

A Bit(coin) of Happiness After a Failure: An Empirical Examination of the Effectiveness of Cryptocurrencies as an Innovative Recovery Tool

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Abstract

This research provides the first examination of the effectiveness of cryptocurrencies as an innovative recovery tool. Through four experiments, we assess the effects of crypto-compensation against traditional compensation types (voucher/cash) on customer recovery satisfaction. Study 1 findings indicate that crypto-compensation is more effective than voucher and cash in improving customer recovery satisfaction. Further, it shows that consumer innovativeness moderates the effectiveness of crypto-compensation. After establishing the effectiveness of crypto-compensation, Study 2 finds a moderating effect of consumer choice in influencing crypto-compensation effectiveness. Study 3 reveals the differential effect of communicating different crypto-compensation benefits on customer recovery satisfaction. Finally, Study 4 concludes that familiar cryptocurrencies (e.g., Bitcoin vs. EOS) best restore satisfaction after a failure and that compensation message framing (i.e., cryptocurrency monetary value vs. real nominal value) moderates this relationship. Theoretical and practical implications are provided.

Keywords: Service recovery; Compensation 2.0; Cryptocurrency; Customer satisfaction; Prospect Theory.

1. Introduction

Over the past three decades, research on service failure and recovery has examined the effects of different types of compensation such as monetary (e.g., voucher and cash) and psychological compensation (e.g., explanation and apology) (Roschk & Gelbrich, 2014). Furthermore, the effectiveness of different levels of compensation (e.g., absent vs. present; partial vs. full; or simple vs. overcompensation) has been tested (Gelbrich, Gäthke, & Grégoire, 2015; Noone & Lee, 2011). However, technological advances are changing the game for customers and firms (Grewal, Roggeveen, & Nordfält, 2017) presenting a novel and potentially positive type of compensation using cryptocurrencies. With the inception of Bitcoin in 2009 (Böhme, Christin, Edelman, & Moore, 2015), soon followed by other forms (e.g., Ethereum, Ripple, and EOS), cryptocurrencies, as quasi versions of cash, have become an innovative disruption to standard payment methods (Kbilashvili, 2018). Broadly defined, cryptocurrencies are a form of peer-to-peer digital and decentralized assets not backed or controlled by government agencies. They are developed using blockchain technology which can “capture a shared, digital ledger in which all parties agree to transactions before they are stored, and all parties own a full copy of the ledger” (Button, 2018, p. 39).

Cryptocurrencies are becoming increasingly popular as a means of tender used to purchase goods and services. For instance, in 2018, Brisbane’s International Airport became the world’s first crypto-friendly airport (Redman, 2018). That same year, 59% of airlines were undertaking pilot projects and research with the intent to explore the use of blockchain in the next three years (Sita, 2020). Similar approaches have been evident in the hotel industry as organizations strive to increase direct relationships with consumers.

Cryptocurrencies might represent a somewhat promising recovery tool as they can offer three added benefits to customers compared to existing compensation forms, which may in turn

benefit the firm by raising customer satisfaction. First, compared to vouchers, cryptocurrencies are convertible to cash. Second, cryptocurrencies offer greater flexibility in spending, as they can be spent in a wide range of outlets either directly or indirectly through third-party mobile apps (Torpey, 2019; Cuthbertson, 2019), as opposed to vouchers which are generally limited to a particular provider (Gelbrich & Roschk, 2011). Third, in comparison with both voucher and cash, cryptocurrencies may raise satisfaction due to their potential to increase in value and may therefore be considered an investment opportunity (Becker, 2018). Based on these benefits to customers, cryptocurrency has the potential to raise recovery satisfaction or allow for similar satisfaction at a lower cost, giving adopters an edge in the area of service recovery.

However, there have been limited empirical studies examining cryptocurrencies in academic marketing and related literature (see Table 1). Some of these studies explain the mechanism and benefits of blockchain and cryptocurrencies (Giudici, Milne, & Vinogradov, 2020; DeVries, 2016) while others specifically discuss the role of cryptocurrencies in a range of topics such as experiential loyalty intentions (Wu & Chang, 2019) or outline the benefits of adopting cryptocurrencies to both customers and retailers (Chakrabarti & Chaudhuri, 2017; Low & Marsh, 2019). However, there are no existing studies focusing on the application of cryptocurrencies in the field of service recovery. The importance of this gap is hailed by scholars who have recently called for insight on different applications of blockchain technology such as cryptocurrencies (Chalmers, Matthews, & Hyslop, 2019). Further, prior service recovery literature also suggests the need for examination of other types of compensation (Grewal, Roggeveen, & Tsiros, 2008; Noone & Lee, 2011). Specifically, Nazifi et al. (2020) suggest that cryptocurrencies should be considered as a recovery tool due to their potential benefits over traditional compensation types (e.g., cash conversion, wider spending opportunities, and also potential rise in value).

[Insert Table 1 Here]

Responding to these calls, we provide the first examination of whether firms should use cryptocurrency as a form of compensation to restore satisfaction after a failure and, if so, how should crypto-compensation (i.e., compensation 2.0) be operationalized? Specifically, this paper aims to address the following research questions: Is crypto-compensation an effective recovery tool compared with voucher and cash? Do consumer innovativeness and choice with recovery moderate the effectiveness of crypto-compensation? Which benefits of cryptocurrencies are most appealing and should be communicated to customers at times of recovery? Lastly, do customers differentiate between different types of cryptocurrencies (e.g., a well-known cryptocurrency such as Bitcoin vs. a less known alternative such as EOS), and does compensation message framing moderate this effect? This paper addresses these questions, giving rise to three novel contributions:

First, we respond directly to the call for research by Nazifi et al. (2020) on the efficacy of cryptocurrency in a recovery context. We provide the first examination of the effectiveness of crypto-compensation as an alternative to traditional recovery options such as voucher and cash. We extend previous studies on service recovery and specifically different compensation types (Grewal et al., 2008; Roschk & Gelbrich, 2014; Noone & Lee, 2011) by shedding initial light on the question of *should* service firms offer crypto-compensation to customers. Further, this research examines an important customer-related boundary condition to the efficacy of crypto-compensation versus traditional compensation. Specifically, we examine how consumer innovativeness may amplify or mitigate the effectiveness of cryptocurrencies. Here, we build on prior research considering the link between innovativeness and the adoption of new technologies (Im, Bayus, & Mason, 2003).

Second, we contribute to the service recovery literature and specifically extend prior research on customer choice (Mattila & Cranage, 2005) and customer participation in a service recovery situation (Dong & Sivakumar, 2017; Van Vaerenbergh, Hazée, & Costers, 2018).

Prior research has established the effectiveness of customer choice in the provision of service recovery options (Dong, Sivakumar, Evans, & Zou, 2015). Yet, prior studies are limited by the focus on choice with service recovery outcomes which customers have good knowledge and experience of (e.g., refund, voucher, discount, and re-performed service) (Roschk & Gelbrich, 2014) and thus, the weighing up of options is rather well informed. However, not all consumers may have a good understanding of cryptocurrencies (Henry, Huynh, & Nicholls, 2018). Therefore, offering this choice in this context may be particularly more important. We extend knowledge on customer participation in the service recovery outcome by examining the moderating effects of choice in crypto-compensation effectiveness (vs. traditional compensation) and finding that choice is indeed beneficial in enhancing recovery satisfaction.

Third, having established crypto-compensation has some promise, we turn our attention to *how* firms can best implement this offering by investigating the impact of different firm-related factors. Specifically, building on Söderlund (2002), we explore whether familiarity with cryptocurrency type affects customer satisfaction. Additionally, we build on Kim and Kramer (2006) and Raghubir and Srivastava (2002) to examine whether crypto-compensation message framing (in terms of nominal cryptocurrency value vs. Dollar value equivalent) moderates this relationship. Further, we provide a first empirical examination of the perceived appeal of different crypto-compensation benefits and their differential impact on recovery satisfaction.

2. Theoretical background and hypotheses development

2.1. Compensation type and level

The use of compensation as an organizational response to service failure has been shown to improve customer satisfaction (Gelbrich, Gäthke, & Grégoire, 2016) and repurchase intention (Grewal et al., 2008), as well as to reduce negative emotions (Chebat, Davidow, & Cudjovi, 2005). When seeking to recover from a service failure, organizations may offer

different *compensation types* like monetary compensation in the form of refunds and discounts or non-monetary compensation in the form of an explanation and apology (Roschk & Gelbrich, 2014). However, a meta-analysis by Orsingher, Valentini, and de Angelis (2010) shows that monetary compensation is best for restoring satisfaction after a failure. Moreover, cash compensation is found to be more effective than voucher compensation (Noone & Lee, 2011), as vouchers have an expiry date and also limit spending to the service provider with whom the failure occurred.

In terms of the *level of compensation*, partial compensation has a greater incremental effect than full or excessive compensation on customer recovery satisfaction (Estelami & De Maeyer, 2002; Gelbrich et al., 2016). Service recovery research (Gelbrich et al., 2015) suggests that this decreasing incremental effect occurs due to the law of diminishing marginal utility. That is, when encountering a service failure, customers experience a negative episode with the provider and might be unsure whether they will receive any compensation at all. Thus, offering small compensation amounts (i.e., partial compensation) might be perceived as an acknowledgment of customers' inconvenience, which results in strong satisfaction effects. However, with increasing compensation amounts, saturation effects may occur. Importantly, redress beyond full compensation (i.e., complete reparation of service failure) may still increase satisfaction but it elicits only small marginal increments (Gelbrich et al., 2016). Given the decreasing effectiveness of high compensation amounts, and given that high compensation is costly and potentially unnecessary (Gelbrich et al., 2016), the current research focuses on partial compensation for studying the effect of crypto-compensation. Specifically, it examines whether the strong effect of a fractional remuneration can be further boosted by using cryptocurrency as an alternative compensation type. In the next section, we draw on prospect theory to explain the potential benefits of crypto-compensation.

2.2. *Prospect theory*

Prospect theory has been used to explain the effect of compensation on recovery satisfaction (e.g., Gelbrich et al., 2015). Prospect theory states that individuals perceive outcomes of economic decisions as gains or losses depending on a reference point, typically represented by a certain asset position. The individual interpretation of outcomes as gains or losses may depend on how the offered prospects are formulated and what decision-makers expect (Kahneman & Tversky, 1979).

In the context of service recovery, the reference point might represent a flawless service (Gelbrich et al. 2015). A service failure is then perceived as a negative deviation from this reference point, resulting in a loss that can involve cognitive and emotional evaluations (Chebat et al., 2005; Gelbrich et al., 2015). Specifically, from a cognitive point of view, a service failure might be seen as an economic loss since customers pay for a flawed service (Gelbrich & Roschk, 2011). From an emotional point of view, a service failure might result in a psychological loss, since it elicits negative feelings such as anger (Nazifi, El-Manstrly, & Gelbrich, 2019). To mitigate economic as well as psychological losses, customers seek compensation (Chebat et al., 2005) that can be seen as gain. Different compensation types (e.g., cash, voucher, crypto-compensation) may lead to different gain perceptions depending on their communicated benefits (i.e., prospects) as well as customers' expectations about the compensation.

2.3. Crypto-compensation effectiveness

2.3.1 Voucher versus Cryptocurrency as Compensation. Our first step is to compare crypto-compensation to voucher as one of the most common forms of compensation due to its customer lock-in effect (Gelbrich & Roschk, 2011). Given that cash compensation is associated with greater satisfaction than voucher following a service failure (Noone & Lee, 2011) and cryptocurrencies resemble a digital form of cash (Kbilashvili, 2018) - that is they can be converted to cash, have no expiry date, and can also be spent in a plethora of places - we expect

crypto-compensation to be perceived similarly to cash. Thus, crypto-compensation has the potential to increase satisfaction beyond voucher, which will not only have an expiry date but will have a set value for use with a particular service provider. Therefore, we propose the following hypothesis that tests crypto-compensation vs. voucher:

H1a. Crypto-compensation leads to higher recovery satisfaction compared with voucher.

2.3.2. Cash versus Cryptocurrency as Compensation. We propose that crypto-compensation may offer an additional benefit over cash, which makes it a superior compensation type. Specifically, it has a high investment potential due to major volatility. Though at the time of offering compensation, a \$100 worth of cash and a cryptocurrency will be equivalent, in the future, they may not be as cryptocurrencies are volatile (Barker, 2019). Since its inception, Bitcoin has appreciated extraordinarily, from \$.008 in 2010 to more than \$10,000 per coin in 2020. Though cryptocurrencies have taken quick dives at times, the general trajectory has been positive (Barker, 2019).

Based on prospect theory, we propose that customers perceive higher gains when receiving crypto-compensation compared to cash. That is, the formulation of prospects typically determines the perceived gain of an outcome (Kahneman & Tversky, 1979). The cumulative benefit of cryptocurrency (e.g., a potential increase in value in the future) might be more favorable than cash as they represent attractive prospects to customers. Thus, we propose crypto-compensation engenders greater satisfaction than an equivalent cash amount based on the potential gains that may ensue. Hence, we propose the following hypothesis that tests crypto-compensation vs. cash:

H1b. Crypto-compensation leads to higher recovery satisfaction compared with cash.

2.4. Consumer innovativeness

We propose that consumer innovativeness influences the positive link between crypto-compensation compared to traditional compensation (i.e., voucher or cash) and satisfaction. Consumer innovativeness can be conceptualized as a personality trait that refers to the probability that one tries new product/service offerings (Steenkamp & Gielens, 2003). Individuals tend to deal with innovations differently. Accordingly, innovative (vs. non-innovative) consumers are more open to trying new things and are keen to acquire innovative products (Steenkamp & Gielens, 2003). Moreover, it has been demonstrated that this consumer group is more involved with new offerings (Bartels & Reinders, 2011). Likewise, the psychological profile of innovative consumers has been characterized as being venturesome, tolerant toward ambiguity, and well-versed with new technologies (Bartels & Reinders, 2011).

Given the characteristics of innovative consumers, we hypothesize that for this group, the positive effect of crypto-compensation compared to traditional compensation (i.e., voucher or cash) on satisfaction will be stronger than for non-innovative consumers. Specifically, crypto-compensation represents an innovative service recovery tool that is new to the service market, making it especially appealing to innovative consumers. Moreover, consumers' knowledge – which is closely related to involvement – is crucial for the adoption of cryptocurrencies (Al-Amri, Zakaria, Habbal, & Hassan, 2019). Thus, the high involvement level of innovative consumers is likely to make them more open to crypto-compensation. In addition, crypto-compensation is based on digital currency, which comes along with a certain degree of ambiguity because of its volatility, and the use of complex computer algorithms (Kbilashvili, 2018). As such, it requires consumers to show a certain degree of risk-taking as well as technology-savvy characteristics inherent to innovative consumers. Indeed, innovativeness has been shown to increase the adoption of technological solutions such as online payments or shopping (Im et al., 2003; Thakur & Srivastava, 2014). Given the

aforementioned argumentation, innovative consumers should be more responsive to crypto-compensation. Formally:

H1c. Consumer innovativeness moderates the effectiveness of crypto-compensation such that the positive impact of crypto-compensation (vs. voucher) on recovery satisfaction is stronger (weaker) among consumers with a higher (lower) level of innovativeness.

2.5. *Consumer choice*

Within the academic literature, there have been calls to explore the impact of customer participation in service recovery (Dong & Sivakumar, 2017; Van Vaerenbergh et al., 2018). Essentially, a critical question for managers is: should customers be given the choice between compensation types? Bitner, Booms, and Tetreault (1990) suggest that providing customers with choice can lead to more favorable service encounters. Moreover, previous studies show that generally when customers participate in the service recovery process, they report higher satisfaction (Dong et al., 2015). Similarly, customer empowerment and perceived control in determining the recovery outcome after a service failure are suggested to further enhance customers' procedural justice and satisfaction (Mattila & Cranage, 2005; Hazée, Van Vaerenbergh, & Armirotto, 2017). However, differences in satisfaction have been identified when selecting from less preferred alternatives, with non-choosers being more satisfied than those who had the choice (Botti & Iyengar, 2004). Consequently, different people can perceive both traditional and crypto-compensation either positively or negatively depending on their preference for the two options. Specifically, with regard to crypto-compensation, those who display preference and choose cryptocurrency over voucher due to its perceived benefits should report a higher level of satisfaction.

We substantiate this claim by referring to the *certainty effect* found in prospect theory. According to this effect, individuals overvalue outcomes that are obtained with certainty

compared to outcomes that are only probable (Kahneman & Tversky, 1979). Applied to the context at hand, the compensation type represents the outcome of the recovery process (Gelbrich et al., 2015). Consumers that opt for crypto-compensation rather than voucher might perceive the benefits of cryptocurrency with certainty. Specifically, they might perceive it as easy to convert into cash and can think of different locations to spend it (though, this certainty may only exist in the very short term given the potential fluctuations in value). As such, they perceive crypto-compensation as a certain gain, which should lead to higher satisfaction than for non-choosers. Regarding the latter group: offering no choice over compensation type implies that some consumers offered crypto-compensation might perceive its benefits as uncertain (i.e., they would never convert it, would not spend it anywhere, and might fear a value decrease). As such, crypto-compensation might be less effective when customers have no choice about the compensation type. Formally:

H2. Consumer choice moderates the effectiveness of crypto-compensation such that the positive impact of crypto-compensation (vs. voucher) on recovery satisfaction is stronger among choosers (vs. non-choosers).

2.6. The appeal of crypto-compensation benefits

As already introduced, the efficacy of crypto-compensation to raise satisfaction above that of alternatives may be located in a number of their benefits such as the convertibility of cryptocurrencies to cash, the ability to spend them widely, and their investment potential (Becker, 2018; Nazifi et al., 2020). It is critical for marketers to gain insight into which benefit is dominant in driving increased satisfaction in order to guide optimal communication of the benefit of crypto-compensation in a service setting, for example through a verbal description by an employee or through an information leaflet or webpage. A recent study suggests that while Bitcoin has both similarities to a fiat currency, people often use Bitcoin for investment

purposes rather than as an alternative medium of exchange (Baur, Hong, & Lee, 2018). Building on this, and drawing on prospect theory which states that the formulation of prospects determines the favorability of an outcome (Kahneman & Tversky, 1979), framing the offering of crypto-compensation as a vehicle for potential future gains will be most appealing for customers. This is in comparison to framing the compensation in line with other benefits (e.g., ability to spend widely and convertibility to cash), implied to be less appealing benefits of crypto-compensation (Baur et al., 2018). Consequently, customer satisfaction is likely to be greater if communicating crypto-compensation as an investment opportunity. Thus:

H3. Framing crypto-compensation as an investment opportunity leads to higher recovery satisfaction compared with framing on other benefits (i.e., ability to spend widely and convertibility to cash).

2.7. Familiarity with cryptocurrency type

In implementing a crypto-compensation strategy, managers can choose from a wide range of cryptocurrency types. In 2018, more than 1,600 different cryptocurrencies were available (Bajpai, 2019), ranging from well-known types such as Bitcoin to less known types such as EOS. Thus, cryptocurrencies differ to the extent they are familiar to consumers. In the following, we argue that the level of familiarity with cryptocurrency type influences recovery satisfaction with crypto-compensation. Previous research stresses that familiarity with objects affects consumers' cognitive processes. Specifically, the reference frame for evaluations varies depending on how familiar an object is (Söderlund, 2002). Prior research suggests that the more often an individual is exposed to a stimulus, the more favorable his or her attitude becomes towards this very stimulus (Zajonc, 1968). Consequently, it has been argued that individuals have a stronger preference for the known and familiar than for the unknown and unfamiliar (Söderlund, 2002).

Familiarity is a well-studied phenomenon in consumer research. With increasing product familiarity consumers are supposed to have superior product knowledge, a higher ability to deal with new product information, and are better at paying attention to relevant information (Johnson & Russo, 1984). Research shows that consumer choice behavior is more favorable for familiar brands than for unfamiliar brands (Hoyer & Brown, 1990).

Adapted from brand familiarity research (Bruner, 2017), we refer to familiarity with cryptocurrency type as the degree to which a customer is aware of and knowledgeable about a cryptocurrency. Given the findings on familiarity from previous consumer research, we assume that for familiar cryptocurrencies, consumers have more knowledge of and can better deal with relevant information (e.g., how valuable it is or where to spend). Moreover, familiar cryptocurrencies might appear as more trustworthy than unfamiliar ones. Transferred to the service recovery context, since there is a positive link between familiarity level and satisfaction evaluations (Ha & Perks, 2005), it is proposed that using a more familiar cryptocurrency as compensation leads to higher satisfaction than using an unfamiliar cryptocurrency. Formally:

H4a. Familiar cryptocurrency types lead to higher recovery satisfaction compared with unfamiliar cryptocurrency types.

2.8. Crypto-compensation framing

When offering crypto-compensation, two different numeric message frames can be used: 1. the real nominal value in the base currency (e.g., 0.01 Bitcoin); and 2. the monetary (or face) value of the cryptocurrency at the time it is offered (e.g., \$100 worth of Bitcoin). The difference in the numeric value of these two frames and consumers' perceptions of this is similar to foreign currency exchange as two numeric values (e.g. \$ vs. £) can be presented to denote a purchase. The money illusion effect, which is most commonly understood in the context of money exchange (Wertenbroch, Soman, & Chattopadhyay, 2007), occurs when a

person is faced with a purchase in a currency where the nominal cost is greater than it is in the currency they are familiar with (e.g., French fries, \$1 vs. 30 Thai Baht). There is a belief that the higher nominal value is perceived as more expensive even though the exchange rate deems them equivalent (Raghubir & Srivastava, 2002).

The money illusion effect can be explained by the fact that face values can influence intuitive judgments which are made based on easily accessible information such as the nominal representation of a currency (Svedsäter, Gamble, & Gärling, 2007). Accordingly, Shafir, Diamond, and Tversky (1997) suggest that it is generally easier for people to think in presented face value rather than the real value. Similarly, Raghubir and Srivastava (2002) indicate that exchange rate conversion can be cognitively taxing and, as such, individuals tend to prefer the presented face value rather than the real nominal value in their evaluation. Furthermore, if the face value is greater than the real nominal value, this can lead to a more positive evaluation. Transferred to our context, if the presented Dollar value (i.e., face value) is greater than the real nominal value of a cryptocurrency (e.g., \$100 > 0.01 Bitcoin), framing crypto-compensation as the former (\$100 worth of Bitcoin) should garner greater satisfaction. Formally:

H4b. Message framing moderates the effectiveness of crypto-compensation such that the positive impact of familiar (vs. unfamiliar) cryptocurrencies on recovery satisfaction is stronger (weaker) for the Dollar (nominal cryptocurrency) value framing.

3. Overview of studies

Before carrying out the experiments, a pilot study explores consumers' familiarity with cryptocurrency. Next, four experimental studies examine the effects of cryptocurrency as a compensation type on customer satisfaction, by comparing it with existing forms (cash/voucher) and establishing boundary conditions for its effect. Study 1 tests the effects of crypto-compensation versus voucher (H1a) and cash (H1b) on customer satisfaction and

examines the moderating effect of consumer innovativeness (H1c) as a customer-related boundary condition. Study 2 examines the moderating effects of choice on the effectiveness of crypto-compensation (H2). Study 3 examines which benefits of crypto-compensation have the greatest effect on satisfaction (H3). Finally, Study 4 examines the effect of cryptocurrency type familiarity (H4a) (Bitcoin as a more familiar cryptocurrency vs. EOS as a less familiar alternative) as well as compensation message framing (H4b) on satisfaction (i.e., nominal cryptocurrency value vs. Dollar value).

3.1. Pilot Study

Data was collected using Clickworker, an online market research company used in prior research (Diamantopoulos, Davydova, & Arslanagic-Kalajdzic, 2019). A total of 142 US participants completed the survey ($M_{Age} = 35.44$, $SD = 11.5$; Female = 66%). Overall, 86.6% of respondents stated that they knew of cryptocurrency, and those who were aware of cryptocurrency have a moderate level of familiarity (based on a 7-point Likert-type item; $M_{Familiarity} = 3.15$, $SD = 1.54$). There were no significant differences in terms of familiarity and awareness based on basic demographics such as gender and age (all p 's > .05). An open-ended question asked respondents what forms of cryptocurrency they had heard of before, with 82.4% stating Bitcoin. Additional open-ended questions explored consumer perceptions of cryptocurrency. Overall, advantages for cryptocurrency included security (44%), convenient wide spending and cash convertibility (16%), as well as investment (14%). Further, participants stated cash conversion and use beyond an organization (19%) as the key benefits of cryptocurrency over voucher while some had concerns about how many organizations would offer the ability to use cryptocurrency (17%).

4. Study 1: The effectiveness of crypto-compensation vs. voucher and cash

The purpose of this study is to examine the effectiveness of cryptocurrency as a recovery tool in comparison with traditional compensation types (i.e., voucher and cash).

4.1. Design and procedure

We conducted a scenario-based experiment with a single factor between-subject design with three conditions manipulating compensation type (voucher, cryptocurrency, and a cash group). To enhance ecological validity, audio-visual stimuli in the form of video clips were used (Gelbrich et al., 2015). We used Videoscribe software to create animated video clips for each of our scenarios, showing elements of the hotel with each of the scenarios narrated by a voice artist. A sample of 110 US participants ($M_{\text{age}} = 35.76$, $SD = 9.32$; Female = 59%) were recruited from Clickworker and randomly assigned to one of three conditions. Closely adapted from Gelbrich et al. (2016), the scenario described a service failure (faulty air-conditioning) for a guest who paid \$150 for a one night stay at a hotel on a hot summer day. When the customer complained the next day, the employee apologized and offered compensation. The compensation was provided as a voucher for a future stay, cash, or as Bitcoin, at the value of \$100 (see Web Appendix A for vignettes). Following the scenario, the participants reported manipulation and realism checks, then dependent, control, and demographic variables. Akin with Oppenheimer, Meyvis, and Davidenko (2009), one scenario-based attention check and one instruction check were included to increase data validity.

4.2. Measures

The manipulation check for the compensation type was nominal with participants having to select the compensation they received (voucher/cash/Bitcoin). The dependent variable, satisfaction with recovery, was measured through a three-item scale from Maxham III and Netemeyer (2002), ($\alpha = .98$; e.g., “In my opinion, the hotel provided a satisfactory resolution to the problem on this particular occasion”). In addition, consumer innovativeness was assessed with 4 items ($\alpha = .94$; e.g., “In general, I am among the first to buy new products

when they appear on the market”) adapted from Steenkamp and Gielens (2003). Blame attribution and perceived severity were included as controls and were assessed with one-item from Grewal et al. (2008) and Hess, Ganesan, and Klein (2003), respectively. Further, two controls related to cryptocurrencies were measured: prior knowledge of cryptocurrency (yes/no) and attitude towards cryptocurrencies (ATC) using three-items ($\alpha = .95$; e.g., “What are your views on cryptocurrencies?”; anchored at 1: Negative to 7: Positive). Seven-point Likert scales (1: Strongly disagree to 7: Strongly agree) were used throughout, except for perceived severity and ATC which adopted seven-point semantic differential scales (see Web Appendices B and C for measures and factor correlations, respectively).

4.3. Realism and manipulation checks

The scenarios were perceived as realistic as they were significantly higher than the scale midpoint ($M_{\text{Realism}} = 5.58 > 4.00, p < .01$). A minimum of 90% correctly recognized the compensation type in each condition, leading to the exclusion of three participants akin to Oppenheimer et al. (2009).

4.4. Hypothesis testing

To test H1a and H1b, an ANCOVA found a significant effect of compensation type on satisfaction, including the four control variables ($F = 6.93, p < .01, \eta^2 = .12$). Pairwise comparisons indicate that satisfaction in the Bitcoin compensation group ($M_{\text{Bitcoin}\$100} = 4.70$) is significantly higher than the cash ($M_{\text{Cash}\$100} = 3.77, p < .05$) and voucher ($M_{\text{Voucher}\$100} = 3.21, p < .01$) groups.

H1c proposes consumer innovativeness to moderate the remedial effect of crypto-compensation on satisfaction. A moderation analysis of a multi-categorical independent variable (i.e., compensation type) is conducted, with the referent group of voucher on satisfaction, including the four control variables as covariates (Hayes & Preacher, 2014). A significant interaction was found for crypto-compensation ($b = .93, p < .01$), but not for the

cash group ($p = .22$). Again, compared with the voucher group, there is a significant negative effect of crypto-compensation ($b = -1.96, p < .05$), but not for cash compensation ($b = -0.88, p = .50$). Furthermore, the effect of consumer innovativeness on satisfaction was not significant ($b = -.17, p = .30$). Figure 1 depicts the moderation result: The positive effect of crypto-compensation on satisfaction increases with higher innovativeness levels, supporting H1c.

[Insert Figure 1 here]

4.5. Discussion of Study 1

Study 1 supports H1a, which proposes that crypto-compensation is more effective than voucher in increasing customer satisfaction following a service failure in a hotel context. Further, cryptocurrency also outperformed cash in improving customer satisfaction. This is in line with the general proposition of prospect theory. Here, partial crypto-compensation represents a more favorable outcome than voucher and cash due to its cumulative benefits (wide spending opportunities and cash convertibility along with the potential increase in value) representing a more attractive prospect to customers (Kahneman & Tversky, 1979), supporting H1a and H1b. Lastly, we observe for more innovative consumers a significantly higher increase in satisfaction with cryptocurrency compared to the traditional compensation types than those less innovative, supporting H1c.

While our results suggest that crypto-compensation outperforms traditional compensation forms including cash, it should be noted that cash is an expensive compensation type and thus, rather unusual. Firms often prefer vouchers to also increase future purchases (Gelbrich & Roschk, 2011). Thus, in all subsequent studies, we exclusively concentrate on voucher. Further, to add some generalizability to our findings, we (partially) replicated the study in an airline context and the results were consistent with our hotel study findings (see Web Appendix E). We also measured purchase intention in line with Grewal et al. (2008) as

an additional DV across all studies and the results generally followed the same pattern as satisfaction. For the sake of brevity, Web Appendices D to H) outline these results.

5. Study 2: Consumer choice

Study 1 provided initial but promising support for crypto-compensation as a potential recovery tool and identified an important customer-related boundary condition. The purpose of this study is to examine the moderating effect of choice (between cryptocurrency and voucher) on satisfaction.

5.1. Design and procedure

We conducted a scenario-based experiment with a 2 (choice: yes vs. no) * 2 (compensation type: voucher vs. cryptocurrency) between subjects, yoked design with four conditions. A sample of 156 US participants, recruited through Clickworker, completed the questionnaire ($M_{\text{age}} = 33.36$, $SD = 10.61$; Female = 60.9%). The scenario involved imagining they had stayed a night at a hotel while on vacation in a room costing \$150. That night there was a leak, which they reported at 2 a.m. and it took one hour to fix. This caused a poor night's sleep, which they complained about to the receptionist when checking out.

The core scenario described that the company typically offers one of the following two compensation types: Voucher [valid at this hotel for six months] or Bitcoin [the world's largest digital currency]. In the choice conditions, the employee offers them a choice and they choose the most preferred compensation type. For the no-choice conditions, the employee does not offer them a choice and provides them with voucher/Bitcoin. In all conditions, the value of the compensation was \$100. After the scenario, participants were presented with the measures as before.

5.2. Measures

The choice manipulation was checked using a single item semantic differential scale (“To what extent would you feel you had freedom over the compensation type you received?”); anchored at 1: *Not at all* to 7: *Very much*) from Botti and Iyengar (2004). A nominal check confirmed the manipulation of the compensation type. Participants were first asked what type of compensation they were offered (voucher vs. cryptocurrency). The measure for dependent variables and controls mirror Study 1.

5.3. Manipulation checks

Half of the participants had a choice between the two types of compensation (voucher/Bitcoin). Among the choosers, 41 participants chose Bitcoin, and 37 chose voucher. Therefore, 41 and 37 respondents were randomly assigned to the non-choice conditions for Bitcoin and voucher, respectively. Choosers considered themselves as having greater freedom than non-choosers ($M_{\text{choosers}} = 5.51 > M_{\text{non-choosers}} = 2.27, p < .01$). Therefore, the manipulation of choice was successful. In addition, a minimum of 84% correctly recognized the compensation type in each condition, resulting in the exclusion of 18 participants in line with Oppenheimer et al., (2009). The scenarios were perceived as realistic ($M_{\text{Realism}} = 5.35 > 4.00, p < .01$).

5.4. Hypothesis testing

An ANCOVA with choice and compensation type as the independent variables, satisfaction as the dependent variable, and all four controls demonstrated a significant effect of choice ($F_{\text{Choice}} = 8.61, p < .01, \eta^2 = .06$) and compensation type ($F_{\text{Comp-Type}} = 4.94, p < .05, \eta^2 = .04$), as well as their interaction ($F_{\text{Choice*Comp-type}} = 4.97, p < .05, \eta^2 = .04$). Figure 2 depicts the mean satisfaction values for the different conditions. Pairwise comparisons indicate that satisfaction in the Bitcoin compensation group is significantly higher than the voucher group when people are offered choice ($M_{\text{Bitcoin}} = 5.23 > M_{\text{Voucher}} = 4.00, p < .01$), but there is no

significant difference between the two compensation types among non-choosers ($M_{\text{Bitcoin}} = 4.16 \approx M_{\text{Voucher}} = 3.99, p = .97$). These results support H2.

[Insert Figure 2 here]

5.5. Discussion of Study 2

Study 2 builds on the first study by exploring the moderating effects of choice on the effectiveness of crypto-compensation. The findings confirm that people derive the most satisfaction when offered a choice in the recovery outcome. Interestingly, when it comes to vouchers, there are no differences between choosers and non-choosers, but for Bitcoin, choosers report a significantly higher level of satisfaction. Perhaps these results are because those who choose Bitcoin over voucher are aware of its lower restrictions (in terms of spending or conversion to cash) and higher benefit (in terms of the potential rise in value). It should be noted that the roughly equal split between Bitcoin and voucher among choosers might be ascribed to the lack of communicating the various cryptocurrency benefits (in this study) coupled with moderate familiarity of people with cryptocurrencies in general.

6. Study 3: Crypto-compensation benefits

The prior studies tested the efficacy of crypto-compensation based in large through communicating the breadth of potential benefits of this compensation (e.g., convertibility to cash). This study extends our knowledge by examining directly the benefits of crypto-compensation that have the greatest effect on satisfaction.

6.1. Design and procedure

We conducted a scenario-text-based experiment with a single factor (*communicated crypto-compensation benefits*) between-subject design focused on four conditions. These include three *crypto-compensation* benefits suggested by Nazifi et al. (2020) (*Spend widely vs. convertibility vs. investment opportunity*) and a control crypto-compensation where no benefit

was communicated (*no-benefit*). In addition, for robustness, a further comparison condition was included, which offered voucher compensation of the same value.

A sample of 284 US participants completed the questionnaire ($M_{\text{age}} = 38.82$, $SD = 11.86$; Female = 51%), who were recruited through Mechanical Turk, widely used in business research (Gonzalez-Jimenez, Fastoso, & Fukukawa, 2019). Here, the core scenario from Study 2 was used. The participants were randomly assigned to one of the conditions, however, in all conditions, the value of the compensation was \$100. In the *no-benefit* crypto-compensation condition, participants were told: “as compensation, we would like to offer you Bitcoin worth \$100”. The other three crypto-compensation conditions extended the former with the communication of a particular benefit. The *Spend widely* condition stated that “you can easily spend in a wide range of online and offline retailers such as Amazon, Uber, Walmart, Netflix if you like”. The *Convertibility* condition expressed “which after you take away you can convert to cash through an exchanger”. Whereas the *investment* condition conferred that cryptocurrency is “a form of investment which has been shown year on year to generally rise in value based on the past decade. This is much like gold as there is a limited supply”. After the scenario, participants were presented with the measures as before

6.2. Measures

Nominal checks confirmed the manipulations; participants were first asked what type of compensation they were offered (voucher vs. cryptocurrency) and in the case of the cryptocurrency conditions, they were asked if the respective condition benefit was communicated answering yes or no. The measure for dependents variables and controls mirror Study 2.

6.3. Realism and manipulation checks

The scenarios were perceived as realistic ($M_{\text{Realism}} = 4.40 > 4.00$, $p < .01$). All participants answered the compensation type correctly. A minimum of 81% correctly

recognized the compensation benefit communicated in each condition, this led to the exclusion of 21 participants akin to Oppenheimer et al. (2009).

6.4. Hypothesis testing

An ANCOVA found a significant effect of communicated cryptocurrency benefits on satisfaction, including the four control variables used in all other studies ($F = 13.30, p < .01, \eta^2 = .27$). Pairwise comparisons reveal that satisfaction is significantly higher when it was communicated that cryptocurrency could be widely spent, compared to all other cryptocurrency conditions ($M_{\text{Spendwidely}} = 4.60 >, M_{\text{NoBenefit}} = 3.62, M_{\text{Convertability}} = 3.89, M_{\text{Investment}} = 4.00, p < .05$). Furthermore, spend widely condition outperformed the voucher condition ($M_{\text{Spendwidely}} = 4.60 >, M_{\text{Voucher}} = 3.63, p < .01$). However, no statistical differences were found for the other three cryptocurrency conditions with the voucher comparison ($p > .05$).

6.5. Discussion of Study 3

This study provides the first insights into the communication of different benefits of cryptocurrencies as a compensation tool. It found that people derive the most satisfaction from the ability to spend it widely at online and offline retailers, compared to the other potential benefits and voucher. Given this aforementioned benefit outperformed voucher, our finding that communicating no benefits of crypto-compensation performed comparably with voucher suggests consumers may lack awareness of the benefits of cryptocurrency. Convertibility was perhaps less satisfying due to the hassle required going to an exchanger. Cryptocurrency as an investment opportunity was arguably less appealing given the perception of potential risk within a period of economic instability creating general pessimism towards investments at the time of the survey (Adrian & Natalucci, 2020). In essence, the current results broaden prior studies (e.g., Becker, 2018) that support cryptocurrency can be a useful tool in everyday business because of its wide spending opportunities.

7. Study 4: cryptocurrency type familiarity and message framing

This study examines two firm-related factors: the cryptocurrency type familiarity (Bitcoin as a more familiar cryptocurrency vs. EOS as a less familiar alternative) as well as compensation message framing (i.e. nominal cryptocurrency value vs. Dollar value).

7.1. Design and procedure

An experiment with a 2 (Cryptocurrency type familiarity: Bitcoin vs. EOS) * 2 (compensation message framing: nominal cryptocurrency vs. Dollar values) between-subject design was conducted with a similar core scenario as in study 1. In total, 135 US participants ($M_{\text{age}} = 36.32$, $SD = 11.04$; Female = 56%) were recruited and randomly assigned to conditions. Compensation type familiarity (high vs. low) was manipulated by presenting compensation as a highly familiar cryptocurrency, Bitcoin (Ren, Hu, Zhu, Ren, & Choo, 2020), or a much less familiar cryptocurrency, EOS, in the US. In all conditions, the customer received an equal level of partial compensation in terms of Dollar value (\$100 worth of compensation in either Bitcoin or EOS, which is also equivalent to .01 Bitcoin, or 35 EOS at the time of data collection). Message framing was manipulated by presenting the compensation as either only the nominal cryptocurrency value or Dollar value equivalence or (e.g., 0.01 Bitcoin vs. \$100 worth of Bitcoin). Following the scenario, participants were presented with the measures as before.

7.2. Measures

A nominal manipulation check for the compensation type tested which cryptocurrency was offered. In addition, participant's level of familiarity with each of the two types of cryptocurrencies was checked using a semantic differential item (anchored at 1: I have not heard about it at all to 7: I have heard about it a lot). The message framing manipulation was checked using an open-ended question asking people to type the compensation amount. Realism, satisfaction, and controls were measured as before.

7.3. Realism and manipulation checks

The scenario was perceived as realistic ($M_{\text{Realism}} = 5.39 > 4.00, p < .01$). Supporting the compensation type manipulation, a minimum of 97% correctly identified the type offered across conditions. Furthermore, mean values for familiarity differed as expected ($M_{\text{Bitcoin}} = 5.21 > M_{\text{EOS}} = 2.06, p < .01$). The framing manipulation was reassured, with a minimum of 88% correctly reporting the monetary/real nominal values across conditions. As in previous studies, those who failed the nominal checks were excluded ($n = 13$).

7.4. Hypothesis testing

An ANCOVA revealed cryptocurrency type familiarity predicted satisfaction, with the inclusion of the controls ($F = 5.41, p < .05, \eta^2 = .08$). Post-hoc tests indicate that satisfaction in the \$100 Bitcoin group is significantly higher than the \$100 EOS group ($M_{\text{Bitcoin}\$100} = 4.89 > M_{\text{EOS}\$100} = 3.91, p < .05$). Therefore, H4a is supported. Further, the results show the significant effect of the compensation message framing ($F = 21.70, p < .01, \eta^2 = .16$) as well as the interaction between compensation type familiarity and message framing ($F = 13.93, p < .01, \eta^2 = .11$). Figure 3 depicts the mean satisfaction values for different groups. Pairwise comparisons examine the nature of this interaction, comparing the nominal cryptocurrency vs. Dollar value equivalence for each of the two cryptocurrency groups. For the two Bitcoin groups, the Dollar value framing (i.e., \$100 worth of Bitcoin) leads to significantly higher satisfaction than the nominal cryptocurrency value (i.e., 0.01 Bitcoin) ($M_{\text{Bitcoin}\$100} = 4.90 > M_{\text{Bitcoin} 0.01} = 2.49, p < .01$). However, for the two EOS groups, there is no significant difference between the Dollar value framing (i.e., \$100 worth of EOS) and the nominal cryptocurrency amount (i.e., 35 EOS) groups ($M_{\text{EOS}\$100} = 3.92 > M_{35\text{EOS}} = 3.66, p = 0.51$). Interestingly, Bitcoin becomes significantly less effective than EOS in improving customer satisfaction when only the nominal cryptocurrency amount is communicated ($M_{\text{Bitcoin} 0.01} = 2.49 < M_{35\text{EOS}} = 3.66, p < .01$), supporting H4b.

[Insert Figure 3 here]

7.5. Discussion of Study 4

In implementing crypto-compensation, this study finds that similar to the findings of the branding literature (Ha & Jang, 2010; Rindfleisch & Inman, 1998), familiar cryptocurrency brands (unless some negative attitude is associated) lead to greater recovery satisfaction. Thus, managers should opt for more well-known cryptocurrencies such as Bitcoin (H4a supported). Further, consideration should be given to the framing of the compensation message (i.e., the real nominal value of the offering in the base cryptocurrency vs. its monetary value equivalence in fiat currencies such as the US Dollar). Here, we find that contrary to H4a, Bitcoin is less effective than EOS in improving customer satisfaction when the real nominal value is communicated. This finding is in line with prior research on the illusionary effects of nominal values in currencies (Raghubir & Srivastava, 2002), showing that the offering in the higher numeric value (here the Dollar value) is perceived more favorably (H4b supported).

8. General Discussion

8.1. Theoretical Contributions

In a time where customer satisfaction stemming from service recovery is paramount, our paper shifts perspective to the potential next generation of compensatory options: crypto-compensation. Extending valued understanding already offered by scholars on the efficacy of service recovery tools, we provide initial insights on cryptocurrency as a potential innovative alternative to traditional compensation tools (Grewal et al., 2008; Noone & Lee, 2011; Roschk & Gelbrich, 2014). Accordingly, our research provides three novel theoretical contributions: First, we build on Martin, Gustafsson, and Choi (2016) and Chalmers et al. (2019) in relation to service innovation adoption and other applications of blockchain technology, and specifically address a call for research by Nazifi et al. (2020) on the efficacy of cryptocurrencies in a service recovery context. We find there is some promise in cryptocurrency as a viable

alternative to traditional compensation types (Roschk & Gelbrich, 2014), that needs to be considered by managers and academics. Our findings suggest that partial crypto-compensation may provide improved effects on customer satisfaction versus voucher and cash. These results are important to consider as until now cash has been known as the most effective compensation method (Noone & Lee, 2011). However, we must caveat this finding of promise in crypto-compensation, with the need for clear and explicit communication to consumers around its benefits. Further, we provide an important customer-related boundary condition for the effect of crypto-compensation versus traditional methods on customer satisfaction. Specifically, we extend the works of Im et al. (2003) and Thakur and Srivastava (2014) on the role of consumer innovativeness and show that higher consumer innovativeness further amplifies the positive link between crypto-compensation and satisfaction. Specifically, more innovative consumers are more open to embracing the novelty of cryptocurrency.

Second, we respond to calls for research on the role of customer participation in service recovery (Dong & Sivakumar, 2017; Hazée et al., 2017). Specifically, we contribute to the service recovery literature by examining the impact of choice with the service recovery outcomes in a crypto-compensation context where customers' knowledge and understanding of different options may not be high (Henry et al., 2018). This is in contrast to prior studies that focus on choice with different recovery outcomes that are familiar to customers (e.g., refund, voucher, and re-performed service) (Roschk & Gelbrich, 2014). Given the increasing uptake of cryptocurrency in many customer-facing sectors, we demonstrate that the positive effect of choice holds for this important context. Indeed, consumers derived the most satisfaction when offered a choice, and those who chose crypto-compensation had significantly higher levels of satisfaction. This finding supports prior research (Mattila & Cranage, 2005; Hazée et al., 2017) suggesting that offering choice to customers gives them a feeling of mastery and control over the situation resulting in increased satisfaction.

Third, we contribute to an important understanding of how firms should best implement cryptocurrency as an alternative form of compensation by 1) focusing on the framing of the benefits, 2) examining the familiarity of the particular currency, and 3) considering the numeric presentation of the compensation value. These actions will now be discussed in sequence. First, we find that people derive the most satisfaction from the ability to spend cryptocurrency widely, while less satisfaction was evident when considering convertibility and investment opportunity. This, to an extent, contrasts with prior studies that uphold the notion that consumers' predilection towards cryptocurrencies is located in their ability to grow in value (Baur et al., 2018). Albeit, the lack of favorability of cryptocurrency as an investment is potentially due to the timing of our study (with negative market sentiments caused by the COVID-19 pandemic) (Adrian & Natalucci, 2020). Furthermore, cash convertibility as a benefit may have been more favorable if it was seamless, unlike the current situation where an intermediary is required to perform the exchange for a small fee. In addition, given that in the majority of our experiments the benefits of cryptocurrencies were explicitly communicated to participants, the generalizability of our findings is constrained to this circumstance. Further, it seems combining the various benefits of cryptocurrencies (rather than communicating them individually) may have a compound effect, particularly when people have moderate familiarity with cryptocurrencies. This may explain why crypto-compensation outperformed cash and voucher groups in Study 1 whereas cash conversion and investment benefits were not individually superior to the voucher group in Study 3.

Second, furthering work by Söderlund (2002) and Ha and Jang (2010) on familiarity with market offerings, we show that Bitcoin as a more familiar cryptocurrency garners greater satisfaction than a less familiar alternative such as EOS. We urge business researchers who are studying cryptocurrencies to consider carefully the impacts of currency familiarity in further investigations. Lastly, our results support the proposition of the illusionary effect of numeric

values, in essence, the bigger, the better. Thus, extending Kim and Kramer (2006) and Raghurir and Srivastava (2002)'s studies, we show that the numeric compensation message framing can influence compensation effectiveness such that the greater the communicated numeric value, the greater the customer satisfaction.

8.2. Managerial Implications

We provide two broad levels of managerial implications, answering the two following questions: *should* managers offer cryptocurrencies as the next generation of recovery tools (i.e., Compensation 2.0)? And if so, *how* should this be implemented? Centrally, our findings suggest crypto-compensation should be considered by management as a potential alternative to voucher and cash for raising customer satisfaction. Furthermore, following our finding that innovative consumers seem to respond more positively to crypto-compensation, certain industries/firms may benefit more than others especially in the near future (e.g., start-ups or those broadly related to technology). Given our study provides first insights into crypto-compensation, the only advice we can be fully assured in giving is as follows: Managers need to open their minds to crypto-compensation, and space for discussion must be written into boardroom agendas. Importantly, practitioners should carry out their own market research on their specific markets/industries to ascertain the fit of this strategy with their consumer base before taking steps to operationalize this practice. Moreover, managers should be mindful of the timing of the research they conduct on their consumer base, as factors such as market volatility are likely to impact perceptions of cryptocurrency as an investment opportunity.

If firms decide to pursue or at least trial a crypto-compensation strategy, how should this be done? Customers should be offered a choice between traditional and crypto-compensation following a service failure. Our findings suggest that those who chose crypto-compensation had significantly higher satisfaction. Furthermore, we re-iterate further the need to educate customers on the use of cryptocurrencies and their benefits both at the time of

offering service recovery and pre-emptively through a content marketing strategy. It is thus critical that if crypto-compensation is offered that employees are trained to articulate all the various benefits, in particular, that it can be widely spent (both online and offline) either directly at some retailers or indirectly through popular third-party mobile apps. Specifically, several start-up companies such as Flexa and Fold offer easy cryptocurrency payment solutions at major retailers (Torpey, 2019; Cuthbertson, 2019).

In addition to benefits communication, managers should offer familiar (well-known) cryptocurrencies such as Bitcoin, rather than those that are less known. Furthermore, when considering illusionary effects, managers generally should communicate the numeric value in Dollars rather than the real nominal value of the offering, especially if the former is much greater than the latter. Specifically, Bitcoin as the first and largest cryptocurrency with the highest market capitalization is perceived more favorably than other less known alternatives. However, when selected as the recovery tool, due to its very low real nominal value, the US Dollar equivalent should be communicated. Albeit the case managers must carefully consider both the familiarity with cryptocurrency types together with the nominal vs. Dollar values to best optimize their offering.

8.3. Limitations and Future Research

As the first examination of crypto-compensation, our studies provide a good platform for further examination into this important and novel field of research. However, we do acknowledge some limitations. First, the scenario-based design was employed, and though popular within business research and while measures were taken to increase ecological validity, relationships must be re-assessed using field data measuring actual behaviors (Bitner, 1990). Further, the use of a real versus fictional organization may lead to varying results. As such, we encourage other researchers to replicate these findings in different industry contexts and organizations to assess the generalizability of the phenomenon.

Second, the present study demonstrates the superior effectiveness of cryptocurrencies compared to traditional compensation (voucher or cash) for partial compensation. It might be especially promising for this compensation range, because its manifold benefits (cash conversion, spending at various retailers, and the potential rise in value) compared to traditional compensation may create an added value for customers that increases the perceived value of partial compensation amounts. Still, the non-linear relationship between compensation level and post-complaint satisfaction (Gelbrich et al., 2016) leaves room to study the effect of crypto-compensation more extensively along the complete compensation continuum (e.g., full compensation and overcompensation). Specifically, the saturation effect inherent to higher compensation levels may tone down the superior value of crypto-compensation, and thus warrant further investigation. Moreover, this is an initial study and, as such, further research should consider the implications of offering crypto-compensation in different contexts, different types of service failures (i.e., outcome vs. process failures), as well as both in terms of positive and negative framing.

Third, the nominal cryptocurrency values of \$100 of Bitcoin (i.e., 0.01 BTC) versus EOS (i.e., 35 EOS) were very different, potentially biasing the interaction between cryptocurrency type and message framing. Albeit this study raises an important discussion of challenges associated with the varied nominal values of cryptocurrencies, future research is critical to address the potential bias here. Specifically, it should replicate Study 4 using cryptocurrencies with similar nominal values and examine the effect of a universal message indicating the value of compensation along with the nominal values (e.g., a free night stay worth either \$100/35 EOS/.01 Bitcoin).

Fourth, it would be useful to examine the nature of fluctuations at the time of the study (i.e., the cryptocurrency asset being in an upward or downward cycle). With regard to the latter, while we expected the investment aspect of Bitcoin to be the driving force for enhancing

recovery satisfaction, the negative impact of the COVID-19 pandemic on financial markets which has the potential to be the worst since the great depression (Chan, 2020), may have influenced some of our results (i.e., Study 2 and Study 3). Therefore, it may also be interesting to conduct a longitudinal study to examine people's reactions to crypto-compensation in general and evaluate the differential effect of the three main benefits over traditional recovery tools at different economic conditions.

Finally, consumer demographics (e.g., age, gender, income, and education) and characteristics (e.g., technology affinity or general risk perception) may warrant further examination. Specifically, risk-averse individuals tend to assume a high probability that actions or events go along with negative consequences (Bauer, 1960). Customers' risk perception is argued to be crucial during service recovery (Orsingher et al., 2010). Given the volatility of cryptocurrencies, high risk-averse customers might expect a high probability that this compensation type could have adverse financial effects, and thus may be less receptive to it than their low risk-averse counterparts. In a similar vein, the current study finds that choice over the recovery type impacts the effectiveness of crypto-compensation, showing less satisfaction with cryptocurrency among non-choosers. In future research, it would be interesting to investigate what percentage of consumers do not get their most preferred recovery option and which cognitive mechanism applies when they form their recovery evaluation.

Declaration of Competing Interest

None.

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Table 1. Summary of marketing and related literature examining cryptocurrency

Authors (Year)	Journal	Type	Context	Main contributions to cryptocurrency research
Giudici et al. (2020)	Journal of Industrial and Business Economics	C	Business Management	Cryptocurrency is argued to meet market demand as it offers more secure, faster payments; yet holding unstable value. Regulation issues are discussed and outlined to go against the ethos of cryptocurrency's inception, with a call for research to better understand the movement.
Barreto, Maggia, and Acevedo (2019)	RETOS	C	Marketing	Cryptocurrencies and blockchain technology are proposed as a tool to reduce poverty in the region through economic activities from tourism.
Low and Marsh (2019)	The Journal of Investing	C	Retail	Cost-saving calculations and benefits from a consumer perspective are considered in relation to the use of cryptocurrencies as an electronic payment system.
Nasir, Huynh, Nguyen, and Duong (2019)	Financial Innovation	E	Business Management	A review of Bitcoin and its potential value is discussed, as well as an assessment of the number of Google searches and their impact on the value of cryptocurrency. The more Google searches for Bitcoin, the more positive return for Bitcoin and a surge in trading.
Wu and Chang (2019)	International Journal of Hospitality & Tourism Administration	E	Marketing	A research framework of experiential loyalty intentions in the context of bitcoin travel is created to further discuss experiential motivation, experiential strength, experiential co-creation, and dimensions of experiential relationship quality.
Button (2018)	Software Quality Professional	C	Business Management	Cryptocurrencies in developing economies are considered and while already being adapted socially and politically have the potential to provide important breakthroughs for businesses.
Chakrabarti and Chaudhuri (2017)	International Research Journal of Engineering and Technology	C	Retail	Blockchain technology is considered in some business processes in the retail sector to benefit customers and retailers. The study highlights the market trend in blockchain adoption as well as some of the challenges.
DeVries (2016)	International Journal of Business Management and Commerce	C	Business Management	Cryptocurrency, specifically Bitcoin, is discussed in terms of potentials for digital trade markets, and an analysis of the strengths, weaknesses, opportunities, and threats are outlined.
Trautman (2016)	The Consumer Finance Law Quarterly Report	C	Business Management	Some of the disruptive changes that are likely to occur in financial services due to rapid technological advances are examined. Virtual currencies and the genesis of Bitcoin are summarized, along with an explanation and importance of blockchain technology.
Rose (2015)	International Business & Economics Research Journal	C	Business Management	A general discussion around Bitcoin is provided, as well as the potential for different perspectives across fields such as computing and economics.

Note: C = Conceptual; E= Empirical

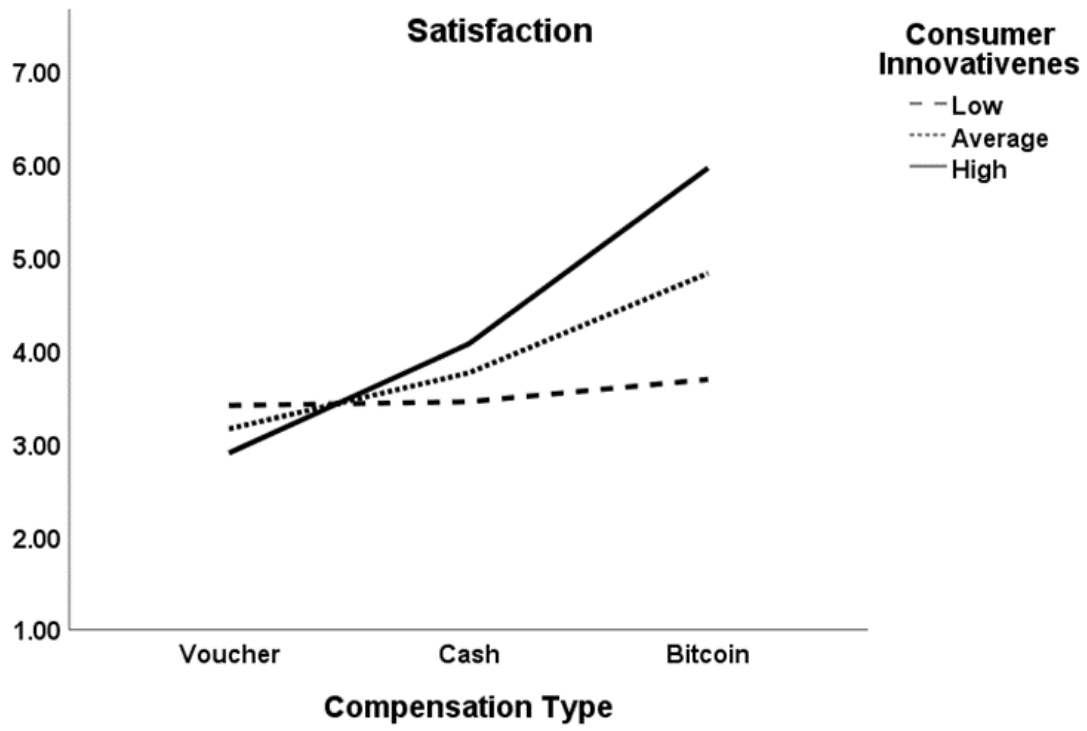


Fig. 1. The moderating effect of consumer innovativeness

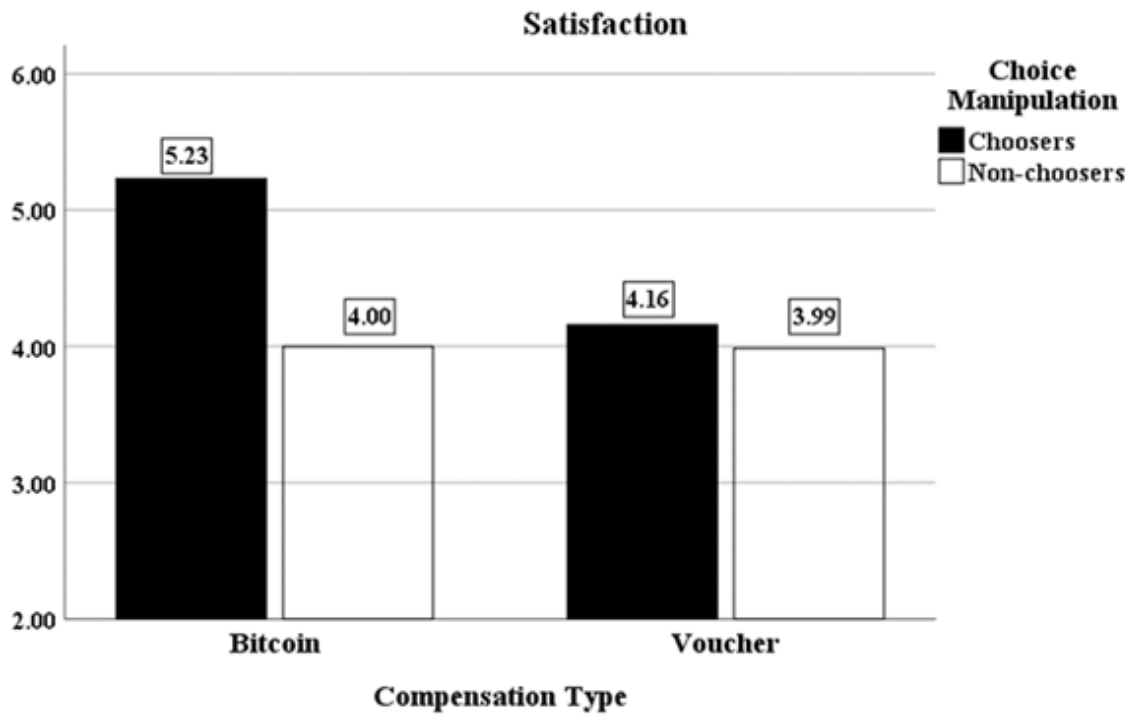


Fig. 2. The moderating effect of choice

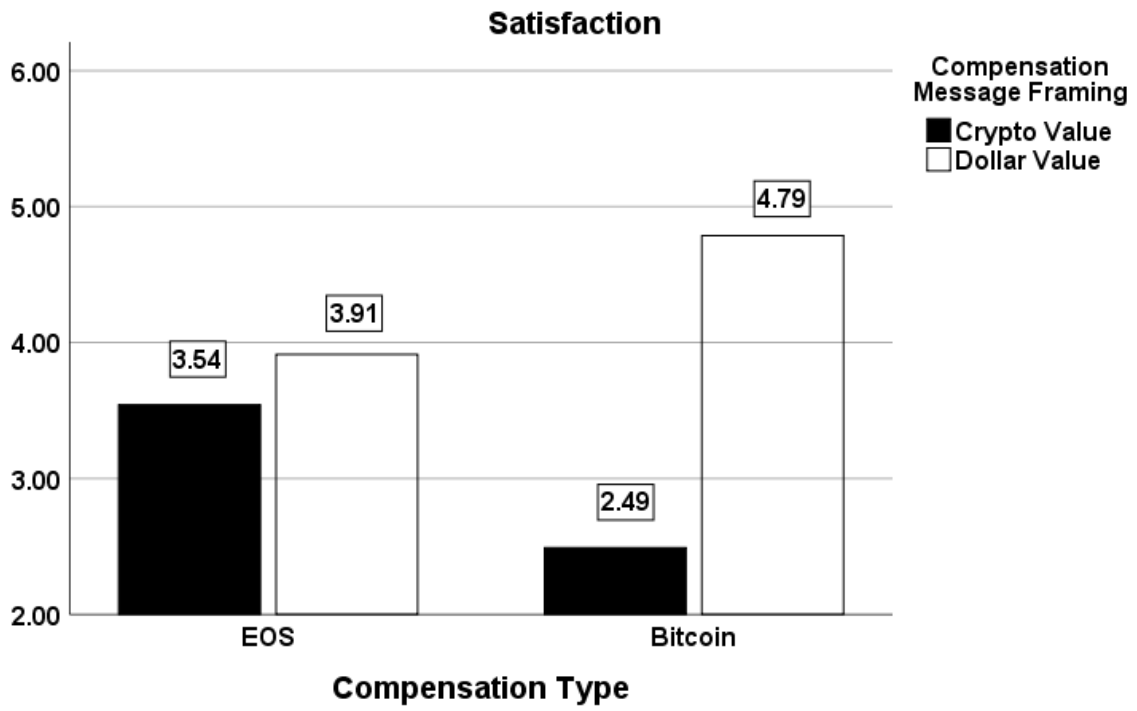


Fig. 3. The moderating effects of compensation message framing

References

- Adrian, T. & Natalucci, F. 2020. COVID-19 Crisis Poses Threat to Financial Stability. IMFBlog.
- Al-Amri, R., Zakaria, N. H., Habbal, A. & Hassan, S. (2019). Cryptocurrency adoption: current stage, opportunities, and open challenges. *International Journal of Advanced Computer Research*, 9 (44), 293-307.
- Bajpai, P. 2019. *The 10 Most Important Cryptocurrencies Other Than Bitcoin?* [Online]. @Investopedia. Available: <https://www.investopedia.com/tech/most-important-cryptocurrencies-other-than-bitcoin/> [Accessed 24 October 2019].
- Barker, J. T. 2019. *Why Bitcoin Has a Volatile Value* [Online]. @Investopedia. Available: <https://www.investopedia.com/articles/investing/052014/why-bitcoins-value-so-volatile.asp> [Accessed 28 October 2019].
- Barreto, P. I. B., Maggia, P. J. a. U. & Acevedo, P. S. I. (2019). Cryptocurrencies and blockchain in tourism as a strategy to reduce poverty. *Retos*, 9, 18.
- Bartels, J. & Reinders, M. J. (2011). Consumer innovativeness and its correlates: A propositional inventory for future research. *Journal of Business Research*, 64 (6), 601-609.
- Bauer, R. A. 1960. Consumer behavior as risk taking. In: HANCOCK, R. (ed.) *Dynamic Marketing for a Changing World*. Chicago, IL: American Marketing Association.
- Baur, D. G., Hong, K. & Lee, A. D. (2018). Bitcoin: Medium of exchange or speculative assets? *Journal of International Financial Markets, Institutions and Money*, 54 (May), 177-189.
- Becker, C. (2018). Bitcoin rising. *Strategic Finance*, 99 (12), 15-17.
- Bitner, M. J. (1990). Evaluating service encounters: the effects of physical surroundings and employee responses. *The Journal of Marketing*, 54 (2), 69-82.

- Bitner, M. J., Booms, B. H. & Tetreault, M. S. (1990). The service encounter: diagnosing favorable and unfavorable incidents. *The Journal of Marketing*, 54 (1), 71-84.
- Böhme, R., Christin, N., Edelman, B. & Moore, T. (2015). Bitcoin: Economics, technology, and governance. *Journal of Economic Perspectives*, 29 (2), 213-38.
- Botti, S. & Iyengar, S. S. (2004). The Psychological Pleasure and Pain of Choosing: When People Prefer Choosing at the Cost of Subsequent Outcome Satisfaction. *Journal of Personality and Social Psychology*, 87 (3), 312-326.
- Bruner, G. C. 2017. *Marketing Scales Handbook: Multi-Item Measures for Consumer Insight Research (Volume 9)*, Fort Worth, TX, GCBII Productions.
- Button, S. (2018). Cryptocurrency and Blockchains in Emerging Economies. *Software Quality Professional*, 20 (3), 39-46.
- Chakrabarti, A. & Chaudhuri, A. K. (2017). Blockchain and its Scope in Retail. *International Research Journal of Engineering and Technology*, 4 (7), 3053-3056.
- Chalmers, D., Matthews, R. & Hyslop, A. (2019). Blockchain as an external enabler of new venture ideas: Digital entrepreneurs and the disintermediation of the global music industry. *Journal of Business Research*.
- Chan, S. P. 2020. 'World faces worst decline since 1930s depression' [Online]. @BBCNews. Available: <https://www.bbc.com/news/business-52273988> [Accessed 4 June 2020].
- Chebat, J. C., Davidow, M. & Codjovi, I. (2005). Silent voices why some dissatisfied consumers fail to complain. *Journal of Service Research*, 7 (4), 328-342.
- Cuthbertson, A. 2019. *Bitcoin now accepted at Starbucks, Whole Foods and dozens of other major retailers* [Online]. Independent. Available: <https://www.independent.co.uk/life-style/gadgets-and-tech/news/bitcoin-stores-spend-where-starbucks-whole-foods-crypto-a8913366.html> [Accessed 20 August 2020].

- Devries, P. D. (2016). An analysis of cryptocurrency, bitcoin, and the future. *International Journal of Business Management and Commerce*, 1 (2), 1-9.
- Diamantopoulos, A., Davydova, O. & Arslanagic-Kalajdzic, M. (2019). Modeling the role of consumer xenocentrism in impacting preferences for domestic and foreign brands: A mediation analysis. *Journal of Business Research*, 104 (November), 587-596.
- Dong, B. & Sivakumar, K. (2017). Customer participation in services: domain, scope, and boundaries. *Journal of the Academy of Marketing Science*, 45 (6), 944-965.
- Dong, B., Sivakumar, K., Evans, K. R. & Zou, S. (2015). Effect of customer participation on service outcomes: The moderating role of participation readiness. *Journal of Service Research*, 18 (2), 160-176.
- Estelami, H. & De Maeyer, P. (2002). Customer reactions to service provider overgenerosity. *Journal of Service Research*, 4 (3), 205-216.
- Gelbrich, K., Gäthke, J. & Grégoire, Y. (2015). How Much Compensation Should a Firm Offer for a Flawed Service? An Examination of the Nonlinear Effects of Compensation on Satisfaction. *Journal of Service Research*, 18 (1), 107-123.
- Gelbrich, K., Gäthke, J. & Grégoire, Y. (2016). How a firm's best versus normal customers react to compensation after a service failure. *Journal of Business Research*, 69 (10), 4331-4339.
- Gelbrich, K. & Roschk, H. (2011). A Meta-Analysis of Organizational Complaint Handling and Customer Responses. *Journal of Service Research*, 14 (1), 24-43.
- Giudici, G., Milne, A. & Vinogradov, D. (2020). Cryptocurrencies: market analysis and perspectives. *Journal of Industrial and Business Economics*, 47 (1), 1-18.
- Gonzalez-Jimenez, H., Fastoso, F. & Fukukawa, K. (2019). How independence and interdependence moderate the self-congruity effect on brand attitude: A study of east and west. *Journal of Business Research*, 103 (October), 293-300.

- Grewal, D., Roggeveen, A. L. & Nordfält, J. (2017). The future of retailing. *Journal of Retailing*, 93 (1), 1-6.
- Grewal, D., Roggeveen, A. L. & Tsiros, M. (2008). The effect of compensation on repurchase intentions in service recovery. *Journal of Retailing*, 84 (4), 424-434.
- Ha, H. Y. & Perks, H. (2005). Effects of consumer perceptions of brand experience on the web: Brand familiarity, satisfaction and brand trust. *Journal of Consumer Behaviour: An International Research Review*, 4 (6), 438-452.
- Ha, J. & Jang, S. C. S. (2010). Perceived values, satisfaction, and behavioral intentions: The role of familiarity in Korean restaurants. *International Journal of Hospitality Management*, 29 (1), 2-13.
- Hayes, A. F. & Preacher, K. J. (2014). Statistical mediation analysis with a multicategorical independent variable. *British Journal of Mathematical and Statistical Psychology*, 67 (3), 451-470.
- Hazée, S., Van Vaerenbergh, Y. & Armiroto, V. (2017). Co-creating service recovery after service failure: The role of brand equity. *Journal of Business Research*, 74 (May), 101-109.
- Henry, C. S., Huynh, K. P. & Nicholls, G. (2018). Bitcoin awareness and usage in Canada. *Journal of Digital Banking*, 2 (4), 311-337.
- Hess, R. L., Ganesan, S. & Klein, N. M. (2003). Service failure and recovery: the impact of relationship factors on customer satisfaction. *Journal of the Academy of Marketing Science*, 31 (2), 127-145.
- Hoyer, W. D. & Brown, S. P. (1990). Effects of brand awareness on choice for a common, repeat-purchase product. *Journal of Consumer Research*, 17 (2), 141-148.

- Im, S., Bayus, B. L. & Mason, C. H. (2003). An empirical study of innate consumer innovativeness, personal characteristics, and new-product adoption behavior. *Journal of the Academy of Marketing Science*, 31 (1), 61-73.
- Johnson, E. J. & Russo, J. E. (1984). Product familiarity and learning new information. *Journal of Consumer Research*, 11 (1), 542-550.
- Kahneman, D. & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47 (2), 363-391.
- Kbilashvili, D. (2018). Influence of E-Commerce and Cryptocurrency on Purchasing Behavior of Wine Customers. *Global Journal of Management And Business Research*, 18 (3), 1-4.
- Kim, H. M. & Kramer, T. (2006). “Pay 80%” versus “get 20% off”: The effect of novel discount presentation on consumers’ deal perceptions. *Marketing Letters*, 17 (4), 311-321.
- Low, R. & Marsh, T. (2019). Cryptocurrency and Blockchains: Retail to Institutional. *The Journal of Investing*, 29 (1), 18-30.
- Martin, D., Gustafsson, A. & Choi, S. (2016). Service innovation, renewal, and adoption/rejection in dynamic global contexts. *Journal of Business Research*, 69 (7), 2397-2400.
- Mattila, A. S. & Cranage, D. (2005). The impact of choice on fairness in the context of service recovery. *Journal of Services Marketing*, 19 (5), 271-279.
- Maxham Iii, J. G. & Netemeyer, R. G. (2002). Modeling customer perceptions of complaint handling over time: the effects of perceived justice on satisfaction and intent. *Journal of Retailing*, 78 (4), 239-252.

- Nasir, M. A., Huynh, T. L. D., Nguyen, S. P. & Duong, D. (2019). Forecasting cryptocurrency returns and volume using search engines. *Financial Innovation*, 5 (1), 2.
- Nazifi, A., El-Manstrly, D. & Gelbrich, K. (2019). Customers' reactions to different organizational tactics in a service termination context. *European Journal of Marketing*, 54 (1), 26-48.
- Nazifi, A., Gelbrich, K., Grégoire, Y., Koch, S., El-Manstrly, D. & Wirtz, J. (2020). Proactive handling of flight overbooking: how to reduce negative eWOM and the costs of bumping customers. *Journal of Service Research*. June 2020.
doi:[10.1177/1094670520933683](https://doi.org/10.1177/1094670520933683)
- Noone, B. M. & Lee, C. H. (2011). Hotel overbooking: The effect of overcompensation on customers' reactions to denied service. *Journal of Hospitality and Tourism Research*, 35 (3), 334-357.
- Oppenheimer, D. M., Meyvis, T. & Davidenko, N. (2009). Instructional manipulation checks: Detecting satisficing to increase statistical power. *Journal of Experimental Social Psychology*, 45 (4), 867-872.
- Orsingher, C., Valentini, S. & De Angelis, M. (2010). A meta-analysis of satisfaction with complaint handling in services. *Journal of the Academy of Marketing Science*, 38 (2), 169-186.
- Raghubir, P. & Srivastava, J. (2002). Effect of face value on product valuation in foreign currencies. *Journal of Consumer Research*, 29 (3), 335-347.
- Redman, J. 2018. *Brisbane International is Now the World's First Crypto-Friendly Airport* | *Bitcoin News* [Online]. @BTCTN. Available: <https://news.bitcoin.com/brisbane-international-is-now-the-worlds-first-crypto-friendly-airport/> [Accessed 4 June 2020].

- Ren, W., Hu, J., Zhu, T., Ren, Y. & Choo, K. K. R. (2020). A flexible method to defend against computationally resourceful miners in blockchain proof of work. *Information Sciences*, 507 (January), 161-171.
- Rindfleisch, A. & Inman, J. (1998). Explaining the familiarity-liking relationship: mere exposure, information availability, or social desirability? *Marketing Letters*, 9 (1), 5-19.
- Roschk, H. & Gelbrich, K. (2014). Identifying Appropriate Compensation Types for Service Failures A Meta-Analytic and Experimental Analysis. *Journal of Service Research*, 17 (2), 195-211.
- Rose, C. (2015). The evolution of digital currencies: Bitcoin, a cryptocurrency causing a monetary revolution. *International Business & Economics Research Journal (IBER)*, 14 (4), 617-622.
- Shafir, E., Diamond, P. & Tversky, A. (1997). Money illusion. *The Quarterly Journal of Economics*, 112 (2), 341-374.
- Sita. 2020. *Blockchain emerges as priority technology for research among airlines and airports in 2018* | SITA [Online]. Available: <https://www.sita.aero/pressroom/news-releases/blockchain-emerges-as-priority-technology-for-research-among-airlines-and-airports-in-2018> [Accessed 20 August 2020].
- Söderlund, M. (2002). Customer familiarity and its effects on satisfaction and behavioral intentions. *Psychology & Marketing*, 19 (10), 861-879.
- Steenkamp, J. B. E. & Gielens, K. (2003). Consumer and market drivers of the trial probability of new consumer packaged goods. *Journal of Consumer Research*, 30 (3), 368-384.

- Svedsäter, H., Gamble, A. & Gärling, T. (2007). Money illusion in intuitive financial judgments: Influences of nominal representation of share prices. *The Journal of Socio-Economics*, 36 (5), 698-712.
- Thakur, R. & Srivastava, M. (2014). Adoption readiness, personal innovativeness, perceived risk and usage intention across customer groups for mobile payment services in India. *Internet Research*, 24 (3), 369-392.
- Torpey, K. 2019. *Fold Enables Spending Bitcoin At Amazon, Starbucks And Uber Via The Lightning Network* [Online]. Forbes. Available: <https://www.forbes.com/sites/ktorpey/2019/07/10/fold-enables-spending-bitcoin-at-amazon-starbucks-and-uber-via-the-lightning-network/#2e37d3fd435a> [Accessed 20 August 2020].
- Trautman, L. J. (2016). Is disruptive blockchain technology the future of financial services? . *The Consumer Finance Law Quarterly Report*, 69 (232).
- Van Vaerenbergh, Y., Hazée, S. & Costers, A. (2018). Customer participation in service recovery: a meta-analysis. *Marketing Letters*, 29 (4), 465-483.
- Wertenbroch, K., Soman, D. & Chattopadhyay, A. (2007). On the perceived value of money: The reference dependence of currency numerosity effects. *Journal of Consumer Research*, 34 (1), 1-10.
- Wu, H. C. & Chang, Y. Y. (2019). What drives experiential loyalty intentions?: The case of bitcoin travel. *International Journal of Hospitality & Tourism Administration*, 1-35.
- Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology*, 9 (2, Pt.2), 1.