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FACTORS INFLUENCING KNOWLEDGE OF THE BITCOIN BLOCKCHAIN AMONG CANADIAN ADULTS

Abstract:

The realm of cryptoassets is highly complex and requires specific knowledge to avoid making risky decisions. This study aims to identify the determinants of both objective and subjective knowledge levels regarding the Bitcoin blockchain. Data were collected from the adult population of Quebec (Canada) in the fall of 2024 (n = 1,078). The results of multiple linear regression analyses indicate that men, perceived risk, self-efficacy, and subjective knowledge level positively influence the objective knowledge level about the Bitcoin blockchain. Conversely, the subjective knowledge level about the Bitcoin blockchain is negatively influenced by household size, age, perceived compatibility, and the presence of facilitators, while it is positively influenced by attitude, self-efficacy, objective knowledge about the Bitcoin blockchain, and perceived knowledge of traditional investment. The findings are discussed in light of the educational needs in this complex domain, particularly among young consumers.

Keywords:

Cryptoassets; Objective knowledge; Subjective knowledge; Canadian consumers; Investment

JEL Classification: G11, O33, D83

1 Introduction

Investment in Cryptoassets [IC] is no longer merely a niche product, as 72% of Quebecers (Province of Canada) are aware of its existence (Warin, de Marcellis-Warin, and Normand, 2022). Young people aged 18 to 24, a vulnerable group of investors, are also aware of cryptoassets: 18% already have at least one cryptoasset in their portfolio (Warin, de Marcellis-Warin, and Normand, 2022). This percentage rises to 50% when the question is asked only to young people who consider themselves autonomous investors (Autorité des marchés financiers, 2022). The lack of experience and knowledge related to cryptoassets: '[...] has not prevented people from buying virtual currencies' (Warin, de Marcellis-Warin, and Normand, 2022, p. 26). Part of the problem likely stems from new investment tools, such as portfolio management services, which reduce the level of financial literacy required to begin exposing oneself to the volatility of cryptoassets. These concerning elements motivate us to better understand the factors influencing the level of knowledge about cryptoassets as an investment medium.

2 Review of literature

Cryptoasset Literacy (CL) is an emerging research area, while financial literacy related to traditional investments has been extensively studied. Several studies show a positive relationship between CL and traditional investments literacy (Jones, Luu, and Samuel, 2024; Khan, 2023; Bannier et al., 2019). Khan (2023) indicates that knowledge of stocks, bonds, and regulatory bodies enhances CL.

Since 2016, the Bank of Canada has surveyed bitcoin adoption and use (Balutel, Felt, and Rusa, 2025). These surveys reveal that women have significantly lower objective CL compared to men (Balutel, Felt, and Rusa, 2025). Bannier et al. (2019) attribute 40% of this gap to traditional investments literacy, sociodemographic variables, and personality traits. Other authors confirm similar findings regarding traditional investments literacy among women (Zaimovic et al., 2023; Santini et al., 2019). Balutel, Felt, and Rusa (2025) report that young people aged 18 to 34 without bitcoins have higher CL than older individuals, while Zaimovic et al. (2023) show young people have lower traditional investments literacy.

Regarding education, individuals without bitcoins and with a university degree have higher CL than those with a high school diploma (Balutel, Felt, and Rusa, 2025), similar to findings on traditional investments literacy (Santini et al., 2019). There is no significant difference in CL across income levels, regardless of bitcoin ownership, but income is positively associated with traditional investments literacy (Santini et al., 2019).

Many studies on cryptoassets aim to predict their adoption as investment tools. While CL is often considered an independent variable, this study explores which factors significantly predict CL (dependent variable), addressing this research gap.

3 Methodology

From November 7 to December 1, 2024, an online data collection was conducted among the adult population of Quebec (Canada) who had already heard about cryptoassets. The questionnaire consisted of 60 questions and took an average of 8 minutes to complete. A total of 1 078 respondents fully completed the questionnaire. Multiple linear regression analyses were conducted to identify the factors influencing knowledge of the of Bitcoin blockchain. To measure knowledge, two measures were used: objective and subjective.

The first measure is objective, as respondents had to indicate the correct answer to six statements. These statements were evaluated by specialists in the field of cryptoassets to ensure they represented an easy to medium level of knowledge. The total score was calculated by summing the correct answers. Individuals who provided incorrect answers or indicated they did not know were coded as 0, and correct answers were coded as 1.

The second measure is subjective, as respondents had to assess their perception of their own level of knowledge about Bitcoin blockchain. Thus, in response to the questions: "In your opinion, what is your level of knowledge of how Bitcoin works compared to Quebecers in general?", they had to choose a level among three possibilities (Table 3). Individuals who indicated "I don't know" were not included in the analyses.

3.1 Factors influencing the level of knowledge

Age, gender, education, annual income and the number of people in household and living in an urban or rural area were used in the analyzes. The fact that a person gives advice to people about their investments as part of their job may influence their level of knowledge was included as a control variable. Table 1 presents the definition of each concept used in the analysis as well as the associated psychometric index.

3.2 Participants

Table 2 presents the characteristics of the respondents. Men slightly outnumber women. Young adults under the age of 35 represent nearly a quarter of the sample, while individuals aged 55 and over account for 45%. There are almost as many individuals with a college diploma as those with an undergraduate degree, constituting 65.1% of the sample.

In terms of gross annual personal income, 40.9% of the sample falls between \$40,000 and \$80,000. The majority of the sample works full-time (44.4%), followed by those who do not participate in the labor market (38.1%). The average household size is 2.3 people. Finally, only 5% of respondents have ever provided investment advice as part of their job.

Table 1. Concepts definition and psychometric index

<i>Name</i>	<i>Definition</i>	<i>Index</i>
Attitude toward cryptoasset investment	The degree of favorable or unfavorable evaluation toward investing in cryptoassets	$\alpha=.750$
Perceived advantages	The extent to which investing in cryptoassets is perceived as offering better returns, easier management, and lower fees compared to traditional investments (e.g., stocks and bonds)	$\alpha=.631$
Complexity	The extent to which investing in cryptoassets is perceived as difficult to understand and adopt	$\alpha=.774$
Compatibility	The extent to which investing in cryptoassets is perceived as consistent with the respondents' vision, values, and expectations regarding investment	$\alpha=.785$
Subjective norms	The extent to which the respondents' family and friends endorse investing in cryptoassets	$r=.834$
Perceived behavioral control	The extent to which respondents are confident that they could invest in cryptoassets and would do so if they truly wanted to	$r=.445$
Self-efficacy	The degree to which respondents believe they can educate themselves about cryptoassets and independently acquire them based on their knowledge and skills	$\alpha=.895$
Facilitators	The extent to which respondents have the time and money to invest in cryptoassets	$r=.496$
Perceived risk	The extent to which respondents consider investing in cryptoassets to be risky	$\alpha=.842$
Subjective knowledge of traditional investments / Bitcoin blockchain	The extent to which respondents perceive their own level of knowledge regarding traditional investments / Bitcoin blockchain	n.a.
Objective knowledge of traditional investments / Bitcoin blockchain	The extent to which respondents understand financial principles and definitions of traditional investment tools, such as stocks and bonds / Bitcoin blockchain	n.a.

Table 2. Descriptive Statistics of the Sample

<i>Variables</i>	<i>n</i>	<i>%</i>
Gender		
Female	515	47.8
Male	558	51.8
Other	4	.4
No answer	1	.1
Age		
18-24 years old	85	7.9
25-34 years old	179	16.6
35-44 years old	163	15.1
45-54 years old	159	14.7
55-64 years old	199	18.5
65-74 years old	185	17.2
Older than 75 years old	107	9.9
No answer	1	.1
Education		
Elementary School	8	.7
Secondary School (General or Technical)	259	24.0
College (General Pre-University or Technical)	349	32.4
University Undergraduate (Certificate, Bachelor's Degree)	353	32.7
University Graduate (Master's, Doctorate, Post-Doctorate)	106	9.8
No answer	3	.3
Personal Annual Income		
Less than 10 000 \$	62	5.8
10 000 to 19 999 \$	78	7.2
20 000 to 29 999 \$	91	8.4
30 000 to 39 999 \$	79	7.3
40 000 to 49 999 \$	119	11.0
50 000 to 59 999 \$	119	11.0
60 000 to 69 999 \$	100	9.3
70 000 to 79 999 \$	103	9.6
80 000 to 89 999 \$	54	5.0
90 000 to 99 999 \$	58	5.4
100 000 \$ +	122	11.3
No answer	93	8.6
Current Situation		
Student without a job	22	2.1
Student with a job	87	8.1
Working full-time	479	44.4
Working part-time	71	6.6
Not participating in the labor market	411	38.1
No answer	8	.7
Has advised people about their investments as part of their job		
Yes	54	5.0
No	917	85.1
No answer	107	9.9
	<i>Mean</i>	<i>Std. Dev.</i>
Number of people in household	2.3	1.3

4 Results

4.1 Descriptives

Table 3 presents the scores on the various scales used. Respondents are more likely to consider themselves to have roughly the same level of knowledge in traditional investment as in cryptoassets. Moreover, the objective knowledge score aligns with this, indicating that people have a better understanding of traditional investment than of cryptoassets.

Table 3. Descriptive Statistics of the Variables

<i>Variables</i>	<i>n</i>	<i>%</i>
Subjective Knowledge (Traditional investment)		
Lower than average	296	27.5
About the same as average	544	50.5
Higher than average	225	20.9
No answer	13	1.2
Subjective Knowledge (Bitcoin blockchain)		
Lower than average	560	51.9
About the same as average	425	39.4
Higher than average	86	8.0
No answer	7	.6
	<i>Mean</i>	<i>Std. Dev.</i>
Attitude toward cryptoasset investment (/20)	9.8	3.4
Perceived advantages (/15)	7.9	2.1
Complexity (/15)	10.0	2.5
Compatibility (/15)	7.2	2.7
Perceived behavioral control (/10)	5.8	2.0
Self-efficacy (/20)	9.1	4.2
Facilitators (/10)	5.3	2.2
Subjective norms (/10)	6.6	2.0
Perceived risk to invest into cryptoassets (/15)	12.5	2.2
Objective Knowledge		
Traditional investment (/4)	2.5	1.1
Bitcoin blockchain (/6)	2.1	1.5

The mean score of objective level of knowledge is 2.1 out of 6, which represents a low level. The subjective level of knowledge, that is, the perception of their level compared to an average person, indicates that half of the sample perceives themselves as below average. The correlation between the objective and subjective levels of knowledge about Bitcoin blockchain is strong and positive ($r = .486$, $p \leq .01$). For knowledge related to traditional investments, the correlation between objective and subjective knowledge is also strong and positive ($r = .314$, $p \leq .01$). When evaluating the level of knowledge between types of

investments, i.e., traditional and Bitcoin blockchain, the correlation remains strong and positive for both subjective knowledge ($r = .461$, $p \leq .01$) and objective knowledge ($r = .339$, $p \leq .01$).

An average score of 9.8 out of 20 indicates a generally unfavorable attitude towards investing in cryptoassets. The scores on the compatibility and perceived benefits scales show a moderate tendency to perceive the advantages of crypto-assets and alignment with people's values. In terms of complexity, a higher score indicates that respondents perceive cryptoassets as rather complex.

The scores on the perceived behavioral control and self-efficacy scales indicate a moderate perception of control and perceived ability regarding the use of cryptoassets. The same applies to facilitating conditions, where these conditions seem to be moderately present, and to subjective norms, meaning that close ones exert a rather moderate influence. Finally, investing in cryptoassets appears to be perceived as risky by the respondents.

4.2 Regressions

The results indicate that the objective level of knowledge about Bitcoin blockchain is higher among men, as well as among individuals with a higher sense of self-efficacy, those who perceive investing in cryptocurrencies as risky, those with a higher level of objective knowledge in traditional investment, and those who perceive themselves as more knowledgeable than average about the Bitcoin blockchain (Table 4).

The determinants of subjective knowledge level differ from those influencing objective knowledge level. Thus, the subjective level of knowledge about Bitcoin blockchain is higher among younger individuals, those in smaller households, those with a favorable attitude towards cryptoasset investment, those with a higher sense of self-efficacy, those with a higher level of objective knowledge about Bitcoin blockchain, and those who perceive themselves as more knowledgeable than average in traditional investment. Additionally, the subjective level of knowledge about Bitcoin blockchain is lower among individuals with a higher level of compatibility and those possessing more facilitating conditions.

Table 4. Regression Results Predicting Bitcoin blockchain Objective and Subjective Knowledge (n=765)

	<i>Objective Knowledge</i>			<i>Subjective Knowledge</i>		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Age			-.061	-.037	.011	-
	-.052	.029				.102***
Gender ^a	.310	.094	.104***	.065	.037	.051
Education	.095	.050	.060	.000	.020	.000
Annual Income	.007	.015	.013	.000	.006	.001
Number of people in household	.008	.037	.007	-.033	.014	-.067*
Localization ^b	.084	.104	.024	-.023	.041	-.015
Has advised people about their investments as part of their job ^c	.173	.186	.028	.086	.073	.032
Attitude toward cryptoasset investment	.022	.022	.051	.031	.009	.164***
Perceived advantages	-.032	.027	-.044	.006	.011	.020
Complexity	-.020	.020	-.033	-.004	.008	-.015
Compatibility						-
	.037	.027	.066	-.031	.011	.130**
Subjective norms	-.016	.023	-.021	.004	.009	.012
Perceived behavioral control	-.041	.032	-.052	.003	.013	.010
Self-efficacy	.084	.015	.0236***	.051	.006	.334***
Facilitators	.047	.027	.067	-.021	.011	-.069*
Perceived risk to invest into cryptoassets	.081	.024	.119***	.007	.009	.025
Objective Knowledge (Traditional investment)	.274	.044	.204***	.007	.018	.012
Objective Knowledge (Bitcoin blockchain)	-	-	-	.090	.014	.210***
Subjective Knowledge (Traditional investment)	-.108	.079	-.050	.259	.030	.281***
Subjective Knowledge (Bitcoin blockchain)	.581	.091	.247***	-	-	-
<i>Adjusted R2</i>	.378			.472		
<i>F value</i>	25.422**			36.858**		
	*			*		

*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$

a 0 = female; 1 = male

b 0 = rural; 1 = urban

c 0 = no; 1 = yes

5 Discussion

5.1 Sociodemographics

It is unsurprising that men have higher levels of objective knowledge about the Bitcoin blockchain, as previous studies have shown (Balutel, Felt, and Rusa, 2025). This trend is also observed in traditional investment fields (Zaimovic et al., 2023; Santini et al., 2019). Women's lower self-efficacy in this area compared to men contributes to this difference. Women with greater confidence in their financial management are more likely to invest and make sound decisions (Farell, Fry, and Risse, 2016). Since self-efficacy influences knowledge levels (Table 4) and women have statistically lower self-efficacy ($t = -9.54$, $p \leq .001$), it is plausible that this explains their lower knowledge levels ($t = -10.19$, $p = .002$).

Contrary to expectations, age does not influence objective knowledge about the Bitcoin blockchain but affects subjective knowledge. Young people are more confident in their knowledge than older individuals. Young people generally have more knowledge about cryptoassets (Balutel, Felt, and Rusa, 2025). Given the recent nature of this field, people may think they know more than they do. Since investing in cryptoassets requires advanced technological knowledge, young people feel more competent in this area. Fintech companies (e.g., Wealthsimple) that simplify cryptoasset investment may create the impression that it is easier than it is.

Contrary to previous studies, neither education level nor gross annual income influences knowledge about the Bitcoin blockchain, whether objective or subjective. However, lack of access to time and monetary resources (as measured by the facilitators) leaves individuals feeling less knowledgeable. This can also lead to a lack of interest, as facilitating conditions are not present to motivate learning.

5.2 Knowledge

It was expected to find that individuals with higher levels of objective knowledge about Bitcoin blockchain feel more knowledgeable about Bitcoin blockchain, and conversely, those who feel more knowledgeable about Bitcoin blockchain actually have more objective knowledge about Bitcoin blockchain. It appears that cryptoasset investors do not exhibit overconfidence and are genuinely well-informed before investing. Overconfidence in investment is a factor leading to risky decisions where risks are underestimated (Baek and Cho, 2022). Moreover, our results indicate that the more a person perceives cryptoasset investment as risky, the higher their level of objective knowledge. In other words, the more a person informs themselves on this subject, the more they recognize the risks.

The results indicate that the more a person has subjective knowledge about traditional investment, the more subjective knowledge they have about Bitcoin blockchain. This result is consistent with previous studies, which have observed a positive and significant relationship between CL and traditional investment literacy (Jones et al., 2024; Khan, 2023; Bannier et al., 2019).

5.3 Self-efficacy and attitude

It was predictable that self-efficacy contributes to a higher level of knowledge, both objective and subjective. Confidence in one's decisions increases the level of knowledge, and conversely, it can be assumed that this confidence grows when the individual possesses more knowledge. This phenomenon is observed in the context of indebtedness (Cloutier, Rukundo and Roy, 2024), financial literacy (Lone and Bhat, 2022), and traditional investment (Forbes and Murat Kara, 2010).

6 Conclusion

This study presents several limitations. The sample was drawn from a panel, which means not totally at random. Additionally, although the province of Quebec is bilingual, only Francophones were surveyed. This choice was made considering that the majority of the population is Francophone. Finally, the political context (i.e., the American elections), during which the data collection took place, may have had some effect on the results. Statements by certain candidates in the U.S. presidential election reignited media interest in cryptoassets, leading to a sharp increase in their prices, while the market had been in decline for several months.

The results of this research on the factors influencing both objective and subjective knowledge levels regarding the Bitcoin blockchain provide several significant contributions. They help identify the sociodemographic criteria that have a significant impact on the perceived or actual knowledge level concerning the Bitcoin blockchain. These findings will enable better targeting of awareness and information communications to assist vulnerable consumers in this particular domain. Furthermore, they offer concrete data to regulatory bodies on the economic and psychological factors of investors that significantly impact their perception of their knowledge level as well as their actual knowledge level. This will allow for better adaptation of protection policies, especially since individuals who understand the functioning of Bitcoin report that investing in cryptoassets is a risky choice. Finally, although this study has highlighted important factors influencing the knowledge level regarding the Bitcoin blockchain, there are still many variables to explore, including sociological variables.

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