

# Are We Ready for Cryptocurrencies? An Empirical Investigation on the Adoption of Cryptocurrencies and Future Directions

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## Introduction

### What is cryptocurrency?

First introduced by Satoshi Nakamoto with *Bitcoin* and is defined as “A chain of digital signatures that transfers the coin to the next by digitally signing a hash of the previous transaction and the public key of the next owner and adding these to the end of the coin.”

### Benefits?

Direct peer-to-peer transactions in a trust-less environment, near real-time transaction settlement/reconciliation, instant tracking and tracing of assets, data provenance, tamper evident data, irreversibility, distributivity, efficiency gains, cost reductions, automated contracts, and a security model that is fault tolerant and resilient.

### Motivation?

Demographic trends support the idea that cryptocurrency will see further adoption in the coming years. Generation Z (those born in the late 90s and early 2000s) has the characteristics to turn cryptocurrencies into a mainstream tool, and are expected to make up 40% of all consumers by the year 2020.

## Background

### Research Questions:

- What are the drivers and barriers of cryptocurrencies consumers see in the adoption phase?
- What are the industry implications that need to be addressed for cryptocurrencies’ growth?

**Objectives:** To identify the drivers and barriers influencing cryptocurrency's adoption.

Currency Name	Market Value (USD)	Pros	Cons
Bitcoin	\$163 Billion	<ul style="list-style-type: none"><li>Largest and most popular.</li><li>Battle-tested against attacks.</li></ul>	<ul style="list-style-type: none"><li>Energy intensive.</li><li>Slow.</li><li>Transaction fees rising.</li></ul>
Ethereum	\$70 Billion	<ul style="list-style-type: none"><li>Built in programming language for smart contracts.</li></ul>	<ul style="list-style-type: none"><li>Slow and energy-intensive.</li><li>Early smart contracts vulnerable to hacking.</li></ul>
Ripple	\$32 Billion	<ul style="list-style-type: none"><li>Fast and cheap cross border payments.</li></ul>	<ul style="list-style-type: none"><li>Privately owned so not decentralized enough.</li></ul>
Bitcoin Cash	\$10 Billion	<ul style="list-style-type: none"><li>A hard fork in Bitcoin tweaked to handle larger transaction volumes.</li></ul>	<ul style="list-style-type: none"><li>Too centralized as some miners create most blocks and coins.</li></ul>
Litecoin	\$10 Billion	<ul style="list-style-type: none"><li>Similar to Bitcoin but much faster.</li><li>Designed that mining can remain open to hobbyists.</li></ul>	<ul style="list-style-type: none"><li>Though faster it is still too slow to be an ideal payment method.</li><li>Far less known.</li></ul>

Table 1 – Dominant Cryptocurrencies

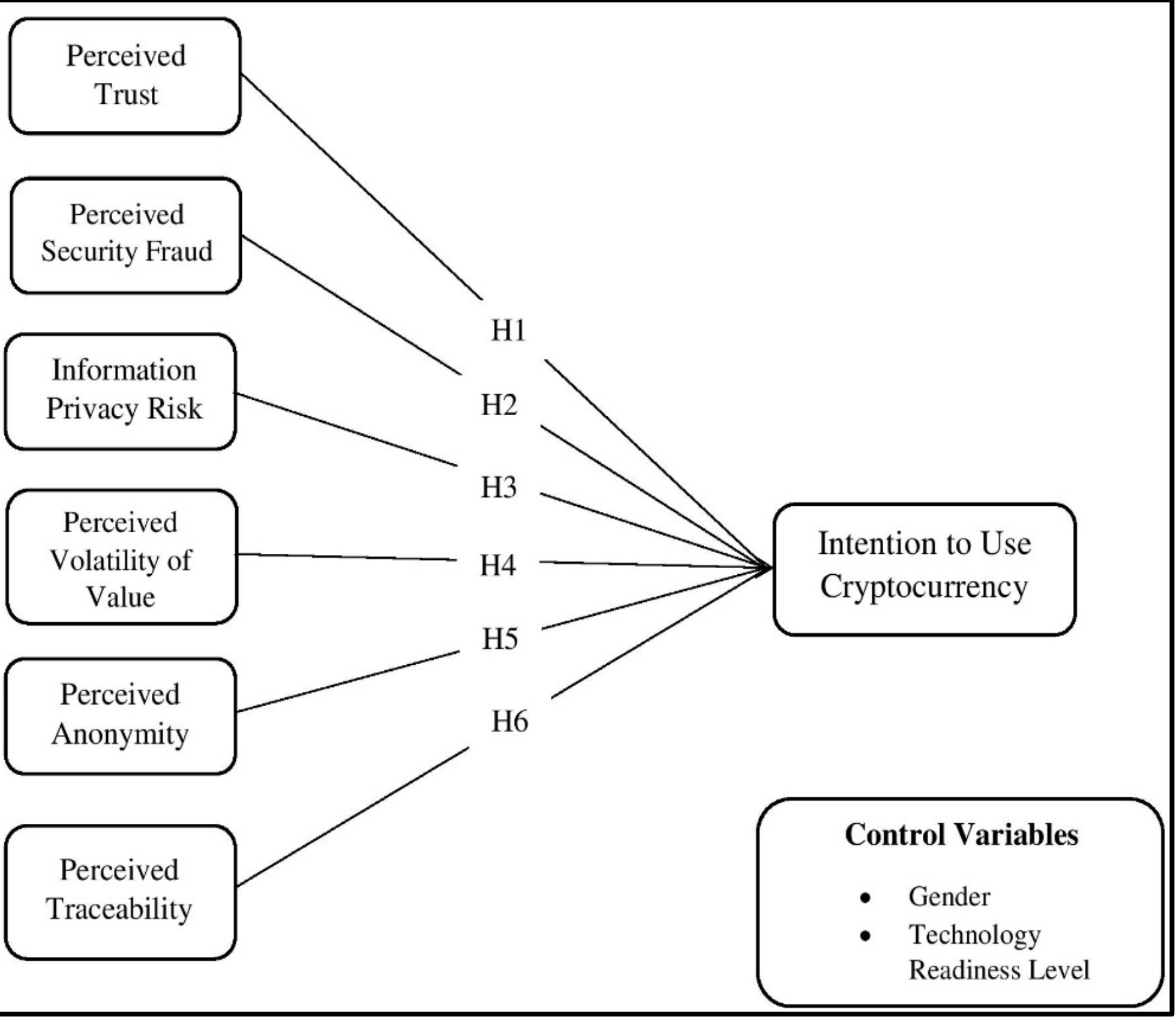


Figure 1 - Exploratory Theoretical Blockchain Adoption Framework

## Methodology

**Research Type & Design:** Quantitative research design in the form of a survey was used.

**Participants:** A total of 327 (mean age= 21.52; 63 % female vs 37% male) cryptocurrency users and non-users based in Toronto, Ontario, Canada.

**Analysis:** Structural Equation Modeling (SEM) using SmartPLS was used to analyze the data. This involved a measurement model and a structural model. Both convergent validity and discriminant validity was confirmed.

## Results

Hypothesis	Coefficients	t-Values	Results
H1: Perceived Trust → Intention to use	0.37***	7.05	<b>Supported</b>
H2: Perceived Security Fraud → Intention to use	-0.02	0.33	Not Supported
H3: Information Privacy Risk → Intention to use	0.03	0.51	Not Supported
H4: Perceived Volatility of Value → Intention to use	- 0.22***	3.56	<b>Supported</b>
H5: Perceived Anonymity → Intention to use	0.18***	3.49	<b>Supported</b>
H6: Perceived Traceability→ Intention to use	0.20***	3.60	<b>Supported</b>

Table 2 shows the statistical testing results for the structural model with path coefficients

## Discussions

- Perceived Traceability:** Was found to have a positive impact on intention to use cryptocurrencies.
- However, most cryptocurrencies have publicly verified records of transactions, which are in contrast to traditional payment schemes, that merely involve the buyer, the seller, and the verifier.
- Having multiple nodes holding records that can trace transactions back to a single wallet could be alarming to people familiar with traditional payment schemes.
- Therefore, one of the reasons behind positive relationship in this research could be that the results were derived from non-technical users and they were unable to perceive how blockchain traceability works, therefore, recognize it as a positive factor.
- Perceived Anonymity:** Was found to have a positive impact on intention to use cryptocurrencies. It is relevant to remark that governments can benefit from publicly available transactions by using them in unprecedented circumstances (e.g., cyberterrorism issues). The perception of anonymity when using cryptocurrencies remains an open debate with some uncertainty of the real importance.
- Perceived Information Privacy Risk and Security Fraud:** Were non significant indicators of ones intention to use cryptocurrency. It is pertinent to mention that many people using payment tools would expect them to be secure and free from fraud. Further, most cryptocurrencies are inherently decentralized and unregulated by governments; there are no safeguards against privacy loss.

## Implications

### Theoretical:

- This study can be used as a reference for future studies that will explore new and different features of cryptocurrencies, which are still being developed.
- The current research provides researchers with an alternative model for adoption of cryptocurrencies consisted of main barriers and drivers.
- Further, the current research provides researchers with insights that aid in understanding and measuring perceived volatility, perceived security fraud, and perceived traceability quantitatively; presenting scales towards measuring intention to use of cryptocurrencies.

### Practical:

- One way to mitigate **value volatility** is to focus on specific situations where cryptocurrency transactions are still worth using despite moderate price fluctuations.
  - If there is a focus on international transactions that traditionally see high transaction fees, there is a good case for using cryptocurrency even though there is some value instability.
  - Other ideas could be used more universally, such as crypto discounts to offset potential losses from price fluctuations.
- Anonymity** had the most significant positive influence on user adoption. Meaning that enhancing the positive effect of anonymity should be a significant consideration.
  - Regulation could be one way to preserve or enhance anonymity and might make users feel much safer about the anonymous environment.
  - To increase anonymity a merchant that accepts cryptocurrency would be interesting such as Bitcoin mixer services. This could be an in house or third party method for anonymizing transactional data and increasing perceived anonymity.