

## Investing In The Future: A Holistic Examination Of Personal And Behavioral Influences On Cryptocurrency Investment, With A Focus On Social Influence And Crypto Expert Guidance

Ms. Zainab Safdar<sup>1</sup>, Bushra F Malik<sup>2</sup>, Dr. Huma Ayub<sup>3</sup>, Abida Ellahi<sup>4</sup>

### Abstract

*The research aimed to investigate the influence of personal and behavioral factors on cryptocurrency investment, with the introduction of social influence and crypto expert recommendations as moderators to augment the impact of these factors. Utilizing the snowball sampling technique, a survey was conducted with a sample of 349 cryptocurrency investors in Pakistan. The study employed Smart PLS 3.3M3 for moderated mediation analysis of the survey data. Results indicate that personal and behavioral factors significantly and positively impact cryptocurrency investment. Profit expectation serves as a positive mediator in the relationship between personal and behavioral factors and cryptocurrency investment. Additionally, social influence and crypto expert recommendations positively moderate the relationship between personal and behavioral factors and the perception of cryptocurrency investment. This study contributes to the existing literature by empirically validating the roles of personal and behavioral factors, social influence, and expert recommendations in shaping perceptions of investment in the unregulated cryptocurrency industry, particularly in the context of developing countries.*

**Keywords-** *Personal factors, Investment skills, Risk affinity, Behavioral factors, Profit expectancy, and cryptocurrency investment.*

### 1. Introduction

The global proliferation of cryptocurrency represents a noteworthy trend propelled by technological advancements, markedly altering individual interactions and financial activities, encompassing investment, trading, and online transactions. The appeal of cryptocurrency extends to its characterization as a hedge and safe-haven asset for investors. This attractiveness is particularly pronounced in emerging economies, where its utilization facilitates uncomplicated remittances in contrast to the intricacies associated with conventional remittance processes. Additionally, it serves as a means to mitigate the adverse effects of currency devaluation during periods of elevated inflationary pressures, thereby safeguarding investors' purchasing power. Nevertheless, several countries, including Egypt, Iraq, Qatar, Oman, Morocco, Algeria, Tunisia, Bangladesh, China, and Pakistan, have imposed bans on

---

<sup>1</sup>Scholar, Department of Business Administration, Fatima Jinnah Woman University Rawalpindi,

<sup>2</sup>Department of Business Analytics, Lewis University, USA

<sup>3</sup>Assistant Professor, Department of Business Administration, Fatima Jinnah Woman University Rawalpindi.

<sup>4</sup>Assistant Professor, Department of Management Sciences Abbottabad University of Science & Technology (Corresponding Author)

digital currencies. Notably, the State Bank of Pakistan (SBP) implemented a comprehensive ban on all cryptocurrencies in April 2018, extending to the prohibition of exchanges and transactions involving bitcoins within the country. Despite these regulatory measures, individuals in Pakistan continue to engage in the purchase and investment of bitcoins, indicating a pervasive but illicit practice. Consequently, it is imperative to recognize the inherent risks associated with investing in bitcoin within the confines of the legal and regulatory framework.

In the fiscal year 2020-21, Pakistan secured the third position in the Global Crypto Adoption Index, succeeding India and Vietnam, attributing this standing to the absence of regulatory frameworks. The Federation of Pakistan Chamber of Commerce and Industry reported a cryptocurrency value of approximately \$20 billion during the stated period. In 2022, the number of cryptocurrency investors in Pakistan reached around 9 million, with crypto-trading applications ranking among the most downloaded in the country. Despite the prevalent enthusiasm among amateur investors, there exists a tendency to prioritize headlines highlighting bitcoin's market capitalization without adequately considering its pronounced volatility. Existing literature, exemplified by Mattke et al. (2020), underscores the significance of personal and behavioral factors in shaping investment decision-making, particularly within the domain of cryptocurrency. Behavioral finance factors have been extensively deliberated, emphasizing the need to comprehend the motivational factors steering investors towards an unregulated and high-risk investment avenue. Additionally, the literature, including studies by Sankar et al. (2015) and Tu et al. (2018), underscores the pivotal role of crypto expert recommendations in influencing investors' decisions. However, a notable gap in the academic exploration pertains to the absence of a comprehensive investigation into the role of an expert in the context of cryptocurrency investment, as identified by Mattke et al. (2020). Consequently, this research aims to address this scholarly gap by elucidating the nuanced interplay between personal and behavioral factors, expert opinions, and social influence in shaping perceptions about cryptocurrency.

The research study aims to achieve the following objectives: 1) Assess the influence of personal factors, including investment skill and risk affinity, and behavioral factors, comprising herding, heuristic, and prospect factors, on cryptocurrency investment. 2) Investigate the role of perception about cryptocurrency as a mediating factor between personal and behavioral factors and cryptocurrency investment. 3) Examine the impact of social influence as a moderating variable between personal factors and the perception about cryptocurrency. 4) Evaluate the influence of crypto expert recommendation as a moderating variable between behavioral factors and the perception about cryptocurrency. 5) Analyze the moderated-mediating impact of social influence between personal factors and the perception about cryptocurrency. 6) Investigate the moderated-mediating impact of crypto expert recommendation between behavioral factors and the perception about cryptocurrency. These objectives collectively aim to comprehensively understand the intricate interrelations among personal and behavioral factors, perception, social influence, and crypto expert recommendations in the context of cryptocurrency investment.

In light of the escalating prominence of cryptocurrency within policy considerations, this study serves as a valuable resource for policymakers. By elucidating the diverse factors influencing investors' motivations to engage in cryptocurrency investment, the study facilitates a comprehensive understanding that can inform the formulation of future laws and regulations. Furthermore, the research offers insights to investors, enhancing their understanding of the nuanced needs and demands within the cryptocurrency landscape, including potential impacts stemming from crypto expert opinions and social influence.

## 2. Literature Review

Unregulated cryptocurrency market emerged as an attractive alternative investment avenue with complete privacy mode after the global financial crisis 2007-2009 (Pandya, Mittapalli, Gulla, and landau, 2019). There are mixed trends in the usage of cryptocurrency globally. Such as in US, and Germany cryptocurrency is used as a means of payment (Hayes, 2015). In Japan, bitcoin is used as a legal payment. In Europe, cryptocurrency is used only as a means of exchange (Gainsbury & Blaszczynski, 2017). On the other hand, a bitcoin transaction is prohibited for banks in China but not for individuals. However, developing countries try to stabilize their currency by restricting cryptocurrency usage. Various developing countries banned cryptocurrencies, such as Bangladesh, Kyrgyzstan, and Nigeria, due to untraceable transactions that help individuals to avoid tax (Pandya et al., 2019). As a developing country, Pakistan also suffers from a weak economy and SBP banned cryptocurrency for various reasons, such as gaps in regimes of AML/CTF (International Antimony Laundering & Combatting the financing of terrorism & proliferation) regarding financial operation & conventional banking. However, the emerging popularity of cryptocurrency in the Pakistan financial market is still an untapped area that needs academic attention to understand why investors are still interested in cryptocurrency despite of ban on it in Pakistan. At different times various initiatives were taken by the Government of Pakistan, such as in the 2017 warning issued by the state bank of Pakistan to Ponzi Schemes associated with digital currency. FIA 2018 asks the legislator to illegalize the Bitcoin and mention the punishment for those using cryptocurrency (Mahgoub, Salem & Ibrahim, 2019). There is a need to understand the motivational factors that drive investor's intention to consider this investment option.

Although several studies in literature discuss the factors that may lead to cryptocurrency investment, among them personal and behavioral factors are mostly cited as influential factors to entice investors (Clark-Murphy & Soutar, 2005; Glaser, Zimmermann, Haferkorn, Weber and Siering, 2014; Mnif & Jarboui, 2021; Zhu, Dickinson and Li, 2017). The subsequent sections present a review of the literature and propose hypothesis of the study.

### 2.1. Personal Factors and Cryptocurrency Investment

Individual characteristic that influences buying behaviour is termed as a personal factor. Mattke et al. (2020) identify investment skills and risk affinity as personal factors that, grouped into configurations, influence bitcoin investment behavior in the context of Germany by adopting a mixed-method approach. Investment skill is an individual tendency related to investment knowledge and making sound investment decisions (Pavlou & Fygenson, 2006). Financial literacy is a set of skills and knowledge along with prior experience in investment that help individuals to make investment decisions (Zhu et al., 2017). Zhao and Zhang (2021) found a significant positive impact of financial literacy and investment experience on cryptocurrency investment in the context of China. There are still limited studies in the literature that highlight the impact of personal factors such as investment skills on cryptocurrency investment decisions in the context of developing countries. Therefore, based on the above discussion following hypothesis has been proposed;

**H<sub>1</sub>:** Personal factors positively affect cryptocurrency Investment in the context of Pakistan.

**H<sub>1a</sub>:** Investment skill positively affect cryptocurrency investment in the context of Pakistan.

Studies in literature also identify risk tolerance as another personal factor to motivate investment decisions (Cohn et al., 1975). Individual risk appetite is an essential factor for investment decisions making, a risk-taker person prefer cryptocurrency investment to a risk-averse person (Mnif & Jarboui, 2021). Bitcoin investment is volatile as its value is

unpredictable, making it more favorable for risk-taker investors to earn extra profit through high-risk investments. Further, Jalal, Pietro, and Leonelli (2021) investigated the relationship between individual factors (risk attitude and market information) and cryptocurrency investment in the context of Pakistan by collecting 185 responses from masters students, and concluded the positive influence of risk attitude and market information on cryptocurrency investment. Research findings are available in related contexts, but the risk affinity driving investment in cryptocurrency have not yet been identified. Therefore, based on the above discussion following hypothesis has been proposed;

**H<sub>1b</sub>:** Risk affinity positively affects cryptocurrency investment in the context of Pakistan.

This study identifies two personal factors, investment skills and risk affinity, grouped into configurations and create a perception about cryptocurrency and ultimately lead toward cryptocurrency investment as Mattke (2020) stated that ease in cryptocurrency acquisition, profit expectancy, and cryptocurrency ideology support lead to perception about cryptocurrency that led to cryptocurrency investment. Hence, this study proposed that coexisting perception and personal factors derive cryptocurrency investment.

**H<sub>4</sub>:** Personal factors influence the perception of cryptocurrency Pakistani investors.

**H<sub>4a</sub>:** Investment skill influences the perception of cryptocurrency investment in Pakistan

**H<sub>4b</sub>:** Risk Affinity influence the perception of cryptocurrency investment in Pakistan.

## **2.2. Behavioral Factors and cryptocurrency investment**

Behavioral factors are psychological factors, comprise cognition and emotions that also play a significant role in decision making (Cao, Nguyen, and Tran, 2021). Luu and Luong (2020) study investment prospective in cryptocurrency market while considering behavioral factors such as prospect, herding, and heuristic. Investors with less information show more herding behavior. Furthermore, Kristoufek (2015) investigates herding behaviors that make volatile bitcoin prices. Bouri et al. (2019) study investor herding behavior in the cryptocurrency market and examine herding behavior may occur when uncertainty increases in the market. Moreover, Silva et al. (2019) conducted a study on herding behavior among fifty cryptocurrencies and found that the herding effect in a downward market period is significant. Based on the above discussion, this study examines the impact of herding behavior on cryptocurrency investment decisions in the context of Pakistan.

**H<sub>2</sub>:** Behavioral factors positively affect cryptocurrency Investment in Pakistan.

**H<sub>2a</sub>:** Herding factor positively affect cryptocurrency investment in Pakistan.

There is limited literature available on the impact of behavioral factors, including the heuristic factor of cryptocurrency investment. Stosic et al. (2018) adds up the literature by examining behavioral factors' (heuristic) effect on cryptocurrency investment decisions. While using rolling window analysis from 2013 to 2018 to examine the effect of herding behavior on the cryptocurrency in the Brazilian market, uncertainty increases the herding trend. Although, Al-Mansour (2020) also studied the impact of behavioral factors, including the heuristic factor, on cryptocurrency investment decisions. However, there is a lack of available literature on all three heuristic factors such as representativeness, anchoring, and availability and their impact on cryptocurrency investment. Keeping in view this gap, the study focuses on all three heuristic

factors and examines their impact on cryptocurrency investment. Therefore, based on the above discussion following hypothesis has been proposed;

**H<sub>2b</sub>**: Heuristic factor positively affect cryptocurrency investment in Pakistan.

Another behavioral aspect i.e. prospect factor explains how risk tolerance affects investment decisions (Plous, 1993). Prospect factors explain the various states of mind like regret, loss aversion, and mental accounting, and this entire actor positively influences decision-making (Waweru et al., 2008). Further, Kengatharan (2014) study the effect of a behavioral factor (prospect) on investment decisions by collecting 128 responses from investors of the Colombo stock exchange and found that behavioral factors influence the investment decision. However, there is limited literature available with reference to the investment in cryptocurrency in Prospect factor, therefore based on the above discussion following hypothesis has been proposed;

**H<sub>2c</sub>**: Prospect factor positively affect cryptocurrency investment in Pakistan.

Al-Mansour (2020) studied the behavioral factor aspect of cryptocurrency investment while collecting responses from 112 investors of the United Arab Emirate (UAE) using the snowball sampling technique. Their findings conclude that investors' choices in investment are affected by other investors in cryptocurrency; moreover, when investors earn a profit, they make other investments based on their skills and knowledge. Hence behavioral factors create a perception about crypto investment and ultimately lead to the investment decision of cryptocurrency.

**H<sub>5</sub>**: Behavioral factors influence perception about cryptocurrency investment in Pakistan.

**H<sub>5a</sub>**: Herding factor positively affect perception about cryptocurrency investment in Pakistan.

**H<sub>5b</sub>**: Heuristic factor positively affect perception about cryptocurrency investment in Pakistan.

**H<sub>5c</sub>**: Prospect factor positively affect perception about cryptocurrency investment in Pakistan.

Investment perception is defined as a quality of an investment that influences an individual investment decision (Loomes & Sugden, 1982). Individual perception of investment motivates investment behavior. Currently limited literature is available on the mediating role of perception of cryptocurrency (profit expectation) and actual investment in cryptocurrency. Khan (2017) investigate investor perception about investment intention in the context of Pakistan while collecting a sample of 207 individuals. The result shows that loss-averse investors fear losses, and they do not focus on the growth of investment; they are more protective toward the capital. Cryptocurrency is a profit-generating but risky investment because cryptocurrency is volatile, so individual risk appetite is more essential for making a cryptocurrency investment decision (Zhou, Qin, Cully, Livshits, & Gervais, 2021). This show that a person who is a risk-taker and wants to earn profit will invest in cryptocurrency. Limited studies are available to support investor personal factors and behavioral factors also affect cryptocurrency investment through perception. Investors' personal (risk appetite and investment skills) and behavioral factors lead to a particular investment when a good profit range is involved. While buying cryptocurrency profit expectation of the investors drives the demand side of cryptocurrency (Subramaniam & Chakraborty, 2020). Therefore, based on the above discussion following hypothesis has been proposed;

**H<sub>6</sub>:** Perception about cryptocurrency among Pakistani investors mediates the positive relationship between personal and behavioral factors and Cryptocurrency Investment.

Literature on investment shows that profit expectation creates motivation for investment (Glaser et al., 2014). Profit earning desire is a primary expectation leading to Cryptocurrency investment. However, few studies are available in this context, therefore, following hypothesis has been proposed;

**H<sub>3</sub>:** Perception about cryptocurrency positively affects Cryptocurrency Investment in Pakistan.

### **2.3. Crypto expert recommendation and cryptocurrency investment**

Experts' recommendation may play a significant role to motivate cryptocurrency investors. Researchers identified trustworthiness and expertise as two critical components for credit-worthy recommendations (Sankar et al., 2015). Gerritsen, Lugtigheid, and Walther (2021) argue that crypto experts have relevant information related to the cryptocurrency market, which contributes to predicting cryptocurrency prices, and improves market efficiency. They argue that in the bitcoin market; crypto experts play an essential role in unfolding prices and have relevant information related to the crypto market, which may increase individual efficiency in making a decision. Literature on the contribution of expert recommendation in the context of developing countries is still limited. Therefore this study proposes crypto expert recommendation's moderating effect on investor adoption intension of cryptocurrency.

**H<sub>8</sub>:** Crypto expert recommendation moderates the relationship between personal factors and perception about cryptocurrency among Pakistani investors.

**H<sub>10</sub>:** Crypto expert recommendation moderates the relationship between behavioral factors and perception about cryptocurrency among Pakistani investors.

### **2.4. Social influence and cryptocurrency investment**

Social influence is the degree to which others influence individual decisions, i.e., friends, family, and social groups (Venkatesh et al., 2003). Social influence is derived from subjective norms, and various studies highlight the significant result of social influence on investment decisions (Abu Shanab, 2010). Social influence is the most influential factor that affects individual investment decisions more than other factors. Moreover, Shive (2010) examines the significant impact of family members on investment decisions. While Putra (2019) examined that friends greatly influenced individual intention to use cryptocurrency. Khazaei (2020) shows the significant impact of social influence on blockchain technology adoption in the Malaysian context. Social influence also positively impacts behavior intention to use cryptocurrency in Indonesia (Alaklabi & Kang, 2021). Previous studies ignore the moderating impact of social influence in cryptocurrency investment. Venkatesh et al. (2003) stated that personal adoption decisions are affected by different factors, but social influence is the most important. Hence social influence significantly affects individual perception. This shows that social influence positively influenced individual perception toward cryptocurrency. Due to the lack of literature available related to the moderating effect of social influence in the cryptocurrency context, this study aims to analyze the moderating impact of social influence between personal factors and perception of cryptocurrency.

**H<sub>7</sub>:** Social influence moderates the relationship between personal factors and perception about cryptocurrency among Pakistani investors.

**H<sub>9</sub>**: Social influence moderates the relationship between personal factors and perception about cryptocurrency among Pakistani investors.

The study used theory of planned behaviour to establish theoretical framework which proposes the influence of two major independent variables personal factors and behavioral factors on dependent variable cryptocurrency investment with mediating impact of perception about cryptocurrency and moderating impact of social influence between personal factor and perception about cryptocurrency and further the moderating impact of crypto expert recommendation between behavioral factor and perception about cryptocurrency. Figure 1 shows proposed research model.

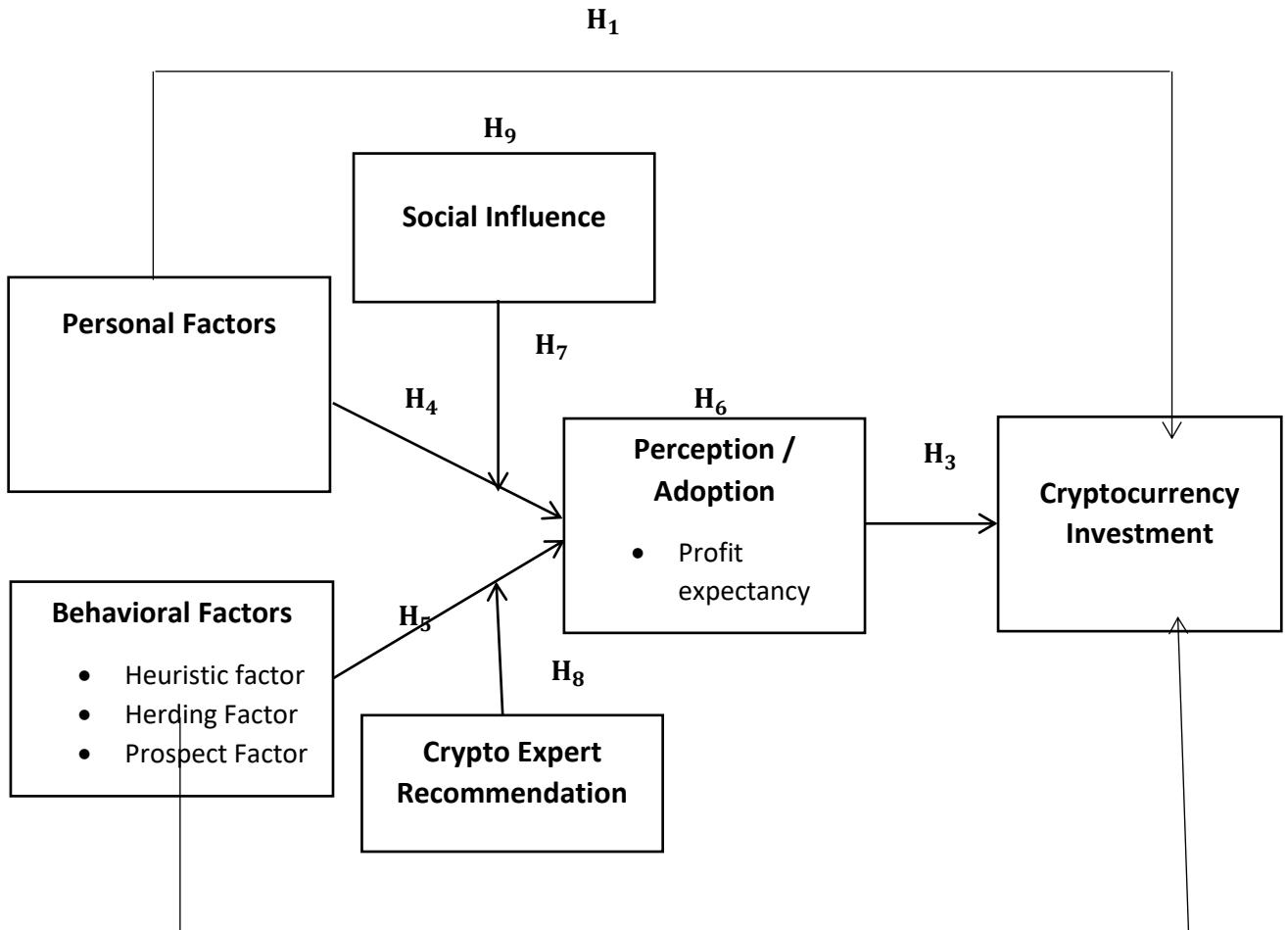


Figure 1: Research Model

**Methodology**

A survey was conducted to collect required sample using snowball sampling. The questionnaires were distributed online through URL links and shared with different social groups related to cryptocurrency investors. A total of 400 questionnaires were distributed, while only 349 responses were received from cryptocurrency investors with in the duration of 3 months’ time period from Nov 2022 to Feb 2022. The questionnaire consisted of two parts,

first part includes demographic factor while the second part consists of questions regarding the variables used in the study.

Table 1 presents the measurement of variables. Data analysis is conducted using smart PLS. All measurement models, structural model, mediation, and moderation analysis is conducted on intelligent PLS while descriptive statistical analysis, factor analysis, and cross-tabulation run through SPSS. Equation 1 presents the model specification.

$$CI_i = \alpha + \beta_1 IS_i + \beta_2 RA_i + \beta_3 HRF_i + \beta_4 HUF_i + \beta_5 PRF_i + \beta_6 IS_i \cdot SI + \beta_7 RA_i \cdot SI + \beta_8 HRF_i \cdot CER + \beta_9 HUF_i \cdot CER + \beta_{10} PRF_i \cdot CER + \beta_{11} PE + \mu_i \dots \dots \dots (1)$$

In the above expression, the subscripts “i” denote cryptocurrency investors. CI denotes Cryptocurrency Investment, IS denotes Investment Skill, RA stands for Risk Affinity, HRF is Herding Factor, HUF is Heuristic Factor, PRF stands for Prospect Factor, SI denotes Social Influence and CER stands for Cryptocurrency Expert.

**Table 1: Measurement of Variables**

<b>Variables</b>	<b>Measures</b>	<b>Authors</b>
Profit expectancy (PE)	<p>Cryptocurrency is financially sound.</p> <p>Investing in cryptocurrency seems to be able to generate high returns.</p> <p>I believe cryptocurrency will perform satisfactorily in the future</p> <p>Cryptocurrency has sufficient resources to grow in the future.</p> <p>I think investing in cryptocurrency is highly rewarding.</p>	Adapted from Ali (2011); Mattke et al. (2020)
Intention to invest in Cryptocurrency(CI)	<p>I will invest in cryptocurrency.</p> <p>I am interested to invest in cryptocurrency.</p> <p>I am looking forward to investing in cryptocurrency.</p> <p>I would recommend that my friends and family</p> <p>Invest in cryptocurrency.</p> <p>I would recommend that other people also</p> <p>Invest in cryptocurrency.</p>	Adapted from East (1993); Mattke et al. (2020); Hati et al. (2020)
Investment skills	<p>If I wanted to, I could become skillful at making good investment decisions about cryptocurrency.</p>	Adapted from Pavlou and Fygenon (2006); Mattke et al. (2020)



	<p>If I wanted to, I could easily become knowledgeable about investing in cryptocurrency.</p>	
	<p>If I wanted o I could earn a large profit from cryptocurrency investment?</p>	
Risk affinity	<p>I am willing to take risks when choosing an investment.</p> <p>I prefer a high-risk investment with a large profit over an investment with low risk and medium profit.</p> <p>I prefer investments that have high risks.</p> <p>Risk is a normal part of an investment.</p>	Adapted from Allen et al. (2005); Mattke et al. (2020)
Herding Factor	<p>Other investors' decisions of choosing cryptocurrency types have an impact on your investment decisions.</p> <p>Other investors' decisions regarding the cryptocurrency volume have an impact on your investment decisions.</p> <p>Other investors' decisions of buying and selling cryptocurrency have an impact on your investment decisions.</p> <p>"You usually react quickly to the changes of other investors' decisions and follow their reactions to the cryptocurrency market.</p>	Adapted from Tan et al. (2008); Al-Mansour (2020)
Heuristic Factor	<p>You believe that your skills and knowledge of the cryptocurrency market can help you to Outperform the market.</p> <p>You rely on your previous experiences in the market for your next investment"</p> <p>You forecast the changes in cryptocurrency prices in the future based on the recent Cryptocurrency prices.</p>	Adapted from Al-Mansour (2020)
Prospect Factor	<p>After a prior gain, you are more risk-seeking than usual.</p> <p>After a prior loss, you become more risk-averse.</p> <p>My instinct has often helped me make a good investment.</p>	Adapted from Ritter (2003); Al-Mansour (2020)

	I am capable of identifying the low point of the market”	
	You avoid selling cryptocurrency that has decreased in value and readily sells cryptocurrency that has increased in value.	
Crypto Expert Recommendation	Crypto Expert Recommendation motivates me in cryptocurrency investment.	Adapted from Su et al. (2018)
	I often seek advice from experts for cryptocurrency investment.	
	I usually prefer the advice of experts for investments.	
	I want researcher's advice to get a high return over time?	
Social influence	My friends motivate me for cryptocurrency investments?	Adapted from Venkatesh et al. (2003)
	Individuals, whom I regard as important would support me for cryptocurrency investment?	
	I prefer to invest in cryptocurrency when saw other people investing?	

## Results and Analysis

Table 2 present the demographic statistics of the respondents, where majority of respondents are young educated male. Literature also supports the active involvement of youth in cryptocurrency (Sabarwal, 2022) as young people are more inclined to take a risk with digital literacy, which enables them to make wise investment decisions. This reflects that education creates more awareness of technological advancement, which triggered investors toward digital currency investment (Christanti and Mahastanti, 2011).

**Table 2 Demographics Statistics**

Sr.no	Demographic	Characteristics	Frequencies	Percentage (%)
1	Gender	Male	59	16.9
		Female	290	83.1
		<b>Total</b>	<b>349</b>	<b>100.0</b>
2	Age	Less than 30	308	88.2
		31 to 40	30	8.6
		41 to 50	9	2.6
		Greater than 50	2	0.6
		<b>Total</b>	<b>349</b>	<b>100.0</b>
3	Qualification	Matric/O level	1	0.3

		Intermediate/A level	3	0.9
		Bachelors	240	68.7
		Masters	83	23.8
		M. Phil	22	6.3
		<b>Total</b>	<b>349</b>	<b>100.0</b>
4	Status	Student	278	79.7
		Employee	42	12.0
		Self-Employed	29	8.3
		<b>Total</b>	<b>349</b>	<b>100.0</b>
5	Income Level	Less than 20,000	222	63.
		20,000-30,000	46	13.2
		31,000-40,000	33	9.5
		41,000-50,000	18	5.1
		Above 50,000	30	8.6
		<b>Total</b>	<b>349</b>	<b>100.0</b>
6	Knowledge about Cryptocurrency	Yes	339	97.1
		No	10	2.9
		<b>Total</b>	<b>349</b>	<b>100.0</b>
7	Investment in Cryptocurrency	Yes	128	36.7
		No	28	8.0
		Maybe in future	193	55.3
		<b>Total</b>	<b>349</b>	<b>100.0</b>

The correlation analysis in table shows that correlation values between all the variables meets the threshold value. The result shows the strongest correlation between social influence and herding factor while weakest relation between social influence and heuristic factor.

**Table 2 Correlation Analysis**

		1	2	3	4	5	6	7	8	9	M
1	<b>CI</b>	1									4.08
2	<b>IS</b>	.536**	1								3.86
3	<b>RA</b>	.484**	.451**	1							3.96
4	<b>HRF</b>	.474**	.297**	.437**	1						3.95
5	<b>HUF</b>	.545**	.582**	.417**	.288**	1					3.80
6	<b>PRF</b>	.609**	.539**	.474**	.474**	.566**	1				3.75
7	<b>PE</b>	.568**	.405**	.505**	.459**	.402**	.474**	1			4.40
8	<b>SI</b>	.338**	.192**	.362**	.648**	.135*	.379**	.412**	1		4.07
9	<b>CER</b>	.401**	.338**	.240**	.346**	.379**	.295**	.333**	.256**	1	3.84

\*\* p< 0.01, \* p< 0.05

CI =Cryptocurrency Investment, IS = Investment Skills, RA =Risk Affinity, HRF = Herding Factor, HUF = Heuristic Factor, PRF = Prospect Factor, PE = Profit Expectation, SI = Social Influence, CER =Crypto expert Recommendation

### Structural Model

The structural model in figure 2 shows the relationship between the constructs in the proposed study model.

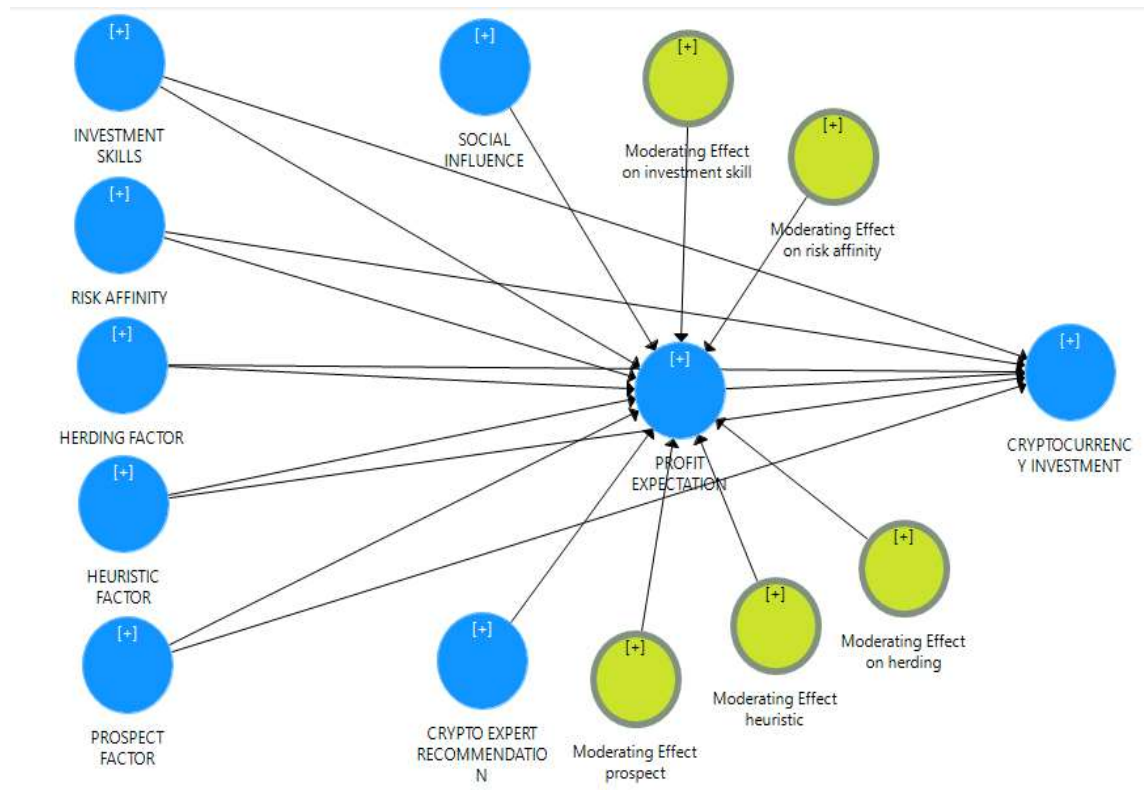


Figure 2: Structural Model

### Direct Path testing

#### Personal factors affect Cryptocurrency Investment.

Table 4 present direct path results where H1 revealed that one of the personal factor investment skills has a significant positive impact on cryptocurrency investment ( $\beta= 0.145$ ,  $t= 3.187$ ,  $p= 0.002$ ). The finding is in line with the findings of previous studies (Zhao & Zhang, 2021; Matke, 2020). This shows that investors with higher knowledge about investment will be attracted to cryptocurrency investment. Another personal factor, Risk Affinity, also significantly impacts cryptocurrency investment ( $\beta=0.143$ ,  $t=2.725$ ,  $p< 0.007$ ). The result is in line be with the findings of Jalal et al. (2021), which support the positive impact of risk affinity on cryptocurrency investment in Pakistan. This show that investor with risk-taker behavior are

more attracted to cryptocurrency investment, while investors with risk-averse behavior show a reserved attitude toward cryptocurrency investment.

### **Behavioral factors affect Cryptocurrency Investment.**

H2 evaluates whether Behavioral factors (Herding, Heuristic, and Prospect) significantly impact cryptocurrency investment. The study results show a significant relationship between herding and cryptocurrency investment ( $\beta=0.159$ ,  $t= 3.200$ ,  $p< 0.01$ ). As most of the respondents are young and show more herding behavior, although they have investment skills. Talpsepp and Tanav (2021) also state, the young generation shows more herding behavior. Further there is significant impacts of heuristic factor on cryptocurrency investment ( $\beta=0.178$ ,  $t=3.194$ ,  $p< 0.001$ ). The findings are consistent with the results of (Paratheepan & Rathirane, 2020). A heuristic is a mental shortcut that helps make a quick and efficient judgment. The impact of third relation Prospect factor (PRF) on cryptocurrency investment (CI) shows significant results as ( $\beta=0.309$ ,  $t=4.649$ ,  $p< 0.007$ ). The result is in lined with Kengatharan and Kengatharan (2014) findings as they examine the positive impact of prospect factors on investment decisions on the stock market in the context of Sri Lanka. The prospect factor shows that investors value gains and loss differently; they give more weightage to gain than loss. Investor prefers investment based on potential gain as cryptocurrency is highly volatile and provides more ground for profit earning. Hence, investors are more inclined to invest in cryptocurrency.

### **Perception about Cryptocurrency affects Cryptocurrency Investment.**

In table 4, H3 present the results of perception about cryptocurrency (profit expectation) which shows its significant impact on cryptocurrency ( $\beta= 0.173$ ,  $t=2.853$ ,  $p< 0.005$ ). Results are in lined with the findings of Das and Jain (2014), who conclude that returns positively affect the investment intention of an individual. The person who believes that cryptocurrency is financially sound is more into cryptocurrency investment to generate high return.

### **Personal factors influence the perception of Cryptocurrency by Pakistani investors.**

Table 4 present the results of H4 which examines the impact of one personal factor, investment skills, and perception about cryptocurrency, and results show insignificant results ( $\beta=0.070$ ,  $t=1.244$ ,  $p< 0.214$ ). Results are consistent with the findings of Stambaugh (2020) that extraordinary skill of knowledge in managers leads to lower expected profit. Further, Risk Affinity's impact on Profit Expectation shows significant positive results ( $\beta=0.189$ ,  $t=3.453$ ,  $p<0.001$ ). The results align with Thaler and Johnson (1990), who states that individuals show risk-taking behavior due to their previous profitable investment. This show that in order to build perception about cryptocurrency investment absorption of risk affinity is mandatory.

### **Behavioral factors influence perception about Cryptocurrency**

Table 4 presents the results of H5 which examines whether behavioral factors (Herding, Heuristic, and Prospect) have a significant impact on the perception of Cryptocurrency. The result indicates that the Behavioral factor (Herding) has a significant impact on the perception of Cryptocurrency ( $\beta= 0.144$ ,  $t=2.389$ ,  $p< 0.017$ ) this show that investor with a herding attitude invest in cryptocurrency while seeing that other are earning profit in it. So herding behavior significantly impacts the perception of cryptocurrency. Behavioral factor (Heuristic) has significant impact on perception about Cryptocurrency ( $\beta=0.113$ ,  $t=2.179$ ,  $p< 0.030$ ) and Behavioral factor (Prospect) has significant impact on perception about Cryptocurrency ( $\beta=0.133$ ,  $t= 2.344$ ,  $p< 0.019$ ) Hence H5 (a, b and c) is supported. As Mahmood, Kouser,

Abbas, and Saba (2016) state that behavioral factors (herding, heuristic, and prospect) positively influence investment performance in the context of Pakistan.

**Table 4 Direct Relationship Results**

Hypotheses	$\beta$	S.D	t	P
H1(a): IS -> CI	0.145	0.046	3.183	0.002
H1(b): RA ->CI	0.143	0.052	2.725	0.007
H2(a): HRF -> CI	0.159	0.050	3.200	0.001
H2(b): HUF -> CI	0.178	0.056	3.194	0.001
H2(c): PRF -> CI	0.309	0.066	4.649	0.000
H3: PE -> CI	0.173	0.061	2.853	0.005
H4(a): IS -> PE	0.070	0.057	1.244	0.214
H4(b): RA -> PE	0.189	0.055	3.453	0.001
H5(a) HRF -> PE	0.144	0.060	2.389	0.017
H5(b):HUF -> PE	0.113	0.052	2.179	0.030
H5(c): PRF-> PE	0.133	0.057	2.344	0.019

CI =Cryptocurrency Investment, IS = Investment Skills, RA =Risk Affinity, HRF = Herding Factor, HUF = Heuristic Factor, PRF = Prospect Factor, PE = Profit Expectation, SI = Social Influence, CER =Crypto expert Recommendation

### Mediation Model

The mediating role of profit expectation between investment skills and cryptocurrency investment was examined in table 5. The indirect effect shows insignificant results ( $\beta= 0.012$ ,  $t= 1.116$ ,  $p<0.265$ ). With inclusion of mediator direct relation show significant result ( $\beta=0.132$ ,  $t=2.124$ ,  $p< 0.014$ ) total effect also show significant relation ( $\beta=0.144$ ,  $t=2.799$ ,  $p< 0.011$ ). Hence this shows no mediation as the direct impact is significant and the indirect effect is not significant. The result shows that profit expectation does not enhance the relationship between IS and CI as a skilled person is more attracted toward cryptocurrency when the cryptocurrency market increases in respect of profit range increases but due to lack of knowledge among respondents result in show contrary results. As Sahi, Arora, and Dhameja (2013) stated individuals try to invest in those instruments of which they have some knowledge and also prefer to invest in the instrument which from provide good profit.

The mediating role of perception about cryptocurrency (profit expectation) between risk affinity and cryptocurrency investment was examined as shown in table 4. The indirect effect is significant ( $\beta=0.033$ ,  $t=2.375$ ,  $p< 0.018$ ). With inclusion of mediator direct relation show significant result ( $\beta= 0.092$ ,  $t=2.550$ ,  $p< 0.088$ ) total effect also show significant relation ( $\beta=0.124$ ,  $t=2.333$ ,  $p< 0.020$ ). Hence this shows partial mediation as the total impact is significant and the indirect effect is also significant and with the inclusion of the mediator direct effect of RA on CI decreased from  $\beta=0.143$  to  $\beta= 0.092$ . The result shows that profit expectation enhances the relationship between RA and CI as a risk-taker person is more

attracted toward cryptocurrency as they feel high expected profit in cryptocurrency because cryptocurrency is volatile. Whether the individual is a risk-taker or averse they are attracted to cryptocurrency just to earn profit. Hence PE positively mediates personal factors. As Garnaut (2015) states that minimum return is necessary to attract an investor for investment.

Further, the mediating role of perception about cryptocurrency (profit expectation) between the Herding Factor and Cryptocurrency investment is examined. The indirect effect is ( $\beta=0.025$ ,  $t=1.912$ ,  $p<0.056$ ) is significant. With inclusion of mediator direct relation show significant result ( $\beta=0.122$ ,  $t=2.208$ ,  $p<0.028$ ) total effect also show significant relation ( $\beta=0.147$ ,  $t=2.799$ ,  $p<0.005$ ). Hence this shows partial mediation as the direct impact is significant and the indirect effect is also significant and with the inclusion of the mediator direct effect of HRF on CI decreases from  $\beta=0.159$  (table 5) to  $\beta=0.122$ . The result shows that profit expectation enhances the relationship between HRF and CI. Pakistani investors show more herding behavior while investing. When individuals saw other people investing in cryptocurrency while seeing the fact that profit margin is increasing they also try to invest in cryptocurrency. Results are in line with Olsen (1996) as he stated that individual herding behavior increase with the level of profit unpredictability.

Next, the mediating role of perception about cryptocurrency (profit expectation) between the heuristic Factor and Cryptocurrency investment is examined. The indirect effect is ( $\beta=0.020$ ,  $t=1.754$ ,  $p<0.080$ ) is significant. With inclusion of mediator direct relation show significant result ( $\beta=0.161$ ,  $t=2.866$ ,  $p<0.004$ ) total effect also show significant relation ( $\beta=0.181$ ,  $t=3.167$ ,  $p<0.002$ ). Hence this shows partial mediation as the direct impact is significant and the indirect effect is also significant and with the inclusion of the mediator direct effect of HUF on CI decreases from  $\beta=0.178$  (table 4.5.1) to  $\beta=0.161$ . The result shows that profit expectation enhances the relationship between HUF and CI.

**Table 5 : Simple Mediation Analysis of Variable**

Hypotheses	Total effects		Direct effect		Indirect effects			
	$\beta$	p	$\beta$	p	$\beta$	SD	t	p
<b>H6(a): IS-&gt;PE-&gt;CI</b>	0.144	0.005	0.13	0.01	0.012	0.011	1.11	0.265
<b>H6(b): RA-&gt;PE &gt;CI</b>	0.124	0.020	0.09	0.08	0.033	0.014	2.37	0.018
<b>H6(c): HRF-&gt;PE-&gt;CI</b>	0.147	0.005	0.12	0.02	0.025	0.013	1.91	0.056
<b>H6(d): HUF-&gt;PE-&gt;CI</b>	0.181	0.002	0.16	0.00	0.020	0.011	1.75	0.058
<b>H6(e): PRF-&gt;PE-&gt;CI</b>	0.30	0.000	0.28	0.00	0.023	0.011	1.90	0.080

Next, the mediating role of perception about cryptocurrency (profit expectation) between prospect factors and cryptocurrency investment is examined. The indirect effect is ( $\beta=0.023$ ,  $t=1.903$ ,  $p<0.058$ ) is significant. With inclusion of mediator direct relation show significant result ( $\beta=0.280$ ,  $t=4.375$ ,  $p<0.000$ ) total effect also show significant relation ( $\beta=0.303$ ,  $t=4.834$ ,  $p<0.000$ ). Hence this shows partial mediation as the direct impact is significant and the indirect effect is also significant and with the inclusion of the mediator direct effect of PRF on

CI decreases from  $\beta=0.178$  (table 4.5.1) to  $\beta=0.161$ . The result shows that profit expectation enhances the relationship between the prospect factor and cryptocurrency investment. Results are in line with the findings of Ahmad et al. (2013) examined that individual behavior of investing is affected by profit expectation.

**Table 6: Moderated Mediation Analysis of Variables**

	Total effects		Direct effect		Indirect effects			
	$\beta$	p	$\beta$	p	$\beta$	SD	t	p
<b>H6(a): IS-&gt;PE-&gt;CI</b>	0.026	0.052	0.132	0.014	0.026	0.014	1.950	0.052
<b>H6(b): RA-&gt;PE-&gt;CI</b>	0.021	0.045	0.092	0.088	0.021	0.011	2.006	0.045
<b>H6(c): HRF-&gt;PE-&gt;CI</b>	0.022	0.038	0.122	0.028	0.022	0.011	2.082	0.038
<b>H6(d): HUF-&gt;PE-&gt;CI</b>	0.18	0.02	0.16	0.04	0.02	0.02	1.46	0.14
<b>H6(e): PRF-&gt;PE-&gt;CI</b>	-0.027	0.121	0.280	0.000	-0.027	0.017	1.553	0.121

Table 6 shows moderated mediation analysis of variables. The moderated mediation analysis of social influence shows that the direct path analysis is significant as ( $\beta=0.132$ ,  $t=2.466$ ,  $p<0.014$ ). The indirect effect results are ( $\beta=0.026$ ,  $t=1.950$ ,  $p<0.052$ ) which show significant result while the total effect is ( $\beta=0.026$ ,  $t=1.950$ ,  $p<0.052$ ). Hence this shows partial moderated mediation as the direct impact is significant and the indirect effect is also significant. Profit expectation enhances the relationship between IS and CI as a skilled person is more attracted toward cryptocurrency when the cryptocurrency market increases, and their profit range increases but the suggestion of friends and family help an individual to make a better decision-related adoption of cryptocurrency. As Shive (2010) states that friends and family members create a positive impact on investment decisions. Moreover, Mnif et al. (2021) examine the positive impact of social influence on cryptocurrency investment.

The direct path analysis of RA on CI shows a significant result ( $\beta=0.092$ ,  $t=2.550$ ,  $p<0.088$ ). The indirect effect is ( $\beta=0.021$ ,  $t=2.006$ ,  $p<0.045$ ) that meets the requirement while the total effect is ( $\beta=0.021$ ,  $t=2.006$ ,  $p<0.045$ ). Hence this shows partial moderated mediation as the direct impact is significant and the indirect effect is also significant. Profit expectation enhances the relationship between RA and CI because a risk-taker person is more attracted to cryptocurrency as they expect high profit in cryptocurrency due to its volatile nature. So, whether an investor is a risk-taker or averse they are attracted to cryptocurrency just to earn a profit, and friends and family suggestions help them in making a wise decision while investing in cryptocurrency. As Putra (2019) and Gupta et al. (2020) states that friends and family greatly influence individual investment intention in cryptocurrency.

Further, to check the moderated mediation, the result shows that direct path analysis of HRF and CI shows significant results that  $\beta=0.122$  which is positive,  $t=2.208$  which is the above cut of point,  $p$  is 0.028 is below the given limit. The indirect effect is ( $\beta=0.022$ ,  $t=2.082$ ,  $p<0.038$ ) that meets the requirement while the total effect is ( $\beta=0.022$ ,  $t=2.082$ ,  $p<0.038$ ). Hence this shows partial mediation as the direct impact is significant and the indirect effect is also significant. Profit expectation positively affects the relationship between HRF and CI and



crypto expert recommendations enhance this relationship. Pakistani investors show more herding behavior while investing as if other people are investing in cryptocurrency and earning good profit Individuals also follow the same attitude and invest in cryptocurrency. The resulting finding reveals that person likely to gain great returns when they follow the trading patterns of others while receiving the crypto expert recommendation. As Sankar et al. (2015) and Krishnan and Brooker (2002) state the recommendation of trustworthy expert help to make a better decision.

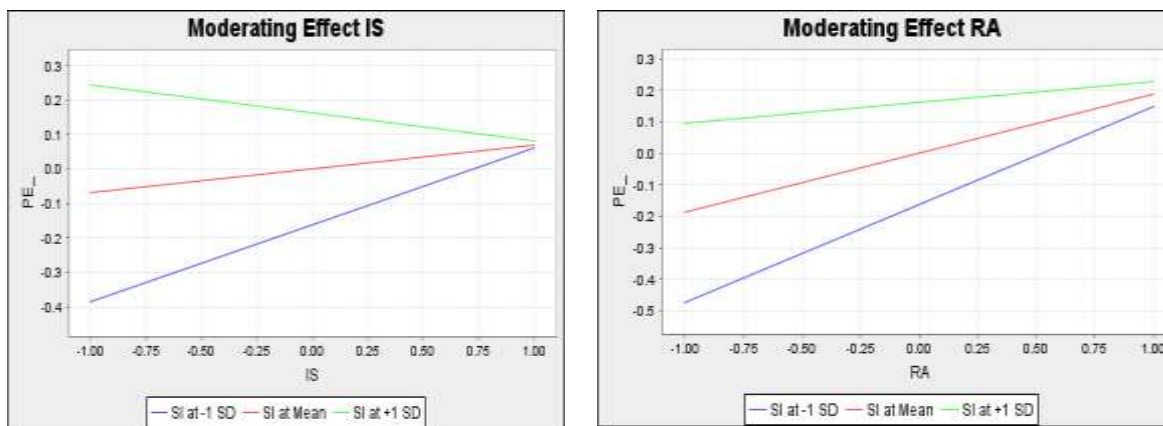
Moderated mediation result shows that direct path analysis of HUF and CI shows significant results ( $\beta=0.161$ ,  $t=2.866$ ,  $p<0.004$ ).The indirect effect is ( $\beta=0.017$ ,  $t=1.466$ ,  $p<0.143$ ) that doesn't meets the requirement while the total effect is ( $\beta=0.017$ ,  $t= 1.466$ ,  $p<0.143$ ) also insignificant. Hence this shows no moderated mediation as the direct impact is significant and the indirect effect is insignificant. The result shows crypto expert recommendation has a negative impact on mediating the relationship of perception between heuristic factors and cryptocurrency investment. Moderated mediation analysis of PRF and CI shows significant results ( $\beta=0.280$ ,  $t=4.375$ ,  $p<0.000$ ). The indirect effect is ( $\beta=-0.027$ ,  $t=1.553$ ,  $p<0.121$ ) which meets the requirement while the total effect is ( $\beta=-0.027$ ,  $t=1.553$ ,  $p<0.121$ ). Hence this shows no moderated mediation as the direct impact is significant and the indirect effect is not significant. The result shows crypto expert recommendation has a negative impact on mediating the relationship of perception between prospect factor and cryptocurrency investment. Results are in line with the findings of Kaushalya and Kehelwalatenna (2020) examined that investment on stockbroker recommendation ends up with a lower financial return.

#### **Moderation Analysis of Social Influence**

The hypothesis is sought to establish the moderating role of social influence (SI) between personal factors (Investment skills (IS) and risk affinity (RA)) and Perception of Cryptocurrency (Profit expectation PE). The results are shown in table 7. The first relationship of social influence between IS and PE is assessed the direct impact is significant as ( $\beta= -0.153$ ,  $t= 2.965$ ,  $p< 0.003$ ). The second relation of social influence between RA and PE The direct path shows significance as ( $\beta= -0.123$ ,  $t= 2.519$ ,  $p<0.012$ ). Investment skill shows that prior investment experience increase investor knowledge about investment and they make a more wise decision but social influence also affect positively affects the relationship. Risk affinity shows the risk-taking behavior of an individual but social influence also affects individual risk-taking behavior. This show that Pakistani investor is significantly affected by the social influence as out of all responses 79.9% are students most of them are bachelors and have an age limit of less than 30, so they don't have enough experience so they make the decision that is mostly recommended by their friends, family or the person who seem more important to them. Hence, this shows the positive attitude of Pakistani investors toward social influence. As Farah, Hasni and Abbas (2018)) state that individual adoption intention is affected by social influence. Hence H7 (b) is Supported.

**Table 7 Moderation Analysis of Social Influence**

		$\beta$	SD	T-Statistic	P value
<b>H7(a):</b>	<b>IS -&gt; PE</b>	-0.153	0.052	2.965	0.003
<b>H7(b):</b>	<b>RA -&gt;PE</b>	-0.123	0.049	2.519	0.012



**Figure 3 Slope analysis for IS-PE and RA-PE.**

### **Moderation Analysis of Crypto Expert Recommendation**

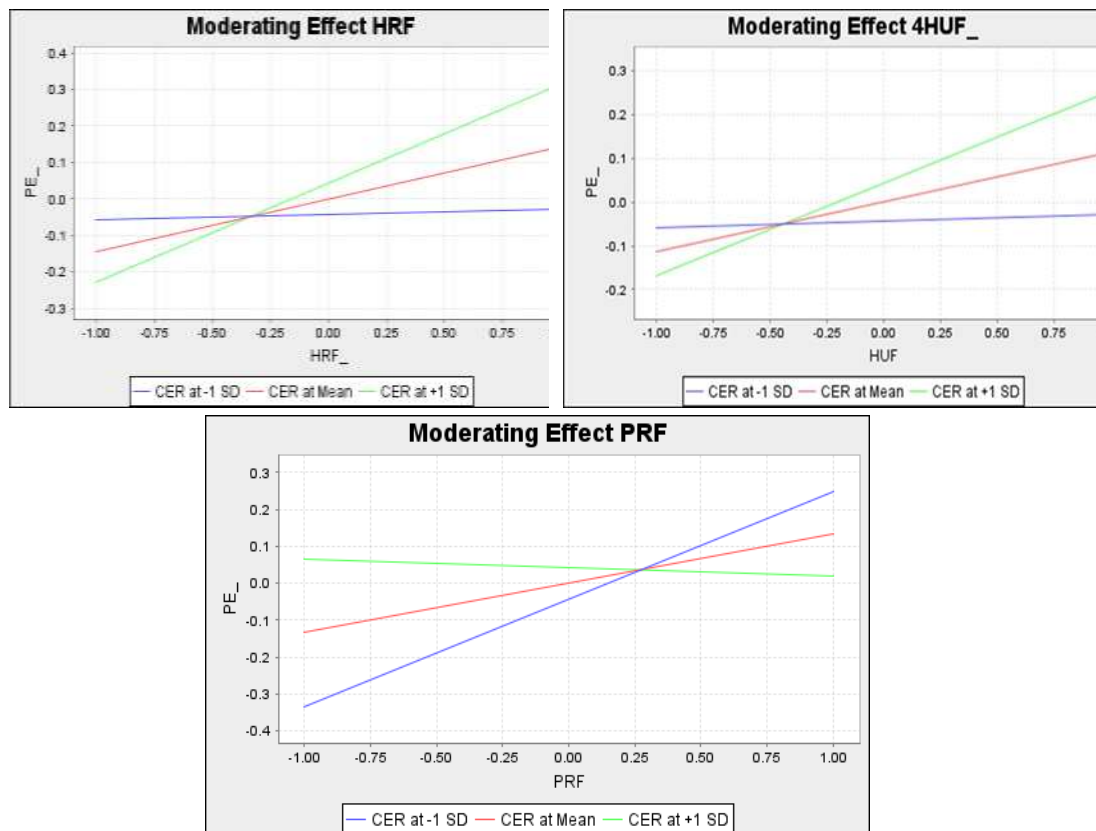
Table 8 also shows the moderation analysis results. The hypothesis is sought to establish the moderating role of Crypto expert recommendation (CER) between Behavioral factors (Herding, Heuristic, and Prospect) and Perception about Cryptocurrency (Profit expectation PE). First relationship of crypto expert recommendation between herding factor (HRF) and profit expectation (PE) is assessed the direct impact is significant as ( $\beta= 0.129, t= 2.275, p< 0.023$ ). An investor herding attitude creates their decision to adopt cryptocurrency but this attitude of adoption changed with the influence of crypto expert recommendation as they have more knowledge about cryptocurrency and made relative researches about cryptocurrency market so their predictions and suggestions are more valid. According to Sankar et al. (2015), expert advice helps better in the investment decision. As stock broker recommendation highly influence Pakistani investor in making their investment decision (Ahmad, 2017).

The second crypto expert recommendation is between heuristic (HUF) and Profit Expectation (PE). The direct path shows significant as ( $\beta= 0.098, t= 1.763, p< 0.079$ ). According to heuristic behavior, the investor makes investment decisions basis on their mental shortcut behavior which is created based on previous experience but with the inclusion of expert recommendations, individual investing behavior changed because now they can decide with a proper logical mindset because if previously they face profit or loss expert knows the reason why last time crypto market go bullish or bearish. As Gerristen et al. (2021) state that crypto experts know the related crypto market that increases individual efficiency in decision making.

Last relationship of crypto expert recommendation between Prospect factor (PRF) and profit expectation (PE) ( $\beta= -0.157, t= 2.259, p< 0.024$ ). The prospect factor shows the risk tolerance behavior of an individual the person with more risk tolerance behavior invests more as cryptocurrency is volatile. Here, in this study crypto expert recommendation negatively moderates the relation between prospect factor and profit expectation. Because every individual has different risk tolerance behavior while the crypto expert recommendation is similar for every individual who wants to invest in crypto at that current time. As Kaushalya and Kehelwalatenna (2020) state that individuals should follow stock broker recommendations but also need to utilize their existing knowledge. Hence H7 is supported.

**Table 8 Moderation Analysis of Crypto expert Recommendation**

	$\beta$	SD	t	P
<b>H8(a): HRF -&gt; PE</b>	0.129	0.057	2.275	0.023
<b>H8(b): HUF -&gt; PE</b>	0.098	0.056	1.763	0.079
<b>H8(c): PRF-&gt; PE</b>	-0.157	0.069	2.259	0.024



**Figure 4:** Slope analysis for HRF- PE HUF-PE and PRF- PE.

**Implications of Research**

The implications drawn from this research carry significant ramifications for various stakeholders in the cryptocurrency landscape. For investors, the study provides a valuable toolkit for making more informed and strategic decisions by elucidating the influential role of personal and behavioral factors in cryptocurrency investment. Policymakers, armed with these insights, can craft regulatory frameworks that strike a balance between safeguarding investors and fostering market growth. Financial institutions stand to benefit by tailoring their services to align with the evolving needs and expectations of cryptocurrency investors. Educational institutions are urged to consider the study's emphasis on blockchain awareness, suggesting the implementation of programs to enhance understanding and mitigate negative perceptions. Additionally, the research community is prompted to explore comparative studies between

developed and developing countries, offering a pathway for further investigations into the generalizability of the research model across diverse economic landscapes. In essence, these implications collectively contribute to the enhancement of individual decision-making, regulatory efficacy, financial services, educational initiatives, and the broader understanding of cryptocurrency investment behavior.

### **Conclusion and Recommendations**

The outcomes of the Structural Equation Modeling (SEM) analysis reveal a significant influence of personal and behavioral factors on cryptocurrency investment, aligning with prior research findings (Mattke et al., 2020; Al Mansour, 2020). Notably, a partial mediation effect is evident, where the perception about cryptocurrency, specifically profit expectation, serves as a mediating factor in the relationship between personal and behavioral factors and cryptocurrency investment. The moderated mediation analysis indicates no mediation in the case of investment, with partial mediation observed for risk affinity, herding, heuristic, and prospect factors. However, the moderating impact of social influence exhibits a significant positive influence on personal factors and perception about cryptocurrency. Similarly, the moderating impact of crypto expert recommendation demonstrates a significant positive effect on behavioral factors and perception about cryptocurrency. These findings contribute to investors' preparedness in navigating the dynamic cryptocurrency market and enhancing their decision-making abilities. Moreover, the study extends its impact beyond individual investors, offering valuable insights for governmental and financial institutions to adapt policies and services in accordance with blockchain technology. Given the potential negative perceptions associated with cryptocurrency, particularly among those less familiar with the technology, promoting blockchain awareness through university courses for undergraduates is deemed imperative. The research, situated in the context of Pakistan, recommends further exploration through a comparative study between developed and developing countries to validate the proposed research model across diverse economic landscapes.

In conclusion, this research illuminates the intricate dynamics of cryptocurrency investment by delving into the influence of personal and behavioral factors. The findings, consistent with prior research, underscore the significance of these factors and reveal the nuanced role of perception, social influence, and crypto expert recommendations. The study not only empowers investors to navigate the complexities of the cryptocurrency market but also offers valuable insights for policymakers, financial institutions, and educational bodies. As the cryptocurrency landscape continues to evolve, the implications derived from this research pave the way for informed decision-making, tailored regulatory frameworks, enhanced financial services, and blockchain awareness initiatives. This comprehensive understanding contributes to the broader discourse on cryptocurrency investment behavior, guiding stakeholders toward a more sustainable and informed future within the ever-changing world of digital assets.

### **Reference**

- Ahmad, H., A. Fida, B., & Zakaria, M. (2013). The Co-determinants of capital structure and stock Returns: Evidence from the Karachi stock exchange. *The Lahore Journal Of Economics*, 18(1), 81-93.  
<https://doi.org/10.35536/lje.2013.v18.i1.a4>
- Ahmad, S. (2017). Factors Influencing Individual Investors' Behavior: An Empirical Study of Pakistan Financial Markets. *Journal Business Finance Affairs*, 6-297. <https://doi.org/10.4172/2167-0234.1000297>
- Alaklabi, s., & Kang, K. (2021). Perceptions towards cryptocurrency adoption: A case of Saudi Arabian citizens. *Journal of Electronic Banking Systems*, 1-17. <https://doi.org/10.5171/2021.110411>

- Ali, A. (2011). Predicting individual investors' intention to invest. An experimental analysis of attitude as a mediator. *World Academy of Science, Engineering and Technology, International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*, 5(2), 157–164. <https://doi.org/10.5281/zenodo.1078847>
- Ali, R., Barrdear, J., Clews, R., & Southgate, J. (2014). The economics of digital currencies. *Bank of England Quarterly Bulletin*, Q3
- Allen, D. G., Weeks, K. P., & Moffitt, K. R. (2005). Turnover intentions and voluntary turnover: The moderating roles of self-monitoring, locus of control, proactive personality, and risk aversion. *Journal of Applied Psychology*, 90(5), 980-990. <https://doi.org/10.1037/0021-9010.90.5.980>.
- Al-Mansour, B. Y. (2020). Cryptocurrency market: Behavioral finance perspective. *The Journal of Asian Finance, Economics and Business*, 7(12), 159-168. <https://doi.org/10.13106/jafeb.2020.vol7.no12.159>
- Bouri, E., Gupta, R., & Roubaud, D. (2019). Herding behaviour in cryptocurrencies. *Finance Research Letters*, 29, 216-221. <https://doi.org/10.1016/j.frl.2018.07.008>
- CAO, M. M., NGUYEN, N. T., & TRAN, T. T. (2021). Behavioral factors on individual investors' decision making and investment performance: A survey from the Vietnam Stock Market. *The Journal of Asian Finance, Economics and Business*, 8(3), 845-853. <https://doi.org/10.13106/jafeb.2021.vol8.no3.0845>
- Chen, Q., Hua, X., & Jiang, Y. (2015). Contrarian strategy and herding behaviour in the Chinese stock market. *The European Journal of Finance*, 24(16), 1552-1568. <https://doi.org/10.1080/1351847x.2015.1071715>
- Clark-Murphy, M., & Soutar, G. (2005). Individual investor preferences: A segmentation analysis. *Journal of Behavioral Finance*, 6(1), 6-14. [https://doi.org/10.1207/s15427579jpfm0601\\_2](https://doi.org/10.1207/s15427579jpfm0601_2)
- Cohn, R. A., Lewellen, W. G., Lease, R. C., & Schlarbaum, G. G. (1975). Individual investor risk aversion and investment portfolio composition. *The Journal of Finance*, 30(2), 605–620. <https://doi.org/10.1111/j.1540-6261.1975.tb01834.x>
- Das, S., & Jain, R. (2014). A study on the influence of demographical variables on the factors of investment-a perspective on the Guwahati region. *International journal of research in Humanities, arts and literature*, 2(6), 97-102. <https://www.researchgate.net/publication/272494610>
- East, R. (1993). Investment decisions and the theory of planned behaviour. *Journal of Economic Psychology*, 14 (2), 337–375. [https://doi.org/10.1016/0167-4870\(93\)90006-7](https://doi.org/10.1016/0167-4870(93)90006-7)
- Farah, M. F., Hasni, M. J., & Abbas, A. K. (2018). Mobile-banking adoption: Empirical evidence from the banking sector in Pakistan. *International Journal of Bank Marketing*, 36(7), 1386-1413. <https://doi.org/10.1108/ijbm-10-2017-0215>
- Gainsbury, S. M., & Blaszczynski, A. (2017). How blockchain and cryptocurrency technology could revolutionize online gambling. *Gaming Law Review*, 21(7), 482-492. <https://doi.org/10.1089/glr.2.2017.2174>
- Garnaut, R. (2015). Indonesia's resources boom in international perspective: Policy dilemmas and options for continued strong growth. *Bulletin of Indonesian Economic Studies*, 51(2), 189-212. <https://doi.org/10.1080/00074918.2015.1061910>
- Gerritsen, D. F., Lugtigheid, R. A., & Walther, T. (2021). Can bitcoin investors profit from predictions by crypto experts? *Finance Research Letters*, 102266. <https://doi.org/10.1016/j.frl.2021.102266>
- Glaser, F., Zimmermann, K., Haferkorn, M., Weber, M. C., & Siering, M. (2014). Bitcoin-asset or currency? revealing users' hidden intentions. *Revealing Users' Hidden Intentions* (April 15, 2014). ECIS (2014). <https://ssrn.com/abstract=2425247>
- Hati, S. R., Wibowo, S. S., & Safira, A. (2020). The antecedents of Muslim customers' intention to invest in an Islamic bank's term deposits: Evidence from a Muslim majority country. *Journal of Islamic Marketing*, 12(7), 1363-1384. <https://doi.org/10.1108/jima-01-2020-0007>
- Kaushalya, P., & Kehelwalatenna, S. (2020). The impact of IFRS adoption on value relevance of accounting information: The case of Sri Lanka. *International Review of Business Research Papers*, 16(2), 66-86. <https://doi.org/10.182-1502108083>

- Kengatharan, L., & Kengatharan, N. (2014). The influence of behavioral factors in making investment decisions and performance: Study on investors of Colombo stock exchange, Sri Lanka. *Asian Journal of Finance & Accounting*, 6(1), 1. <https://doi.org/10.5296/ajfa.v6i1.4893>
- Khan, M. Z. U. (2017). Impact of availability bias and loss aversion bias on investment decision making, moderating role of risk perception. *Management & Administration (IMPACT: JMDGMA)*, 1(1), 17-28.
- Khazaei, H. (2020). Integrating cognitive antecedents to UTAUT model to explain adoption of blockchain technology among Malaysian SMEs. *JOIV : International Journal on Informatics Visualization*, 4(2). <https://doi.org/10.30630/joiv.4.2.362>
- Kristoufek, L. (2015). What are the main drivers of the bitcoin price? Evidence from wavelet coherence analysis. *PLOS ONE*, 10(4), e0123923. <https://doi.org/10.1371/journal.pone.0123923>
- Li, J., Naqvi, B., Rizvi, S. K., & Chang, H. (2021). Bitcoin: The biggest financial innovation of fourth Industrial Revolution and a portfolio's efficiency booster. *Technological Forecasting and Social Change*, 162, 120383. <https://doi.org/10.1016/j.techfore.2020.120383>
- Li, Z., Chen, L., & Dong, H. (2021). What are bitcoin market reactions to its-related events? *International Review of Economics & Finance*, 73, 1-10. <https://doi.org/10.1016/j.iref.2020.12.020>
- Loomes, G., & Sugden, R. (1982). Regret theory: An alternative theory of rational choice under uncertainty. *The Economic Journal*, 92(368), 805. <https://doi.org/10.2307/2232669>
- LUU, Q. T., & LUONG, H. T. (2020). Herding behavior in emerging and frontier stock markets during pandemic influenza panics. *The Journal of Asian Finance, Economics and Business*, 7(9), 147-158. <https://doi.org/10.13106/jafeb.2020.vol7.no9.147>
- Mahmood, Z., Kouser, R., Abbas, S. S., & Saba, I. (2016). The Effect of Hueristics, Prospect and Herding Factors on Investment Performance. *Pakistan Journal of Social Sciences (PJSS)*, 36(1). <https://www.researchgate.net/publication/322508706>.
- Mattke, J., Maier, C., Reis, L., & Weitzel, T. (2020). Bitcoin investment: A mixed methods study of investment motivations. *European Journal of Information Systems*, 30(3), 261-285. <https://doi.org/10.1080/0960085x.2020.1787109>
- Mnif, E., & Jarboui, A. (2021). COVID-19, bitcoin market efficiency, herd behaviour. *Review of Behavioral Finance*, 13(1), 69-84. <https://doi.org/10.1108/rbf-09-2020-0233>.
- Olsen, R. A. (1996). Implications of herding behavior for earnings estimation, risk assessment, and stock returns. *Financial Analysts Journal*, 52(4), 37-41. <https://doi.org/10.2469/faj.v52.n4.2009>
- Pandya, S., Mittapalli, M., Gulla, S. V., & Landau, O. (2019). undefined. *HOLISTICA. Journal of Business and Public Administration*, 10(2), 167-186. <https://doi.org/10.2478/hjbpa-2019-0024>
- Pavlou, & Fygenson. (2006). Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior. *MIS Quarterly*, 30(1), 115. <https://doi.org/10.2307/25148720>
- Plous, S. (1993). undefined. McGraw-Hill Education.
- Putra, Y. M. (2019). Analysis of factors affecting the interests of SMEs using accounting applications.
- Sabarwal, I. (2022). Understanding the attitude of youth towards Cryptocurrency. [https://www.researchgate.net/publication/358276638\\_Understanding\\_the\\_attitude\\_of\\_youth\\_towards\\_Cryptocurrency](https://www.researchgate.net/publication/358276638_Understanding_the_attitude_of_youth_towards_Cryptocurrency).
- Sahi, S. K., Arora, A. P., & Dhameja, N. (2013). An exploratory inquiry into the psychological biases in financial investment behavior. *Journal of Behavioral Finance*, 14(2), 94-103. <https://doi.org/10.1080/15427560.2013.790387>
- Sankar, C. P., Vidyaraj, R., & Kumar, K. S. (2015). Trust based stock recommendation system – A social network analysis approach. *Procedia Computer Science*, 46, 299-305. <https://doi.org/10.1016/j.procs.2015.02.024>

- Shive, S. (2010). An epidemic model of investor behavior. *Journal of Financial and Quantitative Analysis*, 45(1), 169-198. <https://doi.org/10.1017/s0022109009990470>
- Stambaugh, T., & Pierce, J. (2020). Assistive technology and the gifted learner. *Encyclopedia of Education and Information Technologies*, 190-195. [https://doi.org/10.1007/978-3-030-10576-1\\_150](https://doi.org/10.1007/978-3-030-10576-1_150).
- Stosic, D., Stosic, D., Ludermir, T. B., & Stosic, T. (2018). Collective behavior of cryptocurrency price changes. *Physica A: Statistical Mechanics and its Applications*, 507, 499-509. <https://doi.org/10.1016/j.physa.2018.05.050>.
- Su, C., Zhang, H., Bangassa, K., & Joseph, N. L. (2018). On the investment value of sell-side analyst recommendation revisions in the UK. *Review of Quantitative Finance and Accounting*, 53(1), 257-293. <https://doi.org/10.1007/s11156-018-0749-y>.
- Subramaniam, S., & Chakraborty, M. (2020). Investor attention and cryptocurrency returns: Evidence from Quantile causality approach. *Journal of Behavioral Finance*, 21(1), 103-115. <https://doi.org/10.1080/15427560.2019.1629587>.
- Talpsepp, T., & Tänav, A. (2021). Do gender, age and education affect herding in the real estate market? *Journal of Behavioral and Experimental Finance*, 32, 100571. <https://doi.org/10.1016/j.jbef.2021.100571>.
- Thaler, R. H., & Johnson, E. J. (1990). Gambling with the house money and trying to break even: The effects of prior outcomes on risky choice. *Management Science*, 36(6), 643-660. <https://doi.org/10.1287/mnsc.36.6.643>.
- Venkatesh, Morris, Davis, & Davis. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425. <https://doi.org/10.2307/30036540>
- Waweru, N. M., Munyoki, E., & Uliana, E. (2008). The effects of behavioural factors in investment decision-making: A survey of institutional investors operating at the Nairobi stock exchange. *International Journal of Business and Emerging Markets*, 1(1), 24. <https://doi.org/10.1504/ijbem.2008.019243>
- Zhao, H., & Zhang, L. (2021). Financial literacy or investment experience: Which is more influential in cryptocurrency investment? *International Journal of Bank Marketing*, 39(7), 1208-1226. <https://doi.org/10.1108/ijbm-11-2020-0552>
- Zhou, L., Qin, K., Cully, A., Livshits, B., & Gervais, A. (2021). On the just-in-Time discovery of profit-generating transactions in DeFi protocols. 2021 IEEE Symposium on Security and Privacy (SP). <https://doi.org/10.1109/sp40001.2021.00113>
- Zhu, Y., Dickinson, D., & Li, J. (2017). Analysis on the influence factors of bitcoin's price based on VEC model. *Financial Innovation*, 3(1). <https://doi.org/10.1186/s40854-017>