FLORIDA INTERNATIONAL UNIVERSITY

Miami, Florida

EXPLORING FACTORS THAT INFLUENCE U.S. CONSUMER INTENTION TO

COVET LOOSE CHANGE

A dissertation submitted in partial fulfillment of

the requirements for the degree of

DOCTOR OF BUSINESS ADMINISTRATION

by

Carlos Emilio Bared

2022

To: Interim Dean William G. Hardin III,
    College of Business

This dissertation, written by Carlos Emilio Bared and entitled Exploring Factors that Influence U.S. Consumer Intention to Covet Loose Change, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

_____
George M. Marakas, Member

_____
Ronald Mesia, Member

_____
Arun Upadhyay, Member

_____
Fred O. Walumbwa, Major Professor

Date of Defense: May 13, 2022

The dissertation of Carlos Emilio Bared is approved.

_____
Interim Dean William G. Hardin III,
College of Business

_____
Andrés G. Gil
Vice President for Research and Economic Development
and Dean of the University Graduate School

Florida International University, 2022

DEDICATION

To God, for without faith in You I would not have embarked on this journey. To my wife and sons, for without you, I am incomplete. To my grandfather, Dr. Emilio V. Soto-Pradera (1912 -1981), for without you, this quest would have been meaningless.

ACKNOWLEDGMENTS

I want to thank God; through Him, all things are possible.

I want to express my deepest gratitude to my wife, Hanna, for her unwavering belief in me and to my children, Chris, Nico, and Matthew, the source of my inspiration. I would like to thank my parents, Jose and Miriam, for a lifetime of unconditional love and support.

I would like to acknowledge and express my appreciation to various individuals from the faculty and staff of the University, beginning with Dr. George M. Marakas; his idiom of "trust the process" drove me to the finish. I would like to recognize and thank Yasemin Shirazi, without her, 'trusting the process' would not have been possible. I am honored to have been able to work with Dr. Fred O. Walumbwa as my committee chair; his expertise, leadership, and wise counsel were much appreciated. I would also like to recognize other committee members, Dr. Arun Upadhyay and Dr. Ronald Mesia, for their commitment to the quality of my dissertation. I am honored to have been able to work with the esteemed professors from the DBA program, too many to mention by name; however, Dr. Miguel Aguirre-Urreta deserves specific mention, ever available and willing to share his expertise.

Lastly, but no less important, I would like to thank the members of Cohort II. I am honored to have shared this experience with all of you. Like the faculty and administration, certain individuals from Cohort II necessitate specific mention for their friendship, help, and support throughout the program; in no particular order, they are Everod, Tamiko, Hernan, Nushine, Michael, Mauro, Alejandro, and JC.

ABSTRACT OF THE DISSERTATION

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Professor Fred O. Walumbwa, Major Professor

This study aimed to assess U.S. consumer intention to save, store, and account for the coins received as change from a cash transaction. Using a behavioral economics framework and applying Ajzen's Theory of Planned Behavior (1985), this research provides a template to capture, observe, and analyze consumer perceptions about and behavior towards loose change or other similar byproduct decisions. Following procedures prescribed by Icek Ajzen (2006) and (2013), a questionnaire was developed for the critical constructs used to predict consumer intention to covet loose change. A sample population ($n = 490$) of adults residing in the United States participated in the study.

The study examined behavioral beliefs and attitudes towards the targeted behavior, normative beliefs and the resultant subjective norm, control beliefs, and the ensuing perceptions about control. These core concepts combine to form consumer intention to covet loose change, a byproduct decision of a prior choice to pay with cash. Partial least squares structural equation modeling (PLS-SEM) was used to test the

analytical power of the research model's constructs for predicting the target intention to covet.

The statistically supported results indicate that consumers' intention towards loose change is dictated by an underlying belief system of transient behavioral, normative, and control beliefs. Together or in any combination, these fundamental beliefs determine post-purchase intention towards the coins received as change, fortifying the predictive power of the Theory of Planned Behavior (1985). The intention (I) to covet loose change ($R^2 = .67$, $p<.05$) can be predicted from a combination of attitudes towards (A) the coveting behavior ($R^2 = .19$, $p<.05$), the perceptions about social pressures (SN) from 'important others' ($R^2 = .30$, $p<.05$), and perceptions about control (PBC) over the coins received ($R^2 = .04$, $p<.05$).

The implications of this study will benefit consumers, researchers, and policymakers alike as the societal flow towards cashless payments intensifies.

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CHAPTER I. INTRODUCTION

Loose change has become a problem for me; it is accumulating, and I don't have any use for it. It is an unintentional byproduct of my decision to pay with cash. It is a thoughtless consequence of thoughtful consideration. I am inadvertently amassing it without place or purpose. But it wasn't always that way.

I grew up during a time when loose change could morph into a fifteen-cent snow cone after school, or if I held it long enough, it would become a gift for my mother on her birthday. As a teenager, my independence depended on it. The sixty-cent bus fare to the beach, the forty-nine-cent cheeseburger I had for lunch, and the twenty-five-cent phone call home when the sun went down. My future hinged on its precision; it was the "exact change" lane on State Road 836 as I rushed to get to work on time. As a young father, loose change possessed the magical powers of the tooth fairy, the clout to influence good behavior, and the storage capacity for future indulgences. It had a purpose; it was useful; it was coveted.

As the Chief Financial Officer of Farm Stores, it represented an inconvenient necessity in an otherwise convenient enterprise, something to account for, reconcile, and track to further our customer service mission.

Today, loose change is clutter (Holdefehr, 2019). It's everywhere and nowhere in particular. It floats around my existence—destination unknown—finding its way to the most unlikely places, never together, never alone. It is a disregarded artifact of modern-day commerce and has morphed itself, yet again, into the focus of this research.

Statement of the Problem

The gradual proliferation of non-cash alternatives into traditionally cash-only commerce, such as tolls, parking meters, and vending machines, has decreased the utilization opportunities for consumers to spend the coins received as change from a prior retail transaction. Due to the gradual decrease in utilization opportunities and the inconvenience of holding, consumers are less purposeful with their behaviors towards coins (Zenkić et al., 2019). As such, coins go out of circulation. While out of circulation, coins are either coveted or disregarded. Consequently, these monies are diminishing in transactional value (purchasing power) and perceived value, wherein the transaction value of one dollar is not equivalent to the intrinsic value of four quarters (or ten dimes, or twenty nickels, or a hundred pennies).

Significance

The Federal Government continues to mint new coins despite their durability and decreasing utilization opportunities. As a result, the cumulative total of all coins issued (annually) in the United States far exceeds the amount necessary to support commercial activity. A 2002 study of the attrition rate of U.S. coins in circulation estimated that a coin stock of $11.8 billion was required to satisfy the needs of commerce in the United States (Griffiths, 2002). A 2009 article in the Journal of Money, Credit, and Banking stated, *"While payment card usage has increased dramatically, the stock of outstanding currency has not declined rapidly"* (Amromin & Chakravorti, 2009, p. 315). A CoinNews.net article from January 22, 2021, reveals that the U.S. Mint produced more than 14.7 billion coins in 2020, representing a 24% increase over the prior year (Unser, 2021). The fact that the stock of outstanding currency is not declining suggests that coins

are accumulating within the U.S. household, and consumers' perception of coins' utility and intrinsic value is also diminishing. Loose change is amassing while the consumers' cognitive amount understates its value.

Despite its decreasing share of consumer payments, cash remains the go-to-choice as a store of value, particularly during times of crisis. The onset of the coronavirus pandemic provides solid anecdotal evidence of this point. Data released by the Federal Reserve Bank of St. Louis reveals that between March 11th and March 18th, 2020, the currency in circulation increased by nearly $35 million (or 2%) (FRED Economic Data, 2020), the most significant single weekly increase since the week leading up to December 31st, 1999, commonly known as Y2K (Sinclair, 2020).

By exploring the loose change phenomena, this researcher seeks to understand why some consumers are more purposeful in their behavior towards loose change while others simply disregard it. This research will provide a foundation for extending existing knowledge in behavioral economics, filling a research chasm within the realm of household financial decision-making. Most studies relating to behavioral household finance primarily focus on consumption and savings (Beshears et al., 2018), with the choice of payment methods as a subcategory of consumption but fall short in explaining byproduct decisions, such as what to do with the loose change. This research will fill the gap of prior research into behaviors involving other household financial decisions.

Moreover, economists and policymakers would benefit from creating digital non-cash change alternatives that replace loose change by reducing currency demand and the consequential social welfare improvements. No less important, by creating awareness of the phenomena, households will become more purposeful with their behavior towards

loose change. They will be able to reclaim the lost transaction value of coins out of circulation.

Research Question

Consumer behaviors have not evolved to reflect the changes in utilization opportunities for coins, prompting the following question that attempts to capture how consumers 'think' about and behave towards loose change: What are the factors that influence U.S. consumer intention to covet loose change?

This study employed quantitative methods of gathering, analyzing, and evaluating data. The research used quantitative methodologies to examine factors influencing U.S. consumer intention to covet loose change. This study applied the Theory of Planned Behavior (Ajzen, 1985) to explain the factors influencing a person's intention to covet loose change.

Definition of key terms

Attitudes towards behavior. Represent a person's overall assessment of performing the behavior (Kan & Fabrigar, 2017), in this instance, coveting loose change. In the case of loose change, the factor of interest is the attitudes, mindsets, or beliefs relating to the storing, or safekeeping and accounting for, loose change, rather than attitudes directed towards coins themselves. Attitudes towards behavior refers to an individual's evaluation of performing the behavior; only the salient behavioral beliefs will be the immediate determinants of one's attitude toward a behavior. (Kan & Fabrigar, 2017). Attitude toward a behavior is the degree to which performance of the behavior is positively or negatively valued. According to the model, attitude toward a behavior is determined by

the total set of accessible behavioral beliefs linking the behavior to various outcomes and experiences (Ajzen, 1985).

Behavioral beliefs. Behavioral beliefs link the behavior of interest, in this instance, the act of coveting loose change, to the subjective probability that the behavior will produce a given outcome or experience (Ajzen, 1985). Although a person may hold many behavioral beliefs with respect to any behavior, only a relatively small number are readily accessible at a given moment.

Behavioral intentions. An intention to act or behave in a certain way precedes the act or behavior itself and is an adequate predictor of behavior. In as much as the desire to perform an action is linked with the expectation of some outcome (Aarts, Dijksterhuis, & Midden, 1999), behavioral intentions provide the instructions on which actions to take (Sheeran, 2002) and are assumed to capture the motivational factors that influence behavior (Ajzen, 1991). Intention is an indication of a person's readiness to perform a given behavior and is the immediate antecedent of behavior. Behavior intentions are appropriate predictors of an endeavor rather than a predictor of actual performance (Ajzen, 1985).

Byproduct-decisions. The term byproduct-decisions refers to the small decisions consumers make that emanate from a larger order decision. In this instance, the decision to pay with cash may lead to a byproduct-decision of what to do with the change that results from a cash purchase.

Control beliefs. Control beliefs are influenced by second-hand information and other factors that increase or decrease the individual perceptions of control over the outcome from acting or behaving in a certain way (Ajzen & Driver, 1991). These idiosyncratic

perceptions of control often influence whether a person will even attempt to perform a specific behavior such that an attempt to perform a behavior is predicated on the belief about the advantages of success versus the disadvantages of failure. Control beliefs may be based in part on past experiences with the behavior; and will be influenced by second-hand information about the behavior, the experiences of acquaintances and friends (Ajzen, Driver, 1991).

Covet. The behavioral intention, covet, is defined as the conscious act of storing, safekeeping, and accounting for, loose change in a centralized location within the household and is antonymous to disregarding loose change through the conscious act of doing nothing to store or safekeep them.

Important others. Refers to the influences of those who are significant to a person (such as parents and peers) and who affect decision making (Yoo, 2020, pp. 20).

Loose change. Refers to the coins (in aggregate) received, at the point-of-sale, as a result of a cash transaction. A composite of quarters, dimes, nickels, and pennies.

Non-cash alternatives. Refers to all forms of payment other than cash, including checks, money orders, credit cards, debit cards, gift cards, ACH, and wire transfer payments.

Normative beliefs. Refer to the perceived behavioral expectations of such important referent individuals or groups, referred herein as 'important others' such as the person's spouse, family, friends, teacher, doctor, supervisor, and coworkers (Ajzen, 1985).

Perceived behavioral control. Refers to people's perceptions of their ability to perform a given behavior. It is assumed that perceived behavioral control is determined by the total set of accessible control beliefs, i.e., beliefs about the presence of factors that may

facilitate or impede performance of the behavior. To the extent that it is an accurate

reflection of actual behavioral control, perceived behavioral control can, together with

intention, be used to predict behavior (Ajzen, 1985).

Subjective norm. Refers to the perceived social pressure to engage or not to engage in a

behavior. It is assumed that subjective norm is determined by the total set of accessible

normative beliefs concerning the expectations of 'important other' (Ajzen, 1985).

Theory of Planned Behavior. An extension of (Ajzen & Fishbein, 1980; Fishbein &

Ajzen 1975) theory of reasoned action, the theory of planned behavior (Ajzen, 1985)

posits that behaviors are immediately determined by behavioral intentions, which in turn

are determined by a combination of three factors: attitude toward the behavior, subjective

norms, and perceived behavioral control (Kan & Fabrigar, 2017).

CHAPTER II. LITERATURE REVIEW

Behavioral Economics

Behavioral economics incorporates insights from other social science disciplines in considering the economic decisions of individuals and institutions (Thaler, 2016) by exploring the influences of psychological, cognitive, emotional, cultural, and social factors on those decisions (Lin, 2011). Behavioral economics sets the framework for exploring both big and small decisions that people make (Lee et al., 2011) and provides insight into the influence that psychological factors play in household financial decisions (Beverly et al., 2003). Individuals are inclined to stick with their current state of affairs (Lin, 2011) and make decisions based on present circumstances and the expected consequences from those decisions influenced by many exogenous factors determining how the future will evolve (Thaler, 2016). In traditional economic theory, the central figure is the homo economicus, the idealized rational person as a purposive decision-maker who maximizes utility and expected utility or subjective expected utility under conditions of uncertainty (Lynn & McCall, 2016). However, this framework ignores the reality that individuals are not like their rational, neoclassical kin (Lin, 2011). Behavioral economics challenges the homo economicus rationality assumption by integrating psychological frameworks to change the prospect of how humans make decisions fundamentally. These same factors are applied to behavioral household finance decisions.

Most research relating to behavioral household finance primarily focuses on consumption and savings (Beshears et al., 2018), with the choice of payment methods as a subcategory of consumption. Nonetheless, households and consumers alike routinely

make many transaction-related financial decisions (Beshears et al., 2018), including *how* to pay for goods and services (Rysman, 2009). Typical payment instruments available to consumers include cash, checks, money orders, credit and debit cards, online banking, and bill payment services (Foster et al., 2009).

Prior research has documented the correlation between financial literacy and a broad spectrum of finance-related decisions (Beshears et al., 2018). Household decisions of which payment instrument to use are significantly correlated with various demographic characteristics (Klee, 2006). Education and household income are principal demographic factors explaining consumers' choice of payment for a transaction (O'Brien, Shaun, 2014). Other factors that influence household payment choices include the dollar value of the transaction, the payment-method traits such as speed, convenience, security, incentives, and the necessity of record keeping (Beshears et al., 2018). Psychological factors such as "procrastination, regret, risk aversion, compulsiveness, generosity, altruism, and peer pressure" also influence the choice (Beverly et al., 2003, p.309).

Despite the persistent propagation of non-cash alternatives, cash continues to be an essential instrument for payments; consumer surveys indicate that its strong characteristics of acceptance, convenience, cost, and security persist (Foster et al., 2009). Thus, consumers choose payment instruments most appropriate for each transaction (Klee, 2006). Although cash payments represent a diminishing share of the dollar value of overall retail payments (Greene & Schuh, 2017), cash payments are the preferred method of payment for "small value transactions" (O'Brien, Shaun, 2014, p. 23). For small value transactions, those under $10, cash captures nearly 50% of payments (Kumar & O'Brien, 2019).

Notwithstanding the increase in non-cash alternatives, the evolution of consumer payment behavior has been gradual (Connolly & Stavins, 2015). It gives rise to behaviors that appear to be irrational (Beverly et al., 2003). Household expectations about the future use of coins diverge from what would be reasonably called rational because future expectations invariably depend on recent trends and past experiences (Thaler, 2016). This bounded rationality promulgates the idea that consumers can only make sensible decisions within the limits of time and cognitive capability. Research into these seemingly irrational behaviors has ignored household activities relating to coins or loose change resulting from pre-transaction payment choices. Behavioral household finance research has addressed various factors that influence household financial outcomes. However, those have been focused on allocating household resources between consumption and savings (Beshears et al., 2018) and have ranged from rudimentary money management skills to more sophisticated investment decisions (Beverly et al., 2003). Unfortunately, these studies, the field of behavioral household finance, have failed to adequately capture the decision-making framework surrounding loose change, a byproduct of the preceding purchase and payment method decisions.

Theory of Planned Behavior

Ajzen's (1985) theory of planned behavior provides the appropriate framework for exploring the determinants of an individual's intention to covet or disregard loose change, a predictable behavior derived from the individual's attitudes towards the behavior, subjective norms, and perceptions of behavioral control (Ajzen & Driver, 1991). Ajzen (1985) concluded that individuals would act or behave in specific ways when they have a positive evaluation of the act or behavior; when they believe 'important

others' will approve of the action or behavior; and when they perceive to have control over the outcome of the intended behavior. Moreover, the perception of control can vary across situations and actions (Ajzen, 1991) and assumes that the relative importance of these factors depends in part on the intention under investigation (Ajzen, 1985).

The application of Ajzen's (1985) theory of planned behavior requires that the researcher provide an unambiguous definition of the specified behavior to include a description of its target, the action, context, and timeframe involved, and all of the research model's constructs must be compatible with the stated behavior (Ajzen, 2020).

Behavioral Intentions

Prior research under the dominion of behavior theory determined that people act according to their intentions (Ajzen, 1985); people behave the way they intend to behave or act (Sheeran, 2002). In other words, an intention to act or behave in a certain way precedes the act or behavior itself and is an adequate predictor of behavior. In as much as the desire to act is linked with the expectation of some outcome (Aarts et al., 1999), behavioral intentions provide the instructions on which actions to take (Sheeran, 2002) and are assumed to capture the motivational factors that influence behavior (Ajzen, 1991). Thus, behavior intentions are appropriate predictors of an endeavor rather than a predictor of actual performance (Ajzen, 1985). These intentions are predictable outcomes built upon prior experiences (Khan & Kadir, 2011). Routines are more likely to be set for certain behaviors by purposeful intention (Sheeran, 2002); interruption of these habitual behaviors demands mindful consideration of the expected outcome resulting from the behavior to be performed (Aarts et al., 1999). Ajzen (1991) further emphasized, "a behavioral intention can find expression in behavior only if the behavior

in question is under volitional control" (p. 181). Kan and Fabrigar (2017) reinforced the view that behavior intentions are valuable predictors of behaviors, concluding that actions are determined by behavioral intentions that immediately precede the behavior. However, under some circumstances, perceived behavioral control can directly predict behaviors (Kan & Fabrigar, 2017).

Behavior intentions involve four distinct elements or factors. They can be decomposed into either a positive, to do, or negative, not to do (Sheeran, 2002) and indicate a person's inclination to partake in a specific behavior or activity and is a suitable predictor of actual behavior (Yoo, 2020). The four factors include the behavior, the target object to which the behavior is focused, the context in which the behavior or activity is to be performed, and a time element (Fishbein & Ajzen, 1975). These intentions are formed by perceptions that include attitudinal, social (Ajzen, 1991), devotional and economic (Khan & Kadir, 2011), and emotional and functional objectives (Sweeney & Soutar, 2001). As proximal predictors of action (Sheeran, 2002), a behavioral intention can best be interpreted as the desire to attempt to perform an activity or behave in a certain way (Ajzen, 1985). The theory of planned behavior suggests that behavior is immediately determined by behavioral intentions, which are determined by an amalgamation of three factors: attitude toward the behavior, subjective norms, and perceived behavioral control (Kan & Fabrigar, 2017). The greater the conviction and confidence underlying the intention, the stronger the intention-behavior correlations; remarkably, the very act of overtly expressing an intention may amplify a person's devotion to the behavior (Ajzen, 1985).

Behavioral intentions shape the focus of research into household behavior concentrated on consumer-related areas such as brand loyalty and customer retention (Sampaio & Saramago, 2016), consumption, savings (Beshears et al., 2018), and payment decisions (Rysman, 2009). Studies into consumer behaviors have suggested that behavioral intentions are formed from a multidimensional perception of value (Khan & Kadir, 2011) and can fluctuate in strength and direction, with variations that would not be reflected in the targeted behavior (Ajzen, 1985). In the instant study, individual intentions towards loose change [covet or disregard] are influenced by behavioral beliefs emanating from affective experiences –attraction or aversion to— interacting with loose change, the influence of family and friends, and the useability, functionality, and convenience of using coins. Ajzen and Driver (1991) notes that: "Affective reactions and instrumental costs and benefits, about the normative expectations of 'important others', and about the required resources and other factors that facilitate or impede performance of the behavior" sway a person's intention to behave or act in a certain way (p. 202). Each of the factors mentioned above provides unique and persuasive effects on behavior intention. An examination of these intention factors and their applicability to this study are discussed below.

Attitudes towards behavior

Attitudes towards behavior represent a person's overall assessment of performing the behavior (Kan & Fabrigar, 2017). In other words, in the case of loose change, the factor of interest is the attitudes, mindsets, or beliefs relating to storing, safekeeping, and accounting for loose change, rather than attitudes directed towards coins themselves. A person's attitude toward a behavior is shaped by their assessment of the consequences of

the behavior or activity and the strength of these connections (Ajzen, 1985). The foundational Theory of Reasoned Action contends that one's attitude toward a behavior includes two different aspects: affective attitude and instrumental attitude, which serve as a gauge for measuring one's beliefs about the behavior, whether favorable or unfavorable (affective), harmful or beneficial (instrumental) (Yoo, 2020). These attitudinal beliefs aggregate to shape a person's mindset or attitude towards the behavior, or activity, where the perception that the behavior will lead to a particular outcome is based on the individual's assessment of those consequences (Kan & Fabrigar, 2017).

Subjective Norms

Conversely, subjective norms often originate from a normative belief system stemming from the expectations of 'important others' and the impetuses to conform to those expectations (Ajzen, 1985). In a recent literature review, the researcher applied the theory of planned behavior to factors influencing future music participation and found that subjective norms such as parents' and teachers' influence are vital factors to motivate students' continued music participation (Yoo, 2020). Another study applied the theory to farmer behavior and determined that normative beliefs were indispensable in conceptualizing farmer behavior (Sok et al., 2020).

This normative belief system has been empirically linked to past behavior as a predictor of intentions (Conner & Armitage, 1998), particularly in situations with unstable choices where past behavior becomes the best prognosticator of intent (Sheeran et al., 1999). This norm often appears in the form of a habitual response (Kovac & Rise, 2007). Conner and Armitage's (1998) review provides ample empirical evidence to support past behavior as a prognosticator of discernable variation in intentions and

behavior. While research such as Smith et al. (2008) have examined the role of self-reported past behavior on "consumer conduct" and surmised that past behavior has a positive relationship with consumer purchase intention.

Perceived Behavioral Control

The theory of planned behavior recognizes that not all behaviors are under volitional control (Kan & Fabrigar, 2017) and provides an additional construct, perceived behavioral control, determined by a set of control beliefs (Sok et al., 2020). Control beliefs are influenced by second-hand information and other factors that increase or decrease the individual perceptions of control over the outcome of acting or behaving in a certain way (Ajzen & Driver, 1991). These idiosyncratic perceptions of control often influence whether a person will even attempt to perform a specific behavior. Moreover, the attempt is predicated on the belief about the certainty of essential resources and opportunities and the advantages of success versus the disadvantages of failure. These control perceptions combine with the person's attitudinal, normative, and self-identity beliefs to form the intention to perform the behavior (Ajzen, 1985). Within the sphere of planned behavior research, the perception of control combines the internal idea of self-efficacy with external factors that may obstruct or impede the performance of the behavior (Sparks & Shepherd, 1992).

The theory of planned behavior provides a road map for predicting and understanding behaviors. It has been applied to a variety of research covering behavioral domains in areas such as health and welfare (Meyer, 2002), physical activity (Kan & Fabrigar, 2017), leisure activity (Ajzen & Driver, 1991), music education (Yoo, 2020),

tourism, banking, gambling behavior, smoking, environmental behavior, eating behavior, suicidal tendencies and game playing (Habibah, Hassan, Iqbal, & Naintara, 2018).

Summary and Critic of Relevant Studies

Past research within behavioral economics and behavioral household finance has been primarily focused on cash (and coins) that is immediately available (Greene & Schuh, 2017) and used merely for payments. However, such a narrow view of cash as a payment medium ignores its parallel role as a store of wealth (Amromin & Chakravorti, 2009). Specifically, the research seems to overlook a secondary function for small denominations, where coins are coveted as a store of wealth.

Sparks and Shepherd found that specific control beliefs, although significant, only explained five percent of the variance of perceived control, less than the amount presented in prior uses of this method (Sparks & Shepherd, 1992). Meyer (2002) found that perceived behavioral control lacked a direct influence on intention. Contrary to the precepts of the theory of planned behavior, observed a direct negative impact of control belief on intention (Meyer, 2002). Conner and Armitage (1998) examined the theory of planned behavior and proposed that routine behaviors may not be predictable using the Theory of Planned Behavior model.

Figure 1 depicts the consumer's decision-making process at the point-of-sale, which begins with the choice of 'method of payment' (cash versus non-cash) and is followed by seemingly preordained decisions of what to do with the loose change, the payment transaction byproduct. At the point-of-sale, the retail prices for the items to be purchased combine with sales and use taxes such that the actual amount due may differ from the customer's expectations necessitating the interaction with loose change. These

consequential interactions lead to byproduct decisions swayed by routine rather than logical reasoning (Sheeran, 2002). At this point, the individual will either have a preexistent intention to covet or otherwise disregard the coins received, which is a byproduct of choosing to pay with cash.

Figure 1 Illustration of the Consumer Decision-making Process

CONSUMER	RETAIL POINT OF SALE	HOUSEHOLD

CONSUMER MAKES A PRE-PURCHASE DECISION REGARDING METHOD OF PAYMENT (CASH VERSUS NON-CASH ALTERNATIVES

MERCHANT PREFERS NON-CASH ALTERNATIVES BUT MUST ACCEPT CASH; IF MERCHANT ACCEPTS CASH MUST HAVE COINS AVAILABLE TO MAKE CHANGE

ATTITUDES, SUBJECTIVE NORMS, AND PERCEIVED BEHAVIORAL CONTROL ARE DETERMINANTS OF BEHAVIOR INTENTION TO COVET [OR DISREGARD] LOOSE CHANGE

OPPORTUNITY FOR THE DEVELOPMENT OF A DIGITAL CHANGE ALTERNATIVE

Scholars in the field of behavioral economics, such as Beshears et al. (2018), Beverly et al. (2003), Lee et al. (2011), and Lin (2011), have examined the broad spectrum of individual decision-making ranging from the most significant life and death decisions to the more mundane decisions of which side dish to order at a restaurant. While providing a basis for this research by identifying certain psychological factors that influence household financial decisions, these studies have failed to explain byproduct

decisions such as what to do with loose change. These subsequent spin-off decisions,

such as what to do with the leftovers from dinner or what to do with the loose change,

resulting from the most trivial decisions people make, are a consequence of prior choices.

This research will explore the topography of decision-making between cash use and coin[1]

holdings (Greene & Schuh, 2017).

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[1] The 2017 Greene and Schuh article specifically referred to the distinction between cash use and cash holdings.

CHAPTER III. RESEARCH MODEL AND HYPOTHESES

This study aims to evaluate the determinants of U.S. consumer behavior towards loose change and identify the factors that are more likely to influence the intention to covet loose change positively. Overall, it is assumed that consumers with a positive intention to covet loose change ascribe a higher perceived value to coins than those with the negative intention to disregard coins. Figure 2 below illustrates the hypotheses tested using the Theory of Planned Behavior (Ajzen & Driver, 1992) model.[2]

Figure 2 Research Model
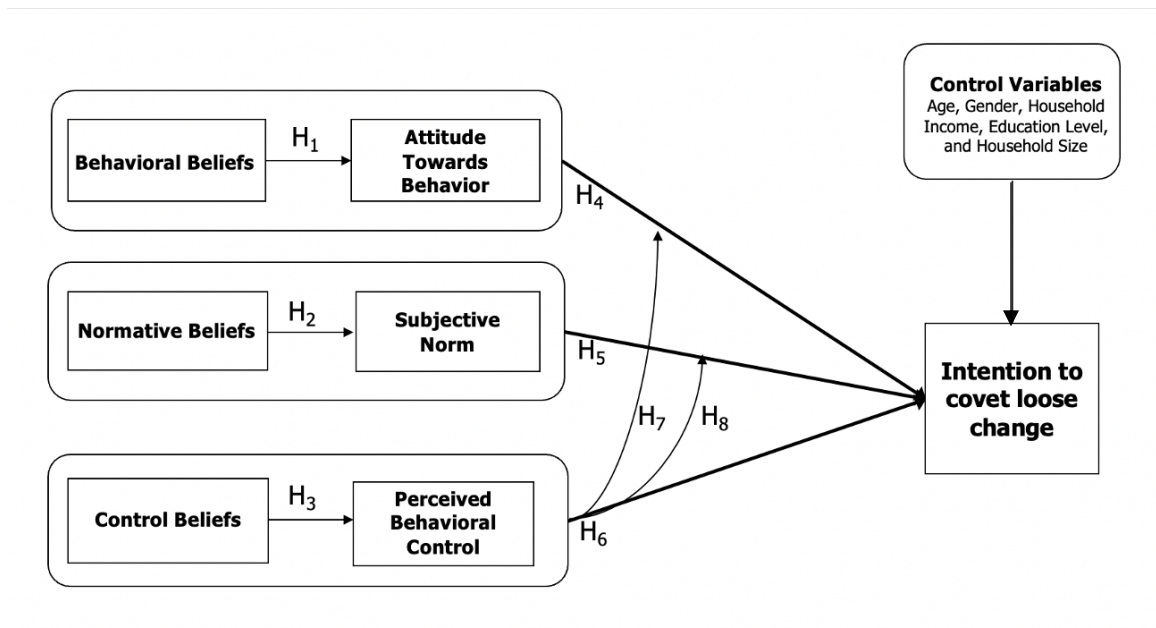
The pre-transaction 'method of payment' decision is borne made by the individual at or before the point of sale; however, the post-transaction behavioral decision of what to do with the loose change often mutates into a household finance decision.

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[2] The model depicted in Figure 2 does not illustrate potential "feedback" effects of the behavior on the antecedent variables, including outcome expectations, behavioral beliefs, normative beliefs, and control beliefs.

The Theory of Planned Behavior proposes that specific belief systems affect attitudes, subjective norms, and perceived behavioral control, thereby influencing an individual's intention to behave or act in a certain way. As applied in this research, a persons' intention to covet loose change (I) after receiving it from a cash transaction will be predicted from a combination of attitudes toward the behavior (A), subjective norms (SN), and perceived behavioral control (PBC). Ajzen (2020) stipulated that, "…the relative importance of these three factors is likely to vary from one behavior to another and from one population to another. In some cases, one or another of the three factors will be found to have no significant effect on intention" (para. 31).

This research applied the Theory of Planned Behavior to a person's intention to covet the coins received as 'change' from a cash purchase. The theory promulgates that salient beliefs influence a person's attitude towards the specified behavior about the consequences of performing the intended action or behavior; that beliefs guide subjective norms about how 'important others' view the behavior; and beliefs about resources, opportunities, obstacles, and impediments shape a person's perception of the ease or difficulty (Meyer, 2002) of storing, safekeeping and accounting for loose change.

The underlying behavioral beliefs (BB) forming a person's subjective assessments about the costs and benefits of storing, safekeeping, and accounting for loose change will have a significant effect on a person's feeling of favorableness or unfavorableness towards the act of storing, safekeeping, and accounting for loose change. Therefore, I propose the following:

H$_1$: **Behavioral beliefs have a positive influence on a person's attitude towards the act of storing, safekeeping, and accounting for loose change.**

A person's underlying normative beliefs (NB) forming the individual's perception, or assessment, of whether 'important others' have a positive or negative opinion towards the act of coveting loose change will significantly influence the person's perceptions about the social pressure (SN) to covet or disregard the loose change received from a cash purchase. Consequently, I propose the following:

H₂: **Normative beliefs have an affirmative effect on a person's perceptions about 'important others' opinions towards the act of coveting loose change.**

The person's underlying perceptions about the presence of factors that enable or hinder engaging in the specified act or behavior (CB) will significantly affect a person's perceptions about the ease or difficulty of storing, safekeeping, and accounting for loose change (PBC). As such, I propose the following:

H₃: **Control beliefs have a positive influence on a person's perceptions about their control over the act of storing, safekeeping, and accounting for loose change.**

A person's attitude, or overall outlook, toward the act of coveting the coins received as change, whether favorable or unfavorable, is used to predict whether the individual intends to covet loose change or simply disregard them. Several studies have shown that attitude towards a behavior has a positive direct effect on intention (Harrison, 1995; Meyer, 2002; Zemore & Ajzen, 2014). Harrison (1995) used the theory of planned behavior to explore 'episodic' volunteer work. Harrison hypothesized[3] that attitude

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[3] Harrison study found partial support for hypothesis, 2(a) where one of three samples tested did not provide support for the hypothesis; however, the difference may have been caused by the significant difference in the experience between the samples measured where past experience may have moderated the relationship between attitude towards the behavior and the intention to attend volunteer work (p. 379).

towards attending volunteer work positively affected intention to attend volunteer work.

Meyer (2002) applied the theory of planned behavior to nursing students' sovereign

behavior of asking or not asking for clinical assignments to complete their education in

nursing. The study measured student attitude or the "feeling of favorableness or

unfavorableness toward asking for an assignment" (p. 110). While Zemore and Ajzen

(2014), in a study examining outpatient completion of substance abuse treatment, found

more favorable attitudes associated with a greater intention to complete treatment.

Individuals who believe that performing a given behavior will lead to largely positive

consequences will hold a favorable attitude toward the behavior. Inversely, negative

beliefs about the outcome will lead to unfavorable attitudes (Ajzen, 1985). As such, a

person's attitude towards the act (or behavior) of coveting positively influences the

intention to covet. It is assumed that consumers with favorable attitudes towards

coveting behavior will have a higher intention to covet loose change. When consumer

attitudes towards the behavior are favorable, the effect on the intention to covet is

positive. I propose the following:

> **H₄:** **Attitude towards coveting loose change will have a positive direct effect on the intention to covet loose change.**

An individual's subjective norms concerning loose change sway their behavioral

intention towards coins, where the strength of the effect increases along the normative

spectrum from unfavorable to favorable. Various studies have shown that subjective

norms are a significant predictor of intention to perform a target behavior. For example,

a recent study about music participation demonstrated that 'important others' can

significantly influence students' intention to continue participating in music ensembles

(Yoo, 2020). Subjective norms provide an appraisal of social pressures (Conner & Armitage, 1998) and other normative forces (Smith et al., 2008) on a person's intention to behave or act in a distinct way such that the greater the strength of the normative force, the stronger the effect on intention. Therefore, it is assumed that a person with more favorable normative beliefs towards loose change possesses stronger intentions to covet. In other words, individuals who have demonstrated positive normative beliefs are more likely to covet loose change in the future. Accordingly, I propose the following:

> **H5:** **Subjective norms will have a positive direct effect on the intention to covet loose change.**

Perceived behavioral control is determined by the total set of control beliefs about the presence of circumstances that may enable or inhibit the accomplishment of the behavior (Sok et al., 2020) and represents an individual's subjective degree of control over the performance of the behavior itself (Ajzen, 2002). Prior research, such as Pavlou and Fygenson's (2006) study of e-commerce adoption, has postulated that perceived behavioral control is a significant predictor of a person's intention toward e-commerce behavior. Consistent with Ajzen and Driver (1991), the greater the perceived behavioral control, the stronger the inclination towards e-commerce adoption by consumers. Similarly, an individual's perception of behavioral control is reflected in their assessment of circumstances that facilitate or impede perceived control over the outcome from acting or behaving in a certain way (Ajzen & Driver, 1991). When receiving coins as change from a cash purchase, it is assumed that individuals with greater perceived control over potential usage of loose change will have a greater intention to covet loose change. Therefore, when the perceived behavioral control over the care custody and use of coins

is high, the effect on the intention to covet loose change is positive. Thus, I propose the following:

H₆: **The perception of behavioral control will have a positive direct effect on the intention to covet loose change.**

An individual's perceptions about their ability to control the performance of the behavior moderate the relationship between the person's attitude towards the behavior and the intention to act or behave in a certain way such that as the perception of control increases the attitude towards the behavior improves thereby increasing the likelihood that the intention will lead to the predicted behavior. As a person's perceived behavioral control increases or decreases, the strength of the attitude towards the behavior will be moderated, either positively or negatively, by the increase, or decrease, in the perception of control. I propose the following:

H₇: **Perceived behavioral control has a significant moderating effect on the relationship between attitude towards the specified behavior and the intention to engage in the behavior.**

Similarly, the individual's perceptions about control moderate the relationship between the person's subjective norms and their intentions. As the perceptions about control increase or decrease, the strength of the subjective norms will be moderated, either positively or negatively, by the increase or decrease in the perceived behavioral control.

H₈: **Perceived behavioral control has a significant moderating effect on the relationship between subjective norms and intention to engage in the specified behavior.**

The effect of an individual's readily accessible behavioral beliefs (BB) on intention is expected to be mediated by the person's attitude towards coveting loose change. Therefore, I propose the following:

H9:   Attitude towards the behavior will mediate the relationship between the individual's behavioral beliefs and their intentions.

The effect of a person's readily accessible beliefs about the opinions of 'important others' on their intended behavior is expected to be mediated by their perceptions about the social pressure to covet, or disregard, loose change. Therefore, I propose the following:

H10:   Subjective norms will mediate the relationship between the individual's normative beliefs and their intentions.

The effect of a person's readily accessible beliefs about the presence of factors that may facilitate or impede the performance of the specified behavior is expected to be mediated by perceptions about their ability to store, safekeeping, and account for loose change. Therefore, I propose the following:

H11:   Perceived behavioral control will mediate the relationship between the individual's control beliefs and their intentions.

CHAPTER IV. METHODOLOGY

This chapter specifies the details regarding the development of the research design, the research model, survey instrument construction, data collection methods, the assumptions made, and techniques used to test the hypothesized relationships in this study.

Research Design

I utilized a cross-sectional research design because this study does not have a time dimension; it is focused on studying and drawing inferences from existing differences between people and their behavior when receiving loose change (USC Libraries, 2021).

I employed a self-administered survey questionnaire to examine the preexistent factors predictive of whether individuals intend to covet the loose change they receive after a cash purchase. The TPB model includes both exogenous and endogenous variables. Exogenous variables are not dependent on yet influence the model's endogenous variables. The exogenic factors include behavioral beliefs, control beliefs, normative beliefs (Ajzen, 1985), which serve to shape a person's attitude towards the intended behavior; their perceptions of the social pressures surrounding the intended behavior; and the perceptions about their ability to perform the behavior (Ajzen & Driver, 1991).

Structural Equation Modeling (SEM)

Consistent with other research where the theory of planned behavior was used to study a variety of behavioral intentions, the survey data will be analyzed using multivariant techniques to evaluate the strength of the causal relationships shaping the behavioral intention (Meyer, 2002). I used structural equation modeling (SEM) to gauge

variations in the variables that influence behavioral intentions. The analysis examined the underlying belief structure looking for patterns of differences in behavioral beliefs, control perceptions, and normative beliefs that form a person's attitude towards coveting coins, the subjective norms, and their perception of control over the action and outcomes of coveting loose change (Ajzen, 1985). Factors that ultimately determine a person's intention to perform or not to perform a given behavior, in this instance, the intention to covet loose change.

I chose Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the application of the Theory of Planned Behavior (TPB) to the study of a person's behavioral intention towards the coins received after a cash purchase. The PLS-SEM is suitable for this study since it has been utilized in various fields of study, including behavioral sciences and marketing. Moreover, PLS-SEM is appropriate since it does not impose the *prima facia* assumption of normality on the analysis (Wong, 2013) while supporting the estimation of predictive models encompassing complex and multifaceted constructs, indicator variables, and structural paths (Hair et al., 2019). PLS-SEM is appropriate for examining formative and reflective models (Hair et al., 2019) techniques employed in this research. It facilitates the visual assessment of the interactions among the model constructs detected solely by their effects on variables surveyed (Wong, 2013).

For the data analysis, I used IBM's Statistical Package for the Social Sciences (SPSS) software, SPSS version 27.0, and SmartPLS version 3.3.3 (Ringle et al., 2015).

Sample, selection, and context

The unit of analysis will be the U.S. consumer. To effectively apply TPB and adhere to Ajzen's Principle of Compatibility[4], I first had to define the focal behavior explicitly, or activity, the setting in which it takes place, and the time frame within which it is to occur (2020). In this instance, the behavior of interest, *'coveting loose change,'* is defined as the conscious act of storing or safekeeping and accounting for loose change resulting from a cash purchase and received at the point of sale. All other constructs must be compatible with the coveting behavior. The research model (Figure 2) adheres to this principle of compatibility (Ajzen, 2020).

I performed a *post hoc* test to verify that I had met the minimum threshold statistical power, the probability that it will yield statistically significant results (Cohen, 1988) from the sample. To determine whether the sample size is large enough and the model strong enough to detect significant effects in the relationships between the variables, I chose a 95% confidence level and a threshold minimum statistical power of .800, commonly used in behavioral research (Gaskin, Post-hoc power analysis in SmartPLS and AMOS, 2013). I used Daniel Soper's Free Statistics Calculator: Post-hoc Statistical Power for Multiple Regression to perform the test of power for each of the constructs, given a 95% confidence level, the number of predictors, the observed R^2, and the sample size (Soper, 2021).

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[4] The Principle of Compatibility states that the Theory of Planned Behavior must correspond to the behavior in four elements, beginning with an unambiguous definition of the behavior of interest in terms of its target, the action involved, the context in which it occurs, and the time frame. All constructs must correspond to the behavior in all four elements (Ajzen, 2020).

I also performed a power analysis using SmartPLS bootstrapping to determine the *t*-statistics for the complete sample and each group. A commonly used threshold *t*-statistic is 1.960, where anything above the baseline statistic would be significant. A power analysis is necessary when a path that was expected to be significant is not (Gaskin, 2013).

Means, Standards Deviations, Skewness, and Kurtosis

Descriptive statistics for model constructs

After determining that the sample size has sufficient statistical power for this study, I calculated the descriptive statistics for each construct and the control variables. Although not necessary when using PLS-SEM, the central assumption of many commonly used statistical tests is normally distributed data (Laerd Statistics, 2020). I performed specific statistical tests and graphical analyses to determine whether the data used in this study follows a normal distribution. Objective in their nature, statistical tests can be excessively responsive to large sample sizes. In situations where arithmetical tests are overly sensitive, good judgment must be exercised in assessing the normality using graphical interpretation (Laerd Statistics, 2018). The following tests and visual analysis were performed on each of the variables to validate the assumption of normality; an alpha level (*p*-value) of .05 was used for all statistical tests.

Skewness and Kurtosis

Skewness is a measure of symmetry, while Kurtosis gauges the peaked of the sample distribution. According to the website statisticssolutions.com, for normal distributions, skewness should be within the range of ±2, and kurtosis values should be within the range of ±7 (Complete Dissertation, 2021).

Shapiro-Wilk's test

The Shapiro-Wilk's test is more appropriate for small sample sizes, typically less than 50; the likelihood of producing significant results using this test increases with sample sizes larger than 200. Wilk's test should *not* be significant to meet the assumption of Normality (Complete Dissertation, 2021).

Kolmogorov-Smirnov test

The Kolmogorov-Smirnov test is another widely used method to test the assumption of Normality. This test should *not* be significant to meet the assumption of normality (Complete Dissertation, 2021).

A graphical assessment of the data was conducted by reviewing the following data distribution plots to determine whether the data for each variable is normally distributed:

- Q-Q plot: If a distribution is normal, the plotted values will roughly follow the expected values' trend line (SPSS Statistics version 27.0.0, 1989, 2020).

- A histogram (with a 'normal' curve overlay) is a visual summary of the distribution of values and is satisfactory if roughly symmetrical. The overlay of the normal curve helps assess the skewness and Kurtosis (SPSS Statistics version 27.0.0, 1989, 2020).

- Stem-and-leaf plots values to display the distribution's shape using the original data. The plot for each model's variables visualizes the skew statistic, whether positive or negative (SPSS Statistics version 27.0.0, 1989, 2020).

Measures

The Theory of Planned Behavior has been widely used to examine consumer behavior. The measurement instrument used to gather the empirical evidence to support the hypotheses was crafted following Ajzen's (2006, 2013) prescription for questionnaire development. I constructed the survey instrument adhering to Ajzen's *Sample TPB*

Questionnaire, which follows a sequential narrative corresponding to the research model

(Figure 2). Each variable is represented by a series of questions crafted to attain insight

into attributes of behavioral intentions towards loose change. Items concerning the

behavior at interest, coveting loose change, were formulated based on this researcher's

experience in cash handling for retail enterprises and input from informed pilot

participants. The survey was organized to measure six exogenous variables, three

endogenous independent variables[5], and one dependent variable. For most questions, the

instrument utilized a seven-point Likert scale, ranging, for example, from strongly

disagree, disagree, neutral, agree, and strongly agree, as well as always, most of the time,

about half the time, sometimes, and never. The questionnaire also included nine inquiries

involving household demographics, including the respondent's age (range), gender,

marital status, ethnicity, household income, household size, and education level. Table 1

summarizes the survey block framework used in the survey instrument for this study.

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[5] One of the endogenous variables, Perceived Behavioral Control (PBC) has both a direct relationship with the dependent variable, intention, and has a moderating effect on the Attitude-Intention and Subjective Norm-Intention relationships. Additionally, Ajzen's theory of planned behavior was designed to predict both 'intention' and the 'behavior' of interest, where PBC has both a direct relationship with intention, and behavior. For this study, Ajzen's TPB is being applied as a predictive model only of the intention to covet loose change and not the behavior itself.

Table 1 Summary of Survey Blocks

Item range	# of items	Variable Name	Abbr.	Specimen item from questionnaire	Likert Response Prompts	Type	Ajzen's TPB Definition
Q5.8, Q5.12 and Q5.16	3	Attitude towards behavior	A	Q5.12 For me to use coins on a regular basis is___	7pt scale ranging from Extremely prudent (1) to Extremely foolish (7)	Endogenous	"Attitude toward a behavior refers to the level to which performance of the behavior is positively or negatively valued and is determined by the total set of accessible behavioral beliefs linking the behavior to various outcomes and experiences."
Q5.3, Q5.7, and Q5.10	3	Subjective Norm	SN	Q5.3 Most people who are important to me think that I should save coins on a regular basis.	7pt scale ranging from Strongly agree (1) to Strongly disagree (7)	Endogenous	"Subjective norm is the perceived social pressure to engage or not to engage in a behavior and it is assumed that subjective norm is determined by the total set of accessible normative beliefs concerning the expectations of important referents"
Q5.6 and Q5.9	2	Perceived Behavioral Control	PBC	Q5.6 Whether or not I use coins on a regular basis is completely up to me	7pt scale ranging from Strongly disagree (1) to Strongly agree (7)	Endogenous	"Perceived behavioral control refers to people's perceptions of their ability to perform a given behavior and it is assumed that perceived behavioral control is determined by the total set of accessible control beliefs, i.e., beliefs about the presence of factors that may facilitate or impede performance of the behavior."
Q5.4, Q5.5, Q5.13, and Q5.17	4	Intention to covet loose change	I	Q5.17 I intend to save coins on a regular basis	7pt scale ranging from Strongly agree (1) to Strongly disagree (7)	Endogenous	"Intention is an indication of a person's readiness to perform a given behavior, and it is considered to be the immediate antecedent of behavior."
Q7.2-7.11	9	Behavioral Beliefs	BB	Q7.4 Keeping the coins that I receive as change from a cash purchases on a regular basis will give me the opportunity to save for things I want ot [sic] buy in the future.	7pt scale ranging from Extremely unlikely (1) to Extremely likely (7)	Exogenous	"A behavioral belief is the subjective probability that the behavior will produce a given outcome or experience. Behavioral beliefs link the behavior of interest to expected outcomes and experiences."
Q8.2-8.8	6	Control Beliefs	CB	Q8.2 How often do you encounter unanticipated situation where loose change would be necessary.	7pt scale ranging from Far too little (1) to Far too much (7)	Exogenous	"Control beliefs have to do with the perceived presence of factors that may facilitate or impede performance of a behavior. It is assumed that these control beliefs — in combination with the perceived power of each control factor — determine the prevailing perceived behavioral control."
Q10.2-10.5	4	Normative Beliefs	NB	Q10.5 My peers think that I should save the coins I receive as change from a cash purchase.	7pt scale ranging from Extremely likely (1) to Extremely unlikely (7)	Exogenous	"Normative beliefs refer to the perceived behavioral expectations of such important referent individuals or groups as the person's spouse, family, friends and It is assumed that normative beliefs — in combination with the person's motivation to comply with the different referents — determine the prevailing subjective norm."
Q12.2-12.10	9	Demographics		Commonly used	Commonly used	Control	Various household demogrpahic questions regarding age, gender, ethnicity, marital and employment status, household income and size and education level.

Control Variables

Inherent in the Theory of Planned Behavior is the assumption that "personality traits, intelligence, demographic characteristics, life values, and other variables of this kind" (Ajzen, 2020, p. 318) influence intentions and behavior. They are considered personal characteristics which indirectly affect a person's behavioral (BB), normative (NB), and control beliefs (CB). Ajzen (2020) explained that TPB recognizes that these personal characteristics can provide valuable information about the forerunners to these personal belief systems that are not provided by the application of the theory itself. In other words, the model's latent constructs are assumed to mediate the effects of these personal characteristics on intentions and behavior.

The survey instrument included items to isolate these personal traits by collecting various household demographic data, including respondents' age, gender, education,

income level, and household size to be used as control variables. Data was also collected on the participants' ethnicity, marital, and employment status.

Policy papers considering consumer payment choice, the antecedent prerequisite decision to the loose change decision in this study, have examined demographic and socioeconomic factors that influence an individual's stated payment preferences. Income level, for example, is a significant factor in the policy-making area of payment-method choice. Nearly two-thirds of the unbanked and underbanked consumer purchases are made using cash as a payment method, resulting in more exposure to loose change for this segment of the U.S. consumer population (Wang, 2019). Another policy paper reported that the demographic traits of age, education, and household income are correlated with payment-method choices (O'Brien, 2014).

Prior research has characterized age, education, income, and household size as factors [influencing] attitudes, subjective norms, perceived behavioral control, and intentions. For example, a 2015 study examining the adoption of e-learning at Jordanian universities proposed that age significantly affects attitudes, subjective norms, and perceived behavioral control on students' intention to adopt e-learning (Altawallbeh et al., 2015). Other research has similarly proposed that education and income shape attitudes, subjective norms, and perceived behavioral control and intentions. For example, one such study examining leisure-time physical activity suggested that the perceived behavioral control and intention to exercise are more robust at higher education and income levels (Amireault et al., 2008). Another study on the effects of budgetary and knowledge constraints on residential energy conservation found household income and

household size to be statistically significant predictors of conservation intention (Sengupta & Cantrell, 2021).

Measurement model assessment

My preliminary analysis included the *post hoc* evaluation of the statistical power of the sample and goodness-of-fit testing and was followed by exploratory factor analysis. I used SPSS to conduct a principal axis factor analysis using the survey responses to the questionnaire applying *varimax rotation* to measure the appropriateness of the sample using the Kaiser-Meyer-Olkin Measure of Sampling Adequacy ("KMO"). The KMO can vary from 0 to 1 and provides a measure of sampling (Kaiser, 1975). The goal is to achieve a KMO value close to 1. Kaiser proposed the following rule of thumb: KMO greater than .90, 'marvelous,' in the .80s, 'meritorious,' in the .70s, 'middling,' in the .60s, 'mediocre,' in the .50s, 'miserable,' and less than .50, 'unacceptable.'

PLS-SEM Analysis

This research contains both reflective and formative measurements; therefore, I performed formative and reflective (Wong, 2013) assessments separately for each part of the model on the cross-sectional survey used to collect data. The analysis included a review of the factor loadings, composite reliability, AVE, and the Fornell-Larcker criterion. Because the measurement model consists of reflective and formative variables, the redundancy analysis, VIF, significance, and relevance of the indicator weights was also examined (Hair et al., 2019). I first reviewed the indicator factor loadings to determine whether acceptable item reliability met the recommended threshold of .70. I then assessed the internal consistency reliability using composite reliability, which uses 'weighted' items based on individual construct loadings and often is more precise than

Cronbach's alpha which tends to understate the internal consistency reliability of the construct due to its sensitivity to the number of indicators are used. (Hair et al., 2019). Concerning internal reliability, Ajzen (1991) acknowledged that "the belief-based measures of attitude, subjective norm and perceived behavioral control are **not** [emphasis added] expected to have high internal consistencies (alpha reliabilities)[6]" (p. 193); therefore, composite reliability was also used as a better measure of inner consistency among the items (Silaparasetti et al., 2017). Surveys can only measure and collect self-reports of prior action or the prospect of intended action not yet taken. They cannot measure social action. As such, survey responses must be regarded as "approximate indicators of what the researchers had in mind when they framed the questions" (Babbie, 2016, p. 280). Ajzen (2002) further clarified, "It is shown that perceived behavioral control over performance of a behavior, though comprised of separable components that reflect beliefs about self-efficacy and controllability, can nevertheless be considered a unitary latent variable in a hierarchical factor model" (p. 665).

Lastly, I used bootstrap confidence intervals applying the percentile method to test further the constructs' reliability falling below the threshold minimums (Hair et al., 2019). I used the Fornell-Larker criterion and an examination of the item cross-loadings to gauge the model's discriminant validity. The structural model was examined using the path coefficients between the constructs, which are indicators of the model's predictive ability (Silaparasetti et al., 2017).

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[6] In Ajzen's 1991 study of Leisure activity, the construct Perceived Behavioral Control scored a CA of (.36) yet the researchers decided to retain the index (Ajzen & Driver, Prediction of leisure participation from behavioral, normative, and control beliefs: An application of the theory of planned behavior, 1991).

Structural model assessment

I surveyed the VIF values to determine whether the collinearity biased the regression. Once satisfied with the measurement model assessment, I evaluated the structural model. Evaluation of the structural model included a review of the coefficient of determination (R^2), the cross-validated redundancy measure Q^2, and the path coefficients' statistical significance and relevance. Additionally, I assessed the model's out-of-sample predictive power using PLSpredict (Hair et al., 2019). I used the VIF values to determine whether the regression results were biased by collinearity. VIF values must be below 5.0 (Wong, 2013) to avoid collinearity problems but ideally close to 3.0 or less (Hair et al., 2019).

I determined the R^2 value (coefficient of determination) for each endogenous construct to measure the model's explanatory power. The R^2 values should be interpreted based on the context of the study, and from related studies, values greater than .25 are expected in consumer research (Wong, 2013). To further assess the model's predictive accuracy, the Q^2 was ascertained, which mingles facets of out-of-sample prediction within-sample explanatory power (Hair et al., 2019). The Q^2 was determined using SmartPLS' Blindfolding procedure applying the recommended omission distance of 5 to 10; Q2 values range from 0.02(small), 0.15 (medium), and 0.35 (large) (Wong, 2013).

Hypothesis Testing

I used a partial least squares approach to structural equation modeling to test the hypotheses, which accounts for measurement error while providing the statistical tools to evaluate the relationships between the model's constructs and the observed items (Hair et al., 2019).

Data Collection Process

The survey was distributed on August 31, 2021. It consisted of a 56-item

questionnaire[7] (Exhibit 1), hosted by Qualtrics (fiu.ca1.qualtrics.com) and administered

to 490[8] respondents recruited using Amazon's Mechanical Turk ("MTurk") at the cost of

$.71 per respondent. Eligibility criteria for participants in the study required that

participants be at least eighteen years of age and reside within the United States.

Bias

Efforts were made to guard against response bias by varying the placement of

related terms (Babbie, 2016), providing sporadic 'distracting questions' unrelated to this

research throughout the survey, and providing limited contextual details to avoid creating

a biased pattern of responses that may confound the study's purpose.

Pilot Study

Formative research

Pursuant to Ajzen's (2006) recommendation for the development of the items

used in this study's questionnaire, formative research was conducted employing an

'informed pilot' technique where a small sample of individuals was invited to assist with

the development of the survey items to elicit the relevant salient beliefs suitable for the

behavior and population of interest. The informed pilot study was conducted in the

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[7] Four items included within the questionnaire were included as distracting *common method bias questions* and are unrelated to this research question, loose change, or coins in general and four questions were eliminated because they require further development and are reserved for future research: two questions inquiring about the respondent's immediate past behavior, and two items seeking asking about the person's self-identity.

[8] The data set included 500 survey responses, ten of which were recorded under 'test'. The 'test' responses have been omitted from this analysis.

spring of 2020 and 2021. The goal of the informed pilot studies was to formulate 5 to 6

items to assess each of the TPB's primary constructs as applied to this study and to elicit

readily available accessible behavioral outcomes, normative referents, and control factors

(Ajzen, 2006) relating to the receiving and handling of loose change.

Pilot Study

A final pilot study was conducted in June 2021.   The participants (*n*=100) in the

pilot research were recruited using MTurk. The pilot study was conducted to obtain

information about salient behavioral attitudes, normative referents, control beliefs (Ajzen

& Driver, 1991), and intentions (Meyer, 2002) toward coveting behavior. Built upon

Ajzen's Theory of Planned Behavior Questionnaire, the survey instrument was crafted to

measure the respondent's fundamental belief structures underpinning the intention to

covet loose change. The survey instrument was organized sequentially, corresponding to

the research model illustrated in Figure 2. The goals set forth for the pilot were

established to get a sense of the time necessary to complete the questionnaire, whether

the statements and questions are unambiguous, and whether the questions adequately

represent the variables contemplated by the research model (Babbie, 2016). A pilot test

of the questionnaire was conducted using MTurk, which provided 100 respondents

representative of the study population. There were no problems encountered during the

pilot study.

CHAPTER V. DATA ANALYSIS AND RESULTS

This chapter provides a comprehensive explanation of results obtained from the data analysis performed using the methods outlined in the preceding chapter. SPSS was primarily used for a descriptive summary of the key variables, normality tests, and exploratory factor analysis. SmartPLS was used for post hoc sample size testing and later for confirmatory factor analysis to ascertain the constructs' validity and reliability and analyze the data and test the hypotheses. The findings from the hypotheses testing are reported in this section.

Sample Size

I recruited participants using MTurk. The participants were required to reside within the United States and be at least eighteen years of age. Only participants meeting the criteria were directed to the questionnaire hosted on the Qualtrics platform.

The participants who met the eligibility criteria were presented with the study questions. Those who completed the survey using MTurk were compensated $.71/item. A total of 500 responses were initially recorded. The survey data was exported directly to SPSS and SmartPLS from Qualtrics. The data were first examined for incomplete answers, duplicate, and inconsistent records. Out of 500 responses, ten were identified as 'Test' in the Response Type field and contained incomplete records. The ten 'Test' submissions have been excluded from the final analysis. Overall, 98% of the responses were accepted and used in this study. The average time spent completing the survey was approximately 9 minutes, with a mean duration for the (n=490) respondents that completed the questionnaire of 523.59 seconds (SD 409.41).

A *post hoc* power analysis was performed using Soper's Statistical Power Calculator Table 2 summarizes each parameter and its observed statistical power. Four hundred ninety responses (63.8% male; 36.1% female) were used in the analyses. The number of responses (sample size) for the data analysis was above the threshold power established applying Soper's (2021) method.

Table 2 Soper's Post-hoc Statistical Power Calculation

Contruct	Symbol	Number of predictors (items)	Confidence (probability level)	Observed R*square*	Observed Statistical Power
Intention to covet loose change	I	4	95%	0.668	1.000
Attitude towards behavior	A	3	95%	0.190	1.000
Subjective norms	SN	3	95%	0.296	1.000
Perceived behavioral control	PBC	2	95%	0.044	0.993

Means, Standards Deviations, Skewness, and Kurtosis

The minimum, maximum, mean, standard deviation, kurtosis, and skewness for each item, the aggregated variables, and control variables are reported in Table 3.

Table 3 Means, Standards Deviations, Skewness, and Kurtosis

Symbol	Construct	Item #	Mean	Standard Deviation	Skewness	Kurtosis
		Formative indicators: 'Salient' beliefs about the behavior, control, and norms				
BB	Behavioral Beliefs	Q7.2	2.540	1.203	1.103	1.481
		Q7.3	2.700	1.383	0.926	0.803
		Q7.4	2.551	1.203	0.804	0.665
		Q7.5	3.310	1.822	0.820	-0.352
		Q7.7	2.912	1.392	0.925	0.736
		Q7.8	3.078	1.624	0.752	-0.050
		Q7.9	2.688	1.214	0.926	1.202
		Q7.10	2.788	1.430	1.106	1.158
		Q7.11	2.612	1.279	1.014	1.520
CB	Control Beliefs	Q8.2	3.020	1.417	0.821	0.198
		Q8.3	3.329	1.553	0.562	-0.343
		Q8.4	3.210	1.563	0.699	-0.076
		Q8.5	3.302	1.612	0.704	-0.094
		Q8.7	3.161	1.432	0.705	0.112
		Q8.8	3.110	1.478	0.725	-0.044
NB	Normative Beliefs	Q10.2	3.229	1.634	0.608	-0.501
		Q10.3	3.020	1.504	0.650	-0.164
		Q10.4	3.016	1.572	0.779	0.037
		Q10.5	3.241	1.581	0.650	-0.307
		Reflective indicators: Attitude, Subjective Norms, Perceived Behavioral Control and Intentions				
A	Attitude towards behavior	Q5.8	3.302	1.560	0.435	-0.497
		Q5.12	3.202	1.494	0.660	-0.019
		Q5.16	3.343	1.588	0.439	-0.555
SN	Subjective Norms	Q5.3	3.400	1.661	0.593	-0.577
		Q5.7	3.631	1.664	0.251	-0.871
		Q5.10	3.210	1.550	0.631	-0.303
PBC	Perceived Behavioral Control	Q5.6rc	2.996	1.488	0.831	0.300
		Q5.9	3.045	1.490	0.776	-0.013
I	Intention	Q5.4	3.273	1.586	0.540	-0.394
		Q5.5	3.378	1.625	0.447	-0.638
		Q5.13	3.020	1.475	0.698	-0.005
		Q5.17	2.984	1.460	0.781	0.063
		Demographic indicators: Control Variables				
Control Variables	Education	Q12.10	4.024	0.702	3.576	-1.275
	Age	Q12.2	2.629	0.939	0.395	1.025
	Gender	Q12.3	1.361	0.480	-1.671	0.580
	Household Income	Q12.7	2.616	0.805	-0.049	-0.206
	Household Size	Q12.8	2.788	1.002	-0.979	-0.334

Tests of normality

Although assumptions about data distribution are not necessary for PLS-SEM modeling, as cited in (Habibah, Hassan, Iqbal, & Naintara, 2018) according to Hair Jr. et al. (2013), "it is worthwhile to examine distributional properties" (Habibah et al., 2018, p. 6) as nonnormal data may cause problems with the assessment of the parameters'

significance, where extremely nonnormal data amplify the resulting standard errors and decrease the likelihood that some relationships will be assessed as significant (Hair et al., 2017). Therefore, each aggregate variable was analyzed using statistical and graphical methods to determine whether the sample data was normally distributed. Although objective, statistical tests can be excessively responsive to large sample sizes; therefore, when arithmetical tests are overly sensitive, good judgment must be exercised in assessing the normality using graphical interpretation (Laerd Statistics, 2018). The following tests and graphical analysis were performed on each of the variables to validate the basic assumption of normality[9]; an alpha level *p*-value of .05 was used for all statistical tests.

Skewness and Kurtosis

Skewness is a measure of symmetry, while Kurtosis gauges the peaked of the sample distribution. For normal distributions, skewness should be within the range ± 2, and kurtosis values should be within the range of ± 7 (Statistics Solutions, 2021); Table 4 indicates that all the variables tested meet the threshold tolerance for Skewness and Kurtosis.

Shapiro-Wilk's test

This test is more appropriate for small sample sizes, typically less than 50 (Laerd Statistics, 2020); the likelihood of producing significant results increases with sample sizes larger than 200 (Statistics Solutions, 2021). Wilk's test should *not* be significant to

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[9] This researcher recognizes that the assumption of normality is not a requirement for PLS-SEM. The information has been provided as supplementary information in conformity with past research that has applied the theory of planned behavior but used alternative multivariate regression analysis techniques.

meet the assumption of normality. Therefore, if the *p*-value of the Shapiro-Wilk Test is greater than 0.05, the data is normal.

Kolmogorov-Smirnov test

The Kolmogorov-Smirnov test is another widely used method to test the assumption of normality. This test should *not* be significant to meet the assumption of normality (Statistics Solutions, 2021). Table 4 presents the results from two well-known tests of normality, the Kolmogorov-Smirnov and the Shapiro-Wilk tests. Since these statistical tests are sensitive to sample size, where the sampling distribution tends to be normal in large samples, regardless of the shape of the data, the data would appear not to follow a normal distribution warranting further investigation. Moreover, the central limit theorem provides that if the sample data are approximately normal, the sampling distribution will also be normal (Ghasemi & Zahediasl, 2012).

Table 4 Tests of normality

Variable Description	Symbol	Kolmogorov-Smirnov			Accept/Reject null hypothesis	Shapiro-Wilk			Accept/Reject null hypothesis
		Statistic	df	Sig.		Statistic	df	Sig.	
Behavioral Beliefs	BB	0.061	490	0.000	Accept	0.975	490	0.000	Accept
Normative Beliefs	NB	0.124	490	0.000	Accept	0.953	490	0.000	Accept
Control Beliefs	CB	0.074	490	0.000	Accept	0.976	490	0.000	Accept
Attitude towards behavior	A	0.081	490	0.000	Accept	0.979	490	0.000	Accept
Subjective Norms	SN	0.075	490	0.000	Accept	0.980	490	0.000	Accept
Perceived Behavioral Control	PBC	0.079	490	0.000	Accept	0.981	490	0.000	Accept
Intention to covet loose change	I	0.094	490	0.000	Accept	0.979	490	0.000	Accept

Due to the large sample size (*n*=490), the statistical tests were distorted and inconsistent with the visual assessment that I conducted by reviewing the following data distribution plots to determine whether the data for each variable is normally distributed:

- Q-Q plot: (Appendix 2) The values observed generally followed the expected values' trend line.

- Histogram (with a normal curve): (Appendix 3) The distribution of values appears sufficiently symmetrical.

- Stem-and-leaf plots: (Appendix 4) The stem plot is normally distributed since there are no obvious or extreme outliers.

The visual inspection of the graphs confirmed that the data is normally distributed.

Respondent demographic profile

The profile of those surveyed (*n*=490) consisted of 313 (or 63.9%) men and 177 (or 36.1%) women. Participant age was categorized using five age ranges from 18 to 24, 25 to 34, 35 to 44, 45 to 54, and over 55 and was not a measure for each year of age. The participants' ages were dispersed as follows: fifteen participants (or 3.1%) were between the ages of 18 to 24; 266 (or 54.3%) were between the ages of 25 and 34; 125 participants (or 25.5%) were between 35 and 44 years of age; 54 (or 11.0%) were between the ages of 45 to 54, while 30 (or 6.1%) were older than 55 years of age. The mean response was 2.63 (S.D. .940), indicating that the mean age was close to 35 years of age.

Respondents' ethnicity was predominantly white, represented by 400 (or 81.6%) of the respondents, 16 (or 3.3%) Hispanic or Latino, 52 (10.6%) black or African American, 19 (or 3.9%) Asian/Pacific Islander and 3 (or .6%) which were not otherwise classified.

Most of the participants were employed, with 444 (or 90.6%) working forty or more hours per week and another 38 (or 7.8%) employed part-time. Eight or (1.6%) of the respondents classified themselves as unemployed. None of the participants classified themselves as retired. Household income was tightly concentrated in two ranges of $25,000 to $50,000 with 148 (or 30.2%) participants and $50,000 to $100,000 with another 247 (or 50.4%) of the participants. There were 46 (or 9.4%) participants with

incomes less than $25,000, 46 (or 9.4%) with incomes between $100,000 and $200,000, only three respondents (or .6%) had incomes greater than $200,000.

Married or in a domestic partnership represented 363 (or 74.1%) of the respondents, while 121 (or 24.7%) were single, never married, and 6 (or 1.2%) reported as Divorced or widowed and never remarried. Household size was categorized using four answer choices: (a) I live alone; (b) two-member household; (c) three-member household; and (d) four or more living together. Participants were members of larger households, where 142 (or 29%) lived with four or more, another 165 (or 33.7%) were part of a three-member household, and 120 (or 24.5%) were part of a two-member household. Only 63 (or 12.9%) of the respondents reported living alone. Nearly a third of the respondents, 139 (or 28.4%), reported having no minor children residing with them; while 310 (or 63.3%) had one to two minors and 41 (or 8.4%) had more than two under the age of 18 included in their household.

Interestingly, the sample population was very educated. More than two-thirds of the respondents, 337 (or 68.8%), had completed a four-year degree program, and another 96 (or 19.6%) had completed post-graduate degrees. Whereas only 34 (or 6.9%) had fulfilled two-year or trade school requirements, 19 (or 3.9%) had achieved a high school equivalent. Four (or .8%) participants had not completed high school.

Table 5 provides a summary of the respondent's demographic profile. Certain demographic characteristics (age, gender, education level, household income, and household size) have been isolated and serve as control variables in this study.

Table 5 Respondent demographic profile

Demographics	Frequency $\eta = 490$	Power (%)
Age (mean 2.63, SD .940)		
18-24	15	3.1%
25-34	266	54.3%
35-44	125	25.5%
45-54	54	11.0%
Over 55	30	6.1%
Gender (mean 1.363, SD .481)		
Male	313	63.9%
Female	177	36.1%
Ethnicity (mean 1.39, SD .870)		
White	400	81.6%
Hispanic or Latino	16	3.3%
Black or African American	52	10.6%
Asian/Pacific Islander	19	3.9%
Other	3	0.6%
Employment status (mean 1.11, SD .362)		
Employed full-time (40+ hours per week)	444	90.6%
Employed part-time (less than 40 hours per week)	38	7.8%
Unemployed	8	1.6%
Marital status (mean 1.77, SD .452)		
Single never married	121	24.7%
Married or in a domestic partnership	363	74.1%
Divorced or Widowed and never remarried.	6	1.2%
Houshold income (mean 2.62, SD .806)		
less than $25,000 per year	46	9.4%
between $25,000 and $50,000	148	30.2%
between $50,000 and $100,000	247	50.4%
between $100,000 and $200,000	46	9.4%
more than $200,000	3	0.6%
Household size (mean 2.79, SD 1.003)		
I live alone	63	12.9%
Two member household	120	24.5%
Three member household	165	33.7%
Four or more living together	142	29.0%
Minor children in the household (mean 1.80, SD .573)		
None	139	28.4%
1 to 2 members are under the age of 18	310	63.3%
More than 2 members are under the age of 18	41	8.4%
Education level (mean 4.02, SD .703)		
Less than a high school diploma	4	0.8%
High school diploma or equivalent	19	3.9%
Two year college or trade school	34	6.9%
Four year college or university with a degree (e.g. BA or BS)	337	68.8%
Post Graduate Master's degree (e.g. MA, MS, or MEd) or higher	96	19.6%

Measurement Model Assessment

I performed an initial principal axis factor analysis using SPSS after reverse coding several variables[10] on the 40-items[11] from the questionnaire using *varimax* rotation for the data obtained from the respondents (*n*=490). Table 6 displays the results of the analysis returned a Kaiser-Meyer-Olkin Measure of Sampling Adequacy ("KMO") of .925 'marvelous' according to Kaiser (1975).

Table 6 KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser–Meyer–Olkin Measure of Sampling Adequacy.		.925
Bartlett's Test of Sphericity	Approx. Chi–Square	6688.585
	df	435
	Sig.	.000

Table 7 displays the analysis performed to obtain eigenvalues for each factor in the data. The seven factors extracted explained 52.8% of the variance. The scree plot, shown in Figure 3, was unambiguous with an inflection point at seven factors consistent with the theory of planned behavior diagram (Ajzen, 2019) as adapted for this study.

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[10] The following variables were reverse coded in SPSS: Q5.2, Q5.6, Q5.14-15, Q6.2-3, Q7.2-7.11, Q8.2-8, Q11.2-3. The recoded variables are used for the analysis.

[11] Survey questionnaire has 68 items in total, including nine of which are related to household demographics and four excluded 'common method bias's guarding inquiries. Items Q3.2 through Q3.11, Q4.2 and Q4.3, Q6.1 and Q6.2, and Q11.2, and Q11.3 were eliminated from the analysis for lack relevancy to this study; any data not used in this analysis has been maintained and may be used for future research on this topic. Items Q5.14 and Q5.15, direct measures of the latent constructs PBC and SN, respectively, were eliminated due to inconsistent results with indicator loadings and reliability. Exhibit 6 contains a detail the items excluded from this analysis.

Table 7 Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.930	29.767	29.767	8.479	28.262	28.262	5.128	17.092	17.092
2	4.114	13.714	43.481	3.645	12.149	40.411	3.495	11.650	28.743
3	1.838	6.128	49.609	1.381	4.604	45.015	2.787	9.291	38.034
4	1.423	4.744	54.353	0.986	3.287	48.301	2.387	7.957	45.991
5	1.098	3.661	58.014	0.617	2.056	50.358	1.208	4.026	50.017
6	0.863	2.878	60.892	0.366	1.222	51.579	0.443	1.477	51.494
7	0.808	2.695	63.587	0.355	1.185	52.764	0.381	1.270	52.764

Figure 3 Scree plot
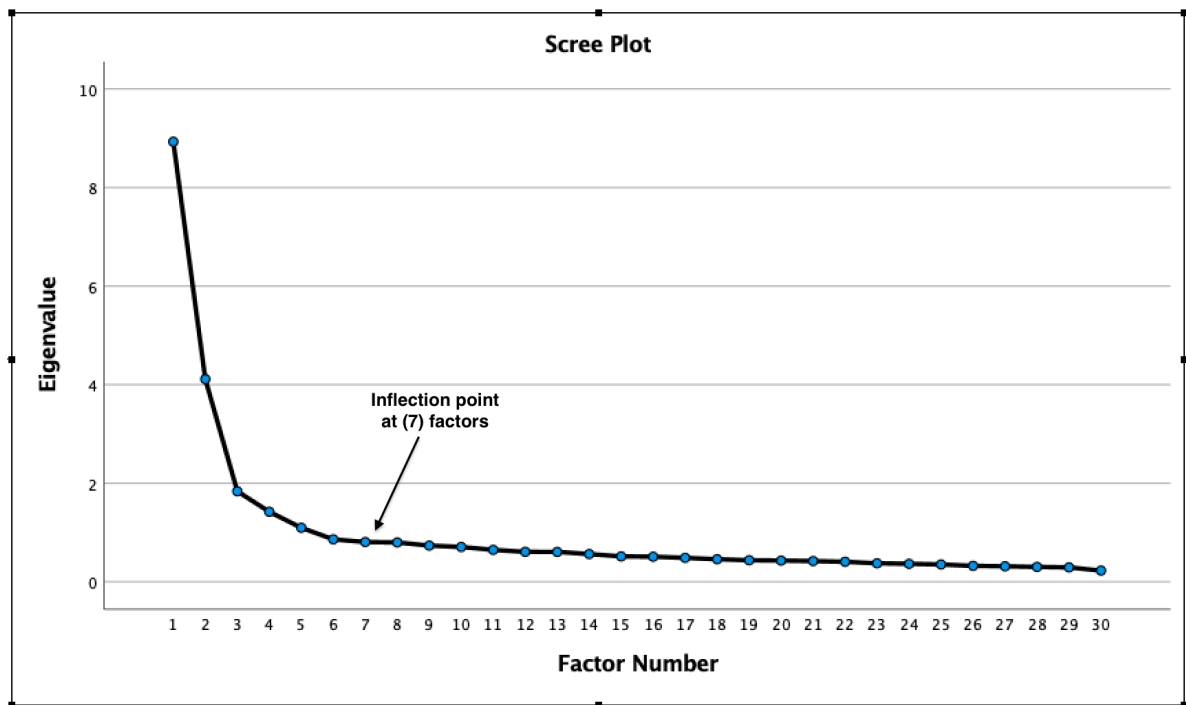
PLS-SEM Analysis

This study includes one dependent variable, three reflective endogenous predictor variables, and three formative exogenous beliefs that underpin the Theory of Planned Behavior (TPB) framework. There is no need to report on the indicator reliability, internal consistency reliability, and discriminant validity when a formative indicator is

used (Wong, 2013). The formative indicators in this model include a persons' behavioral beliefs (BB), their control beliefs (CB), and their normative beliefs (NB).

*Internal consistency reliability*

I proceeded to test whether the survey questions crafted for this study reliably and consistently measured the endogenous constructs as depicted in the Theory of Planned Behavior path diagram, Figure 4. I used SPSS and SmartPLS for the reliability analysis to study the properties of each measurement scale and the items that compose those scales. The reliability analysis provided information about the relationships between the individual items in each scale. Composite Reliability measures were used to gauge the internal consistency reliability. The readily accessible behavioral, normative, and control beliefs are formative indicators that affect attitudes, subjective norms, and perceived behavioral control and are distinct from the reflective (or direct measures) for each endogenous latent construct. For the formative indicators, there is no requirement for internal consistency since they are considered causal determinants, or antecedents (Ajzen, 2021), each representing a unique "dimension of meaning" of the construct and collectively representing all dimensions of the latent variable (Garson, 2016, p. 19).

The questionnaire items measure a person's attitude towards storing, safekeeping, accounting for, and otherwise coveting loose change; the subjective norms associated with loose change; and the perceived behavioral control over the outcome of coveting loose change. Figure 4 is a schematic representation of the TPB as applied to the behavioral intention to covet the loose change received after a cash purchase. According to Ajzen's (2006) theory, three main considerations influence an individual's actions and behaviors; they are, "…beliefs about the likely consequences of the behavior (behavioral

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beliefs), beliefs about the normative expectations of others (normative beliefs), and beliefs about the factors that may facilitate or impede performance of the behavior (control beliefs)" (p. 1).

The following reliability analysis adheres to the schematic above by grouping questions into scales, as depicted in Figure 4.

Figure 4 Measurement Model Assessment
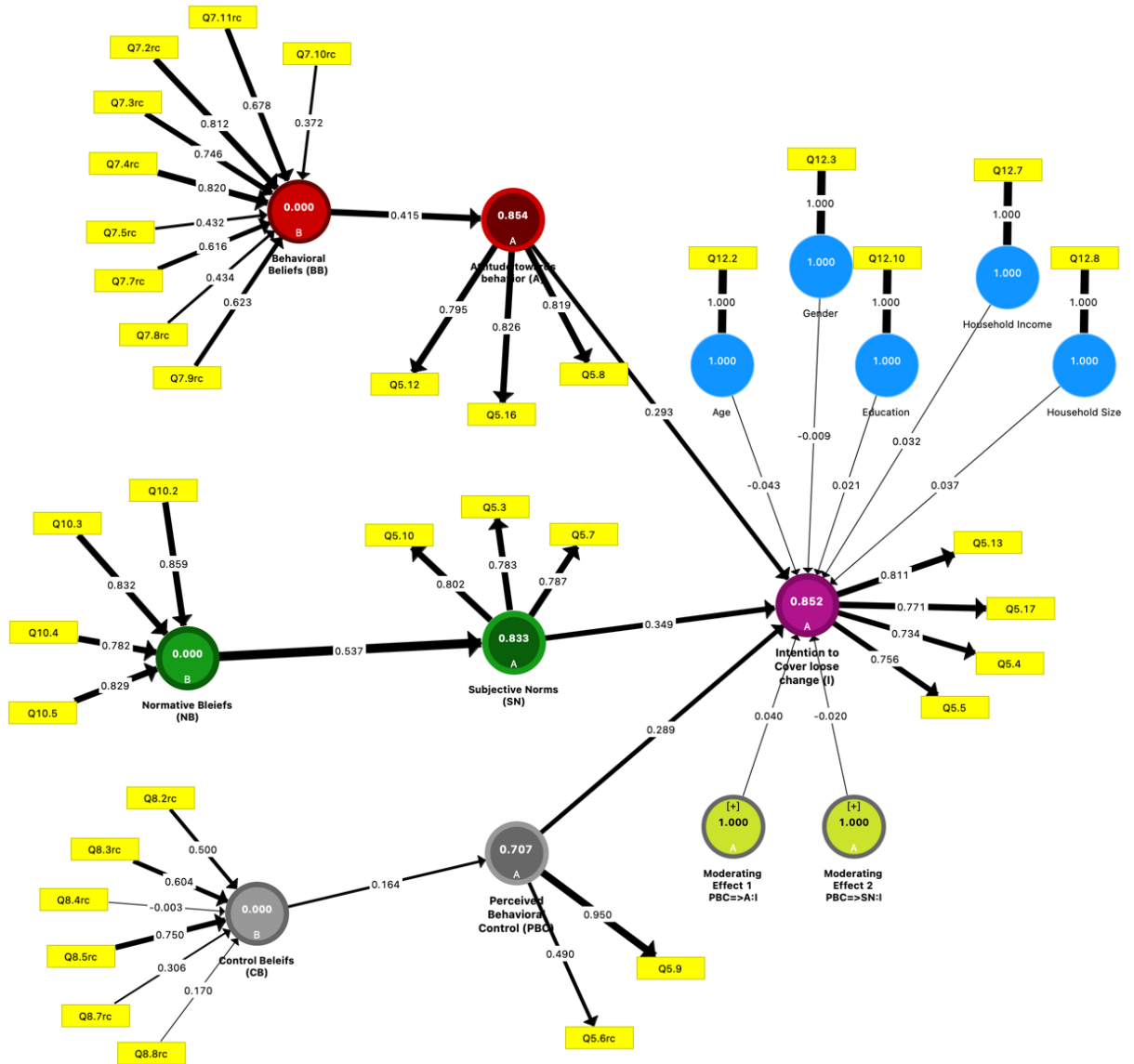
The items were grouped based on the variables represented in the theory of

planned behavior questionnaire with three exogenous variables defining behavioral

beliefs (BB), normative beliefs (NB), and control beliefs (CB) that influence three

reflective endogenous variables for attitude towards coveting behavior (A), subjective norms (SN), and perceived behavioral control (PBC) that together combine to form a person's intention (I) to covet loose change. Ajzen (2006), recognizing that the formative indices are not selected based on any criteria that would assure high alpha reliability, explained how the *"salient"* belief system provides the foundations for attitudes, subjective norms, and the individual's perception of control over the behavior and the outcomes associated with the behavior are at times inconsistent with the person's overall attitude where confirmation of construct validity and its predictive capabilities is ascertained *"when research using the measures developed by the investigator supports the predictions derived from the theory"* Ajzen, 2020, para.17).

Whereas reflective models assume that the construct is the 'reality' and that each of its' indicators is a sample of all possible indications of that actuality, formative models assume that the indicator is the 'reality.' Together, the indicators develop the latent construct (Garson, 2016). Accordingly, eliminating a formative indicator is much more consequential; doing so would alter the intended meaning of the underlying belief system described herein (Gaskin, 2017). For formative constructs, construct validity is determined by the strength and significance of the path from the indicator to the construct and necessitates an assessment of how much an indicator's influence is inflated because it correlates with other independent items in the model by examining the variable inflation factor (VIF) among the formative items measures the degree of collinearity among the indicators in a formative measurement model (Hair et al., 2017). The correlation of formative indicators is unnecessary since each characterizes a specific facet of meaning collectively attributed to the examined construct. Therefore, the measure of convergent

validity for formative constructs is not appropriate or applicable (Freeze & Raschke, 2007). Unlike reflectively measured constructs, convergent validity and discriminant validity is not meaningful for formative constructs because formative measures do not assume a correlation among the indicators. Rather the assumption is that of a distributed set of indicators to maximize the amount of explained variance in the latent concept.

Attitude towards behavior (A)

Attitude (A) is directly measured across three reflective indicators (items Q5.8, Q5.12, and Q5.16), revealing respondents' attitudes towards coveting loose change. I tested the internal consistency of the three indicators, which resulted in the composite reliability coefficient for the three items of.854 for the complete data set (*n*=490), confirming that the items have relatively high internal consistency where the higher the values, ranging between 0 and 1, the more reliable the item scale.

Subjective Norms (SN)

Similarly, subjective norms (SN) were measured across three indicators (items Q5.3, Q5.7, and Q5.10), reflecting social pressures surrounding the respondents' willingness to covet loose change. Correspondingly, I tested the three items reflecting subjective norms, which resulted in composite reliability of .833, substantiating that the items have high internal consistency.

Perceived Behavioral Control (PBC)

Next, I analyzed the two reflective indicators (items Q5.6 and Q5.9), signifying the participant's perception of their ability to store, account for, or otherwise covet loose change, which resulted in composite reliability of .707, validating that the two items exceeded the commonly used threshold for internal consistency.

Intention (I)

Finally, I evaluated the reflective items indicating a person's readiness or intention to covet loose change. The resultant composite reliability is .852, verifying that the four items (Q5.4, Q5.5, Q5.13, and Q5.17) measuring intention have relatively high internal consistency. The results for each scale are summarized in Table 8.

Table 8 Measurement Model Assessment

Latent Construct	Symbol	Indicators	Convergent Validity						Internal Consistency Reliability	
			Outer Loadings	p-value	Outer Weights	p-value	Average Variance Extracted (AVE)	p-value	Composite reliabiltiy	p-value
			>.0.400	<.050	>0.200	<.050	>.500	<.050	>0.600	<.050
Attitude towards 'coveting' behavior	A	Q5.8	0.818	0.000	0.407	0.000	0.661	0.000	0.854	0.000
		Q5.12	0.795	0.000	0.409	0.000				
		Q5.16	0.825	0.000	0.414	0.000				
Subjective Norms	SN	Q5.3	0.782	0.000	0.421	0.000	0.624	0.000	0.833	0.000
		Q5.7	0.786	0.000	0.387	0.000				
		Q5.10	0.801	0.000	0.457	0.000				
Perceived Behavioral Control	PBC	Q5.6	0.492	0.000	0.065	0.000	0.574	0.000	0.707	0.000
		Q5.9	0.947	0.000	0.883	0.000				
Intention to covet loose change	I	Q5.4	0.734	0.000	0.286	0.000	0.591	0.000	0.852	0.000
		Q5.5	0.753	0.000	0.344	0.000				
		Q5.13	0.812	0.000	0.344	0.000				
		Q5.17	0.771	0.000	0.325	0.000				

Construct Validity

Construct validity assesses how well the operationalization of a theoretical concept is captured by items used to measure the construct (Freeze & Raschke, 2007). To determine whether the survey questionnaire appropriately distinguished between people who covet loose change and those who otherwise disregard it, convergent and discriminant validity measures were calculated for each construct. The questionnaire was arranged so that each construct was represented by a group of items or indicators expected to correlate with one another positively. Construct validity determines whether a

set of reflective indicators truly reflect the latent construct that those items are believed to be measuring (Demo et al., 2012).

Convergent validity

Convergent validity measures how a construct converges or correlates with alternative measures of the same construct. The average variance extracted (AVE) measures a latent construct's convergent validity, which indicates the degree to which a latent construct explains the variance of its indicators. A minimum value of .50 is the commonly accepted threshold value for convergent validity. Evaluated by analyzing the average variance extracted (AVE) for all items on each construct, convergent validity explains how a construct converges to explain the variance of its items (Hair et al., 2019). Table 8, Measurement Model Assessment, contains the average variance extracted (AVE) and indicator reliability exhibited in the outer loadings for each reflective construct. The values shown in Table 8 demonstrate that the latent constructs have convergent validity values and reliability measures within the ranges of generally accepted values (Habibah et al., 2018)[12].

Discriminant validity

According to the website Analysis INN (2020), the simplest method to ascertain a measurement model's discriminant validity is using SPSS Bivariate Correlations to examine the correlation coefficient between the items of interest. The correlations

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[12] Item # Q5.6, "Whether or not I use coins on a regular basis is completely up to me." did not meet the meet the .700 commonly accepted threshold for outer loadings; however, the latent construct, perceived behavioral control's overall composite reliability met the threshold, therefore, the indicator was included in the analysis.

indicate the extent to which the model's latent variables are distinct or unrelated from one another. Table 9 displays the Pearson's Correlation for each construct.

Table 9 Pearson's Correlation for the latent constructs

	Correlations							
Variable		**BB**	**CB**	**NB**	**A**	**SN**	**PBC**	**I**
BB	Pearson Correlation	1	.628**	.490**	.370**	.369**	-0.034	.291**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.453	0.000
CB	Pearson Correlation	.628**	1	.265**	.161**	.190**	-0.076	0.083
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.094	0.065
NB	Pearson Correlation	.490**	.265**	1	.541**	.528**	.185**	.561**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000
A	Pearson Correlation	.370**	.161**	.541**	1	.717**	.353**	.707**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000	0.000
SN	Pearson Correlation	.369**	.190**	.528**	.717**	1	.331**	.723**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.000
PBC	Pearson Correlation	-0.034	-0.076	.185**	.353**	.331**	1	.363**
	Sig. (2-tailed)	0.453	0.094	0.000	0.000	0.000		0.000
I	Pearson Correlation	.291**	0.083	.561**	.707**	.723**	.363**	1
	Sig. (2-tailed)	0.000	0.065	0.000	0.000	0.000	0.000	

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

Summary of Correlation Table:

The endogenous constructs reflecting a person's attitude, subjective norm, and perceptions of control are theoretically autonomous from one another. In reality, however, the same provocations can influence all or some of the antecedent exogenous variables which form the individual's underlying behavioral, normative, and control beliefs and are therefore expected to be intercorrelated (Ajzen, 2020).

The formative variable representing a person's behavioral beliefs (BB) is positively correlated with the other constructs, except for its correlation with PBC, which was negative and insignificant. The exogenous variable representing a person's control beliefs positively correlates with subjective norms (SN) and attitudes (A). Still, the

correlations between perceived behavioral control (PBC) and intention (I) are not significant, indicating that these relationships may be non-linear. In contrast, the formative variable representing a person's normative beliefs (NB) correlates positively with each of the model's variables.

The endogenous variables reflecting a person's attitude towards coveting behavior (A) and subjective norms (SN) correlate positively with all other variables in the model. While the latent construct representing the person's perception of control (PBC) is positively correlated with the other endogenous constructs, however, its correlations with the antecedent variable representing a person's beliefs about their ability to perform the behavior (CB) and their normative beliefs (NB) are negative and not significant indicating that the relationships may not be linear.

The aggregate variable representing a person's intention to covet the loose change received resulting from a cash purchase (I) is positively correlated with all higher-order constructs; the strongest correlation among the constructs is between intention (I) and subjective norms (SN), (.723, $p<.05$), followed by a strong correlation with attitudes (A) (.707, $p<.50$) and a moderate correlation with a person's perception of control (PBC), (.363, $p<.05$). The correlations with control beliefs (CB) are insignificant, indicating that these relationships may be non-linear.

Another commonly used gauge of discriminant validity for reflective variables is the Fornell-Larcker criterion which evaluates the degree of shared variance between the model's endogenous constructs. Table 10 displays the Fornell-Larcker Criterion matrix exhibiting the level of empirical distinction among the constructs in the structural model (Hair, et al., 2019).

Table 10 Fornell-Larcker Criterion

	Fornell-Larcker Criterion			
	A	I	PBC	SN
A	0.814			
I	0.712	0.768		
PBC	0.562	0.635	0.638	
SN	0.724	0.727	0.557	0.790

To determine whether a formative indicator contributes enough to the latent construct, I examined the collinearity among the indicators. After assessing the collinearity detailed in Table 11, I determined that the formative indicators' contributions to shaping each construct are statistically significant and relevant.

Table 11 Measurement model assessment of formative constructs

Latent Construct	Symbol	Indicators	Collinearity VIF
			<3.000
Behavioral Beliefs	BB	Q7.2	1.956
		Q7.3	1.770
		Q7.4	1.858
		Q7.5	2.229
		Q7.7	1.787
		Q7.8	2.003
		Q7.9	1.534
		Q7.10	1.562
		Q7.11	1.599
Normative Beliefs	NB	Q10.2	2.013
		Q10.3	1.837
		Q10.4	1.758
		Q10.5	1.915
Control Beliefs	CB	Q8.2	1.698
		Q8.3	1.481
		Q8.4	1.721
		Q8.5	1.927
		Q8.7	1.395
		Q8.8	1.456

Structural Model Assessment

After completing the measurement model assessment, I evaluated the structural model using SmartPLS by applying a complete bootstrapping sampling technique with 5,000 samples employing a two-tailed test of its significance applied to the inner and outer models (Ringle et al., 2015). SmartPLS provides alternative types of measurement model setups, including Mode A, where causality is from the construct to its measures (indicators); and Mode B, which assumes that indicators are distinct and not fungible, where each formative item captures a specific aspect of the construct (Hair, et al., 2017).

The programming for each exogenous construct was set to Mode B, appropriate for formative variables. In contrast, the endogenous variables were set to Mode A, the commonly used setting for analyzing reflective items (Ringle et al., 2015). A detail of the SmartPLS settings used can be found in Exhibit No. 5. The beta coefficient indicative of the effect size and the T-statistic representing the significance of the path coefficients were used to determine whether the data supported the study's hypotheses. I tested the direct effects and significance of each formative variable (the underlying antecedent behavioral, normative, and control beliefs) on the corresponding latent constructs reflecting a person's attitude, subjective norms, and perceived behavioral control; the direct effects and significance of the relationships between the three reflective constructs and the dependent variable; the moderating effect of perceptions of control on a person's attitude and subjective norms; as well as the indirect effect of the formative variables on the dependent variable.

Collinearity

I also evaluated each variable's variance-inflation-factor (VIF) to determine whether the independent variables are linearly correlated, a phenomenon affecting the particular predictor. A conservative threshold of VIF <3.000 was deemed ideal for this study (Hair et al., 2019). Table 11 (formative variables) and Table 13 (reflective variables) includes the VIF values for each construct; the collinearity statistics for all variables measured were below the 3.000 thresholds. Therefore, multicollinearity is not a concern.

Path coefficients and significance

I evaluated the relationships between the constructs by examining the path coefficients and t-statistics to understand the strength and significance of the relationships between the variables. A threshold critical T-value of 1.96 and a significance level of 5% are commonly used. The results of evaluating the relationships in the structural model are displayed in Table 14, which confirms which relationships are significant and whether the stated hypotheses are supported.

Model's (f^2) Effect Size

SmartPLS provides an estimate of effect size (f^2) for all combinations of relationships between the endogenous and exogenous constructs in the structural model, which provides an analytical basis to determine the relevance of the predictor constructs in their contribution to the R^2 of the dependent construct(s) (Hair et al., 2017). The effect sizes are commonly classified as no-effect (0.000) small ($.02 < f^2 > .15$), medium ($.15 < f^2 > .35$) and large ($f^2 > .35$) (Hair, Risher et al., 2019). Table 12 displays the effect size for each construct relationship.

Table 12 Models(f^2) Effect Size

Relationships explored	f squared	Effect Size
A -> I	0.113	Small
BB -> A	0.237	Medium
CB -> PBC	0.046	Small
NB -> SN	0.427	Large
PBC -> I	0.152	Small
PBC=>A:I -> I	0.006	No effect
PBC=>SN:I -> I	0.004	No effect
SN -> I	0.158	Small

Note. A = attitude towards the behavior; BB = behavioral beliefs; CB = control beliefs; I = intention to perform behavior; NB = normative beliefs; PBC = perceived behavioral control; SN = subjective norms.

The estimated effect size that the latent construct reflecting the person's attitude towards coveting loose change (A) has on the dependent variable representing the individual's intention to covet of .113 denotes a small effect size. While the antecedent exogenous variable defining behavioral beliefs has a medium effect size of .237 on attitude.   Control beliefs, however, have a small effect size on the person's perceptions about control, and PBC's subsequent effect on the behavioral intention (I), .152, is also deemed small. Whereas normative beliefs, .427, have a large effect on subjective norms (SN). However, the effect of subjective norms on intention .158 is small. The moderating

effects of perceived behavioral control on the attitude-intention and subjective norm-intention relationships had no effect or predictive relevance.

Coefficients of determination (R^2) and Predictive Relevance (Q^2)

Next, I examined the structural model's explanatory power, R^2, for the complete sample. The coefficient of determination, R^2, indicates the model's predictive capabilities and represents the variance explained, in percentage terms, by the three predictor variables in Ajzen's TPB model as applied herein. Table 13 lists the R^2 values for each of the model's endogenous variables A, I, PBC, and SN, which demonstrates that the model's three endogenous constructs explain nearly sixty-seven percent 66.8% of the variance in a person's intended behavior when receiving loose change from a cash purchase.

In addition to measuring the model's predictive accuracy R^2, I used SmartPLS' blindfolding technique, which calculates Stone-Geisser's Q^2, to ascertain the path model's predictive relevance. When using a blindfolding approach, the objective is to maximize the use of all observations for prediction where values greater than zero indicate the predictive relevance of the endogenous construct (Ringle et al., 2015). Table 13 summarizes the computation of Q2, which is greater than zero for all the endogenous variables, indicating support for the predictive relevance of the model's endogenous variables.

Table 13 Coefficients of determination (R^2) and Predictive Relevance (Q^2)

Endogenous Constructs	Symbol	Indicators	Collinearity VIF	R2	Q2
Attitude towards 'coveting' behavior	A	Q5.8	1.525	0.190	0.101
		Q5.12	1.408		
		Q5.16	1.542		
Subjective Norms	SN	Q5.3	1.350	0.296	0.171
		Q5.7	1.422		
		Q5.10	1.339		
Perceived Behavioral Control	PBC	Q5.6	1.039	0.044	0.006
		Q5.9	1.039		
Intention to covet loose change	I	Q5.4	1.439	0.668	0.374
		Q5.5	1.408		
		Q5.13	1.675		
		Q5.17	1.552		

Results

The PLS-SEM approach was set up to analyze the relationships hypothesized in the research model. The herein analysis controlled for age, gender, education level, household income, and household size. An illustration of the full structural model is included in Figure 5, and a summary of the results is contained in Table 14. The Theory of Planned Behavior asserts that behavioral intention is predicted by any combination of attitude towards the behavior, the subjective norms, or pressures to act a certain way and the individual's perceptions about their control over things that may facilitate or impede behavioral achievement (Ajzen, 1985).

Accordingly, hypothesis 1 posited that behavioral beliefs have a positive influence on a person's attitude towards the act of storing, safekeeping, and accounting for loose change. The results indicate that the postulated relationship between a person's

underlying behavioral beliefs and their attitude towards coveting loose change are

supported and significant, (β) = 0.433, statistics (t) = 9.364, and (p) < 0.05.

Similarly, hypothesis 2 theorized that the individual's underlying normative

beliefs have an affirmative effect on a person's perceptions about 'important others'

opinions towards the act of coveting loose change. The results show that the hypothesized

relationship between a person's normative beliefs and their subjective norms is supported

and significant, (β) = 0.542, statistics (t) = 11.680, and (p) < 0.05.

In the same way, hypothesis 3 theorized that the individual's underlying control

beliefs have a positive influence on a person's perceptions about their control over the act

of storing, safekeeping, and accounting for loose change. The results support the

hypothesized relationship between a person's control beliefs and their perceptions about

their control and are significant, (β) = 0.200, statistics (t) = 2.754, and (p) < 0.05.

Hypothesis 4, which stipulated that attitude towards coveting loose change will

have a positive direct effect on the intention to covet loose change, is supported and

significant, (β) = 0.203, statistics (t) = 6.202 and significant value (p) < 0.05.

Hypothesis 5, which specified that subjective norms would have a positive direct

effect on the intention to covet loose change, is supported and significant, (β) = 0.348,

statistics (t) = 7.040, and (p) < 0.05.

Hypothesis 6 hypothesized that the perception of behavioral control will have a

positive direct effect on the intention to covet loose change. The results support the

hypothesized relationship and is significant, (β) = 0.291, statistics (t) = 7.207 and (p) <

0.05.

Additionally, hypothesis 7 offered that perceived behavioral control has a significant moderating effect on the relationship between attitude towards the specified behavior and the intention to engage in the behavior. While hypothesis 8 proposed that perceived behavioral control has a significant moderating effect on the relationship between subjective norms and intention to engage in the specified behavior. Neither hypothesis 7, nor 8 are supported by the data and are not significant, $(\beta) = 0.037$, statistics (t) $= 0.764$ and $(p) = 0.445$ and $(\beta) = -0.017$, statistics (t) $= 0.415$ and $(p) = 0.678$, respectively.

Additionally, certain specific indirect effects were also postulated, including hypothesis 9, which propounded that *attitude towards the behavior will mediate the relationship between the individual's behavioral beliefs and their intentions.* Hypothesis 9 is supported and significant, $(\beta) = 0.127$, statistics (t) $= 4.923$ and $(p) < 0.05$. Similarly supported and significant, hypothesis 10 posed that subjective norms will mediate the relationship between the individual's normative beliefs and their intentions, $(\beta) = 0.189$, statistics (t) $= 5.698$, and $(p) < 0.05$. Lastly, hypothesis 11 is supported and significant in its assertion that perceived behavioral control will mediate the relationship between the individual's control beliefs and their intentions, $(\beta) = 0.058$, statistics (t) $= 2.545$, and $(p) < 0.05$.

Table 14 Hypotheses, path coefficients, and significance

Hypotheses	Path	Betas	t-statistics	p values	Result
Outer Model					
H1: Behavioral beliefs have a positive influence on a person's attitude towards the act of storing, safekeeping, and accounting for loose change.	BB->A	0.433	9.364	0.000	Supported
H2: Normative beliefs have an affirmative effect on a person's perceptions about 'important others' opinions towards the act of coveting loose change.	NB->SN	0.542	11.680	0.000	Supported
H3: Control beliefs have a positive influence on a person's perceptions about their control over the act of storing, safekeeping, and accounting for loose change.	CB->PBC	0.200	2.754	0.006	Supported
Inner Model					
H4: Attitude towards coveting loose change will have a positive direct effect on the intention to covet loose change.	A->I	0.293	6.202	0.000	Supported
H5: Subjective norms will have a positive direct effect on the intention to covet loose change.	SN-> I	0.348	7.040	0.000	Supported
H6: The perception of behavioral control will have a positive direct effect on the intention to covet loose change.	PBC->I	0.291	7.207	0.000	Supported
Moderating Effects					
H7: Perceived behavioral control has a significant moderating effect on the relationship between attitude towards the specified behavior and the intention to engage in the behavior.	PBC=>A:I -> I	0.037	0.764	0.445	Not supported
H8: Perceived behavioral control has a significant moderating effect on the relationship between subjective norms and intention to engage in the specified behavior.	PBC=>SN:I -> I	-0.017	0.415	0.678	Not Supported
Specific Indirect Effects					
H9: Attitude towards the behavior will mediate the relationship between the individual's behavioral beliefs and their intentions.	BB -> A -> I	0.127	4.923	0.000	Supported
H10: Subjective norms will mediate the relationship between the individual's normative beliefs and their intentions.	NB -> SN -> I	0.189	5.698	0.000	Supported
H11: Perceived behavioral control will mediate the relationship between the individual's control beliefs and their intentions.	CB -> PBC -> I	0.058	2.545	0.011	Supported

Figure 5 Structural Model Assessment
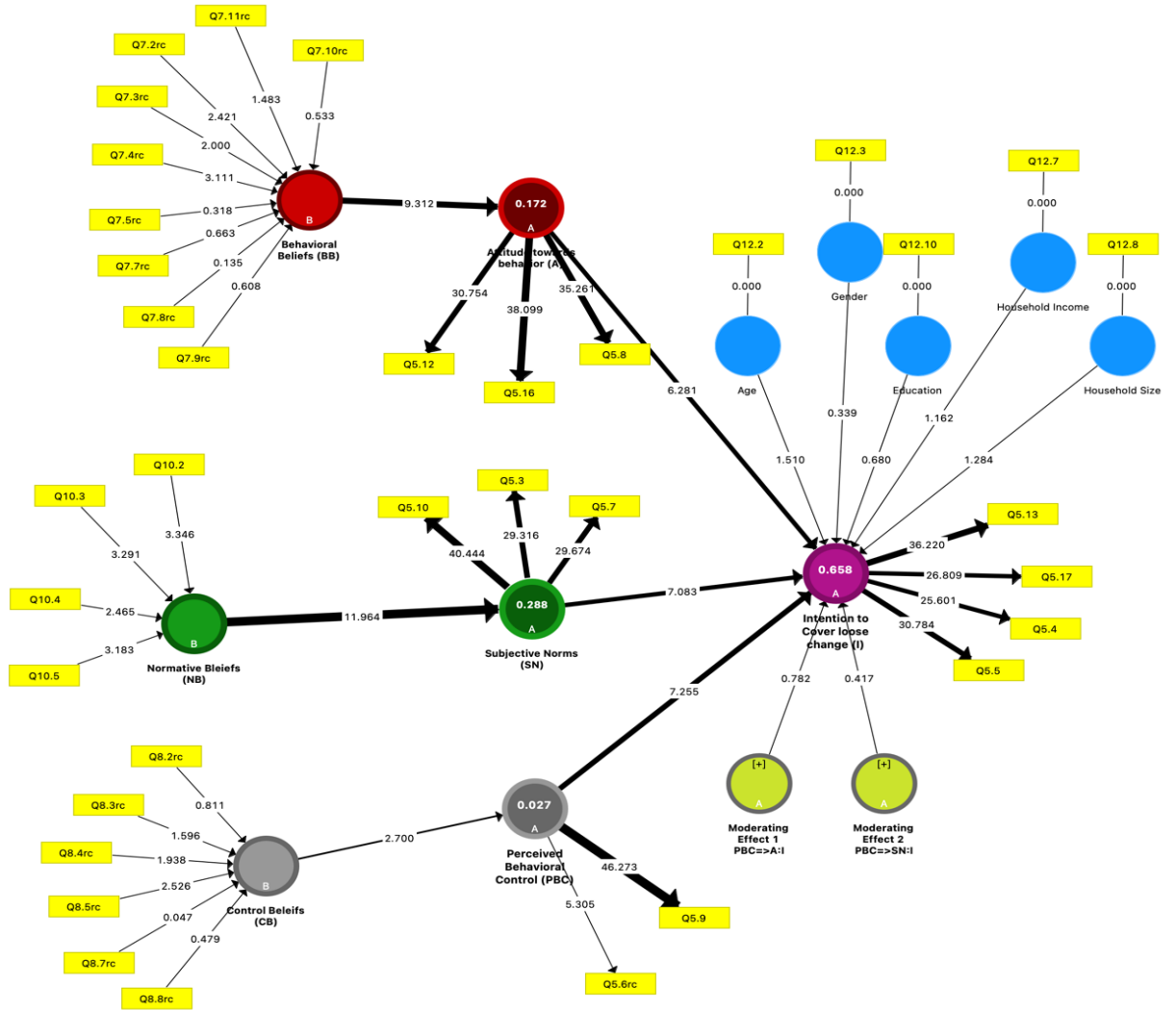
CHAPTER VI. DISCUSSION, LIMITATIONS, AND CONCLUSION

This chapter summarizes and discusses the results obtained from the analysis described in the preceding chapter, the implications and opportunities for future research, the study's limitations, and a conclusion explaining these findings.

Discussion of results

The objective of this research was to understand how American consumers think and behave towards loose change by exploring the factors that influence consumers' intended behavior when receiving coins as 'change' from a cash purchase. The results contained herein provide empirical evidence about influences that guide behavior, where some consumers are more purposeful in their behavior towards coins and loose change, while others are not. The results are summarized in Table 14 from the preceding chapter.

For the immediate study, I applied Ajzen's (1985) Theory of Planned Behavior as a framework to examine the factors that influence a person's intended behavior when receiving coins as 'change' from a recent cash purchase. As the dependent variable, behavioral intention is predicted from survey responses reflecting the respondent's attitude towards the behavior, subjective norms, and their perceptions of behavioral control (Ajzen & Driver, 1991). In the context of this study, the intention to covet loose change was predicted from a combination of attitudes toward coveting behavior, the perceptions about social pressures from 'important others,' and perceptions about control over the coins received.

The structural model exemplifies the dynamic relationships between a person's underlying belief system, represented by the three exogenous variables for behavioral, normative, and control beliefs. The theory's core variables reflect attitudes, subjective

norms, and perceived behavioral control are illustrated in Figure 5. Overall, the results

herein are consistent with prior research from Ajzen and Driver (1991), Ajzen and Driver

(1992), Meyer (2002), and Gordon (2008), which provides support for the proposition

that an individual's underlying belief systems affect their attitudes, subjective norms, and

perceptions about their control over the behavior; and together, in whole or in part or any

combination, influence a person's intention to behave or act in a certain way.

To illustrate this application of Ajzen's (1985) theory, suppose a customer enters

a retail store for a purchase; after choosing to pay with cash, the consumer is faced with

an inadvertent byproduct decision: What to do with the coins received as change, either

covet [targeted behavior] or otherwise disregard?

Hypotheses 1 through 3 focused on the individual's underlying belief system. In

Hypothesis 1, I proffered that behavioral beliefs linking behavior to an expected outcome,

will positively affect the individual's attitude towards the act of storing, safekeeping, and

accounting for loose change. In other words, a person who possesses favorable beliefs

about the outcomes and consequences of saving the coins received from a cash

transaction would positively influence their attitude, where the more favorable the

attitudinal disposition, the greater the intention to covet. Similarly, Hypothesis 2

theorized that the individual's underlying perceptions about the expectations of

'important others' would positively influence the subjective social pressures relating to

the act of coveting loose change. In the same way, Hypothesis 3 suggested that

underlying control beliefs positively affect perceptions about control over factors that

would hinder or impede the performance of the intended behavior. The results support the

hypothesized relationships articulated in Hypotheses 1 through 3. The significance of

these links reveals much about the belief system underlying a person's mindset, underscoring the penchant for fluctuations in attitudinal posture, variations in the perceived expectations of 'important others,' and the sensed appearance or disappearance of factors that facilitate or impede the act or behavior, accentuating the transitory nature of a person's perceptual orientation.

Ajzen's (1985) Theory of Planned Behavior core structure was included in Hypotheses 4 through 6, encompassing the effects of the individual's attitude towards the targeted behavior, subjective norms, and perceptions about control. Expectedly, Hypothesis 4, which stipulated that a person's attitude will positively influence their intention to covet loose change, was also supported, indicating that individuals will covet loose change when they have a positive overall assessment of the behavior. This general assessment or evaluation of the behavior itself encapsulates the respondent's mindset or belief relating to storing, safekeeping, and accounting for loose change, rather than attitudes directed towards coins themselves and is shaped by the appraisal of consequences resulting from the behavior. Similarly anticipated, Hypothesis 5 was supported, indicating that subjective norms positively affect the person's intention to covet loose change. Meaning that individuals will conform to expectations when they believe 'important others,' such as family or household members, will approve of the behavior. Recognizing that perceptions of control can vary as situations and circumstances change (Sparks et al., 1997), in Hypothesis 6, I theorized that a person's perception of behavioral control will have a positive direct effect on the intention to covet loose change. An individual's perception of control over the outcome of acting or behaving in a certain way is reflected in their assessment of circumstances that facilitate

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or encumber their ability to perform the intended act. When the perception of control over the care custody and use of coins is high, the effect on the intention to covet loose change is positive. Like the other core variables in the model, this hypothesized relationship was supported. When these control perceptions combine with the individual's attitudinal disposition and subjective norm, they form the intention to save the coins received from a cash transaction. Interestingly, however, the notion of control over the behavior can override a person's will to act or behave as planned, either directly when encountering factors that would impede performance or indirectly by moderating the effects of their attitudinal disposition and subjective norm.

The moderating effects of perceived behavioral control were postulated in hypotheses 7 and 8. Where Hypothesis 7 offered that perceived behavioral control has a significant moderating effect on the relationship between attitude towards the specified behavior and the intention to engage in the behavior." While Hypothesis 8 proposed that "perceived behavioral control has a significant moderating effect on the relationship between subjective norms and intention to engage in the specified behavior. The data supported neither Hypotheses 7 nor 8. Signaling that in the context of a 'cash-paid retail transaction,' the relative importance of the consumer's perception of control over the inadvertent byproduct decision of what to do with the coins received are not sufficiently influential in regulating the effects of attitudes or subjective norms on intention. Ajzen and Driver (1992) emphasized this phenomenon when describing perceived behavioral control, stating that "Perceived behavioral control may not be particularly realistic when a person has relatively little information about the behavior, when requirements or

available resources have changed, or when new unfamiliar elements have entered the situation" (p. 209).

In a retail setting, where a consequential purchase and cash payment decision has been made, the incognizance of consequences in the resulting byproduct decision of what to do or not do with the coins received as change appears to nullify the perceptions of control. Furthermore, in the general context of coin use and useability, volitional control is meaningfully compromised by decreased consumer use opportunities, negating perceived behavioral control's influence in moderating the impact of attitudes or subjective norms on intention.

In addition to hypothesizing about direct effects on intention discussed in the preceding sections, three specific indirect effects were also proposed. Hypothesis 9 articulated that a person's attitude mediates the relationship between their behavioral beliefs and intentions. Hypothesis 10 posed that social pressures, or subjective norms, mediate the relationship between the individual's perceptions about the expectations of 'important others' and their intended behavior. While Hypothesis 11 asserted that the endogenous variable reflecting perceived behavioral control mediates the relationship between the control beliefs underscoring the individual's sense of the factors that facilitate or impede the act of storing, safekeeping, and accounting for loose change and the intention to covet the coins received. Table 14 indicates that all three hypotheses representing the specific indirect effects are supported, crystalizing a fundamental premise in Ajzen's (1985) Theory of Planned Behavior, where a person's underlying belief system is transitory and subject to change. In the context of loose change, the individual's attitudes, subjective norms, and perceived behavioral control are based on

the underlying beliefs.   These include views and ideas about the outcomes and consequences of coveting [or disregarding] the coins received as change; beliefs about the expectations of influential referents concerning spending and saving money; and assumptions about factors that make it difficult to use, keep or account for the coins received. This fleeting belief system represents people's knowledge, whether timely, accurate, realistic, distorted, misrepresented, or incomplete. These underlying beliefs, short-lived though they may be, either support or dissuade the saving of the coins received as 'change' from a cash purchase.

Implications and future research opportunities

The study provides a framework for explaining byproduct decisions, such as what to do with the 'change' received from a cash purchase filling a gap in the research into behavioral economics. This research expands existing knowledge in household financial decision-making and can be used as a springboard for further studies regarding household spending and saving behavior. Generally, studies relating to behavioral household finance have focused primarily on consumption and savings but seem to ignore the byproduct decisions that emanate from cash payment choices. This study, however, provides the foundation for future research into the interlace of consumer and household behavior. Furthermore, policymakers charged with developing a Central Bank Digital Currency will benefit from the knowledge obtained about the consumer decision-making process when deciding what to do with the coins received as change from a cash payment. A recent Executive Order issued by President Biden on March 9, 2022, states explicitly: "A United States CBDC may have the potential to support efficient and low-cost transactions, particularly for cross-border funds transfers **and payments** [emphasis

added], and to foster greater access to the financial system, with fewer of the risks posed by private sector-administered digital assets" (The White House, 2022)

The inevitable development of regulations regarding the issuance and use of digital currencies presents future research opportunities for scholars. This study provides a foundation for further work in consumer payment choice. During this research, I gathered information that was not used in this study but reserved for expanding this inquiry. Information regarding the participants' past behavior and self-identification and numerous items that form outcome expectations, control factors, and an individual's motivation to comply with normative beliefs were obtained but not included in this study. Additionally, a variety of demographic characteristics were collected from the respondents. Due to time and budgetary constraints, their impact on intended behavior was not considered in this study and is reserved for future work and analysis. Future work may include data segregation by demographic profile to examine the potential differences in the model's predictive capabilities.

As previously noted, the intention to covet loose change was specified as the targeted behavior for this research. However, to provide a more comprehensive account of consumer behavior relating to loose change, future research should include the assessment of the model's constructs in relation to the alternative 'disregarding' behavior. The examination of the alternative behavior would reveal how the stated factors influence or fail to influence the intended behavior, where some consumers covet loose change while others simply disregard it.

Limitations

Studies of this nature are not impervious to nuanced deficiencies manifest in the compromises a researcher must make to satisfy time and budgetary constraints. In this study, one such limitation is found in the recruitment of participants. The cost and time efficiencies realized using Amazon's Mechanical Turk provided sufficient motivation to compromise on the integrity of answers harvested from the MTurk respondents. Despite measures taken to guard against common method bias, there is no guarantee that such measures provided enough filtration against prejudiced, predetermined, or systematic responses. Future research should consider the recruitment of respondents immediately following a cash purchase, at the point of sale, including post-purchase surveys and interviews.

Another critical limitation includes feedback effects from the model's exogenous variables. The performance of an act or behavior results in a looping effect where the individual gains information about the social reaction from 'important others,' the actual impediments experienced, and the realized consequences of the behavior as opposed to those anticipated. The resulting feedback loop may cause changes in attitudes, subjective norms, and perceptions about control which potentially results in alterations to intended behavior. Therefore, the model's predictive capability covering a different period or other population samples may not yield similar results.

Additionally, this study applied the Theory of Planned Behavior (Ajzen, 1985) to the point of intention. In contrast, Ajzen's (1985) full model does not stop at 'intention' but goes on further to predict actual behavior, which would require a longitudinal study that was not feasible due to the time constraints of this study. Consequently, some aspects

of the entire model were excluded, which may have impacted the results. Furthermore, this study focused on the specified behavioral intention to covet loose change but did not consider the alternative. The alternative behavior, disregarding loose change, may have different readily available underlying beliefs that may or may not mirror those of the targeted behavior. The potential consequence of differing underlying beliefs is unknown and would likely lead to attitudes, subjective norms, perceptions of control, and intentions different than those found in this study.

Finally, PLS-SEM is a regression-based statistical analysis method that compromises explanatory power for greater predictive capabilities, maximizing the explained variance in the model's endogenous variables. Therefore, the explanatory power of the analysis is limited to the researcher's judgment and interpretation (Hair et al., 2017). Additionally, the statistical analysis tool used, SmartPLS, is considered by some to be ineffectual in analyzing the consistency and validity of formative variables. This study includes three formative exogenous variables. Moreover, PLS-SEM provides relatively new and emergent analysis methods; however, there is no certainty that SmartPLS version 3.0 is current with the most recent advancements and statistical metrics affecting these conclusions.

Conclusion

In the context of a cash-paid retail transaction, this study found that the Theory of Planned Behavior model is suitable for predicting consumer intention [and behavior] towards loose change. Moreover, this research provided empirical evidence that an individual's underlying beliefs were transient. However, they may be, prove to be the most influential factors, in any combination, guiding consumers' post-purchase intention

when receiving coins as change. These salient beliefs about how the consumer will account for the loose change, what they think 'important others' would expect them to do with the 'change;' and how much control they believe to possess over the future use of the coins received, together provide the foundation for the consumer propensity to covet, or otherwise disregard loose change. For some, these core beliefs are tilted towards coveting behavior, where they believe that saving, storing, and keeping the 'change' will lead to positive outcomes. Where they believe that friends and family members would expect them to save rather than disregard the coins received, and where they perceive that the advantages of saving the coins for future use outweigh the disadvantages. The insight provided by this study will assist policymakers charged with designing, implementing, and regulating digital currencies where digital 'change' may serve as the nexus between analog money and cryptocurrencies, thereby stemming the adverse effects of the societal drift towards non-cash payment alternatives.

APPENDICES

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Appendix 1 - Survey Questionnaire

Appendix 2 - Q-Q plots

Appendix 3 - Histograms (with a normal curve)

Appendix 4 - Stem-and-leaf plots

Appendix 5 - SmartPLS settings

Appendix 6 – Survey items excluded from this analysis

REFERENCES

Aarts, H., Dijksterhuis, A., & Midden, C. (1999). To plan or not to plan? Goal achievement or interrupting the performance of mundane behaviors. *European Journal of Social Psychology, 29*(10), 971-979.

Ajzen, I. (1985). From Intentions to Actions: A Theory of Planned Behavior. In B. J. Kuhl J., *Springer Series in Social Psychology: Action Control* (pp. 11-39). Springer.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211.

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 179-211.

Ajzen, I. (2002). Perceived Behavioral Control, Self-Efficacy, Locus of Control, and the Theory of Planned Behavio. *Journal of Applied Social Psychology, 32*(4), 665-683.

Ajzen, I. (2006). Theory of Planned Behaviour Questionnaire. *Social Science*, 1-7.
Ajzen, I. (2013). *Theory of Planned Behaviour Questionnaire.* Retrieved April 2021, from Measurement Database for Social Science.: www.midss.ie

Ajzen, I. (2019). *Theory of Planned Behavior Diagram*. (University of Massachusetts Amherst) Retrieved from Icek Ajzen: https://people.umass.edu/aizen/int.html

Ajzen, I. (2020, April 25). The theory of planned behavior: Frequently asked questions. *Human Behav & Emerg Tech, 2*, 314-324.

Ajzen, I. (2020, April 25). *The theory of planned behavior: Frequently asked questions*. Retrieved from https://people.umass.edu/aizen/faq.html

Ajzen, I. (2020, April 25). *The Theory of Planned Behavior: Frequently asked questions*. Retrieved February 2022, from people.umass.edu/aizen: https://people.umass.edu/aizen/faq.html

Ajzen, I. (2021, February 19). *Is it appropriate to use multiple regression analysis to determine the relative importance of beliefs, or to select beliefs to be targeted in a behavioral intervention?* Retrieved from Icek Ajzen Frequently Asked Questions: https://people.umass.edu/aizen/faq.html

Ajzen, I., & Driver, B. L. (1991). Prediction of leisure participation from behavioral, normative, and control beliefs: An application of the theory of planned behavior. *Leisure sciences, 13*(3), 185-204.

Ajzen, I., & Driver, B. L. (1992). Application of the Theory of Planned Behavior to Leisure Choice. *Journal of Leisure Research, 24*(3), 207-224.

Altawallbeh, M., Thiam, W., Alshourah, S., & Fong, S. (2015). The role of age and gender in the relationship between (attitude, subjective norm and perceived behavioural control) and adoption of e-learning at Jordanian universities. *Journal of Education and Practice, 6*(15), 44-54.

Amireault, S., Godin, G., Vohl, M.-C., & Pérusse, L. (2008). Moderators of the intention-behaviour and perceived behavioural control-behaviour relationships for leisure-time physical activity. *International Journal of Behavioral Nutrition and Physical Activity, 5*(7).

Amromin, G., & Chakravorti, S. (2009). Whither Loose Change? The Diminishing Demand for Small-Denomination Currency. *Journal of Money, Credit and Banking, 41*(2-3), 315-335.

Are the Distributions Normal? (1989, 2020). (IBM Corporation) Retrieved September 2021, from IBM Documentation SPSS Statistics version 27.0.0: https://www.ibm.com/docs/en/spss-statistics/27.0.0?topic=distributions-are-normal

Babbie, E. (2016). *The Practice of Social Research, 14th Edition.* Cengage Learning.

Beshears, J., Choi, J. J., Laibson, D., & Madrian. (2018). *Behavioral household finance.* (Vol. 1). North-Holland.

Beverly, S., Hilgert, M. a., & Hogarth, J. M. (2003, July). Household financial management: the connection between knowledge and behavior. *Federal Reserve Bulletin, 89*(7), pp. 309-322.

Biden Jr. J. JOSEPH R. BIDEN JR. (2022, March 9). *BRIEFING ROOM Executive Order on Ensuring Responsible Development of Digital Assets MARCH 09, 2022; PRESIDENTIAL ACTIONS.* (T. W. House, Producer, & The White House) Retrieved March 2022, from The White House: https://www.whitehouse.gov/briefing-room/presidential-actions/2022/03/09/executive-order-on-ensuring-responsible-development-of-digital-assets/

Bond, C. (2020, August 3). *Why The Idea Of A 'Cashless Society' Is So Dangerous And some say racist, too.* Retrieved from HuffPost.com: https://www.huffpost.com/entry/cashless-society-dangers-racist_l_5f234e95c5b68fbfc880de22?ncid=APPLENEWS00001

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences (2nd Edition).* New York, NY: Routledge.

Conner, M., & Armitage, C. J. (1998). Extending the Theory of Planned Behavior: A Review and Avenues for Further Research. *Journal of Applied Social Psychology, 28*(15), 1429-1464.

Connolly, S., & Stavins, J. (2015). *Payment Instrument Adoption and Use in the United States, 2009-2013, by Consumer's Demographic Characteristics.* Federal Reserve Bank of Boston, Consumer Payments Research Center. Boston: Federal Reserve Bank of Boston.

Demo, G., Neiva, E. R., Nunes, I., & Rozzett, K. (2012). Human Resources Management Policies and Practices Scale (HRMPPS): Exploratory and Confirmatory Factor Analysis. *BAR - Brazilian Administration Review*.

Discriminant Validity. (2020, February 27). Retrieved December 2021, from Analysis INN.: https://www.analysisinn.com/post/discriminant-validity/

Durbin Watson Test & Test Statistic. (2016, June 20). Retrieved from Statistics How To: https://www.statisticshowto.com/durbin-watson-test-coefficient/

Elliott III, W. (2013). *"Can a College-Saver Identity Help Resolve the College Expectation-Attainment Paradox?".* Washington University in St. Louis, Center for Social Development George Warren Brown School of Social Work. St. Louis, MO: Center for Social Development.

Elliott, W. (2013). Small-dollar children's savings accounts and children's college outcomes. *Children and Youth Services Review, 35*, 572-585.

Fekadu, Z., & Kraft, P. (2001). Past Behavior and its Moderating Effects on Self-identity-Intention Relationships. *Social Behavior and Personality, 29*(7), 671-686.

Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior- An Introduction to Theory and Research.* Reading, MA: Addison-Wesley.

Foster, E., Schuh, S., & Zabek, M. A. (2009). *The 2009 Survey of Consumer Payment Choice.* Federal Reserve Bank of Boston, Consumer Payments Research Center. Boston, MA: Federal Reserve Bank of Boston.

FRED Economic Data. (2020, August 6). Retrieved from FRED Economic Research - Federal Reserve Bank of St. Louis: https://fred.stlouisfed.org/series/MBCURRCIRW#0

Freeze, R., & Raschke, R. L. (2007). An Assessment of Formative and Reflective Constructs in IS Research. *European Conference on Information Systems (ECIS 2007 Proceedings)* (pp. 1481 - 1492). Association for Information Systems AIS Electronic Library (AISeL).

Garson, G. D. (2016). *Partial Least Squares: Regression & Structural Equation Models* (Vol. 2016 Edition). Asheboro, NC: Statistical Associates Publishing.

Gaskin, J. (2013, July 31). *Post-hoc power analysis in SmartPLS and AMOS*. Retrieved December 2021, from YouTube: https://www.youtube.com/watch?v=XPIj__vCj5s

Gaskin, J. (2017, October 14). *Validating Formative Models in SmartPLS 3*. Retrieved from YouTube: https://www.youtube.com/watch?v=Qx_7pN7eAes

Ghasemi, A., & Zahediasl, S. (2012). Normality Tests for Statistical Analysis: A Guide for Non-Statisticians. *International Journal of Endocrinology & Metabolism, 10*(2), 486-489.

Gordon, M. S. (2008). EXTENDING THE THEORY OF PLANNED BEHAVIOR IN THE EXERCISE DOMAIN: A STUDY OF COMMUNITY COLLEGE STUDENTS IN AN URBAN MULTICULTURAL SETTING. *Florida International University*.

Greene, C., & Schuh, S. (2017). *The 2016 Diary of Consumer Payment Choice.* Federal Reserve Bank of Boston, Consumer Payments Research Center. Boston: Federal Reserve Bank of Boston.

Griffiths, D. T. (2002). The attrition rate of the United States coins in circulation: some evidence from the Federal Reserve data. *Applied Economics*, 2023-2029.

Habibah, U., Hassan, I., Iqbal, M. S., & Naintara. (2018). Household behavior in practicing mental budgeting based on the theory of planned behavior. *Financial Innovation, 4*(28), 1-14.

Hair, J. H., Risher, J. J., Sarsstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review, 31*(1), 2-24.

Hair, J., Hult, G. M., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM).* Sage Publications (Kindle Edition).

Harrison, D. A. (1995). Volunteer Motivation and Attendance Decisions: Competitive Theory Testing in Multiple Samples From a Homeless Shelter. *Journal of Applied Psychology, 80*(3), 371-385.

Holdefehr, K. (2019, July 24). *5 Common Sources of "Micro Clutter" Lurking Around Your Home Here's how to tackle these mini clutter magnets.* Retrieved March 2022, from RealSimple.com: https://www.realsimple.com/home-organizing/organizing/micro-clutter-organizing

Holland, K. (2013, NOV 21). *CNBC Personal Finance.* Retrieved January 2020, from https://www.cnbc.com/2013/11/21/more-money-than-you-think-is-hiding-in-those-sofas.html

Iacobucci, D., Schneider, M. J., & Po, D. L. (2015, July 7). *Mean centering helps alleviate "micro" but not "macro" multicollinearity.* Retrieved from SpringerLink: https://link.springer.com/article/10.3758/s13428-015-0624-x#:~:text=Mean%20centering%20is%20the%20act,variable's%20new%20mean%20is%20zero.

Kaiser. (1975). *Find the Kaiser, Meyer, Olkin Measure of Sampling Adequacy.* Retrieved December 2019, from personality-project.org: https://www.personality-project.org/r/html/KMO.html

Kaiser. (1975). *Find the Kaiser, Meyer, Olkin Measure of Sampling Adequacy.* Retrieved December 2019, from personality-project.org: https://www.personality-project.org/r/html/KMO.html

Kan, M. P., & Fabrigar, L. R. (2017). Theory of Planned Behavior. In T. S. V. Zeigler-Hill, *Encyclopedia of Personality and Individual Differences* (pp. 1-8). Cham: Springer International Publishing.

Khan, N., & Kadir, S. (2011). The impact of perceived value dimension on satisfaction and behavior intention: Young-adult consumers in banking industry. *African Journal of Business Management, 5*(16), 7055-7067.

King, P. S. (2013). *Encyclopedia of Behavioral Medicine.* Retrieved from SpringerLink: https://link.springer.com/referenceworkentry/10.1007%2F978-1-4419-1005-9_971

Klee, E. (2006). *Families' Use of Payment Instruments During a Decade of Change in the U.S. Payment System.* Federal Reserve System, Board of Governors of the Federal Reserve System. Washington, DC: Board of Governors of the Federal Reserve System.

KMO and Bartlett's Test. (n.d.). Retrieved August 2020, from IBM® IBM Knowledge Center: https://www.ibm.com/support/knowledgecenter/en/SSLVMB_24.0.0/spss/tutorials/fac_telco_kmo_01.html

Kovac, V. B., & Rise, J. (2007). The Relation Between Past Behavior, Intention, Planning, and Quitting Smoking: The Moderating Effect of Future Orientation. *Journal of Applied Biobehavioral Research, 12*(2), 82-100.

Kumar, R., & O'Brien, S. (2019). *2019 Findings from the Diary of Consumer Payment Choice.* Federal Reserve System, Cash Product Office Federal Reserve System. Federal Reserve Bank of San Francisco.

La Barbera, F. &. (2020). Control Interactions in the Theory of Planned Behavior: Rethinking the Role of Subjective Norm. *Europe's Journal of Psychology, 16(3), 16*(3), 401–417.

Laerd Statistics. (2018). *Testing for Normality using SPSS Statistics*. (Lund Research Ltd) Retrieved from Laerd Statistics: https://statistics.laerd.com/spss-tutorials/testing-for-normality-using-spss-statistics.php

Lee, M. K., Kiesler, S., & Forlizzi, J. (2011, May). Mining behavioral economics to design persuasive technology for healthy choices. *SIGCHI Conference on Human Factors in Computing Systems*, (pp. 325-334). Vancouver.

Leftcourt, H. M. (1991). Chapter 9 - Locus of Control. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman, *Measures of Personality and Social Psychological Attitudes* (pp. 413-499). Academic Press.

Lin, T. C. (2011). A Behavioral Framework for Securities Risk. *Seattle University Law Review*, 325-378.

Lynn, M., & McCall, M. (2016). Beyond gratitude and gratuity: A meta-analytic review of the predictors of restaurant tipping.

Meyer, L. (2002, March). Applying the theory of planned behavior: nursing students' intention to seek clinical experiences using the essential clinical behavior database. *Journal of Nursing Education, 41*(3), 107-116.

Nario-Redmond, M. R., Biernat, M., Eidelman, S., & Palenske, D. J. (2004, April). The Social and Personal Identities Scale: A Measure of the Differential Importance Ascribed to Social and Personal Categorization. *Self and Identity, 3*, 143-175.

Nepomuceno, M. V., & Loroche, M. (2015). The impact of materialism and anti-consumption lifestyles on personal debt and account balances. *Journal of Business Research, 68*, 654-664.

O'Brien, Shaun. (2014). *Consumer Preference and the Use of Cash: Evidence from the Diary of Consumer Payment Choice.* Federal Reserve Bank of San Francisco, Cash Product Office. San Francisco: Federal Reserve Bank of San Francisco.

Pavlou, P. A., & Fygenson, M. (2006, March). Understanding and Predicting Electronic Commerce Adoption: An Extension of the Theory of Planned Behavior. *MIS Quarterly, 30*(1), 115-143.

Press Release: United States Mint Statement on Circulating Coins. (2020, July 23). Retrieved from US Mint: https://www.usmint.gov/news/press-releases/statement-on-circulating-coins

Ringle, C. M., Wende, S., & Becker, J.-M. (2015). SmartPLS 3. *Boenningstedt: SmartPLS.*

Ringle, C. M., Wende, S., & Becker, J.-M. (2015). SmartPLS 3. *Boenningstedt: SmartPLS.* Boenningstedt, Germany.

Rise, J., Sheeran, P., & Hukkelberg, S. (2010). The Role of Self-identity in the Theory of Planned Behavior: A Meta-Analysis. *Journal of Applied Social Psychology, 40*(5), 1085-1105.

Rysman, M. (2009). The Changing Retail Payments Landscape. *The Changing Retail Payments Landscape*, pp. 61-82.

Sampaio, A., & Saramago, J. (2016). Loyalty in retailing: multidimensional approach to customer perceived value. *European Journal of Applied Business Management*, 96-114.

Sengupta, P., & Cantrell, R. (2021). Context Matters: The effects of budgetary and knowledge constraints on residential energy conservation. *Journal of Environmental Studies and Sciences*.

Sheeran, P. (2002, January 1). Intention—Behavior Relations: A Conceptual and Empirical Review. *European Review of Social Psychology, 12*(1), 1-36.

Sheeran, P., Orbell, S., & Trafimow, D. (1999). Does the Temporal Stability of Behavioral Intentions Moderate Intention-Behavior and Past Behavior–Future Behavior Relations? *PSPB, 25*(6), 724-730.

Silaparasetti, V., Srinivasarao, G., & Khan, F. R. (2017). STRUCTURAL EQUATION MODELING ANALYSIS USING SMART PLS TO ASSESS THE OCCUPATIONAL HEALTH AND SAFETY (OHS) FACTORS ON WORKERS' BEHAVIOR. *Humanities & Social Science Reviews, 5*(2), 88-97.

Sinclair, S. (2020, March 30). *US Cash in Circulation Sees Biggest Increase Since the Y2K Bug Panic, Fed Data Indicates*. (Digital Currency Group) Retrieved from

Coindesk.com: https://www.coindesk.com/us-cash-in-circulation-sees-biggest-increase-since-the-y2k-bug-panic-fed-reserve-data-indicates

Smith, J. R., Terry, D. J., Manstead, A. S., Louis, W. R., Kotterman, D., & Wolfs, J. (2008). The Attitude–Behavior Relationship in Consumer Conduct: The Role of Norms, Past Behavior, and Self-Identity. *The Journal of Social Psychology*, 311-333.

Sok, J., Borges, J. R., Schmidt, P., & Ajzen, I. (2020). Farmer Behaviour as Reasoned Action: A Critical Review of Research with the Theory of Planned Behaviour. *Journal of Agricultural Economics*, 1-25.

Soper, D. S. (2021). *POST-HOC STATISTICAL POWER FOR MULTIPLE REGRESSION [Software]*. Retrieved December 2021, from Free Statistics Calculator version 4.0: https://www.danielsoper.com/statcalc

Sparks, P., & Shepherd, R. (1992). Self-identity and the theory of planned behavior: Assesing the role of identification with" green consumerism". *Social psychology quarterly*, 388-399.

Sparks, P., Guthriea, C. A., & Shepherd, R. (1997). The Dimensional Structure of the Perceived Behavioral Control Construct. *Journal of Applied Social Psychology, 27*(5), 418-438.

SPSS Statistics version 27.0.0. (1989, 2020). (IBM Corporation) Retrieved September 2021, from IBM Documentation SPSS Statistics version 27.0.0: https://www.ibm.com/docs/en/spss-statistics/27.0.0?topic=features-nonparametric-tests

Statistics Solutions. (2021). *Testing of Assumptions*. (Statistics Solutions) Retrieved September 2021, from Complete Dissertation: https://www.statisticssolutions.com/free-resources/directory-of-statistical-analyses/testing-of-assumptions/

Stieg , C. (2020, March 6). *CNBC Make it*. Retrieved from CNBC.com: https://www.cnbc.com/2020/03/06/what-you-need-to-know-about-handling-cash-amid-coronavirus-spread-who.html

Sweeney, J. C., & Soutar, G. N. (2001). Consumer perceived value: The development of a multiple item scale. *Journal of Retailing, 77*, 203-220.

Taber, K. S. (2017, June 7). *The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education*. Retrieved from SpringerLink: https://link.springer.com/article/10.1007/s11165-016-9602-2

Terry, D. J., Hogg, M. A., & White, K. M. (1999). The theory of planned behaviour: Self-identity, social identity and group norms. *British Journal of Social Psychology* , 225-244.

Testing for Normality using SPSS Statistics. (2018). (Lund Research Ltd) Retrieved from Laerd Statistics: https://statistics.laerd.com/spss-tutorials/testing-for-normality-using-spss-statistics.php

Testing for Normality using SPSS Statistics. (2020). (Lund Research Ltd) Retrieved from Laerd Statistics: https://statistics.laerd.com/spss-tutorials/testing-for-normality-using-spss-statistics.php

Testing of Assumptions. (2021). (Statistics Solutions) Retrieved September 2021, from Complete Dissertation: https://www.statisticssolutions.com/free-resources/directory-of-statistical-analyses/testing-of-assumptions/

Thaler, R. H. (2016). Behavioral Economics: Past Present and Future. *American Economic Review, 106*(7), 1577-1600.

Tobin, M. (2020, August 1). *Coin Shortages Are Causing a Liquidity Crisis at Laundromats*. Retrieved from Bloomberg Businessweek: https://www.bloomberg.com/news/articles/2020-08-01/coin-shortage-u-s-laundromats-are-running-out-of-quarters

Types of Research Designs. (2021, November 3). (University of Southern California) Retrieved November 2021, from USC Libraries Research Guides: https://libguides.usc.edu/writingguide/researchdesigns

Unser, M. (2021, January 22). *U.S. Mint Produces 14.77 Billion Coins for Circulation in 2020*. (CoinNews Media Group LLC) Retrieved March 2022, from CoinNews.net: https://www.coinnews.net/2021/01/22/u-s-mint-produces-14-77-billion-coins-for-circulation-in-2020/

Wang, C. (2019). *Cash Me If You Can: The Impacts of Cashless Businesses on Retailers, Consumers, and Cash Use.* Policy, The Federal Reserve, Cash Product Office of the Federal Reserve System.

Wong, K. K.-K. (2013). Partial Least Squares Structural Equation Modeling (PLS-SEM) Techniques Using SmartPLS. *Marketing Bulletin, 24*(Technical Note 1), 1-32.

Wuensch, K. L. (2015). *Factor Analysis - SPSS.*

Yoo, H. (2020). Factors Influencing Future Music Participation: A Review of Literature Based on the Theory of Planned Behavior. *National Association for Music Education, 38*(3), 18-28.

Zemore, S. E., & Ajzen, I. (2014). Predicting Substance Abuse Treatment Completion using a New Scale Based on the Theory of Planned Behavior. *Journal of Subtance Abuse Treatment, 46*(2).

Zenkić, J., Millet, K., & Mead, N. (2019). *THE EFFECT OF COINS ON SPENDING.* Think Forward Initiative. Think Forward Initiative.

VITA

CARLOS EMILIO BARED

Born, Miami, Florida

1986-1990	B.A., Business Administration Loyola University New Orleans, LA
1990-1991	Merrill Lynch Financial Services
1991-1994	The Bared & Company, Inc. Assistant Controller Miami, FL
1993-1995	Master of Business Administration University of Miami Miami, FL
1994-1997	The Bared & Company, Inc. President & Chief Financial Officer Miami, FL
1997-1999	REWJB Dairy Plant Associates Vice President & Chief Financial Officer Miami, FL
1999 -2000	United Petroleum Corporation Senior Vice President & Chief Financial Officer Miami, FL
2000-2014	Farm Stores Corporation Chief Executive Officer Miami, FL
2014-2017	Farm Stores Franchising, L.L.C. Chief Executive Officer Miami, FL
2018-Present	3e11 LLC Principal/Managing Director Miami, FL

2019-2022   Doctoral Candidate
            Florida International University
            Miami, FL