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Determinants of investment in cryptocurrencies: The case of Morocco

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ABSTRACT

The study investigates the factors that might increase the investment in cryptocurrencies among Moroccan investors. The study used a survey questionnaire to collect data from a sample of 200 respondents. Subsequently, the collected data was analysed using linear regression as well as basic descriptive statistics and one sample *t*-test. The findings revealed that attitude, subjective norms and perceived behavioural control have a significant impact on the intention to invest in cryptocurrencies. In addition, the results indicated that the Moroccan investors have high tendency to invest in cryptocurrencies. It is worth stressing that this is one of the earliest studies that examine the perception and willingness to invest in cryptocurrencies. Hence, it is expected to be one of the foundations for the future studies in this area.

Introduction

Cryptocurrency is one of the latest developments in the monetary and financial field. It is a virtual currency that is being recently used to buy and sell goods and services online, but it is also a popular asset commonly used for hedging and speculation purposes (Trimborn, Li and Hardle, 2017). In contrast to the classic fiat currencies that are issued and managed by the government authorities in different countries, cryptocurrencies are managed by a public ledger formed by a huge number of contributors (Guo and Antulov-Fantulin, 2018). Cryptocurrencies were officially launched sometime in 2009 (Meera, 2018), though they were initially introduced in 2008 through a white paper published under the pseudonym "Satoshi Nakamoto" (Berentsen and Schar, 2018).

Cryptocurrencies enable participants to directly exchange funds among each other electronically without the need for traditionally recognised intermediary (Nakamoto, 2008). Rather, the exchange is performed online through a peer-to-peer network of users (Guo and Antulov-Fantulin, 2018). It is worth mentioning that there are currently over 1000 active cryptocurrencies (UBS, 2017), including Bitcoin, Ethereum, Ripple, Litecoin etc.

Since their introduction, the issue of high price volatility of cryptocurrencies surfaced and was subject to major debates worldwide. For instance, the Bitcoin price was USD0.008 when it was first launched in 2009, and it has witnessed high levels of volatility throughout the past years to reach the highest price level of nearly USD20,000 by mid-December 2017. Hence, it is crucial to empirically investigate the willingness of Moroccans to invest in cryptocurrencies. Particularly, the study attempts to answer the following questions:

1. Are the Moroccan investors willing to invest in cryptocurrencies?
2. What are the factors that influence Moroccans to invest in cryptocurrencies?

The Moroccan context is selected as it is an emerging and dynamic market that is highly opened to new assets and investment schemes. It is worth noting that this study is one of the early studies focusing on the investors' intention to venture into cryptocurrencies as an investment. Hence, it will contribute in laying the theoretical and empirical foundation

in this area. Specifically, it adapts and extends the theory of planned behaviour in a research area which has been understudied so far. As such, the study identifies the main dimensions that should be emphasised by the practitioners and policymakers to develop and effectively benefit from the cryptocurrencies that are becoming more and more accepted internationally both as a medium of exchange and a vital and profitable investment. Such development would certainly benefit the potential Moroccan investors, and specifically those with prior investment experience.

The rest of the paper is organized as follows: the next section provides a brief discussion of the previous studies in the area of investment, the research model as well as hypotheses development. Section three explains in details the methodology applied. Section four presents a summary of the analysis results. Finally, section five discusses the implications and recommendations for future research.

Literature Review

The investment behaviour has been widely covered in both empirical and theoretical academic research. These studies were conducted in different settings, and using various models and statistical techniques. For instance, Pascual-Ezama, Scandroglio and De Liano (2014) used the theory of planned behaviour (TPB) to investigate the investors' behaviour in the Spanish stock market. The study covered a sample of 127 individual investors and applied structural equation modelling (SEM) method. The findings revealed that attitude, subjective norms, and beliefs were found to have a significant impact on investment behaviour.

On the other hand, Sondari and Sudarsono (2015) explored the Indonesian investors' behavioural intention using TPB. Their findings showed that the attitude toward investment and subjective norms have significant influence on the intention to invest, while self-efficacy did not have any influence on the investment intention.

In a different context, Salimian and Iman (2016) examined the factors affecting decisions of potential investors in Iran using SEM approach, for a sample of 296 respondents. The findings indicated that behavioural attitude, subjective norm, perceived behavioural control and risk appetite of potential investors to invest have a significant positive impact on investment plans.

Cucinelli, Gandolfi and Soana (2016) also examined Italian customers and advisors' financial behaviour using TPB. The authors found that attitude, subjective norms and perceived behavioural control have a significant influence on financial behaviour, while past investment and financial literacy did not have any effect on investment behaviour.

Vuk, Pifar, and Aleksic (2017) examined the influence of trust and risk dimensions on Slovenian students' intention to invest. The findings revealed that trust does not have a direct positive impact on individuals' intention to invest. However, financial risk has a direct positive effect on intention to invest.

Nevertheless, in the area of cryptocurrency which is a relatively new investment asset, very few studies have been conducted to examine the investors' perception toward them. Particularly, Henry, Huynh and Nicholls (2017) explored the Bitcoin awareness and usage in Canada. The authors' covered a representative sample via the Bitcoin Omnibus Survey (BTCOS) in Canada. The findings revealed that 64 percent of Canadians are aware of Bitcoin, but only 2.9 percent effectively use it. Furthermore, the findings showed that awareness of Bitcoin was strongly associated with men and those with college or university education. Furthermore, Bitcoin awareness was concentrated among unemployed individuals. On the other hand, Bitcoin ownership was associated with younger age groups with high school education. Finally, the results showed that knowledge is positively correlated with Bitcoin adoption.

In a relatively similar study, one of the latest studies, Jonker (2018) investigated the adoption intention and actual usage of Bitcoin among retailers in Netherland. The findings indicated that the usage of Bitcoin by retailers is still modest. However, the respondents showed interest in using cryptocurrency payments in the near future. Furthermore, the findings revealed that the factors influencing the retailers' willingness to adopt Bitcoin payments include the impact of consumer adoption of crypto payments, the retailers' perceived net transactional benefits associated with crypto payments, and the retailers' perceived level of adoption efforts. On the other hand, other factors were found to limit the usage of cryptocurrency by retailers. This includes the low consumer demand and the perceived limited added value of cryptocurrency payments compared to other traditional payment methods.

In summary, the above studies have employed various models in studying investment behaviour. Nevertheless, the model that has been severely used was the theory of planned behavior (TPB) developed by Ajzen (1991). According to TPB, the individuals' intention to make a certain decision depends on his/her attitude towards that decision, the subjective norms, as well as the perceived behavioural control.

It is noteworthy that the attitude towards the behaviour is determined by the sum of accessible behavioural beliefs, which refer to the subjective probability that the behaviour will achieve expected outcomes positively or negatively. Subjective norm is determined by the sum of normative beliefs which reflect the perceived behavioural expectation or opinions of important referent individuals or groups. Perceived behavioural control is determined by the sum of accessible control beliefs which refer to the perceived presence of requisite resources and opportunities to perform a given behaviour (Ajzen, 1991). Hence, the adapted TPB factors, especially the attitude, summarize all the important dimensions that were identified in the above studies.

Accordingly, the following hypotheses are developed:

H1: Attitude has a positive influence on Moroccan investors' intention to invest in cryptocurrencies

H2: Subjective norms have a positive influence on Moroccan investors' intention to invest in cryptocurrencies

H3: Perceived behavioural control has a positive influence on Moroccan investors' intention to invest in cryptocurrencies

H4: The Moroccan customers are willing to invest in cryptocurrencies

Methods

The study focuses on Moroccan investors with potential interest in cryptocurrencies. The focus was mainly on individuals with prior investment experience, as well as individuals with minimum investment awareness. The target sample was 200, however only 136 questionnaires were properly filled and returned. Hence, a response rate of nearly 68 per cent was achieved.

The survey questionnaire was designed to collect information about the respondents' perception regarding the attributes of cryptocurrencies as well as their intention to invest in it in the future. For measuring this information, Likert type scaling was used (1 = strongly disagree and 5 = strongly agree). 16 items were listed in this section and most of them were derived from the previous studies conducted in other countries as highlighted above, as well as from current investment and cryptocurrency literature with necessary adaptations made for the specific context of this study. The second section of the questionnaire explored information about respondents' profile, namely, gender, age, and education level.

The data gathered were subsequently analysed using linear regression and one sample *t*-test. The choice of these techniques was inspired from Hair, Black, Babin and Anderson (2010) as well as from similar studies conducted in this area. It is worth mentioning that the analysis was performed through SPSS 18.

The demographic information in Table 1 indicates that 52.2 per cent of the respondents are male, while 47.8 per cent are female. In terms of age grouping, majority of the respondents are between 31 and 40 years i.e. 51.5%, while 33% are aged between 20 and 30 years of age, and 15.5% of the respondents are between 41 and 50 years old. Regarding the level of education, 48.2 per cent of the respondents are Bachelor's degree holders, 26.1% are Master's degree holders, and 25.7% are holding Diplomas.

Table 1. Respondents' profile

Demographics	Categories	Percentage
Gender	Male	52.2
	Female	47.8
Age	Less than 20 years	-
	20 to 30 years	33.0
	31 to 40 years	51.5
	41 to 50 years	15.5
	More than 50 years	-
Education level	Diploma	25.7
	Professional	-
	Bachelor's degree	48.2
	Master's degree	26.1
	Ph. D degree	-

Results

Prior to the data analysis using linear regression and *t*-test, it is crucial to confirm the reliability and validity of the instrument and data. For this matter, the Cronbach Alpha measure is used. It is noteworthy that Cronbach Alpha should be at least 0.6 to be acceptable (Nunnally, 1978). In this regard, Table 2 shows that the Cronbach Alpha values for all the model constructs are ranging between 0.710 and 0.905. Thus, they are at an acceptable level.

Table 2. Convergent validity measures

Constructs	Cronbach Alpha
Behavioural intention	0.813
Subjective norms	0.905
Attitude	0.710
Perceived behavioural control	0.794

The results in Table 3 indicate that attitude has a significant positive effect on the intention to invest in cryptocurrencies. This is in line with Ajzen (1991). Hence, hypothesis 1 in supported. The attitude is mainly formed by the perceived profitability of cryptocurrencies relative to other forms of assets and investment. The profitability refers not only to the direct monetary gain achieved by the investor, but also the potential diversification benefits that can be achieved by including cryptocurrencies in investment portfolios. Furthermore, the attitude towards cryptocurrencies is significantly formed by the amount of trust the investors can have in them, especially that they are issued and managed by third parties, away from official authorities.

On the other hand, the results indicate that subjective norms have a significant positive effect on the intention to invest in cryptocurrencies. This is in line with Ajzen (1991). Hence, hypothesis 2 is supported. This implies that the Moroccan investors consider the opinion of reference groups such as peers, family members as well as media. It is noteworthy that the advice from these reference groups is usually not an imposition on the investors, but rather a guidance that can be either accepted or rejected, depending on the personal judgment of the investors.

Finally, perceived behavioral control was also found to have a significant positive effect on intention to invest in cryptocurrencies. This is in line with Ajzen (1991). Hence, hypothesis 3 is also supported. This implies that it is crucial for the Moroccan investors to feel in control of their actions and decisions, without any laws or third parties forcing them to invest or otherwise. Moreover, there needs to be support from the local and international authorities to encourage Moroccan investors to venture into cryptocurrencies. This could be in form of financial support, legal and regulatory formworks allowing trade and usage of cryptocurrencies, etc.

Thus, all variables initially included in the model were found to be significantly influencing the intention of the Moroccan investors to invest in cryptocurrencies, namely, attitude, subjective norms and perceived behavioural control.

Table 3. Regression analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.569	.162		3.505	.001
	Attitude	.252	.088	.246	2.865	.005
	Subjective norms	.257	.089	.258	2.893	.004
	Perceived behavioural control	.328	.094	.330	3.467	.001

The results in Table 4 indicate that the Moroccan investors indicated willingness to venture into cryptocurrency investment. This is indicated by the significant difference of all the items in Table 4 from the test value/neutral value. This is in line with findings of Henry, Huynh and Nicholls (2017). Hence, hypothesis 4 is supported.

Table 4. One sample t-test

	Test Value = 3					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
BI1	6.914	135	.000	.79412	.5670	1.0213
BI2	6.441	135	.000	.66912	.4637	.8746
BI3	5.831	135	.000	.66176	.4373	.8862
BI4	5.424	135	.000	.57353	.3644	.7826

Discussion and conclusions

The objective of the current study was to examine the factors that might influence the Moroccan investors' intention to invest in cryptocurrencies. The findings revealed that attitude, subjective norms and perceived behavioural control could influence the Moroccan investors' decision to invest in cryptocurrencies. Furthermore, the Moroccan investors showed a significant tendency to invest in cryptocurrencies.

These findings have significant implications for the theory, for the policy makers and regulators as well as for the practitioners. Particularly, this study sets the ground on the cryptocurrencies investment behavior. Thus, the findings of the current study will certainly help advance the body of knowledge on cryptocurrency investment behavior in the future. Furthermore, the current study is an extension of the theory of planned behaviour to a different setting and to a different new area of study that has been empirically understudied.

Finally, the study provides insights to policymakers and practitioners on the aspects that need to be emphasized in order to enhance the cryptocurrencies investment and usage. Indeed, this will not just contribute to investors' wellbeing, but the wellbeing of the economy as a whole. This is only possible is the policy makers and regulators could enhance the logistical tools necessary for the effective investment in cryptocurrencies.

The current study has a number of limitations that should be considered in the future studies in this area. Mainly, the sample size is relatively limited, though accurately calculated, hence the results cannot be generalised to all Moroccan investors. Thus, the future studies are recommended to select a larger and more representative sample size, in order to generalise the results to the whole population. The future studies are also recommended to extend these findings to other contexts and preferably using other models as well. Finally, many dimensions such as knowledge and awareness of cryptocurrencies could not be covered in this study. Hence, future studies are highly recommended to establish a comprehensive model that overs most of the important dimensions.

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