DIGITAL CURRENCY AND ITS IMPACT ON QUALITY OF LIFE
Emergent Research Forum Paper

Brigid A. Appiah Otoo
University of North Carolina at Greensboro
baappiah@uncg.edu

Hamid Nemati
University of North Carolina at Greensboro
nemati@uncg.edu

Abstract
Digital currency has received widespread discussion in practice and academia as a potential alternative to money. Existing research about digital currency largely focuses on building proofs of concept. This paper moves beyond the conventional discussion on this emergent technology to explore what people can do and achieve with it. Based on the theoretical framework of Sen's (1992, 1993) capability approach, the study explores how the adoption of digital currency at the individual level impacts quality of life in a deprived environment, with limited access to banks. We also discuss the antecedents of digital currency adoption based on the Elaboration Likelihood Model (ELM). In this study, we adopt the European Central Bank's definition of digital currency as a digital representation of value, which can be used as an alternative to money (European Central Bank (ECB), 2012).

Keywords
Digital Currency, Quality of Life, Capability Approach, Emergent Technology

Introduction
There is considerable and growing interest in the adoption of digital currency, especially from the policy-making perspective. Evidence of the increasing attention being paid to the phenomenon digital currency can be found in the growing number of publications dealing with the topic and news articles covering digital currency. However, this emerging technology has significant uncertainty and ambiguity since its prominent impact is yet to be realized (Christopher et al., 2014). Like all emerging technologies, the aim of digital currency is to positively impact the lives of individuals and the society at large (Rotolo et al., 2015).

The existing literature on digital currency focuses on the proof of its concept. However, for policy makers and businesses to invest in the provision of secure digital currency solutions, the value of its adoption must be clearly demonstrated at the individual level. In this study, we explore answers to the following research questions:

1. What is the impact of the adoption of digital currency on an individual’s quality of life?
2. What are the antecedents to the adoption of digital currency?

Related Literature and Theoretical Background
This chapter outlines the key findings from a review of relevant literature on various forms of digital currency. It also details the existing literature on the theoretical framework of this research. Two major streams of literature provide the theoretical foundations for this study. Sen’s Capability approach is used to study how adoption of digital currency impacts quality of life while Elaboration Likelihood Model (ELM) forms the foundation for studying the antecedents for the adoption of digital currency at the individual level.
Digital Currency

The financial industry and other enterprises which involve transactions could soon experience a revolution with the prospects of digital currency development and its facilitating technologies such as blockchains (Marr, 2017). The term digital currency in this research refers to the following terms created by literature: e-money, electronic money, network money, digital money, electronic currency, digital cash, electronic cash, e-cash and mobile money (Berentsen, 2005). There are two types of digital currency; private digital currency and digitized state issued currencies (Gans and Halaburda, 2015).

While digitized state issued, currencies have gained considerable level of acceptance its direct link to physical currencies presents many challenges such as double spending and money laundering. Hence, private digital currencies such as bitcoin were created to resolve some of these issues (Santori et al, 2016). Private digital currencies have however struggled to gain widespread adoption by users mostly due to lack of government backing and regulation (Christopher et al, 2014).

Private Digital Currencies, despite having transactional characteristics of money have no physical counterpart (Gans and Halaburda, 2015). These are virtual goods that store value and are issued by private entities. Examples include bitcoin, amazon and Facebook credit. For deprived communities with limited access to traditional banking facilities, accepted systems of digital currency offer critical services and benefits for local users (Mullan, 2014). This is evidenced in the utility of mobile financial services in sub-Saharan countries like Kenya (Jack et al, 2010).

Quality of Life

Over the last few decades Quality of Life (QoL) research, has spurred much interest in the social, behavioral, environmental, and policy sciences (Uysal et al, 2016). Research suggests that, individuals care about different things for their wellbeing depending on the level of development in their society. Sirgy’s (1986) study states that higher-order needs (social, esteem, and self-actualization needs) are more relevant for the wellbeing of individuals in developed countries while lower-order needs (biological and safety related needs) matter more to individuals in less developed societies. This is in line with Sen’s assertion that the utility of a resource to an individual depends on interpersonal differences (Sen, 1993). Example, in their study about quality of life (QoL) in rural Malaysia, Idris et al (2016) observed that, the dimensions of settlement, safety, involvement and social relationships (lower-order needs) scored highest while dimensions of physical environment and job security (higher order needs) yielded moderate scores.

Hagerty et al (2001) suggests that, Quality of Life is a term that infers the quality of a person’s whole life, not just some component part. Any measure of QoL must therefore capture the state of being in various life domains such as quality of work life, quality of leisure life, quality of family life, quality of community life, quality of home life, and so on (Sirgy et al., 1982). Several governments and public policy institutes have developed “Quality of Life Indexes” – statistics that attempt to measure the quality of life for entire states or regions (Hagerty et al, 2001). Sen’s capability approach has been utilized by the United Nations Development Program, to evaluate quality of life where ‘poverty’ is understood as deprivation in the capability to live a good life, and ‘development’ is understood as capability expansion (Sen, 1992).

Sen’s Capability approach

Amartya Sen’s Capability approach provides a tool and a framework within which the quality of life can be evaluated and conceptualized (Robeyns, 2005). Based on this approach, quality of life is analyzed in terms of the core concepts of ‘functionings’ and ‘capability’. Capabilities can be explained as possible uses of a resource, while functioning is effectivly what is achieved by the individual who adopts the resource (Verd and Andreu, 2011). Sen’s capability approach has been utilized by the United Nations Development Program, to evaluate quality of life where ‘poverty’ is understood as deprivation in the capability to live a good life, and ‘development’ is understood as capability expansion (Sen, 1992).

In this study, digital currency is considered as the resource. The possible benefits from its adoption will make up the capability set while the benefits relevant for the individual user’s quality of life will constitute the functionings. The capability approach focuses on the uses that a person can make of the various resources available to them (functionings) rather than resources that a person has access to (Clark, 2005). According Sen (1993), a person’s well-being is his/her “ability to achieve valuable functionings” (p. 200).


**Elaboration Likelihood Model (ELM)**

The theory of Elaboration Likelihood Model (ELM) revolves around the notion of persuasion (Angst and Agarwal, 2009). This model, developed by Petty and Cacioppo (1986) suggests that, persuasion to adopt an emerging technology could change in two ways; central route and peripheral route. The central route, involves persuasion resulting from an individual’s evaluation of the options presented for their support. However, the peripheral route, involves persuasion due to a person’s experience of the merits and demerits of options presented to them.

The fundamental elaboration process involves creating one’s own thoughts in response to the information to which one is presented. Petty, Wells and Brock (1976) state that the most influential factors that determine the persuasion route an individual can adopt are motivation and capability. ELM does not only provide a framework to explore factors which affect persuasion, it also helps to evaluate the impact of these variables and their mediational processes (Petty and Cacioppo, 1986). Bhattacherjee and Sanford (2006) stated that ELM addresses gaps in technology adoption studies by explaining information evaluation routes.

**Conceptual Model**

Figure 1 below shows a conceptual model which explains how the adoption of digital currency (an emerging technology) impacts an individual’s quality of life. This relationship will be studied based on Sen’s Capability Approach. The model further depicts the relationships between the adoption of digital currency and its antecedents, which will be explored using the Elaboration Likelihood Model (ELM).

![Figure 1. Research Model](image)

The adoption of digital currency presents many benefits at the individual level. Among these benefits, the individual’s characteristics will influence their choice of options which are relevant for their quality of life (termed functioning in Sen’s model). Sen (1992) suggested that, the capability set of any resource available to an individual will depend on interpersonal differences (utilization function). Hence, we propose the following hypotheses:

**Hypothesis (H1):** The adoption of digital currency has a positive impact on quality of life.

**Hypothesis (H2):** Individual characteristics moderate the impact of adoption of digital currency on quality of life.

In this study, the impact of three variables on the adoption of digital currency at the individual level will be explored. These antecedents are government policies, facilitating technology and individual characteristics. Based on the ELM framework, government policies and facilitating technology influence the adoption of digital currency via peripheral route. This is because, both factors could motivate an individual to adopt digital currency through a low level of elaboration. For example, government backing
through the provision of incentives could encourage the adoption of digital currency as an alternative to money. Also, by mere awareness of facilitating technology such as functioning internet systems, telecommunication infrastructure and effective online security systems an individual could adopt digital currency through a low thought process. We therefore propose the following hypotheses:

**Hypothesis (H3a):** Government policies encourages the adoption of digital currency.

**Hypothesis (H3b):** Facilitating technology increases the adoption of digital currency.

Unlike the above antecedents, individual characteristics influence the adoption of digital currency via a central route. Personal characteristics such as attitude to change, attitude to risk as well as ability (the capability for critical evaluation (Petty and Cacioppo, 1986)) enables them to adopt digital currency after a high elaboration process. We therefore propose that:

**Hypothesis (H4):** Individual Characteristics affect one’s willingness to adopt digital currency.

Based on the above described model, various individual characters which differs from person to person will be explored. This will also inform the moderating effect of these characters on the impact adoption of digital currency has on quality of life.

**Methodology**

A mixed method approach will be used to test the conceptual model and hypotheses of this study. First, face to face interviews will be conducted to validate the research instrument and enrich the understanding of the study context. Participants of the initial interviews will include two leaders in organizations looking to adopt digital currency as a business offering, two digital currency users as well as two personnel who are knowledgeable about government financial policies.

Based on the initial findings a survey questionnaire will be designed and administered to about 400 users of digital currency. The purpose of this survey is to determine the perceptions of users about the utility of digital currency and their attitudes to its adoption. The questionnaire will also throw light on people's expectations with government policies and facilitating technology that would encourage them to adopt digital currency. In the questionnaire, each factor will be measured with multiple items, which will be adapted from extant literature to improve content validity (Straub, Boudreau, and Gefen, 2004). All items will be measured with a five-Likert scale ranging from strongly disagree (1) to strongly agree (5).

Using the questionnaire, data will be collected from students in a developing country. Selecting students as subjects for this study is appropriate because they are potential users of digital currency which fit the context of this study. Following data collection, the information will be analyzed based on the two step-approach recommended by Anderson and Gerbing (1988). First, structural equation modelling software, Partial Least Squares (PLS) will be adopted to conduct a confirmatory factor analysis (CFA). It will also be used to examine the validity which includes convergent and discriminant validity. Second the structural mode will be examined to test research hypotheses.

**Discussion and Conclusion**

The proposed research model provides a holistic view that will enable stakeholders of the adoption of digital currency to understand its impact on the quality of life. Sen’s capability model is a proven approach by which the aim of this research can be achieved. Once the utility of digital currency to the well-being of individuals is clearly shown, more practice and academic research will focus on finding ways to mitigate the existing implementation and adoption concerns. This will further develop the concept of digital currency and enable the society to benefit from its use at both the macro and micro level.

While this study focuses on the impact of digital currency adoption on the quality of life at the individual level, there remains research opportunities to explore this at the national level. Effective research in this area will inform policy making and business decision making for the benefit individual users.
References