

# Bitcoin Adoption: An Empirical Study on User Behaviour in Ghana

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**Abstract:** The hype and disruptive nature of cryptocurrencies have attracted much attention in research fields and huge industrial revolutions, and many Bitcoin success stories amidst the cons of the technology. The disparity between technological adoption between developed economies and developing economies further deepens research. Many research focuses on the security, nature and/ evolution of Bitcoin, user adoption process, etc., in the developed economies in Europe and America with not enough studies on Bitcoin adoption and development in Sub-Saharan Africa, a hub of developing economies. This study seeks to examine the user behaviour to Bitcoin adoption, determining factors in Ghana. It adapts the Unified Theory of Acceptance and Use of Technology model 2 (UTAUT2), extending it with Perceived Trust, and Perceived Risk to develop the research hypothesis. To the Ghanaian consumer, there are no moderating effects of Age and Gender on Price Value (PV) and Facilitating Conditions (FC). Performance Expectation (PE), Effort Expectation (EE), Perceived Risk (PR), Perceived Trust (PT), Price Value (PV) had a significant influence on Behavioural intention to use Bitcoin. The research survey considers both users/investors and non/potential users using identified Bitcoin-focused platforms as a base for the snowball survey providing insights into the user behaviour to Bitcoin adoption and the general Bitcoin phenomenon in Ghana.

**Keywords:** Bitcoin, Digital Currency, Blockchain, Ghana, Innovations, UTAUT 2, SEM.

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## 1. INTRODUCTION

The disruptive nature of cryptocurrencies, coupled with the hype it accrues, has attracted much research from various perspectives and scopes. Silinskyte, J. (2014), Spenkeliuk, H.F., 2014, Baur, A.W., Bühler, J., Bick, M., Bonorden, C.S. (2015) and many other works of literatures have a focus on the core understanding and functions of Bitcoin, its adoption and future predictions in developed economies. Bitcoin as financial innovation has diverse responses, penetration levels and performances. Innovations are not applied in a vacuum, hence the behavioural reactions and intentions to an innovation affect its development, growth trends and acceptance.

Bitcoin and its decentralized blockchain system have become an item of interest mainly due to increased cross border transactions, crowdfunding, growth in the middle-income earning bracket and the inherent economic benefit. 2019 ended with a 20% increase in a transaction on the Paxful P2P exchange platform; the user base almost tripled in Ghana, with 41,243 accounts. Localbitcoins, another major P2P exchange platform, has over 669 Cities in Ghana with cash trade. The focus of this study narrows on the user behavioural responses of Ghanaians to the Bitcoin innovation; how the inherent attributes of Bitcoin and their cultural, economic, and local settings influence an individual's behavioural reaction to Bitcoin. The study adds Perceived Risk and Perceived Trust to UTAUT 2 of Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003), tailoring it to the Bitcoin consumer context contributes to extending the generalization of the UTAUT 2 model. In exploring the Bitcoin situation in Ghana, the research design adopts a two-pathway approach considering both users/investors and non/potential as both are essential to the Bitcoin adoption process. The study used a research survey to generate empirical data on the Bitcoin adoption in Ghana, precisely Bitcoin awareness, and consumer determining factors. Bitcoins exist in digital forms, hence the study identified Bitcoin (Cryptocurrency) focused platforms as bases for the snowball survey. Technology adoption studies such as Thomas, Troy & Singh, Lenandlar & Gaffar, Kemuel. (2013), Christian Sombero (2019), are generally done in the Western context; hence, doesn't reflect the full situation in developing countries, therefore the direct application of the framework in non-Western contexts might create suboptimal outcomes.

The findings give more insights into user behaviour to Bitcoin adoption in Ghana, minimizing the empirical research gap in the field of Bitcoin and adoption in developing countries. Using Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003) UTAUT 2 model as a base model, the research objectives:

1. To Explore the Bitcoin phenomenon in Ghana
2. To explore the determinants of Bitcoin adoption that influence consumer payment preference among the Ghanaian virtual community.
3. Determine the demographic profile of respondents, gender, age, education, and occupation.

## 2. THEORETICAL MODEL AND CONCEPTUAL FRAMEWORK

An individual plays an important role in the acceptance and evaluation of new technology. Davis, Fred D. (1989), Venkatesh, Viswanath, James Y. L. Thong, and Xin Xu (2012) supports the notion consumers' attitudes toward the acceptance of new information systems and technologies critically determine the successful information systems adoption. Rogers, E.M., (2010) introduces the concept of diffusion as "the means by which an innovation is communicated through certain channels over time among the members of a social system". Rogers, E.M., (2010), Hasani, Imane et al (2017) finds technology diffusion depends on the innovation's perceived attributes, communicated over channels, over time within a social system. Diffusion, adoption, and acceptance of innovation do not essentially depend only on the technology, Shani, A. B., & Sena, J. A. (1994) but on the user's reaction to it, its effectiveness and usefulness. Only when users form an acceptance reaction towards a technology, will they spend time, and resources and make changes to their daily life to start using the new technology or system. The time aspect of innovation plays an important role. Some innovations get diffused and adopted early and some late.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003) after comparing, and contrasting existing innovation models compiled a unified model which was generated from eight relevant and competing models. Thus, Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behaviour (TPB), CTAM-TPB, Model of PC utilization (MPCU), Innovation Diffusion Theory (IDT), and Social Cognitive Theory (SCT). The formulated UTAUT model has four main determinants: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC). Unified Theory of Use and Acceptance of Technology UTAUT 2 model encompasses a comprehensive integration of existing models to provide a much better understanding of acceptance of new technology from an individual perspective. The UTAUT 2 includes three extra determinants. Thus, price value, habit, and hedonic motivation. The integration of hedonic motivation, price value, and habit bring such new mechanisms; that affect monetary constraints, and automaticity tied to the new constructs into the large cognition and intention-based Venkatesh, Viswanath, James Y. L. Thong, and Xin Xu (2012) UTAUT. This newest model has gradually been adopted for exploring various issues such as Huang, Chi-Yo & Kao, Yu-Sheng. (2015) self-technology service, smart mobile device adoption, learning management software acceptance, and the healthcare industry.

### 2.1 Conceptual Framework

The core purpose of this study is to examine the nature of Bitcoin in Ghana and empirically determine the influential factors that affect individual user preference to adopt Bitcoin as a mode of exchange. The conceptual framework for this empirical study is adapted from the Unified Theory of Acceptance and Use of Technology 2 (UTAUT 2) model as described Venkatesh, Viswanath, James Y. L. Thong, and Xin Xu (2012) which focuses on the consumer perspective of IT adoption and use. After analysis of the UTAUT 2 model and relevant works of literature, certain modifications are made to tailor the model to Bitcoin in the end-user context in a developing economy such as Ghana. Bitcoin as a payment method is still at its infant stages hence new to many people in Ghana, the scope of this research respondents for that matter. Although there have been electronic means of payment such as Mastercard, Visa cards, PayPal and mobile money platforms, Bitcoin differs in its structure and application. Hence the research conceptual model follows Silinskyte, J. (2014), takes out experience as a moderating variable for determinant factors since the use of digital currency prior to the introduction of Bitcoin was not expected. In response to Venkatesh, Viswanath, James Y. L. Thong, and Xin Xu (2012) recommendation and analysis of the literature available, this study introduces two other determinants: Perceived Trust and Perceived Risk from the TAM model.

**Performance Expectancy (PE):** Venkatesh, et al (2012) defines the degree to which an individual consumer believes using technology will provide benefits in performing certain activities. In the case of Silinskyte, J. (2014), Lee, Y. S., Cheah, et

al (2018) Bitcoin performance expectancy has a significant effect on the user's intention and adoption of Bitcoin. Christian Sombero (2019) finds Performance expectancy (PE) indeed has a positive influence on behavioural intention (BI) to use Bitcoin. End-users in the Ghanaian virtual space expect adapting to Bitcoin will help them attain value outcomes such as fast, reliable, and cheaper transactions and value gain. Such performance expectancy would increase the consumer's behavioural intention to use Bitcoin.

H1 - Performance Expectancy (PE) has a significant positive influence on the consumer's behavioural intention to adopt (use) Bitcoin.

**Effort Expectancy (EE):** Venkatesh, et al (2012) effort expectancy captures the intuitive view of the consumer on the extent of ease of utilizing new technology. It borders on the user-friendliness of the technology. IMF (2018) expresses adopting and adapting to the technology reaps its full benefits. Lee, Y. S., Cheah, et al (2018), Christian Sombero (2019) finds Effort Expectancy has a significant positive influence on behavioural intention to use Bitcoin. Silinskyte, J. (2014) proposed effort expectancy is moderated by gender and age. The findings showed effort expectancy indeed has a significant positive influence on the behavioural intention to use Bitcoin but is not moderated by gender and age differences. Ghanaians expect moderate effort to learn, adapt and use Bitcoin. They also expect its utilization to be relatively smooth and easy to use. Therefore, the research posits that;

H2 - Effort Expectancy (EE) has a significant influence on the user's behavioural intention to adopt (use) Bitcoin.

**Social Influence (SI):** In the consumer context the individual takes a voluntary decision-making action. Rogers, E.M., (2010) however, the individual does not exist in isolation but exists or operates within a social construct. This makes the individual susceptible to influences from within the social constructs. In this Bitcoin context, social influence covers how people with Bitcoin knowledge (friends, family, opinion leaders, experts, Bitcoin advocates, etc) can impact people around them to form behavioural intentions towards the use of Bitcoin. Ghanaians are culturally community-minded and have huge reverence and obedience to leaders. This study considers users/investors and non/potential users, therefore, such influence will have an impact on how Ghanaians will adopt and adapt to the use of Bitcoin. This can either facilitate or hinder its adoption process. Bitcoin has attracted huge media attention, highlighting its benefits by Bitcoin activists and millionaires or sceptics who do not ascribe to the potential of Bitcoin. Likewise, there are diverse positions in the literature on the effect of social influence on the use of Bitcoin. Christian Sombero (2019), and Owusu, A. (2020) find social influence has a significant positive impact on an individual's adoption and use of Bitcoin. However, Lee, Y. S., Cheah, et al (2018), and Silinskyte, J. (2014) had contradicting conclusions.

H3 – Social Influence (SI) significantly impacts the behavioural intention to utilize Bitcoin.

**Facilitating Conditions (FC):** According to Venkatesh, et al (2012), it covers the availability of needed infrastructure and support for the use of technology. The needed support and resources differ with user groups. However, the underlining fact remains the same, a user with more available resources and support will have increased intentions to adopt the use of technology. In the absence of experience (because Bitcoin is new), the demographics of gender and age are expected to have a significant moderating effect. Morris, J. M. (1994) shows the moderating effect of age comes as consumers further in the age spectrum will experience more difficulty in processing new/and complex information hence affecting their learning, adoption and use of a technology. Women, compared to men, rely much on external support and resources to use a technology. These differences partly stem from gender roles in society.

Much like traditional investing, there exist a huge gender disparity in the cryptocurrency world. Prof. Anna Dreber, states in Cohen.J and Wronski. L (2021) this has many factors and the traditional risk tolerance is often mitigated by the availability of needed support. Silinskyte, J. (2014), Christian Sombero (2019), concludes Facilitating conditions (FC) have a positive influence on Bitcoin use in developed economies. However, the results do not support age to negatively moderate facilitating conditions on Bitcoin use. The research expects increased levels of facilitating conditions to the Ghanaian end-user should lead to lower uncertainty and ambiguity concerning Bitcoin adaptation (usage). Thus, the confidence level in using Bitcoin is expected to be more important for older women than older men.

H4 – Facilitating Conditions (FC) has a significant positive influence on Bitcoin utilization.

H5 – Age (AGE) will significantly moderate the influence of Facilitating Conditions (FC) on Bitcoin utilization such that effect will be stronger on the older consumer.

H6 – Gender (GEN) will significantly moderate the influence of Facilitating Conditions (FC) on Bitcoin use and adaptation such that effect will be stronger on women.

**Hedonic Motivation (HM):** Higgins, T.E (2009) views hedonic motivation as a spectrum of pain or pleasure realized from use or decision making. According to Parker, C., & Wang, H. (2016), a consumer simultaneously examines both hedonic and utilitarian motivation values toward a purchase decision. In applying hedonic motivation to Bitcoin use from a consumer perspective, we consider both the intrinsic pleasure and the utilitarian features that influence the intention to use Bitcoin. Owusu, A. (2020) found Hedonic motivation positively influences an individual's behavioural expectation in utilizing Bitcoin. In his analysis, respondents associated the satisfactory feeling with how easy it is to use Bitcoin and the user-friendliness of the technology. This further confirms studies from Venkatesh, et al (2012), Parker, C., & Wang, H. (2016), Lee, Y. S., Cheah, et al (2018), also confirms the significant influence of hedonic motivation on behavioural intention to use Bitcoin. This study adopts these ideas and defines HM as the relish derived from the adaptation (use) of Bitcoin. We expect a positive influence on behavioural intention to use Bitcoin if Ghanaians derive positive satisfactory feelings of euphoria from the use of Bitcoin. Thus,

H7 – Hedonic Motivation (HM) has a significant positive impact on behavioural intention to utilize bitcoin.

**Price Value (PV):** In the consumer context, the individual bears the monetary cost of use. Venkatesh, et al (2012) states Price value is the tradeoff between the perceived benefits and the monetary cost incurred in the use of a technology. A consumer will associate a high price value if the perceived benefits are greater than the monetary cost. Therefore, price value plays a significant role in the behavioural intentions of an individual consumer to adopt the use of technology. Men and women associate different important price value levels with the use of technology. This difference is also seen in age such that price value is more for younger individuals compared to older individuals. Men are considered to be independent and competitive oriented hence makes the decision based on selective information. On the contrary, Bakan, D. (1966), Kite, M. E., & Deaux, K. (1987) findings prove women are more interdependent, cooperative, and consider more details in decision making.

Consumers bear usage costs such as data service and transaction fees in using Bitcoin. It is expected a low pricing and cost structure increases the price value an individual consumer associates with the use of Bitcoin. The gender differences induced by social role stereotypes will be amplified with age, such that older women will be more price-sensitive. In South Africa, Walton A, Johnston K (2018) finds Bitcoin's ability to offer cheaper, more efficient cross-border transactions are important benefit. Ghana is dominantly a youthful population with more tendency to explore modern technology more than the older generation. Therefore, the youth purports to attribute more benefits to the use of technology. Women are less tech enthused than men and more cost-conscious than men. Ghana with underlining stereotypical gender roles expects gender and age disparity in benefits and costs attributed to the adoption and use of Bitcoin. It is expected that price value will influence Ghanaians' intention to utilize Bitcoin. Gender and age will moderate the influence of price value such that the effect will be stronger among women, particularly older women.

H8 – Price Value (PV) has a significant positive influence on the behavioural intention to utilize bitcoin.

H9 - Age (AGE) will significantly moderate the influence of Price Value (PV) on behavioural intentions to utilize Bitcoin such that effect will be stronger on older consumers.

H10 – Gender (GEN) will significantly moderate the influence of Price Value (PV) on behavioural intentions to utilize Bitcoin such that the effect will be stronger on women.

**Habits (HT):** To Limayem et al.(2007) Habits are formed from repeated learning and practices. Habits formed guides an individual's attitudes and intentions. Venkatesh, et al (2012) adopts habit into UTAUT 2 following the work Icek Ajzen & Martin Fishbein (2000). They assume that repeated performance of behaviour can lead to well-established attitudes and intentions that can be triggered by attitude objects or cues in the environment. According to Murray, Kyle & Hubl, Gerald. (2007) consumers with more use of technology are likely to form a cognitive lock-in that prevents behavioural change. Habit can be formed in both short and long periods through repeated use. The effect of habit on behavioural intention is stronger over a long period with extended use of a technology. Lee, Y. S., Cheah, et al (2018) found the intention to use

Bitcoin in Malaysia is not significantly influenced by Bitcoin users' habits to transact with Bitcoin continually. This finding is contrary to Venkatesh, et al (2012) who posits Habit directly and indirectly influences the intention to use technology. Bitcoin is a new alternative means of payment in the Sub-Saharan region. In the absence of experience, we expect continuous use of Bitcoin will influence consumers' behavioural intention to utilize Bitcoin.

H11 – Habit (HT) has a significant influence on the behavioural intention to utilize Bitcoin.

### Extending UTAUT 2

The study introduced Perceived Trust and Perceived Risk from the Lee, Y. S., Cheah, et al (2018), Walton A, Johnston K (2018), Shahzad, F., Xiu, G., Wang, J. and Shahbaz, M. (2018) TAM model.

**Perceived Risk (PR):** Bauer, R. A. (1960) and Ostlund, L.E. (1974), states the negative consequences that may arise from consumers' actions lead to an important well-established concept in consumer behaviour: perceived risk. According to Hasani, Imane et al (2017), uncertainty emanating from Perceived Risk directly or indirectly affects an individual's confidence in their decisions. The assessment of Perceived risk, although it will be on a commonly defined basis, the experience or level of its effect is subjected to the individual's judgement and risk-taking level hence the differences in risk perception among consumers. According to Featherman, Mauricio & Pavlou, Paul. (2003), Martins, Carolina & Oliveira, Tiago & Popovič, Aleš (2014) consumers identify and value risk when evaluating products/services to purchase/adopt, which may create anxiety and discomfort for them. The Bitcoin network creates an ecosystem such as currency exchanges, miners, merchants, crowdsourcing platforms etc. they play an essential role for interested persons to obtain initial Bitcoin, and continuous trade, among others. However, this expose interested persons to some level of risk, potential vulnerabilities. For instance, Abramova, S. and Böhme, R., (2016) reports Mt. Gox, at the time of ceasing operation in 2014, reported a loss of 754,000Btc of its customers, equivalent to approximately \$450 million in value. Similar cases happened to Bitclub, Bitworld, and Cryptoworld, among other platforms. Some risk comes from the user's activities such as typo errors, device vulnerabilities, loss of device and forgotten passwords. When technology fails to deliver its expected outcome, it results in a financial, psychological, physical, or social loss to the user.

The study considers Perceived Risk in the forms of performance risk, financial risk, time risk, psychological risk, social risk, security risk, and overall risk adopted from Abramova, S. and Böhme, R., (2016). It is expected that Ghanaians with an understanding of the risk associated with the use of Bitcoin will influence the behavioural intention to use Bitcoin. However, the research acknowledges the differences in assessment and risk aversion of each individual and age group.

H12 – Perceived Risk (PR) has a significant influence on behavioural intention to utilize Bitcoin.

**Perceived Trust (PT):** Pavlou et al (2006), Gefen et al., (2008) asserts Trust is an essential element in user decision making to accept and use a technology. According to Boon, S. and Holmes, J. (1991) trust is perceived as a situation whereby a person is dependent on another party under risky and uncomfortable conditions. Grandison et al., (2000) puts Trust as a multifaceted concept perceived to be a subjective belief in the character, ability, strength, reliability, honesty or truth of someone or something Trust in a system creates a positive attitude in society and develops users' interaction with innovation over time. Undermining the trust element of a technological system has the tendency to reduce intention to use therefore deterring users from adoption and technology use Shahzad, F., Xiu, G., Wang, J. and Shahbaz, M. (2018).

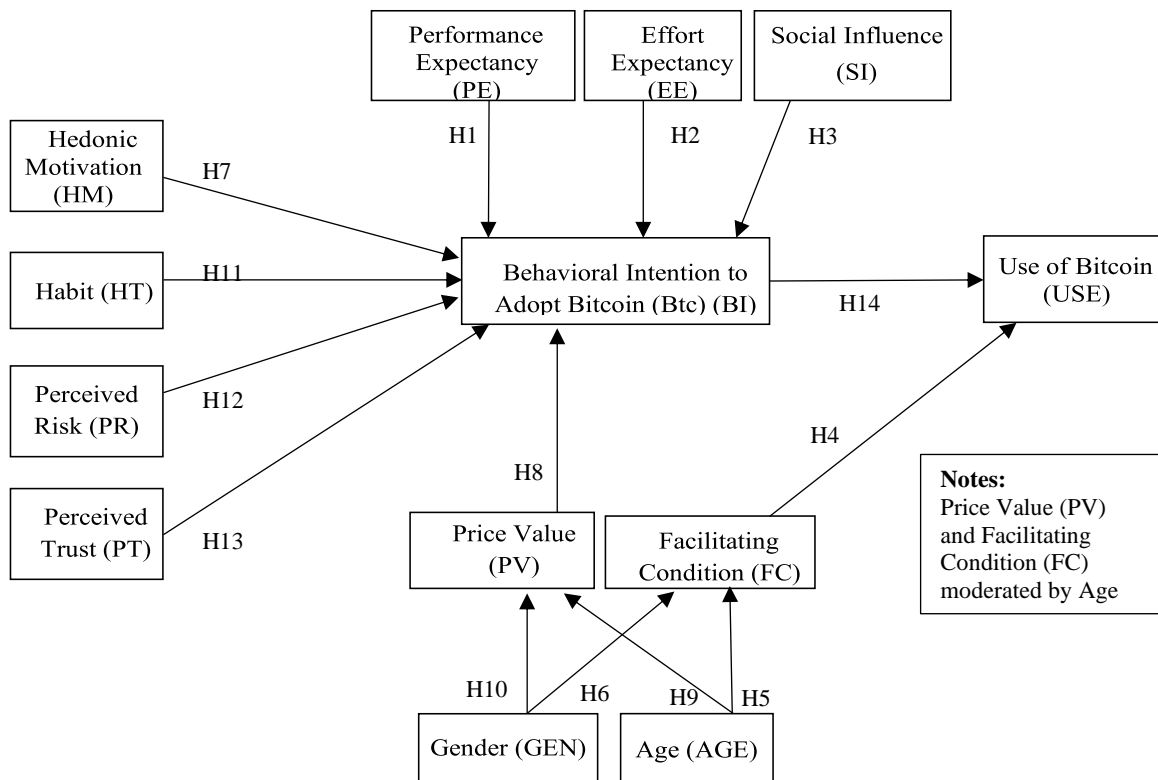
In Bitcoin, trust is decentralized, bypassing the need to have a central authority to review and approve all transactions. Like the traditional ledger system which requires a third party or central authority to secure and handle transaction which builds trust among users, the Blockchain contains all records of the transaction, spread across its networks of autonomous computers. This means no single person or institution has control of the system, which builds transparency and trust among users. Adapting the definition of Davis, F. D. (2003) this study defines Trust as the willingness to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party. We look at perceived trust in aspects of trust in the Bitcoin systems functionality, trust in the Bitcoin's purchasing power as money, trust in secured Bitcoin infrastructure Huhtinen, T.P., (2014) It is expected that Ghanaians with a (fair) understanding of Bitcoin and its system trust Bitcoin is secure with minimal risk such that their personal details and transactions are secured and confidential to any third party. Ghanaians also trust they can exchange Bitcoin for goods and services. It is expected that Ghanaians increasing trust in Bitcoin will lead to an increased intention to adopt (use) Bitcoin. In that view, this study posits that perceived trust will have a positive relationship with the intention to use Bitcoin.



H13 – Perceived Trust (PT) has a significant positive influence on Behavioural intention to utilize Bitcoin.

**Behavioural Intention (BI):** plays an important role in actual Bitcoins usage. This signifies potential users will go on to use Bitcoin as a payment system or invest in Bitcoin infrastructure in the foreseeable future. Its expected behavioural intention is to have a direct effect on use of Bitcoin.

H14 – Behavioral Intention has a significant direct effect on the Actual Use of Bitcoin.



Source: Summary of proposed research conceptual framework with the hypothesis

Figure 1: Summary of Proposed Research Conceptual Framework with The Hypothesis

### 3. METHODOLOGY

Focusing on examining the nature of Bitcoin in Ghana, the study employs a quantitative analysis. It's vital to acquire valuable information providing a comprehensive understanding and analysis of the subject matter. The quantitative method affords a systematic empirical investigation of a social phenomenon (such as the Bitcoin adaptation situation) via statistical, mathematical, or numerical data or computational techniques (Given, 2008).

#### 3.1 Data Collection

For an extensive study of the Bitcoin usage situation in Ghana, the empirical research employs a two-pathway approach; thus, it includes both users/investors and non/potential users of Bitcoin referencing the two-pathway cryptocurrency adaptation process identified in the literature. The anonymous feature of Bitcoin allows users to use the innovation without exchanging personal details during Bitcoin transactions hence it's hard to identify Bitcoin users in Ghana through transactional records. The study identified platforms with Bitcoin as a focused topic of interest as a basis for distributing the online questionnaire. These communities on social media platforms consist of Bitcoin and crypto enthusiasts, Bitcoin curious members who are Ghanaians or residing in Ghana. The communication mode on these platforms is often in English, sometimes Twi (local languages) in text, audio/voice, graphics, videos and pdf formats. However, it is instructive to know that not all community members are actual Bitcoin users or people who have completed the Bitcoin adoption process but include curious members who are very much knowledgeable about the Bitcoin protocol. This means the targeted response groups will be able to make meaning of the questionnaires, providing viable answers.

- Telegram: Blockchain & Crypto Ghana - 1,163 members
- WhatsApp: Bitworld Center Ghana - 60 members
- Facebook:
  - Bitcoin Investments - 72.4k members
  - Ghana Bitcoin Investors - 585 members

Just like the Bitcoin protocol, joining or following such groups are solely voluntary, hence using such platforms as a target response base guarantees some level of satisfactory responses as they are more willing to participate in a Bitcoin-related study. The online survey was conducted in English from October 2020 to February 2021

#### 4. DATA ANALYSIS AND PRESENTATION

After the descriptive statistics, the analysis is done in 2 steps. Firstly, factor analysis and correlations are executed to test the adequacy, and suitability of the dataset and check the bivariate direction and the strengths of association between the variables. Next is factor relationship analysis with the use of the Structural Equation Model (SEM) SPSS Amos. At this point, the Confirmatory Factor Analysis (CFA) covers model fit testing and path analysis. Again, multi-group analysis is conducted to determine the relationship between the constructs and moderating effects.

##### 4.1 Descriptive Analysis

This survey targeted Ghanaians or non-Ghanaians residing or doing business in Ghana as both contribute to the Bitcoin situation in Ghana and the economy on a larger scale. With the snowball method, a total of 202 responses were received with a 100% completion rate. Taking a dive into the demographics, the data shows that 141 male respondents representing 69.80% of the total responses dominated the gender group. In contrast, the female gender accounted for 30.20% of respondents, thus 61 out of 202 responses. Analyzing the age item, most of the respondents belong to the youthful bracket between the ages of 18 - 44. However, sub-age groups of 18-24, 25-34 had 112 (55.45%), 76 (37.62%), respectively. This is consistent with a 58.7% youthful population representing the youthful working population of Ghana. According to the data from the Ghana Statistical Services (GSS), Ghana’s population distribution by region is highly dense in the central and southern parts of the country. People are attracted to jobs and the availability of social amenities such as better schools, hospitals, better roads and entertainment, etc. The central and southern parts of the country constitute the financial and economic zones of Ghana. Data from Table 2 **Error! Reference source not found.** shows a true sample representation of the entire Ghanaian population distribution: Greater Accra, Ashanti region and Western had the most responses, 91 (45.05%), 50 (24.75%) and 33 (16.34%), respectively.

**Table 1: Respondents Bitcoin Awareness and Use Data**

Item	Frequency	Percentage	
Bitcoin Awareness	Digital Currency	191	94.55%
	Gold	13	6.44%
	Cryptocurrency	180	89.11%
	Cash	23	11.39%
	Legal Tender in Ghana	10	4.95%
	Total	202	100%
Bitcoin Use	Yes	64	31.68%
	No	138	68.32%
	Total	202	100%
Years of Bitcoin Use	Less than a year	29	14.36%
	1-2 year	16	7.92%
	3-4 years	22	10.89%
	4-5 years	3	1.49%
	More than 5 years	6	2.97%
	Never	126	62.38%
	Total	202	100%

Source: Developed from Research Data

**Table 2 : Descriptive Statistics**

Descriptive	Item	Frequency	Percentage
Gender	Male	141	69.80%
	Female	61	30.20%
	Total	202	100%
Age	Under 18	2	0.99%
	18-24	112	55.45%
	25-34	76	37.62%
	34-44	10	4.95%
	45-54	1	0.50%
	55-64	1	0.50%
	65+	0	0.00%
	Total	202	100%
Location	Ashanti Region	50	24.75%
	Central Region	13	6.44%
	Eastern Region	6	2.97%
	Greater Accra	91	45.05%
	Northern Region	3	1.49%
	Upper West Region	3	1.49%
	Volta Region	3	1.49%
	Western Region	33	16.34%
	Total	202	100%

Source: developed from the research

Ghana’s economy is one of the fastest-growing economies in the world, growing at 8% (World Bank, 2021). The middle-income section of the economy mimics the general growth of the economy. This also affects the level of education, occupation, household income and expenditure. On the education and economic profile of the respondents, the respondents had at least a Senior High School education level and a PhD/Doctorate as the highest level of education. However, it accounts for a small percentage of 2.97%. Overall, 144 respondents out of 202, representing 71.29%, have a Diploma or Bachelor’s Degree as their highest level of education. It could be deduced that the general respondents had a high education or literacy level, translating into their ability to understand and make informed responses. With regards to the occupation makeup of the 202 respondents show students and self-employed thus, 115 (56.93%) and 27 (13.37%) respectively constituted the two large groups of occupation. However, a fair number is distributed at trainee/ Intern (11%), Associate/Supervisor (6%) and mid-senior level/Manager levels (6%) of the occupational ladder, 5% unemployed and 2% retired. This is consistent with the youthful bracket of the population.

**4.2 Reliability**

The reliability analysis scales measure the internal consistency to ensure it reflects the constructs it measures. In survey research, whereby the Likert scale is used to measure responses, Cronbach alpha is commonly used to check if the scale is reliable. As a rule of thumb, when:  $\alpha < 0.5$  is unacceptable,  $0.6 > \alpha \geq 0.5$  is considered poor, the internal consistency is questionable,  $0.8 > \alpha \geq 0.7$  is an acceptable international consistency,  $0.9 > \alpha \geq 0.8$  is considered good and  $\alpha \geq 0.9$  is considered an excellent internal consistency (Cronbach, L. J. 1951). Interpreting the alpha values, the higher the value, the greater the consistency between the constructs, and vice versa. The overall constructs have a highly consistent value of 0.961.

**Table 3: Total Reliability Test**

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.961	.965	35

**4.3 Frequency Analysis**

The self-administered questionnaire had a 5 Likert point scale ranging from Strongly Disagree to Strongly Agree.



Table 4 shows a total response of 202 with a mode of 3. Thus generally answers had a positive attitude. The Skewness column of the frequency test results Hair et al., (2017) assesses the extent to which the variables are symmetrical or lack symmetry. Kline, R. B. (2016) proposes in frequency test analysis, as a rule of thumb, when a  $\pm 3$  skewness value means normally distributed and 0, perfect symmetry. The variables' skewness range from -0.020 to 0.781. Thus, the survey has a normal distribution as it meets the test condition.

**Means Results:** In statistics, the average value of the data set is one of the common central tendency values to describe the central position of a dataset. The GENDER and USE2 variables had the lowest (0.70) and highest mean (4.58) values, respectively. The standard deviation column shows Gender and Age standard deviations of 0.460 and 0.678, respectively, hence closely distributed around the mean. The dependent and independent variables have a higher standard deviation of 0.801 to 1.982. this implies the survey answers to these questions are broadly distributed and have varied responses.

**Table 4: Frequency Statistics**

	N		Mean	Std. Error of Mean	Median	Mode	Std. Deviation	Variance	Skewness	Std. Error of Skewness	Range	Min	Max
	Valid	Missing											
GEN	202	0	0.70	0.032	1	1	0.460	0.212	-0.869	0.171	1	0	1
AGE	202	0	2.50	0.48	2	2	0.678	0.460	1.304	0.171	5	1	6
PE1	202	0	2.68	0.071	3	3	1.003	1.005	0.293	0.171	4	1	5
PE2	202	0	2.47	0.062	3	3	0.876	0.767	0.017	0.171	4	1	5
PE3	202	0	2.37	0.064	2	2	0.906	0.822	0.369	0.171	4	1	5
EE1	202	0	2.47	0.065	3	3	0.92	0.847	0.18	0.171	4	1	5
EE2	202	0	2.31	0.063	2	2	0.896	0.803	0.642	0.171	4	1	5
EE3	202	0	2.35	0.062	2	2	0.875	0.765	0.299	0.171	4	1	5
SI1	202	0	2.87	0.068	3	3	0.96	0.922	0.203	0.171	4	1	5
SI2	202	0	2.81	0.066	3	2	0.938	0.88	0.275	0.171	4	1	5
SI3	202	0	2.62	0.069	3	2	0.981	0.962	0.463	0.171	4	1	5
FC1	202	0	2.35	0.063	2	2	0.891	0.795	0.663	0.171	4	1	5
FC2	202	0	2.23	0.055	2	2	0.779	0.607	0.778	0.171	4	1	5
FC3	202	0	2.22	0.056	2	2	0.801	0.642	0.69	0.171	4	1	5
HM1	202	0	2.51	0.061	3	3	0.865	0.749	0.093	0.171	4	1	5
HM2	202	0	2.51	0.057	3	3	0.812	0.659	-0.02	0.171	4	1	5
HM3	202	0	2.67	0.083	3	3	1.173	1.377	0.167	0.171	4	1	5
PV1	202	0	2.57	0.064	3	3	0.907	0.823	0.423	0.171	4	1	5
PV2	202	0	2.36	0.065	2	2	0.927	0.859	0.431	0.171	4	1	5
PV3	202	0	2.47	0.067	3	3	0.947	0.897	0.189	0.171	4	1	5
HT1	202	0	2.99	0.075	3	3	1.065	1.134	-0.13	0.171	4	1	5
HT2	202	0	3.17	0.074	3	3	1.052	1.106	-0.057	0.171	4	1	5
HT3	202	0	3.5	0.074	4	3	1.057	1.117	-0.319	0.171	4	1	5
PR1	202	0	2.85	0.077	3	3	1.096	1.202	0.299	0.171	4	1	5
PR2	202	0	2.51	0.07	2	2	0.999	0.997	0.367	0.171	4	1	5
PR3	202	0	2.34	0.071	2	2	1.006	1.012	0.634	0.171	4	1	5
PR4	202	0	2.57	0.071	3	2	1.006	1.012	0.402	0.171	4	1	5
PT1	202	0	2.62	0.076	3	3	1.074	1.152	0.346	0.171	4	1	5
PT2	202	0	2.63	0.073	3	3	1.044	1.089	0.436	0.171	4	1	5
PT3	202	0	2.57	0.071	3	3	1.011	1.023	0.421	0.171	4	1	5
PT4	202	0	2.53	0.067	3	3	0.957	0.917	0.467	0.171	4	1	5
BI1	202	0	2.31	0.073	2	2	1.039	1.079	0.781	0.171	4	1	5
BI2	202	0	2.57	0.073	2	2	1.04	1.082	0.417	0.171	4	1	5
BI3	202	0	2.33	0.073	2	2	1.042	1.087	0.749	0.171	4	1	5
USE1	202	0	2.28	0.073	2	2	1.033	1.067	0.79	0.171	4	1	5
USE2	202	0	4.58	0.139	6	6	1.982	3.927	-0.859	0.171	5	1	6
USE3	202	0	3.85	0.103	5	5	1.462	2.137	-0.878	0.171	4	1	5

**4.4 Factor Analysis**

The complexity of the models calls for the use of the Structural Equation Model SEM analysis method which covers mediating relationships between latent variables. Thus, it measures the direct and indirect effects of the causal relationship. During the factor analysis, J. F. Hair, W. C. Black, B. J. Babin (2006), Dodge, Y. (2008), Kaiser-Meyer-Olkin (KMO) is used to test the adequacy of the sampling measures for each variable in the model. Using SPSS Statistics, the analysis refers to the rule of thumb values between 0 and 1. A rule of thumb for interpreting the statistic. The KMO results showed a value of 0.939 at Bartlett's test of Sphericity 0.000 ( $p < 0.05$ ) which indicates data adequacy and suitability.

**4.5 Correlation Analysis**

The Pearson’s correlation was conducted to measure the relationship between the dependent and independent variables. Venkatesh, et al (2012) call for adapting the Unified Theory of Acceptance and Use of Technology 2 by including other factors that will extend the application of the model. In this study, the UATUT2 is extended and applied to the consumer side in the digital currency environment. Using SPSS, the study measures the relationship between the factors affecting Bitcoin end-user behaviour and factors affecting the actual Bitcoin USE. According to Pearson’s R coefficient value of +1 implies positive correlations between the measure variables, 0 value shows no correlation and -1 indicates a negative correlation between the variables. Analyzing the dataset in SPSS, Table 5 indicates correlation results \*\*. Correlation is significant at the 0.01 level (2-tailed) and \*. Correlation is significant at the 0.05 level (2-tailed).

Referencing the results, in Table 5 Gender and Age variables P values don’t satisfy the rule p above > 0.01 or >0.05, hence considered not significant. Effort Expectancy EE (r= .722, p< 0.05), Societal Influence SI (r= .592, p< 0.05), Facilitating Condition FC (r= .646, p< 0.05), Hedonic Motivation HM (r= .676, p< 0.05), Price Value (r= .642, p< 0.05), Habit HT (r= .584, p< 0.05), Perceived Risk PR (r= .388, p< 0.05), Perceived Trust PT (r= .643, p< 0.05), Behavioral Intention BI (r= .635, p< 0.05) and USE (r= .575, p< 0.05) positively associated with Performance Expectancy.

**Table 5: Correlation Results**

Correlations											
	PE	EE	SI	FC	HM	PV	HT	PR	PT	BI	USE
PE	1										
EE	.722**	1									
SI	.592**	.596**	1								
FC	.646**	.738**	.510**	1							
HM	.676**	.709**	.479**	.652**	1						
PV	.642**	.656**	.511**	.623**	.594**	1					
HT	.584**	.540**	.578**	.499**	.604**	.574**	1				
PR	.388**	.457**	.394**	.432**	.399**	.486**	.379**	1			
PT	.643**	.751**	.531**	.691**	.618**	.750**	.604**	.483**	1		
BI	.635**	.707**	.521**	.686**	.623**	.652**	.558**	.447**	.807**	1	
USE	.575**	.616**	.390**	.541**	.580**	.596**	.502**	.358**	.642**	.675**	1

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

**4.6 Structural Analysis**

The research model has multiple dependent constructs affecting Behavioural Intention. Thus, Facilitating Condition (FC), and Price Value (PV) are both moderated by gender and age. Behavioural intention also influences actual Bitcoin use. This complexity presents a multi-level moderating effect on the variables. SEM suits best producing a set of weights to estimate unobserved constructs after performing multiple levels of regression. In analyzing the complex relationship of the model, the model fit test is done to check the data has a good fit for further analysis to test the hypothesis by estimating the weight of each causal path.

**4.7 Model Fit**

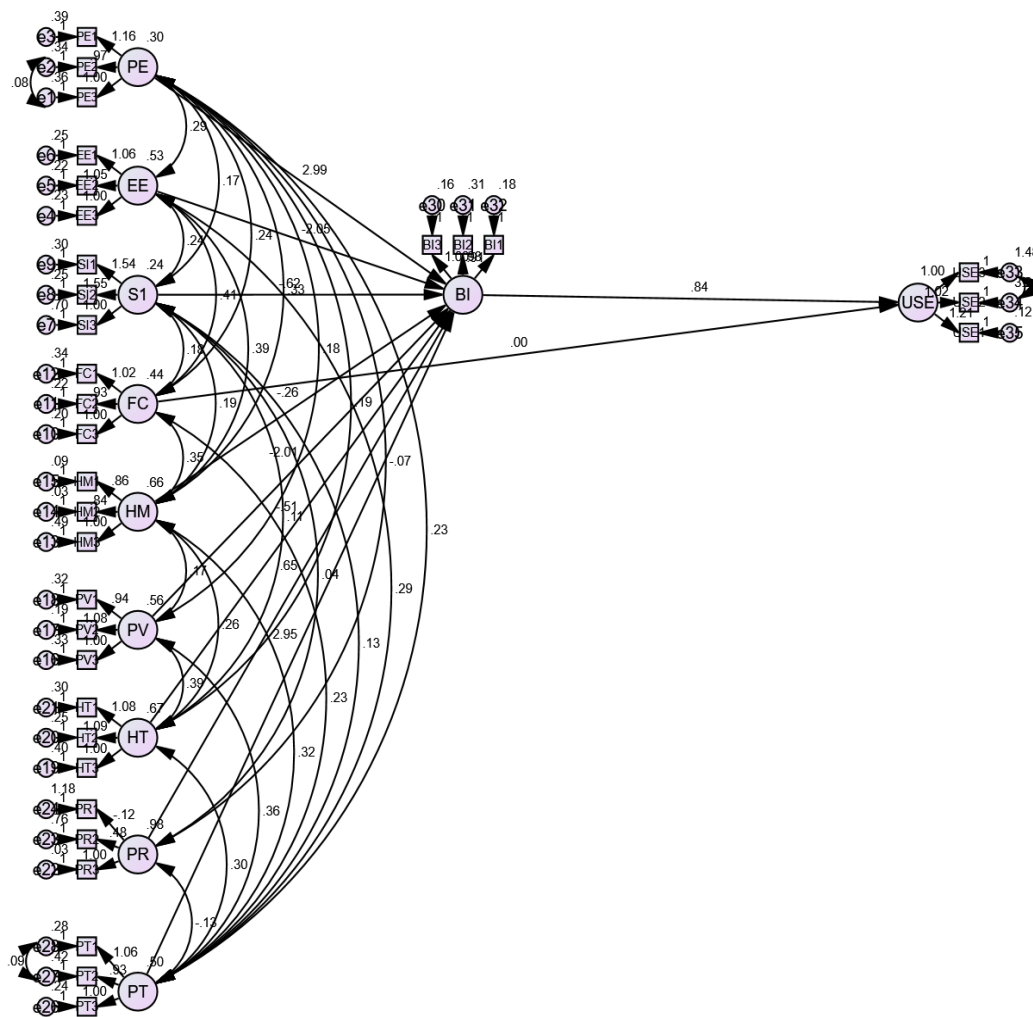
In testing the model fit in Table 6 this study makes use of goodness of fit indexes such as Degree of Freedom, Comparative fit index (CFI), Parsimony-Adjusted Measures Index (PNFI), Incremental Fit Index (IFI), Tucker-Lewis Index (TLI) and Root Mean Square Error of Approximation (RMSEA). CFI represents the amount of variance that has been accounted for in a covariance matrix. It ranges from 0.0 to 1.0. A higher CFI value indicates a better model fit. In practice, the CFI should be close to 0.95 or higher (Hu and Bentler 1999). Fan et al (2016) posits CFI is less affected by sample size than the  $\chi^2$  test. The Comparative fit index (CFI), and Schumacker, Randall & Lomax, Richard. (2016) Tucker-Lewis Index (TLI) compare the fit of a model against the independence model with a range of 0 and 1. For this study, CFI, and TLI had 0.909 and 0.894 respectively indicating an acceptable fitting model, a fair fitting model for TLI Whittaker, T. A. (2016) IFI accounting for the complexity of the model has 0.910 out of 0 and 1 rule of thumb range indicating an acceptable model fit. Kline, R. B. (2016), Whittaker, T. A. (2016) with RMSEA benchmarks had an acceptable value of <0.5 and a value of 0.074 expressing a close-fitting model. The table also shows a degree of freedom value of 2.103 which meets the stipulated benchmark of 2-5.

Table 6: Goodness of Fit Indices

Fit Index	Result	Reference value
$\chi^2$ /degree of freedom	2.103	$\leq 2^a; \leq 5^b$
CFI (Comparative Fit Index)	0.909	$\geq 0.93^a$
PNFI (Parsimony-Adjusted Measures Index)	0.724	$> .50^a$
IFI (Incremental Fit Index)	0.910	$\geq 0.9^a$
TLI (Tucker-Lewis Fit Index)	0.894	$\geq 0.9^a$
RMSEA (Root Mean Square Error of approximation)	0.074	$< 0.08^a; < 0.1^b$

<sup>a</sup>Acceptability: acceptable.

<sup>b</sup>Acceptability: marginal.



Source: developed from the research

Figure 2: Results of Structural Equation Model

#### 4.8 Hypothesis Testing

Performance Expectancy (PE) influence Behavioral Intension to Use with a P-value of 0.006 and Standard Estimated weight of 1.091. Effort Expectancy (EE) influence on Behavioral Intension (BI) had a Standardized estimate path weight (SE) of 0.857 and a P-value of 0.016  $p < 0.05$ . Social influence with a standardized estimate of 0.571, P-value of 0.277,  $p < 0.05$ . The results also indicate Facilitating Conditions (FC) 0.571 standardized estimate with a p-value of 0.981  $p < 0.05$ . Hedonic Motivation (HM) on Behavioral Intension to Use (BI) shows a standardized estimate of 0.311 and a p-value of 0.408  $p < 0.05$ .

Price Value (PV) 0.646 standardized estimate and p-value of 0.002  $p < 0.05$ . Habit (HT) influence the Behavioral intention to utilize Bitcoin showing a standardized estimate of 0.348 and a p-value of 0.139  $p < 0.05$ . Perceived Risk (PR) influences behavioural intention to utilize Bitcoin with a standardized estimate of 0.266 and p-value of 0.017  $p < 0.05$ . Table 6 shows a standardized estimate of 0.726 and a p-value of  $p < 0.001$ . Behavioural intention directly influence the Actual Use of Bitcoin with standardized estimate of 0.115 and p-value of  $p < 0.001$ .

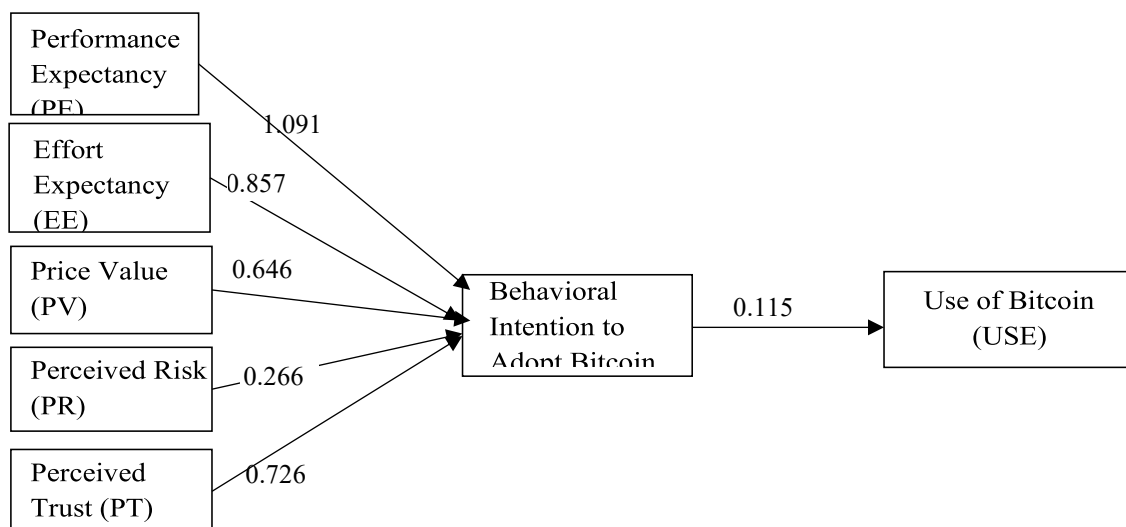
**Moderating Effect of Age and Gender:** To answer the research inquiry on the moderating effects of Age and Gender, the multigroup SEM analysis approach is adopted from J. F. Hair, et al (2006), Hasani, Imane et al (2017) and Gaskin, J. (2012). The multigroup results are compared against their chi-square and degrees of freedom values. For Facilitating Condition (FC), the results showed a CMIN value of 0.349 and a p-value of 0.554 at 1 Degree of Freedom. This indicates no significant difference between subgroups of Gender and Age. For Price Value, the results showed a CMIN value of 1.78 and a p-value of 0.673 at 1 Degree of Freedom. This indicates no significant moderating effects of Gender and Age on Price Value and Behavioral Intension.

**Table 7: Summary of Hypothesis Testing**

Hypothesis	Path	SE	P-value	Relationship Direction	Sig.	Results
H1	PE - BI	1.091	.006	Positive	Significant	Supported
H2	EE - BI	.857	.016	Positive	Significant	Supported
H3	SI - BI	.571	.277	Positive	Insignificant	Not Supported
H4	FC - USE	.057	.981	Positive	Insignificant	Not Supported
H7	HM - BI	.311	.408	Positive	Insignificant	Not Supported
H8	PV - BI	.646	.002	Positive	Significant	Supported
H11	HT - BI	.348	.139	Positive	Insignificant	Not Supported
H12	PR - BI	.266	.017	Positive	Significant	Supported
H13	PT - BI	.726	<0.001	Positive	Significant	Supported
H14	BI - USE	.115	<0.001	Positive	Significant	Supported

Notes: significance: \* $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Figure 3** shows the influencing factors that affect user behavioural intention to use Bitcoin in the Ghanaian Bitcoin ecosystem. It deduces no existence of Age and Gender moderating effects on Price Value, Facilitating Condition elements of consumers' behavioural intention and actual Bitcoin use. Performance Expectancy (PE), and Behavioral Intention had the highest and lowest standardized estimate of 1.091 and 0.115 respectively.



Source: Developed from Research Data

**Figure 3: Final Concept Framework for Bitcoin Acceptance in Ghana**

## 5. FINDINGS

The goal of this study was to generate an empirical research base on the Bitcoin phenomenon in Ghana. Combining a two-pathway approach of users/investors and non/potential users and employing quantitative research method, we also looked at user behaviour to Bitcoin adoption in Ghana. The conceptual research framework adopted Venkatesh, et al (2012) UTAUT 2 as the base model extended with Perceived Trust and Perceived Risk from Lee, Y. S., Cheah, et al (2018), Walton A, Johnston K (2018), Shahzad, F., Xiu, G., Wang, J. and Shahbaz, M. (2018) TAM model.

Table 8 shows Performance Expectancy (PE), Effort Expectancy (EE), has a positive influence on the user's behavioural intention to adopt Bitcoin. This finding is in line with previously discussed works of literature by Venkatesh, et al (2012), Silinskyte, J. (2014), Lee, Y. S., Cheah, et al (2018), Walton A, Johnston K (2018), Shahzad, F., Xiu, G., Wang, J. and Shahbaz, M. (2018). Again, Hedonic Motivation (HM), and Habit (HT) turns out to have a positive influence on Behavioural Intention but are statistically insignificant to influence Bitcoin consumer. Social media in itself is a habit altering and fun innovation. With the ongoing Bitcoin craze, the youth in Ghana becomes more aware of Bitcoin use which a percentage adapt to the technology mostly for investment/earning purposes. However, the influence on habit is relatively mild; and statically insignificant. Its influence is projected to be much more evident in the years to come. With Price Value (PV), this study found a positive influence on behavioural intention to use Bitcoin. Bitcoin in recent months (and or years) is on an uptrend gain in value; this creates an earning opportunity outweighing the monetary cost of its purchase. Again, the inherent characteristics of Bitcoin also provide a non-monetary value greater than its associated cost. This study also indicates Facilitating Conditions (FC) have no significant influence on Bitcoin Use. The moderating results contradict Venkatesh, et al (2012) moderating effect of AGE and GENDER on Price Value (PV), Facilitating Conditions (FC) to influence Behavioural Intension and Use respectively. This is due to the observation of non-gender bias support services, fewer women involved in Bitcoin in Ghana, gender equality in Ghanaian Society, and the almost exclusive youthful population of Bitcoin adopters in Ghana.

However, there is a good level of Bitcoin awareness ambience in Ghana. Within the twisted meaning of Bitcoin in Ghana, many understand its nature and risk. Perceived Risk (PR) was found to have a significant positive influence on behavioural intention to use Bitcoin. The research discovered a greater majority of the youth in the Ghana Bitcoin space, are in for the investment/profit-making opportunity due to its high volatility hence the perceived high risk is associated with greater opportunity for profits. Certain underlying factors (especially from the non-users) draw from lack of regulation, huge price volatility, complexity, and negative association with scams. Perceived Trust was found to be very important to end-user in Ghana. The trust in the Bitcoin protocol to complete transactions without the bank, engage in e-commerce, protect user identity, and investment opportunities, and provide solutions of hope to many local problems brought about by lack of trust in the centralised (government) system.

Behavioural intention indeed has a strong positive influence on an individual decision to complete the Bitcoin adoption process. This study employs a two-path way approach for both Bitcoin users/investors and non/potential users. Understanding the Gartner hype cycle and the adoption behaviour of Bitcoin at every stage leaves earners and wounded people. Both scenarios send ripple effects throughout the cycle. Referring to Table 1, in similar fate to Mazikana, Tapiwa. (2019) and Silinskyte, J. (2014), a significant number of the respondent haven't completed the Bitcoin adoption process even with a well-rounded knowledge of Bitcoin. However, the research results indicate a more significant majority intend to adopt Bitcoin in the near future. Although the Bitcoin community is growing in Ghana, it could also be deduced that it's a smaller percentage that generates the huge Bitcoin transaction records.

**Table 8: Hypothesis Conclusion**

Hypothesis	Proposal	Results
H1	Performance Expectancy (PE) has a significant positive influence on the user's behavioural intention to adopt (use) Bitcoin.	Accepted
H2	Effort Expectancy has a significant influence on the user's intention to adopt (use) Bitcoin.	Accepted
H3	Social Influence (SI) significantly influence the behavioural intention to utilize Bitcoin.	Rejected
H4	Facilitating Conditions (FC) has a significant positive influence on Bitcoin utilization behaviour.	Rejected



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H5	Age (AGE) will significantly moderate the influence of Facilitating Conditions (FC) on Bitcoin utilization such that effect will be stronger on the older consumer.	Rejected
H6	Gender (GEN) will significantly moderate the influence of Facilitating Conditions (FC) on Bitcoin adaptation such that effect will be stronger on women.	Rejected
H7	Hedonic Motivation (HM) has a significant positive influence on the behavioural intention to utilize Bitcoin.	Rejected
H8	Price Value (PV) has a significant positive influence on the behavioural intention to utilize Bitcoin.	Accepted
H9	Age (AGE) will significantly moderate the influence of Price Value (PV) on intention to utilize Bitcoin such that effect will be stronger on older consumers.	Rejected
H10	Gender (GEN) will significantly moderate the influence of Price Value (PV) on the intention to utilize Bitcoin.	Rejected
H11	Habit (HT) has a significant influence on the behavioural intention to utilize Bitcoin.	Rejected
H12	Perceived Risk (PR) has a significant influence on the behavioural intention to utilize Bitcoin.	Accepted
H13	Perceived Trust (PT) has a significant positive influence on behavioural intention to utilize Bitcoin.	Accepted
H14	The behavioural intention has a significant direct influence on the Actual Use of Bitcoin.	Accepted

## 6. SUMMARY AND CONCLUSION

Bitcoin and its underlying technology Blockchain have enormous growth potential in Ghana. This study used SEM quantitative research method to analyze 202 valid snowball responses on user behaviour to bitcoin adoption. The research also found a more significant number of Bitcoin users are the teeming youthful population of Ghana living in the central and southern parts: Greater Accra, Ashanti, Western Region and Central Regions of the country, which is the commercial zones. This research finding on Bitcoin demographics shows a true representation of the country's population distribution.

Reverting to the research inquiry, Bitcoin adoption determinants in Ghana centre on:

- End-user's knowledge of Bitcoin technology, its system, expected benefits and value gain.
- Fewer efforts to learn and use Bitcoin and practical, user-friendly systems and services.
- Accessibility and availability of Bitcoin supporting services in the ecosystem.
- Value for cost in adapting to Bitcoin
- Security and continuous trust in the Bitcoin system sustainability.

Bitcoin end-users in Ghana are:

- Predominantly youth between the ages of 18-44 years.
- They are mostly dense in the commercial regions of Ghana; the central and southern parts.
- They are mostly educated with a minimum educational level of Senior High School.
- Mostly self-employed, low to middle-level positions or in school and male-dominated.

### 6.1 Research Limitations and Recommendations for Future Studies

This study fills the research gap by contributing empirical findings on the consumer context of Bitcoin adoption in a developing country. It serves as a resource base for startups, companies, and governmental initiatives in the field of Bitcoin and cryptocurrencies. The research framework design eliminated the experience moderating effect in this study. Future studies could test all the UTAUT 2 moderating effects on the construct. This recommendation draws from the projection of Bitcoin growth, affording users some level of experience that affects their continuous and future behavioural intentions to Bitcoin use. The UTAUT 2 model could be extended with other variables of interest from the innovation diffusion and technology acceptance models or use other models to examine the Bitcoin adoption in Sub-Saharan Africa.

Notwithstanding, with well-conducted research coupled with the diversified distribution of respondents, this study's results provide an empirical study of the larger view of Bitcoin adoption in Ghana, which can be used for deductive insights and conclusions. However, it will be a great addition for empirical research on bitcoin adoption behaviour from an institutional perspective.

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