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You can't hold the tide with a broom:
Cryptocurrency payments and tourism in South Korea and China

4   **Abstract**

5   Cryptocurrencies are modifying the very nature of how travelers use and manage payment

6   systems. Bearing in mind that cryptocurrencies in tourism and hospitality are solving the issue of

7   isolation of money and liquidity, this study explored travelers' adoption of cryptocurrency

8   payments in the South Korea and China context**.** The originality of the present study lies on

9   introducing risk, security, and attitude variables into the Technology Acceptance Model (TAM)

10   and the Unified Theory of Acceptance and Use of Technology (UTAUT) model. We found that

11   perceived usefulness, perceived ease of use and security are antecedents of attitude, while

12   attitude, performance expectancy, effort expectancy, social influence and facilitating conditions

13   have significant effect on intention to use cryptocurrency payments in tourism. We also outline

14   the significant moderating effect of age and gender on travelers' adoption of cryptocurrency

15   payments. This study can help policy makers to understand the utility of cryptocurrency

16   payments in tourism.

17   **Keywords:** cryptocurrency adoption, TAM, UTAUT, tourism, hospitality, security, attitude

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19   **1. Introduction**

20   With the inception of blockchain technology and the rise of cryptocurrencies, a new form

21   of finance has emerged (Kim, 2021). The tourism and hospitality sector are experiencing a ripple

22   effect from this radical change. Thus, as "you can't hold the tide with a broom" (Villeneuve,

23   2017), the tourism and hospitality sector in conjunction with financial technologies are

24   embracing the blockchain technology and utility of cryptocurrencies. Hence, the *modus operandi*

25   of the legacy payment system, based on providing universal convertibility and universal trust

26   between travelers and tourism and hospitality stakeholders, is transforming under the strong

27   influence of cryptocurrencies. Consequently, cryptocurrencies are modifying the very nature of

28   how travelers use and manage the most fundamental tool required for tourism and hospitality

29   services: money. Cryptocurrencies utility in tourism and hospitality comes in a form of solving

30   the issue of isolation of money and liquidity by bringing the interoperability in payments and

31   settlement systems. However, Bitcoin as first digital asset through its Proof of Work (PoW)

32   algorithm failed as world currency, mainly as it is creating even greater isolation of money, it

33   brings high fees for payments, its energy consumption is creating a lofty carbon footprint, and it

34   is overall ineffective in handling contracts or trust agreements (Voshmgir, 2020). Nevertheless,

35   blockchain technologies and cryptocurrencies continued to evolve since the inception of Bitcoin,

36   and today we have cryptocurrencies that run on Consensus Protocol such as XRP Ledger

37   (Treiblmaier, 2022). Cryptocurrencies founded on the Consensus Protocol successfully solved

38   aforementioned Bitcoin weaknesses, as they demonstrate overall superiority in scalability and

39   liquidity while providing a real time payments and settlements that are secure and trustworthy.

40   With cryptocurrency payments in tourism and hospitality, travelers can now engage in

41   what Rademaker (2021) calls a high-tech and low-touch payments. Accordingly, cryptocurrency

42   payments offer travelers with a high degree freedom to pay from their own devices in seamless,

43   inexpensive, real time and secure way, while receiving the benefits from loyalty programs,

44   cashback bonuses or crypto rewards. Thus, according to the Statista report (2022), the tourism

45   and hospitality sector showed great interest for adoption of cryptocurrencies in payments, as 64%

46   of consumers said they would use cryptocurrencies for travel payments, and 44% said they

47   would use it for hospitality payments. Moreover, in an exploratory study on usage of Bitcoin for

48 online travel products among 138 European travelers, Leung and Dickinger (2017) have

49 concluded that use of Bitcoin for online travel products is quite optimistic as participants showed

50 willingness to use Bitcoin for payments in restaurants and food delivery.

51   In a recent exploratory research organized among travelers from the Australasia who

52 have used cryptocurrencies for payments of travel services Treiblmaier et al. (2021) concluded

53 that innovation, convenience, safety and reliability, self-indulgent aspects, and confidence in

54 cryptocurrency payment systems were driving force behind travelers' positive sentiments

55 towards cryptocurrency payments. Moreover, Abbasi et al. (2021) evaluated adoption of

56 cryptocurrency payments in Malasya on a sample of 314 respondents and concluded that

57 confidence, performance expectancy, merit, effort expectancy and characteristic creativity have a

58 robust impact on behavioural intention to embrace cryptocurrency. The adoption factors of

59 cryptocurrency were investigated by Nadeem et al. (2021) among Chinese respondents, and the

60 authors concluded that perceived ease of use and perceived usefulness have a positive

61 relationship with the intention to use Bitcoin. In 2018 prior to the COVID-19 pandemic, the

62 global international tourism in the Balance of Payments (BOP) was 22,566 billion $USD, with

63 277.3 billion $USD international tourism expenditures in China and 35.1 billion $USD in South

64 Korea (United Nations World Tourism Organization (UNWTO), 2021). However, even though

65 global cryptocurrency adoption is exponentially growing, cryptocurrency payments varies across

66 countries, and South Korea and China are lagging behind (Chainalysis, 2021). Moreover, it is

67 unclear why China and South Korea are not experiencing wider adoption of cryptocurrency

68 payments, especially as China is world leader in blockchain technology (Wang et al., 2021) and

69 South Korea is the leading nation in global electronic technology, which is the cornerstone for

70 innovations in sector of financial technology (Jamrisko et al., 2021). Furthermore, it appears that

cryptocurrency epicenter is moving away from East Asia (Singer, 2021) as China government has engaged in another (forth since 2013) crypto crackdown (Sergeenkov, 2022) and South Korea's newly-elected pro-crypto President Yoon Suk-yeol plans new crypto oversight committee due to Terra's collapse that lead to loss of 60 billion US$ (Invernizzi, 2022). Nevertheless, the positive attitude towards cryptocurrency is on the rise in South Korea (Varsney, 2021) and China remains the second top Bitcoin mining hub despite various crypto bans (Partz, 2022) as many cryptocurrency users and entrepreneurs such as Jack Ma are embracing cryptocurrencies payments for cross-border operations (Chen and Poh, 2022). Besides, Benneton and Compiani (2021) argue that fear of missing out, positive attitude and social dynamics have positive effect on cryptocurrency payments adoption among younger individuals with lower income as Singer (2022) points that even recent Terra's collapse did not have negative impact on cryptocurrency payment users ages 18–34. Thus, Frank (2021) points that millennials are investing up to 50% of their wealth in cryptocurrencies due to various benefits of cryptocurrency payments. Similarly, cryptocurrency payment adoption is on the rise among users ages of 45 and 54 while 26% of women aged from 55 to 64 showed engagement with cryptocurrency payments, compared to 14% of men in the same age group (Wirex and Stellar Development Foundation, 2021). Lastly, as cryptocurrency payments offer low fees and women control about 80% of retail spending, it is believed that women will lead global adoption of cryptocurrency payment (Newar, 2022). Thus, the study described here sets to clarify aforementioned phenomenon.

The originality of the present study lies in introducing risk, security and attitude variables into Davis's (1989) Technology Acceptance Model (TAM) and combining extended TAM with Venkatesh et al.'s (2003) Unified Theory of Acceptance and Use of Technology (UTAUT) to

94   evaluate intention to use cryptocurrency in tourism payments in South Korea and China. The

95   proposed conceptual model in this study will provide important insights into the adoption of

96   cryptocurrency payments in tourism and close the academic literature space by contributing

97   answers to the subsequent research question:

98   • What are the underlying factors that are shaping the adoption of cryptocurrency

99   payments in tourism in the South Korea and China context?

100

101   Furthermore, this study aimed 1) to develop a theory-based model founded on extended

102   Davis's (1989) TAM and Venkatesh et al.'s (2003) UTAUT that would explain cryptocurrency

103   payments in tourism in the South Korea and China context, 2) to empirically test the adoption of

104   cryptocurrency payments in tourism in aforementioned context, 3) to unearth the moderating role

105   of the age and gender, and 4) to uncover the mediating role of attitude in intention to use

106   cryptocurrency payments in tourism. The present study brings forth exhaustive analysis of

107   various factors that may diametrically and concomitantly influence South Korean and Chinese

108   travelers' intention to use cryptocurrency payments in tourism.

109   This study is divided into six parts. The first part encompasses the introduction and

110   *raison d'etre* of the research. The second part incorporates theoretical background, proposed

111   conceptual model with associated variables, followed with hypotheses development. The

112   research methodology accompanied by data collection procedures are portrayed in the third part.

113   The fourth part puts forward hypotheses testing and results. Discussions, theoretical and practical

114   contributions with limitations of the study and future avenues of research are elaborated in the

115   fifth part. Conclusion is summarized in the sixth part.

116

2. Theoretical framework and hypotheses development

Cryptocurrency payments for tourism products and hospitality services are gaining momentum across the globe as travelers perceive cryptocurrency payments as a contemporary way that offers freedom of choice, flexibility in payments combined with security and personalised experience. Moreover, tourism and cryptocurrency payments seem to be a complementary pairing as parity checks, bookings, loyalty programs, non-fungible tokens (NFTs) and metaverse that run on a blockchain provide security, fidelity, transparency, and accountability to various critical customer touchpoints. Looking at cryptocurrency payments in tourism, early research conducted on European travelers by Leung and Dickinger (2017) outlined that Bitcoin was not perceived as a digital asset for payments of tourism products; however, participants did express positive attitudes towards using Bitcoin during future trips. This is perhaps because Bitcoin is seen more of as store of value (Baur and Dimpfl, 2021) rather than digital asset for payments. Furthermore, Thees et al. (2020) argue how cryptocurrency payments can play important role in what the authors' call "a value chain" between travelers' primary and secondary activities build on blockchain. The utility of cryptocurrency payments is recognized by Tham and Sigala (2020), who argue that cryptocurrencies are not only digital assets with sole purpose for payments in tourism. Cryptocurrencies can play pivotal role in poverty reduction as they offer even playing field, reshape local economies, and support growth of local economies (Tham and Sigala, 2020). Furthermore, Treiblmaier et al. (2021) outline that Asia-Pacific travelers are impartially satisfied with the experience of cryptocurrency payments of tourism products, thus, aforementioned travelers showed robust intention to engage in such activities again in near future. The authors conclude that there is a positive indication for the adoption of cryptocurrency payments in tourism (Treiblmaier et al., 2021). Thus, in a recent research note

140 Treiblmaier (2021) calls for discussion on utility of cryptocurrency payments in the tourism

141 industry and for a clear distinction on application of payment tokens, utility tokens and

142 investment tokens. Similary, Nuryyev et al. (2021) proposed extended TAM model for analyzing

143 travelers and hospitality businesses' intention to use cryptocurrency payments for tourism

144 products and hospitality services. Daryaei et al. (2020) go even further with elaboration of the

145 utility of cryptocurrency in tourism industry as they argue how Bitcoin is pivotal in Collaborative

146 Networks (CN) as it can bridge various heterogeneous tourism stakeholders and bring them

147 together into one Tourism Collaborative Network (TCN). Furthermore, cryptocurrency payments

148 based on Distributed Ledger Technology (DTL) are seen as revolutionary leap forward in

149 tourism and tourism marketing as Antoniadis et al. (2020) outline how the utility of

150 cryptocurrency payments based on DTL can offer security in payments, efficiency of record

151 keeping and real time transaction execution. Consequently, Radic et al. (2020) argue how

152 cryptocurrency payments based on DTL offer cheap, fast, scalable, and reliable transactions;

153 thus, cryptocurrency payments have potential to solve liquidity issues in crisis situations.

154 Moreover, Valeri (2020) points that cryptocurrency payments in tourism offer significant

155 improvements to tourism business through smart contracts, decentralized finance and

156 decentralized applications.

157   The rise of decentralized applications (DApps) in travel and tourism industry is seen as

158 promising future by Ozdemir et al. (2020) as DApps can offer different activities via smart

159 contracts such as people-to-people (P2P) payments/loans, decentralized crypto exchanges

160 (DEXs), social platform, and even new media art. Digital currencies and cryptocurrency

161 payments in travel and tourism industry that run on blockchain technology are seen as the state-

162 of-the-art tools that can reduce risks, mitigate frauds and bring transparency through smart

163 contracts, identity governance and loyalty programs (Banerji et al, 2021). Moreover, Çapar

164 (2020) outlines the utility of cryptocurrency payments among potential medical tourists. Thus,

165 Önder and Treiblmaier (2018) point to robust utility of cryptocurrency payments in travel and

166 tourism industry through the customer-to-customer (C2C) payments, where new models of C2C

167 tourism products could arise in primary and secondary markets. However, Yadav et al. (2022)

168 warn that clarity and legal status of cryptocurrencies in countries across the globe is needed for

169 the successful development of C2C payments in the travel industry. Similarly, Barrutia Barreto

170 et al. (2019) argue how cryptocurrency payments in tourism can reduce poverty; however, it is

171 essential that governments through legal frameworks provide clarity and even playing field as

172 clarity promotes the adoption of cryptocurrency payments in tourism and increase end-user trust

173 and overall confidence. Furthermore, Nyrryev et al. (2020) outline that the embracement of

174 cryptocurrency payments by micro and mid-sized tourism business, is driven by the social

175 influence, organization's tactical direction, and personal preference of an executive. Therefore,

176 Nam et al. (2019) conclude that with the maturity of cryptocurrency payments systems in

177 tourism and hospitality, travelers will adopt without any reservation those cryptocurrencies that

178 survive test of utility and time. As cryptocurrency payments in tourism industry are removing

179 hidden fees by eliminating intermediaries, it is important to study technology adoption models of

180 cryptocurrency payments from the travelers' perspective (Rashideh,2020).

181   Table 1 summarizes the recent literature on the impact of cryptocurrency payments in

182 tourism

183   Based on the aforementioned studies and the need for a profound understanding of the

184 underlying rationale of cryptocurrency payments in tourism, our study builds on technology

185 adoption theories and models to bring to the light the essential mechanism for adoption of

186   cryptocurrency payments in tourism in the context of South Korea and China. Accordingly,

187   contemporary conceptual models and the associated academic studies on technology adoption

188   frameworks for cryptocurrency payments founded on blockchain technology, encourage the

189   fusion of various models as a baseline for explaining behavioural intentions, as such integration

190   overcomes potential weaknesses of the single model by adding advantages from other models

191   (Alazab, et al., 2021). Thus, in the conceptual framework of this study (Fig. 1), built on an

192   extension of Davis's (1989) TAM and Venkatesh et al.'s (2003) UTAUT, we argue that intention

193   to use cryptocurrency payments in tourism is influenced by attitude, performance expectancy,

194   effort expectancy, social influence, and facilitating conditions. Furthermore, we argue that

195   perceived usefulness, ease of use, security and risk are antecedents of attitude, while

196   performance expectancy, effort expectancy, social influence, and facilitating conditions are

197   moderated by age, gender, experience and voluntariness.

198   **(Please insert Figure 1 here)**

199

200   *2.1. TAM and cryptocurrency payments*

201   The TAM model is a theory from the Information Systems (IS) that was designed for

202   elucidating, forecasting, and improving end user acceptance of information technology (IT)

203   (Davis et al., 2020). After more than thirty years since its inception, today's academic literature

204   shows that TAM is a notable scientific paradigm and a plausible model for enabling evaluation

205   of heterogeneous technological implementations (Davis et al., 2020; Sun et al., 2020; Kaushik et

206   al., 2015). The TAM core variables, perceived usefulness and perceived ease of use, are principal

207   causal mediators during the cognitive interaction process between the end users and technology

208   (Chou et al., 2022; Shin, 2020). Thus, when the end users recognize technical characteristics

209 namely clarity and accuracy, they will provide emotional responses, including confirmation

210 level, and that will influence the satisfaction (usefulness and convenience) (Liu and Ye, 2021).

211 The value of TAM model within the context of adoption of cryptocurrency payments in

212 tourism was outlined by Treiblmaier et al. (2021) who proposed that a comprehensive model

213 based on integrated cornerstones of adoption theories such as TAM and UTAUT could explain

214 Asia Pacific travelers' fulfillment with the utility of cryptocurrencies in tourism. Similarly,

215 Nuryyev et al. (2018) concluded that intention to adopt cryptocurrency payments in tourism is

216 influenced by perceived usefulness, and perceived ease of use. Furthermore, Nadeem et al.'s

217 (2021) findings show that perceived ease of use and the perceived usefulness have a positive

218 relationship with the intention to use Bitcoin.

219

220 *2.2. UTAUT and cryptocurrency payments*

221 The UTAUT model emerged as the effort to consolidate various different perspectives on

222 technology adoption to a single well-grounded model (Venkatesh et al, 2003). The UTAUT

223 model postulated that all technology adoption models can be described by four central

224 constructs, namely, performance expectancy, effort expectancy, social influence, and facilitating

225 conditions, which stimulate behavioral intention and are moderated by peculiar characteristics

226 such as age, gender, experience and voluntariness (Rashid Alismaili et al., 2022). The UTAUT

227 model has been noticeably regarded as the most comprehensive and beneficent model to explain

228 technology adoption (Salahshour Rad et al., 2018; Medeiros et al., 2022). Furthermore, UTAUT

229 model managed to explain about 70 percent of the variance in behavioral intention to use a

230 technology (Venkatesh et al., 2012).

231   In a recent study on adoption of cryptocurrency payments among Malaysian end users

232   Abbasi et al. (2021) extended the UTAUT 2 model and concluded that end user's behavioural

233   intention towards adoption of cryptocurrency payments was positively influenced by

234   performance expectancy and effort expectancy. Moreover, the UTAUT model was employed by

235   Gunawan and Novendra (2017) to examine Bitcoin adoption in Indonesia, and the study results

236   showed that performance expectancy and the social influence greatly affect the behavioral

237   intention to use Bitcoin for payments. Almarashdeh et al. (2021) adjusted the UTAUT model and

238   demonstrated that performance expectancy, effort expectancy, social influence, trust, adoption

239   risk, decentralization have positive effect on end user's future expectation and behavioral

240   intentions to use Bitcoin for payments.

241

242   *2.3. Perceived Usefulness, Perceived Ease of Use and Attitude*

243   Perceived usefulness and perceived ease of use are founding elements of TAM. Perceived

244   usefulness assess the efficacy determined by the end user, whereas perceived ease of use

245   confirms the disadvantages of the technology recognized by the end user (Appavoo, 2020). Thus,

246   the end users' adoption of technology is determined by her/his attitude towards the technology,

247   and her/his attitude is influenced by perceived usefulness and perceived ease of use (Davis,

248   1989).

249   Cryptocurrencies are making revolutionary changes in financial technologies, while

250   cryptocurrency payments are rapidly reshaping the financial markets as perceived usefulness and

251   perceived ease of use of cryptocurrency payments are positively influencing end users' attitude

252   in todays' early stage of technology adoption (Albayati et al., 2020). Moreover, the efficacy of

253   cryptocurrency payments such as cheap, fast, easy to use P2P transactions that provide fidelity

254 with anonymity are considered as useful factors through the end users affective, cognitive and

255 connotative responses (Aghaei et al., 2021; Hamm, 2022). Similarly, perceived usefulness and

256 perceived ease of use of Bitcoin for payments had positive influence on executives' attitudes, as

257 end users' prefer direct payment methods that don't involve intermediaries (Palos-Sanchez, et

258 al., 2021). Moreover, Daryaei et al. (2020) outline that perceived usefulness, such as the

259 possibility of booking tourism products and hospitality services with perceived ease of use

260 namely the quick and inexpensive transaction of value, positively influences end users' attitude

261 towards adoption of Bitcoin for payments in tourism. Hence, the aforementioned authors

262 conclude that cryptocurrency payments in tourism could make credit cards and bank statements

263 obsolete as payment methods (Daryaei et al., 2020). Folkinshteyn and Lennon (2016) argue that

264 the perceived usefulness of Bitcoin for payments such as privacy and fidelity could predetermine

265 the end users' attitude towards the adoption of Bitcoin. Similarly, the ease of use of

266 cryptocurrencies payments in tourism offers considerable benefits for consumers, and thus, it

267 positively effects the attitude of consumers, which is evident in the Asia-Pacific region, where

268 cryptocurrency payments are available for wide range of tourism products and hospitality

269 services (Treiblmaier et al., 2021). Accordingly, it is hypothesized that:

270 **Hypothesis 1.** Perceived usefulness has a positive and significant impact on the attitude

271 towards cryptocurrency payments in tourism.

272 **Hypothesis 2.** Perceived ease of use has a positive and significant impact on the attitude

273 towards cryptocurrency payments in tourism

274

275 *2.4. Security, Risk and Attitude*

276   The security of cryptocurrency payments is based on the possession of a private key,

277   whereas execution of payment transaction is endorsed by a digital signature previously created

278   with a private key (Wilusz & Wójtowicz, 2019). Perceived risk is an individuals' intuitive

279   judgment and general appraisal (Peng & Zhang, 2018), which in cryptocurrency payments is

280   related to monetary loses, legislative uncertainty (Voskobojnikov et al., 2020) end user mistakes,

281   intrusion and third party service breakdown (Alzahrani & Daim, 2021).

282   Cryptocurrency in medical tourism provides safeguard from monetary loses, wide

283   accessibility and private data security, which positively influence end users' attitudes towards

284   cryptocurrency payments (Çapar, 2020). Thus, Çapar (2020) goes even further by concluding

285   that the artfulness of the tourism business lies in the adoption of cryptocurrency payments mainly

286   due to cryptocurrencies' superior performance in form of security, monetary risk minimization,

287   transparency and rapid responsiveness. Moreover, the adoption of cryptocurrency payments in

288   tourism is driven by travelers' attitude, which is positively influenced by security (Treiblmaier et

289   al., 2021). Security features of cryptocurrency payments are generally perceived as safe

290   technologies that rest on DTL; however, some end users feel that potential risk may leave open

291   space for unknown security attack vectors (Treiblmaier et al., 2021). Potential implementation

292   risk, financial risk and social risk, combined with security breach are strongly associated with

293   attitude towards consumers' adoption of cryptocurrencies (Mendoza-Tello et al., 2019).

294   Furthermore, attitude towards cryptocurrency payments during the COVID-19 pandemic was

295   positively influenced by Bitcoin's superior security features and ability to eliminate various risks

296   associated with payments (Hou et al., 2021). However, in a recent study, Ögel and Ögel (2021)

297   concluded that perceived monetary, progress of events and cognitive risks have significant and

298   negative effect on end users' attitude toward the use of cryptocurrencies. Accordingly,

299 cryptocurrencies are generally perceived as high-risk and volatile assets that negatively affect

300 end users' attitude (Grujić, 2021). Thus, improving the security and trust in the cryptocurrency

301 ecosystem is perceived positively by end users as security, trust, and risks have a robust

302 influence on attitude towards the adoption of cryptocurrency payments (Ooi et al., 2021). Based

303 on aforementioned arguments the following hypotheses were postulated:

304   **Hypothesis 3.** Security has a positive impact on attitude towards cryptocurrency

305   payments in tourism.

306   **Hypothesis 4.** Risk has a negative impact on attitude towards cryptocurrency payments

307   in tourism.

308

309 *2.5. Attitude and intention to use cryptocurrencies*

310   Fishbein and Ajzen (1977) in their Theory of Reasoned Action (TRA) outline that

311 behavioral intention is evaluated by the attitude toward behavior. Thus, attitude is a persons'

312 internal disposition that is exposed in a form of critical appraisal towards certain psychological

313 object (Bauer, 2020; Nimri et al., 2020). Moreover, attitude is comprised of individuals' beliefs

314 and points of view regarding the approval or disapproval of particular things (Esfandiar et al.,

315 2021; Liao et al., 2021).

316   Shahzad et al. (2018) in their study outlined that perceived trustworthiness is essential

317 ingredient for creating a positive attitude among end users, which ultimately leads to the

318 favorable behavioural intention towards cryptocurrency adoption in mainland China. Similarly,

319 customers' behavioural intention towards adoption of blockchain-based cryptocurrency

320 transactions was significantly influenced by attitude (Albayati et al., 2020). Moreover,

321 behavioural intention towards payments via mobile phones based on cryptocurrencies are

322 strongly influenced by customers' attitude (Diniz et al., 2016). Consequently, positive attitude

323 towards cryptocurrencies utility and payments appears to be driving force behind the Bitcoin

324 adoption by business executives (Palos-Sanchez et al., 2021).   Thus, as end users gain more

325 information and achieve profound understanding of blockchain technology and cryptocurrency

326 payments, their attitudes will grow more positive, which in return will influence their adoption of

327 Bitcoin and cryptocurrency transaction on a daily basis (Daryaei et al., 2020). Hence, the

328 aforementioned justification led to the following hypothesis:

329 **Hypothesis 5.** Attitude has a positive impact on intention to use cryptocurrency payments

330 in tourism.

331

332 *2.6. Performance expectancy, effort expectancy, social influence, facilitating conditions and*

333 *intention to use cryptocurrencies*

334 Performance expectancy is the extent to which utilizing certain technology will

335 contribute to the end users' advantage or profit (Venkatesh et al., 2012). Moreover, it is the

336 consumers' cognizance of the applied technology effectiveness and convenience (Juaneda-

337 Ayensa et al., 2020). Effort expectancy is the level of easiness related to end user engagement

338 with certain technology (Venkatesh et al., 2012). Thus, the technology complexity and the

339 convenience of the applied technology are the underlying mechanisms of effort expectancy

340 (Ammenwerth, 2019). Social influence is the degree to which end users' significant others'

341 believe in the utility of certain technology (Venkatesh et al., 2012). Hence, social influence acts

342 as extrinsic motivator which provides social recognition for using certain technology (Dečman,

343 2020). Facilitating conditions encompass the end users' realization of the readily available assets

344 and assistance to execute behavior (Venkatesh et al., 2012). Accordingly, if the consumers have

345   essential means, software interoperability, basic understanding and customer service they would

346   be ready to engage with applied technology (Juaneda-Ayensa et al., 2020).

347   Performance expectancy demonstrated strong influence on intention to use

348   cryptocurrencies among millennials as they find certain benefits from cryptocurrency adoption

349   (Meuthia et al. 2019). Similarly, perceived benefits and utility of cryptocurrency payments is in

350   correlation with perceived value of cryptocurrencies and as such has robust influence on the

351   behavioral intention towards adoption of cryptocurrency payments (Hasan et al., 2022).

352   Moreover, the elucidative strength of performance expectancy is affected by trust and

353   transparency, and performance expectancy has robust impact on intention to use cryptocurrencies

354   (Chang et al., 2022). Thus, as there is a clear, dominant role of performance expectancy and

355   robust favorable effect of performance expectancy on intention to use Bitcoin, the payments

356   services should increase their security performance for the transaction process (Gunawan and

357   Novendra, 2017).

358   Effort expectancy showed a notable favorable impact on intention to use cryptocurrencies

359   in Vietnam, mainly due to the fact that effort expectancy is positively affected by payment

360   convenience, which is regarded as critical factor for adoption of cryptocurrency payments (Jung

361   et al., 2018). Furthermore, while effort expectancy has positive and significant effect on intention

362   towards transactions on blockchain, it is of paramount importance to implement underlying

363   technology in acceptable manner to meet end users' needs (Caldarelli et al., 2020). Thus, the fast,

364   cheap, reliable, real time cryptocurrency payments were valued by consumers as effort

365   expectancy positively influenced the intention to use cryptocurrencies (McMorrow and Esfahani,

366   2021). Cryptocurrency payments aspects such as usefulness and attainability that meet or exceed

367   individual requirements are strongly associated with effort expectancy, whereas effort

368 expectancy positively affects behavioral intention to use cryptocurrency (Almarashdeh et al.,

369 2021).

370   Social influence is pivotal during the inception phase of consumers' intention to use

371 cryptocurrency (Cheng, 2020); however, as consumers grow accustomed to cryptocurrency

372 payments, the social influence positive effect on behavioural intention to use cryptocurrency is

373 wearing down (Abbasi et al., 2021). Moreover, in countries where cryptocurrency payments are

374 in the early stages of technology adoption, the benefits of cryptocurrency payments are shared

375 between community members, and thus, consumers' behavioral intention to use cryptocurrencies

376 is strongly affected by end users' social influence (Al-Amri et al., 2021). Accordingly, social

377 influence by means of exchange of information in regards to the utility of Bitcoin and other

378 cryptocurrencies has a robust, positive influence on intention to use cryptocurrency (Broni et al.,

379 2020).

380   Amid the COVID-19 pandemic consumers utilized digital transactions due to fear of

381 physical contact; thus, facilitating conditions proved to be of great importance, as facilitating

382 conditions exhibited positive significant impact on behavioural intention towards digital

383 payments (Musyaffi et al., 2021). Furthermore, consumers from emerging nations depend on

384 their countries legislative and technical infrastructure that form facilitating conditions, which in

385 return considerably influence end users' behavioural intention to use cryptocurrency (Yeong et

386 al., 2022). Similarly, end users hold strong beliefs in regulatory and technical system approvals;

387 thus, once the aforementioned aspects are satisfied, the facilitating conditions demonstrate strong

388 positive influence on end users' intention to use cryptocurrency (Miraz et al., 2022). Lastly,

389 cryptocurrency adoption is strongly depended on network support, little wonder that facilitating

conditions influence intention to use cryptocurrency (Alalwan et al., 2017). Based on our review

of the academic literature and relevant empirical evidence, we propose the following hypotheses:

Hypothesis 6. Performance expectancy has a positive impact on intention to use cryptocurrency payments in tourism.

Hypothesis 7. Effort expectancy has a positive impact on intention to use cryptocurrency payments in tourism.

Hypothesis 8. Social influence has a positive impact on intention to use cryptocurrency payments in tourism.

Hypothesis 9. Facilitating conditions has a positive impact on intention to use cryptocurrency payments in tourism.

2.7. Impact of performance expectancy, effort expectancy, social influence and facilitating conditions moderated by age and gender

Moderators are forceful constructs that have the potential to stimulate the change or progress within a system or process (Idrish et al., 2017). Moreover, moderators are demographical characteristics or additional circumstantial variables that have a comprehensive influence on technology. Age and gender are robust moderating variables, meaning that the higher their values are, the higher the behavioural intention is towards the end users' technology adoption (Venkatesh et al., 2003).

Rodriguez (2021) outlines that albeit cryptocurrency is a revolutionary financial instrument, it is constricted with inclusion problem: not enough women. Accordingly, twice as many men as women are using cryptocurrency, while young and middle-aged end users are rapidly adopting cryptocurrency compared to the older ones (Rodriguez, 2021). However, in a

413 study by Gunawan and Novendra (2017) performance expectancy impact on behavioural

414 intention towards the adoption of cryptocurrency was not moderated by gender and age. The

415 results of the previous study were supported by Novendra and Gunawan (2017) and Ter Ji-Xi et

416 al., (2021), where authors concluded that the performance expectancy relationship with

417 behavioural intention towards adoption of cryptocurrency and Bitcoin is not moderated by age or

418 gender. Nevertheless, cryptocurrencies are reshaping financial technologies, and therefore, it is

419 important to examine potential dissimilarity in gender when it comes to intention to use

420 cryptocurrency payments (McMorrow, and Esfahani, 2021).

421 Mobile wallets, online wallets or hardware wallets offer a user-friendly, secure, and

422 convenient cryptocurrency payment method, and so it is believed that effort expectancy

423 influence towards intention to use cryptocurrency payments could be moderated by age and

424 gender (Bashir, 2020). However, despite the easiness of using cryptocurrency for payments,

425 recent Pew Research Center study outlines that American males ages 18 to 29 (43%) say they

426 have used a cryptocurrencies compared with 19% of women in the same age range, whereas the

427 likelihood of using cryptocurrency decreases with age in both men and women (Perrin, 2021).

428 Furthermore, Lee at al., (2019) outline that effort expectancy significantly affects males' and

429 young adults' intention to use blockchain technology including cryptocurrencies. Moreover,

430 Gunawan and Novendra (2017) study showed a positive relation between effort expectancy and

431 behaviour intention which is moderated by age and gender.

432 The social influence impact on individuals' intention to adopt cryptocurrency is robust

433 among Generation Z and young millennials who use social platforms to share their knowledge

434 and enthusiasm towards cryptocurrencies and the technology that surrounds it (Locke, 2021a).

435 Furthermore, as the cryptocurrency market briefly surpassed 3 trillion $USD in November 2021,

436 more and more young women were engaging in NFTs of art, music, digital plots of land in the

437 metaverse and cryptocurrency payments utilizing social media platforms such as the World of

438 Women collection and the Crypto Coven collection (Locke, 2021b). However, Gunawan and

439 Novendra's (2017) study showed that gender and age do not have moderating effect on relation

440 between social influence and behavioural intention towards the adoption of cryptocurrency.

441 Moreover, the relationship between social influence and behavioural intention towards the

442 adoption of cryptocurrency was moderated by age; however, gender did not have significant

443 moderating impact (Ter Ji-Xi et al., 2021).

444   Cryptocurrency payments that run on blockchain technology are seen by young adults

445 and women as an avenue towards the creation of decentralized, egalitarian, more transparent and

446 inclusive world (Chandran, 2021). Thus, Lee at al., (2019) argue that facilitating conditions

447 significantly affect males' and young adults' intention to use blockchain technology including

448 cryptocurrencies. Moreover, it is believed that the proliferation of facilitating conditions in the

449 form of online tutorials and support chat would increase the behavioral intention toward

450 blockchain technology and cryptocurrency payments, where age would most likely negatively

451 moderate such a relationship, as senior end users' might not have right skills and intuitive

452 knowledge to utilize technology (Salem, 2019). Accordingly, in a recent study by Ter Ji-Xi et al.,

453 (2021) age and gender did not have significant impact between facilitating conditions and the

454 behavioural intention towards the adoption of cryptocurrency. Consequently, review of relevant

455 research and data led to the following hypotheses:

456   **Hypothesis 10 a, b, c, d.** The influence of performance expectance, effort expectancy,

457   social influence and facilitating conditions on intention to use cryptocurrency payments

458   in tourism will be moderated by age.

459   **Hypothesis 11 a, b, c, d.** The influence of performance expectance, effort expectancy,

460   social influence and facilitating conditions on intention to use cryptocurrency payments

461   in tourism will be moderated by gender .

462

463   **3. Research methodology**

464   *3.1. Research design*

465   Figure 2 shows the research process of this study. The present research adopted a post-

466   positivistic paradigm as the most important aspect of this paradigm is analyzing and

467   acknowledging theories through causal relationship between variables, seeking scientific

468   interpretation and occurring phenomenon observable in the human behavior of interest (Indhiarti

469   & Sudarwati, 2021). The post-positivistic paradigm argues that object of study is not constrained

470   by human intellect, and thus researchers are incapable of perceiving and accomplishing absolute

471   validity (Berkovich, 2021). The action research strategy was adopted in this study as action

472   research lies in creating solutions in a calculated way that can be repetitive (Hasan & Gjøsæter,

473   2021) and can address the lack of knowledge in the academic literature (Manfra, 2019). A cross-

474   sectional time horizon was used as it is suitable for surveys that are involved with attitude,

475   behaviour and association between variables of interest (Peacock & Peacock, 2020). This study

476   used a deductive approach accompanied by a cross-sectional time horizon and quantitative data

477   collection techniques. In this study quantitative data collection techniques were used as such

478   method provides breadth of understanding (Palinkas & Cooper, 2017) with generalization in

479   regards of attitudes, beliefs and preferences as hypothesis can be drawn prior to data collection

480   (Hammaberg et al., 2016).

481   **(Please insert Figure 2 here)**

3.2. Data collection and sample characteristics

This study used an online survey conducted between November 13 and December 16, 2021, with Chinese and South Korean respondents. This questionnaire for potential participants consumed an average of about 15 minutes to complete and was conducted with knowledge of the study objectives and content of the questionnaire. However, since this study is about blockchain and cryptocurrencies, which is a new area that is not widely popularized. Therefore, we used the first question ("Do you know about cryptocurrencies?") to exclude 40% and 20% of participants in the data collection process for China and Korea, respectively. Also, through the second question ("Do you have any experience with cryptocurrencies?") excluded 20% and 10% of the Chinese and Korean participants, respectively. After two screening processes and the exclusion of missing and outlier responses, 355 and 329 valid questionnaires were collected through professional questionnaire agencies in China and Korea.

Among the 355 questionnaires completed by the Chinese participants, 42.8% were male, and 57.2% were female. The average age was 33.95 years old. About 25.1% had an annual income between $55,000 ~ $69,999, 22.8% made between $70,000 ~ $84,999, 21.4% made between $40,000 ~ $54,999, 18.9% made between $25,000 ~ $39,999, about 5.9% were under $25,000, and over $100,000 accounted for about 3.9%. 2.0% were between $85,000 and $99,999. In addition, about 45.4% had a college degree, 24.2% had a two-year degree, 21.1% had a high school degree, 6.8% had a graduate degree, and only about 2.5% had less than a high school degree in terms of education.

As a result of summarizing the questionnaires completed by the South Korean participants, we found that males occupied 52.6% and 47.4% were females. The average age was

505 38.95 years old. About 28.9% had an annual income between US$25,000 ~ US$39,999, 26.7%

506 were between US$40,000 ~ US$54,999, 17.0% were between US$55,000 ~ US$69,999, 16.1%

507 were between US$70,000 ~ US$84,999, and about 11.2% were under US$25,000. For the annual

508 salary statistics of Chinese and Korean participants, we present these values in a clearer manner

509 through pie charts (Figure 3). Additionally, approximately 42.9% had a two-year degree, 21.6%

510 had a college degree, 18.8% had a high school degree, and 16.7% had less than a high school

511 degree in terms of educational attainment.

512   **(Please insert Figure 3 here)**

513

514 *3.3. Measures for study variables*

515   The survey contained a mix of multi-item measures (see Appendix A for a complete list

516 of items). Scale items to assess the study variables were adopted from previously validated

517 measurement items and were anchored on a 7-point Likert-type scale. The perceived usefulness

518 construct was adopted from Nuryyev et al.'s (2020) and Davis's (1989) scales, perceived ease of

519 use factor was adopted from Davis's (1989) scale, and attitude was adopted Davis's (1989) and

520 Patil et al.'s (2020) scales. The security construct was adopted from Nuryyev et al.'s (2020) scale

521 while risk was adopted from Singh et al.'s (2020) scale. The performance expectancy and

522 facilitating conditions constructs were adopted from Venkatesh et al.'s (2012) and Tran and

523 Nguyen (2021) scales, effort expectancy was adopted from Venkatesh et al.'s (2012) scale, while

524 social influence was adopted from Venkatesh et al.'s (2012), Nuryyev et al.'s (2020) and Tran

525 and Nguyen (2021) scales. The common method bias of self-administrated questionnaires was

526 minimized by following the procedural method of Jordan and Troth. (2020). Explicitly, all

527 participants were well-informed regarding the purpose of the research and how the results would

528   be used. The survey used was not extensive, measurements did not overlap, wording of the items

529   was balanced carefully, measures were adopted from different sources, and the questions

530   presented were transparent and without ambiguities (Jordan and Troth, 2020).

531

532   **4. Results**

533   *4.1. Data quality testing with CFA*

534   In this study, we analyzed the collected samples through SPSS 24.0 and AMOS 26.0. In

535   order to develop a measurement model, a confirmatory factor analysis was performed to examine

536   each measurement item in the questionnaire. The findings showed that the indicators for all

537   measurement items ranged from .705 to .947. In addition, the average variance extracted (AVE)

538   and the composite reliability (CR) of each factor calculated by factor loadings ranged from .534

539   to .884 and .775 to .958, which were above the recommended metrics of .500 and .700,

540   respectively (Hair et al., 2021). This demonstrated the existence of favorable convergent validity

541   and internal consistency between each factor and measurement item in this study. Additionally,

542   the value of $\sqrt{AVE}$ of each factor was greater than the maximum value of the correlation

543   coefficient between factors. Therefore, the data of measurement scales were tested to provide

544   excellent discriminant validity in this study. The samples presented goodness-of-fit indicators

545   (CHI: $\chi^2 = 601.687$, df = 420, $\chi^2/df = 1.433$, p < .01, CFI = .921, NFI = .937, TLI = .934,

546   RMSEA = .033; KOR: $\chi^2 = 650.119$, df = 420, $\chi^2/df = 1.548$, p < .05, CFI = .945, NFI = .962,

547   TLI = .952, RMSEA = .021), which also revealed a desirable CFA model. Further detailed

548   reports are summarized in Tables 1 and 2.

549   **(Insert Table 1, Table 2)**

550

4.2. Assessment and testing of hypotheses for the structural model

We analyzed the generated structural equation models by AMOS 26.0 and tested the hypotheses developed in this study (see Table 4). Firstly, the constructed structural model showed goodness-of-fit statistics (CHI: $\chi2 = 884.680$, df $= 417$, $\chi2/df = 2.122$, p< .01, RMSEA $= .056$, CFI $= .931$, IFI $= .932$, and TLI $= .923$; KOR: $\chi2 = 770.298$, df $= 413$, $\chi2/df = 1.865$, p< .01, RMSEA $= .051$, CFI $= .956$, IFI $= .954$, and TLI $= .950$). Then, we compared the results obtained with the technology adoption model (CHI: $\chi2 = 367.564$, df $= 125$, $\chi2/df = 2.941$, p < .01, NFI $= .934$, RFI $= .919$, TLI $= .945$, CFI $= .955$, RMSEA $= .063$; KOR: $\chi2 = 278.473$, df $= 130$, $\chi2/df = 2.142$, p < .01, NFI $= .939$, RFI $= .928$, TLI $= .960$, CFI $= .965$, RMSEA $= .058$) and UTAUT model (China: $\chi2 = 314.970$, df $= 105$, $\chi2/df = 3.000$, p < .01, NFI $= .930$, RFI $= .909$, TLI $= .937$, CFI $= .952$, RMSEA $= .075$; Korea: $\chi2 = 191.155$, df $= 105$, $\chi2/df = 1.821$, p < .01, NFI $= .960$, RFI $= .947$, TLI $= .981$, CFI $= .975$, RMSEA $= .051$). In order to demonstrate the relative advantages of the model proposed in this study in comparison to the technology adoption model (CHI: $R2 = .510$; KOR: $R2 = .415$) and UTAUT model (CHI: $R2 = .317$; KOR: $R2 = .238$), the proposed model (CHI: $R2 = .827$; KOR: $R2 = .650$) was capable of better predicting people's willingness for adoption. Additionally, the results of the hypotheses examined indicated that usefulness (CHI: $\beta = .328$, t $= 6.211$; KOR: $\beta = .191$, t $= 3.233$), easy of use (CHI: $\beta = .527$, t $= 6.180$; KOR: $\beta = .345$, t $= 5.874$), and security (CHI: $\beta = .491$, t $= 5.429$; KOR: $\beta =. 179$, t $= 3.042$) were significant on attitude, while there was no significant relationship between risk and attitude (CHI: $\beta = -.020$, t $= -.500$; KOR: $\beta = -.019$, t $= -.347$). However, attitude (CHI: $\beta = .714$, t $= 6.396$; KOR: $\beta = .642$, t $= 4.547$), performance expectancy (CHI: $\beta = .166$, t $= 2.689$; KOR: $\beta = .215$, t $= 2.239$), effort expectancy (CHI: $\beta = .320$, t $= 7.337$;

573   KOR: β = .314, t = 2.628), social influence (CHI: β = .398, t = 7.729; KOR: β = .280, t = 3.551),

574   and facilitating conditions (CHI: β = .169, t = 2.832; KOR: β = .120, t = 2.186) were significant

575   on intention to use. Thus, H1, H2, H3, H5, H6, H7, and H8 were supported, H4 was not

576   supported.

577   **(Insert Table 3)**

578

579   *4.3. Indirect and total effect evaluation*

580   We examined the indirect effects of the generated structural equation model. A

581   significant indirect effect between perceived usefulness (CHI: β = .234, p < .01; KOR: β = .123,

582   p < .05) and ease of use (CHI: β = .376, p < .01; KOR: β = .221, p < .01) on intention to use were

583   revealed for both Chinese and South Korean participants. In addition, there was a significant

584   indirect effect between perceived security (CHI: β = .351, p < .01; KOR: β = .115, p > .05) and

585   intention to use only for Chinese participants. In contrast, there was no significant indirect effect

586   for both Chinese (β = -.014, p > .05) and South Korean participants (β = -.012, p > .05) with

587   respect to perceived risk-attitude-intention to use. Moreover, the total effects of usefulness (CHI:

588   β = .408**; KOR: β = .604**), easy of use (CHI: β = .270**; KOR: β = .360**), security (CHI:

589   β = .439**; KOR: β = .548), and risk (CHI: β = -.012; KOR: β = -.262) on intention to use were

590   concluded. The outcomes are shown in Table 4.

591   **(Insert Table 4)**

592

593   *4.4. Examination of chi-square differences according to age and gender in the structural model*

594   The invariance test was conducted separately through data from participants from both

595   countries in order to examine in more detail the variability that exists between age and gender of

596   participants. Namely, differences in chi-square values between the constructed baseline model

597   and the nested model were assessed. Additionally, the invariance test requires analysis for both

598   data groups. However, age was performed in a fill-in-the-blank manner for this study. Hence, we

599   averaged the ages to obtain a mean age of 33.95 and 38.95 years for Chinese and Korean

600   participants, respectively. The criteria for grouping were then tested for invariance using the

601   mean as the threshold, with values below the mean as the low age group and values above the

602   mean as the high age group. Therefore, the results of analysis with Chinese participants as survey

603   respondents showed that there was no significant difference between the invariance tests for age

604   (PE>INT: $\Delta\chi2[1]$ = 1.095, p >.05, EE>INT: $\Delta\chi2[1]$ = 1.413, p >.05, SI>INT: 1.090, p >.05,

605   FC>INT: $\Delta\chi2[1]$ = .025, p >.05).   A significant partial difference exists as indicated by the

606   invariance test results for gender (PE>INT: $\Delta\chi2[1]$ = 1.701, p >.05, EE>INT: $\Delta\chi2[1]$ = .002,

607   p >.05, SI>INT: $\Delta\chi2[1]$ = 3.746, p < .01, FC>INT: $\Delta\chi2[1]$ = 6.027, p < .01). In addition,

608   following the analysis of the data from the South Korean participants, we found that age

609   (PE>INT: 12.585, p < .01, EE>INT: $\Delta\chi2[1]$ = 16.922, p < .01, SI>INT: $\Delta\chi2[1]$ = 43.704, p < .01,

610   FC>INT: $\Delta\chi2[1]$ = 14.350, p < .01) and gender (PE>INT: $\Delta\chi2[1]$ = 17.436, p < .01, EE>INT:

611    $\Delta\chi2[1]$ = 12.531, p < .01, SI>INT: $\Delta\chi2[1]$ = 32.726, p < .01, FC>INT: $\Delta\chi2[1]$ = 18.188, p < .01)

612   both showed significant differences in invariance test. Detailed results of the invariance test are

613   displayed in Tables 5 and 6. Throughout the tables capital C and K was used to denote Chinese

614   and South Korean participants. Consequently, the hypotheses were represented also by C and K

615   to distinguish them. Thus, with the specific results of the tables we concluded that H10cC,

616   H10dC, H10aK, H10bK, H10cK, H10dK, H11aK, H11bK, H11cK, and H11dK were supported.

617   In contrast, H10aC, H10bC, H11aC, H11bC H11cC and H11dC were not supported.

618   **(Insert Table 5 and Table 6)**

619

620   **5. Discussion and implications**

621   Cryptocurrency is digital revolution that is changing the future of money and payment

622   systems in tourism and hospitality sector by interlinking on a blockchain international travelers

623   and tourism and hospitality stakeholders. Cryptocurrencies role in travel and tourism and

624   hospitality services is to provide frictionless blockchain-based mechanisms for payments,

625   transparent transactions, financial stability, liquidity, scalability and fast and cheap cross border

626   payments. Furthermore, cryptocurrencies are solving real tourism and hospitality related

627   problems such as absences of opportunity to strong currency, or friction for remittance initiatives

628   directed to reduce poverty in various touristic destinations. Consequently, the aim of this study

629   was to evaluate behavioural determinants affecting travelers' intention to use cryptocurrency

630   payments in tourism in the South Korea and China context. The study encompassed the

631   following variables: perceived usefulness, perceived ease of use, security, risk, attitude,

632   performance expectance, effort expectancy, social influence, facilitating conditions, age and

633   gender to measure travelers' viewpoint. In accordance with the synopsized results, the

634   conceptual model unraveled the impacting ascendance drawn out by the dependent variables,

635   intention to use cryptocurrency (82.7%) and attitude (62.7%) for Chinese travelers and intention

636   to use cryptocurrency (65%) and attitude (18.8%) for South Korean travelers. The

637   aforementioned values demonstrate the conclusiveness of various variables on travelers

638   behavioural aftermaths.

In regard to the antecedents of attitude, our study brought forward the relationship between perceived usefulness, perceived ease of use, security and risk with attitude towards cryptocurrency payments. Subsequently, perceived ease of use is displayed as the most substantial antecedent (CHI: β = .527, t = 6.180; KOR: β = .345, t = 5.874), followed by security (CHI: β = .491, t = 5.429; KOR: β =. 179, t = 3.042) and perceived usefulness (CHI: β = .328, t = 6.211; KOR: β = .191, t = 3.233). Risk (CHI: β = -.020, t = -.500; KOR: β = -.019, t = -.347) was insignificant in forecasting travelers' attitude towards cryptocurrency payments.

Cryptocurrencies are considered high risk assets mainly due to their volatility and lack of clarity regarding the legal implications. Regulatory agencies in South Korea have just recently made an act that came into force in March 2021 which brought clarity towards the understanding of the nature and meaning of cryptocurrencies (Lau, 2021). Similarly, in September 2021, the People's Bank of China and the National Development and Reform Commission declared all cryptocurrency transactions illegal (Reuters, 2021). Little wonder, soon after that China enrolled its digital yuan (Central bank digital currency (CBDC)), making strong efforts towards national and global adoption of digital yuan. Thus, our study showed that in countries where regulatory watchdogs provide a clear, robust regulatory framework, the negative effect of cryptocurrency related risks on attitude towards cryptocurrencies, loses its impact. Although in our study the negative impact of risk on attitude was insignificant, this path should be further investigated in the rapidly evolving crypto marketplace as findings by Ögel and Ögel (2021) outline that plethora of risks have robust, negative effect on end users' attitudes toward the use of cryptocurrencies. In relation to perceived ease of use, the results of our study show that when travelers perceive that buying tourism products and hospitality services online with cryptocurrency is a frictionless process analogous to paying with a credit or debit card, the

662 cryptocurrency payment will favourably influence their attitude. This finding correspondents

663 with similar studies related to the attitude towards cryptocurrency payments in tourism (Albayati

664 et al., 2020; Hamm, 2022; Daryaei et al.,2020). This study's findings exhibited that the security

665 features of cryptocurrency payments have robust impact on the travelers' positive attitude

666 towards cryptocurrency payments in tourism. This is due to the fact that cryptocurrency does not

667 need third-party verification; thus it is deemed more secure than credit and debit card payments.

668 Moreover, the blockchain ledger is utilized to verify and record every transaction, and so stealing

669 ones' identity is almost impossible (Çapar, 2020; Treiblmaier et al., 2021). Perceived usefulness

670 of the cryptocurrency payment system improves individual financial performance as travelers

671 can use cryptocurrency to efficiently spend their money by eluding substantial foreign exchange

672 fees. Furthermore, cryptocurrency exchanges or platforms can convert various cryptocurrencies

673 into national currency for a very small or nonexistent fee. Lastly, as travelers can earn cashback

674 and crypto rewards for utilizing cryptocurrency payments, their overall financial performance

675 will improve, ultimately fulfilling their intentions (Davis, 1989) and improving attitude towards

676 cryptocurrency payments (Treiblmaier et al., 2021; Palos-Sanchez, et al., 2021).

677   With respect to antecedents of intention to use cryptocurrency payments in tourism, our

678 research proposed the relationship between attitude, performance expectance, effort expectancy,

679 social influence and facilitating conditions with intention to use cryptocurrency payments in

680 tourism. Accordingly, attitude displayed as the most substantial antecedent (CHI: β = .714, t =

681 6.396; KOR: β = .642, t = 4.547), followed by social influence (CHI: β = .398, t = 7.729; KOR: β

682 = .280, t = 3.551), effort expectancy (CHI: β = .320, t = 7.337; KOR: β = .314, t = 2.628),

683 performance expectancy (CHI: β = .166, t = 2.689; KOR: β = .215, t = 2.239) and facilitating

684 conditions (CHI: β = .169, t = 2.832; KOR: β = .120, t = 2.186).

685   The main purpose of this study was to discover the realms which influence travelers'

686   intention to use cryptocurrency payments in tourism. Our study showed that attitude affects

687   travelers' intention towards cryptocurrency payments as travelers' appreciate the utility of such

688   payments. In other words, cryptocurrency payments remove the third parties to process payments,

689   and thus, travelers' can store and transfer their money and value without the dependency on any

690   organization as they are the only ones who hold a key through an encryption. This finding

691   resonates with similar studies that outlined that end users' positive attitude ultimately leads to the

692   favorable behavioural intention towards cryptocurrency adoption (Shahzad et al., 2018; Albayati

693   et al., 2020; Diniz et al., 2016). In relation to the social influence, our study shows that

694   cryptocurrencies are democratizing the financial world with a positive effect on the tourism and

695   hospitality sector. Moreover, as mobile phone and internet adoption grows, travelers can access

696   financial services and, through cryptocurrency payments, provide financial assets to their friends

697   and significant others who might be unbanked. As cryptocurrency payments in tourism and

698   hospitality are in early stages of technology adoption, social influence plays important role in

699   consumers' intention to use cryptocurrency (Cheng, 2020; Al-Amri et al., 2021). Furthermore,

700   our study showed that effort expectancy positively affects intention towards cryptocurrency

701   payments as travelers' can use their mobile phones to settle travel bills while they receive

702   cashback or crypto rewards for every transaction. Thus, using cryptocurrency payments via

703   mobile phones travelers' can interlock in a decentralized way with the poorest communities of

704   the world that they are visiting in various tourist destinations. Accordingly, effort expectancy's

705   positive impact on intention to use cryptocurrency is driven by convenience (Jung et al., 2018)

706   that is solving end users' needs (Caldarelli et al., 2020) by providing the fast, cheap, reliable, real

707   time payments (McMorrow and Esfahani, 2021). With regards to the performance expectancy,

708   our study shows that the utility of cryptocurrency payments leads to a better understanding of

709   cryptocurrencies. Thus, as cryptocurrency payments offer straightforward and intuitive

710   experience, performance expectancy influences travelers' intention to use cryptocurrency

711   payments. Our study findings resonate with the previous findings of Haar (2021), who argues

712   that performance expectancy in form of fast processing and low transaction fees influence

713   cryptocurrency payments adoption. Moreover, the businesses that provide cryptocurrency

714   payments to the consumers are solving their issues related to the liquidity and scalability, hence,

715   end users' performance expectancy positively affects intention to use cryptocurrency payments

716   (Temizkan et al., 2022). Lastly, our study confirmed that facilitating conditions positively impact

717   intention towards cryptocurrency payments. As facilitating conditions via cryptocurrencies

718   increase financial inclusion, travelers can execute any transactions via mobile phones without

719   any central authority. Moreover, during the holidays and leisure travel consumers can utilize

720   cryptocurrency for buying tourism products or hospitality goods and services, even sending

721   donations to visiting communities. As decentralized finance (DeFi) via smart contracts on a

722   blockchain is gaining its momentum, travelers' can engage in borrowing and lending services

723   using cryptocurrencies without credit scores. Our study results echo previous findings by

724   Alalwan et al. (2017) who pointed that cryptocurrency adoption is strongly depended on network

725   support, where Miraz et al. (2022) specify facilitating conditions as regulatory and technical

726   systems that hold a positive influence on end users' intention to use cryptocurrency.

727   Finally, on the subject of the moderating effects, the present study confirmed the

728   moderating effect of age and gender one the influence of performance expectance, effort

729   expectancy, social influence and facilitating conditions on intention to use cryptocurrency

730   payments in tourism in context of South Korea travelers. Thus, our study results are supported by

731 Chandran (2021) who argues that cryptocurrency payments are pathway towards an inclusive

732 world, as Locke (2021b) recognizes that women are not being left out from digital revolution as

733 they are embracing blockchain technology and cryptocurrencies. Moreover, our study results

734 related to the adoption of cryptocurrency payments confirmed previous findings by Locke

735 (2021a) who pointed that many younger end users' are finding similarities with each other across

736 virtual communities as they are utilizing cryptocurrency payments for NFTs' and metaverse. On

737 the other hand, Perrin (2021) concluded that intention to adopt cryptocurrency payments is

738 influenced by convenience, regulatory framework, and technical systems within older end users.

739   In the context of China travelers, age had moderating effect on the impact of social influence

740 and facilitating conditions on intention to use cryptocurrency payments in tourism. Furthermore,

741 our study results resonate with Locke (2021a) who outlines that younger end users are

742 enthusiastic towards cryptocurrencies payments as they share their knowledge and experiences

743 via social platforms. Lastly, our study results are supported by Rodriguez (2021) who noticed

744 that financial transactions via mobile phones are a valuable utility perceived by middle-aged end

745 users who are rapidly adopting cryptocurrency payments.

746 *5.1. Theoretical implications*

747   Firstly, this study is a rare endeavor to uncover digital revolution and adoption of

748 blockchain cryptocurrency payments in tourism on two opposite social class systems, namely

749 capitalism in South Korea and modified Marxism in China. Our study result showed that digital

750 revolution and inception of blockchain technology affected the evolution of money and payment

751 system equality in capitalist and modified Marxist societies. Furthermore, this study showed that

752 travelers from South Korea and China are favorable towards adoption of cryptocurrency

753 payments in tourism as they hold strong beliefs that with cryptocurrency payments money can

754   flow freely and unobstructed, as it creates conditions for equality and prosperity. Thus, this

755   finding is supported by Smith (1929) who argues that money provides meaning of value, and

756   value gives context to human existence and mans' conquest over weakness and death. Moreover,

757   our study fulfilled the task of social theory outlined by Becker (1975) which is to give expression

758   to creative, innovative, and transformative technologies that can improve human ideologies.

759   Secondly, this study can be considered as pioneering attempt to include travelers' attitude

760   with performance expectance, effort expectancy, social influence and facilitating conditions with

761   intention to use cryptocurrency payments in tourism in the South Korea and China context. The

762   blooming presence of travel and hospitality business across the world that are accepting

763   cryptocurrency payments creates an opportunity for South Korea and China travelers to capture

764   the financial benefits of this revolutionary technology. Several previous studies in the global

765   tourism context discussed perception of cryptocurrency payments in tourism (Treiblmaier, 2022;

766   Treiblmaier et al., 2021; Daryaei et al., 2020; Antoniadis et al., 2020; Radic et al., 2020; Valeri,

767   2020; Çapar, 2020; Önder and Treiblmaier, 2018; Nyrryev et al., 2020). However, none of the

768   previous studies explored the interconnection of Davis's (1989) TAM and Venkatesh et al.

769   (2003) UTAUT with travelers' intention to use cryptocurrency payments in tourism. Our results

770   show that travelers' attitude, performance expectance, effort expectancy, social influence and

771   facilitating conditions have a significant and positive influence on intention to use

772   cryptocurrency payments in tourism. Our study results will assist future studies to recognize

773   other constructs and profoundly understand travelers' intention to use cryptocurrency payments

774   in tourism.

775   Third, this study suggests antecedents of attitude towards cryptocurrency payments of

776   South Korea and China travelers in a novel, factual way based on the contemporary outlook of

777 digital payments. Thus, this study showed that attitudes towards cryptocurrency payments are

778 influenced by perceived usefulness, perceived ease of use and security as frictionless payment,

779 absence of third-party verification, and being a more secure payment system improves travelers

780 confidence and financial performance. Accordingly, this research offers a theoretical foundation

781 for a novel view of TAM by proposing that in the context of cryptocurrency payments in tourism,

782 perceived usefulness, perceived ease of use, and security are powerful drivers of attitude towards

783 cryptocurrency payments.

784 Fourth, this study suggested the moderating effects of age and gender on the relationships

785 between performance expectance, effort expectancy, social influence, facilitating conditions and

786 intention to use cryptocurrency payments in tourism in context of South Korea and China.

787 Accordingly, the results of our study showed that female travelers from South Korea are

788 adopting blockchain technology and cryptocurrencies payments. That is, they can provide

789 financial assets to their valuable social circle, use their mobile phones to settle travel bills and

790 receive cashback or crypto rewards for such transactions, interlock in a decentralized way with

791 the poorest communities of the visiting tourist destinations, enjoy straightforward and intuitive

792 payment experience without any central authority. Moreover, our study results extend the

793 nomological network associated to adoption of cryptocurrency payments in tourism by including

794 new assemblage of variables and associated theoretical instruments.

795

796 *5.2. Practical implications*

797 This is one of the first studies that explored attitude towards cryptocurrency payments in

798 the context of South Korea and China. The aforementioned construct has dominant role in the

799 ongoing digital revolution, so it is of paramount importance to the tourism and hospitality

800 business, financial sector and blockchain application developers. Moreover, as travelers are

801 constantly sharing their beliefs, thoughts and experiences in regards of cryptocurrency payments

802 on many social platforms, it is important for the tourism and hospitality stakeholders to observe

803 and understand the implications of novel trends in cryptocurrency payments and progression of

804 the value creation build on blockchain technology. Travelers' attitude towards cryptocurrency

805 payments expressed on social platforms affects viability of intention to use cryptocurrency

806 payments in tourism. Consequently, our study provides valuable knowledge and a useful

807 roadmap of travelers' attitude towards cryptocurrency payments.

808   The adoption of cryptocurrency payments in tourism and hospitality sector is built on the

809 public need for superior quality payments, which are simple and straightforward. Hence,

810 cryptocurrencies act as a medium of exchange on blockchain based platform that empowers the

811 advance of the Internet of information towards the Internet of value. The Internet of value in the

812 tourism and hospitality sector is in its simplest form an ecosystem of numerous assets, that have

813 the monetary value for people. Accordingly, the Internet of value rebuilds existing structures of

814 attainable values into a digital interconnected streamlined system that enables a value transfer in

815 the absence of governance (Treiblmaier, 2022). Moreover, with adoption of cryptocurrency

816 payments, travelers and tourism and hospitality business can unlock the Internet of value across

817 the tourism and hospitality sector via the five domains, namely NFTs, metaverse, DeFi, CBDC

818 and energy consumption and carbon credits.

819   In essence, cryptocurrencies are grouped computer codes, and as such, it is impossible to

820 ban them. Transferring cryptocurrencies between wallets is like sharing movies or music by

821 means of a pen drive. Therefore, a regulatory ban is not something that is practically achievable,

822 as it does not prevents individuals' capability to circulate them. Governments that are not

823   favorable towards cryptocurrencies have to accept the fact that in essence, cryptocurrency are

824   here to stay as they have a value and liquidity. Moreover, as hundreds of millions of people

825   across the globe are willing to accept cryptocurrencies, there is a factual mutual trust and

826   convertibility between end users, and thus cryptocurrencies are fundamentally a medium of

827   exchange. Accordingly, certain governments fundamental misunderstanding of cryptocurrencies,

828   based on casual refrain that criminals use cryptocurrencies to enable illegal activity, and as such

829   cryptocurrencies should be banned, is fundamentally wrong. Governments with such an

830   approach are ignoring absolute legal use cases for cryptocurrencies that are already in place and

831   that will continue to evolve in the future. Moreover, cryptocurrencies have been used for more

832   than a decade as a store and transfer of value without any need for intermediaries. With

833   burgeoning cryptocurrency use cases and spread of various applications that offer frictionless

834   payments, travelers are using cryptocurrencies regularly for numerous activities across the

835   tourism and hospitality sector. Subsequently, governments that are banning cryptocurrencies will

836   actually increase the black market trade in such countries. Accordingly, governments should

837   collaborate with private entities and work jointly in creation of public policy by adapting present-

838   day regulatory frameworks with the ongoing digital revolution and promote crypto innovations.

839

840   *5.3. Limitations and future research*

841   This study is not without limitations, thus our study should serve as baseline that provides

842   opportunities for future research. The first limitation is the focus of the study, as our study is

843   based on specific constructs and theory related to the Davis's (1989) The Technology

844   Acceptance Model (TAM) and Venkatesh et al.'s (2003) The Unified Theory of Acceptance and

845   Use of Technology (UTAUT). Nevertheless, our study showed that both models act as an open

846   source platform that enables integration of other constructs and concepts. Thus, further studies

847   should use other constructs that are compatible with this platform. The second limitation is the

848   survey itself, which was in this study self-administered online. Hence, due to potential self-

849   response bias a certain degree of caution has to be taken in consideration in generalizing the

850   findings of this study. Nevertheless, to mitigate the potential impact of self-response bias, the

851   survey was composed and validated following the procedural methods set by Jordan and Troth.

852   (2020) as independent and dependent variables did not duplicate the composition of the

853   hypotheses. The third limitation is the study design, which was cross-sectional. Thus, as Crosby

854   and Salazar (2020) argue in such studies, causation cannot be established, cohort effects are not

855   observable, and incidence are not determined. Future studies could employ a longitudinal study

856   design to overcome this limitation of the present study. The fourth limitation is related to the

857   moderators used in this study, age and gender. Due to participants' profiles, our study did not

858   have the foundation to include experience and voluntariness as moderators, thus, future studies

859   that build on UTAUT model should include experience and voluntariness as suggested by

860   Venkatesh et al. (2003).

861

862   **6. Conclusion**

863   The winds of change are blowing towards the tourism and hospitality sector since

864   cryptocurrency payments are being rapidly adopted due to its potential to break down payment

865   barriers so that value can flow as easily as information does. The advent of blockchain

866   technology with cryptocurrency payments will become intrinsically embedded within tourism

867   and hospitality business processes for years to come. Thus, it is the time for South Korean but

868   even more for Chinese policymakers to take the progressive approach towards public policy and

869   adapt current regulatory frameworks and promote cryptocurrency innovations in tourism and

870   hospitality.

871   In closing, unlike the previous studies, the present research is one of the rare research that

872   explores individuals' intricate psychological process for decision formation about cryptocurrency

873   use in the tourism context. The developed theoretical model where the extended TAM and

874   UTAUT model are successfully merged into one comprehensive framework contained a

875   sufficient prediction power for approach intention. In this research, a theoretically-meaningful

876   improvement was made to the extant theory in social psychology and consumer behavior. Our

877   research sufficiently and effective broadened and deepened the TAM model and UTAUT model

878   for the explication of a new type of tourists' decision/behavior (i.e., cryptocurrency use).

879   Moreover, this research successfully took into account such critical concepts as risk and security.

880   Given its on-going growth worldwide, cryptocurrency is becoming a critical phenomenon in the

881   tourism sector as well as other diverse business/non-business sectors. Keeping pace with this

882   emerging phenomenon, the present study offers a crucial guiding framework that helps

883   academics and practitioners to deeper understand tourists' decision-making process and

884   behaviors about cryptocurrency use/adoption.

885

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Table 1. Review summary of relevant studies

Authors	Focus	Underlying Theory/Model/Concepts	Important Finding/ Issue addressed
Leung and Dickinger (2017)	Exploratory study on usage of Bitcoin for online travel products,	Unspecified.	Bitcoin is used for online travel products and for payments in restaurants and food delivery,
Thees et al. (2020)	The implications of blockchain in the tourism industry.	Content analysis.	Cryptocurrency payments can play important role in travelers value chain.
Tham and Sigala (2020)	Usage and impacts of blockchains and cryptocurrencies on sustainable tourism development.	Literature review.	Cryptocurrencies increase trust, democratize participation in economic systems and re-distribute power and economic relations amongst actors.

Treiblmaier et al. (2021)	Travelers' intention to use cryptocurrencies for payment purposes.	Mix of quantitative and qualitative data.	Travelers are impartially satisfied with the experience of cryptocurrency payments of tourism products.
Treiblmaier (2021)	Description of a token application in a tourism or hospitality application.	Research note.	Importance of cryptocurrency utility and clear distinction on application of payment tokens, utility tokens and investment tokens in the tourism industry.
Nuryyev et al. (2021)	Cryptocurrency payment adoption in Taiwanese hotels.	Extended TAM	Cryptocurrency payments is affected by perceived usefulness and perceived ease of use.
Daryaei et al. (2020)	Exploratory study on identifying factors affecting bitcoin adoption/acceptance in are affected by the	Collaborative Networks (CN).	Bitcoin is pivotal in Collaborative Networks (CN) as it can bridge various heterogeneous tourism stakeholders and bring them together

	behavior of the Tourism Collaborative Network (TCN).		into one Tourism Collaborative Network (TCN).
Antoniadis et al. (2020)	The cryptocurrency payments based on Distributed Ledger Technology (DTL).	Literature review.	The utility of cryptocurrency payments based on DTL can offer security in payments, efficiency of record keeping and real time transaction execution.
Radic et al. (2020)	COVID-19 and crisis management in cruise tourism.	Crisis management theory	Cryptocurrency have potential to solve liquidity issues in crisis situations.
Valeri M. (2020)	The blockchain technology aa functional tool for better governance of the tourism system.	Literature review.	Cryptocurrency payments offer significant improvements to tourism business.
Ozdemir et al. (2020)	Blockchain as basics criteria that allows decision makers to compare various distributed applications (DAPPs).	Case analysis.	DApps can offer people-to-people (P2P) payments/loans, decentralized crypto exchanges (DEXs), social platform, and new media art.
Banerji et al. (2021)	The concept of blockchain among the leading travel and tourism journals.	Literature review.	Cryptocurrency payments in travel and tourism industry can reduce risks, mitigate frauds and bring transparency.

Çapar (2020)	The use of cryptocurrencies and transactions in medical tourism.	Unspecified.	Cryptocurrency payments are have utility among potential medical tourists.
Önder and Treiblmaier (2018)	Propositions towards further refining and elaboration of consumer perspective on cryptocurrencies.	Research note.	Cryptocurrency have robust utility in travel and tourism industry through the customer-to-customer (C2C) payments.
Yadav et al. (2022)	Extending Önder and Treiblmaier (2018) propositions.	Research note.	Importance of clarity and legal status of cryptocurrencies for the successful development of C2C payments in the travel industry.
Barrutia Barreto et al. (2019)	Analysis of the cryptocurrencies potential within tourism sector.	Case analysis.	Cryptocurrency payments in tourism can reduce poverty.
Nyrryev et al. (2020)	Factors influencing the intention to adopt cryptocurrency payments among small to medium-sized enterprises (SMEs) in tourism and hospitality.	Extended TAM	Cryptocurrency payments by SMEs, is driven by the social influence, organization's tactical direction, and personal preference of an executive.
Nam et al. (2019)	The key characteristics of blockchain technology in conjunction with the smart city/tourism framework.	Content analysis.	Cryptocurrency payments systems in tourism and hospitality are in early stage of adoption, however, travelers will adopt those cryptocurrencies that survive test of utility and time.

| Rashideh (2020) | A blockchain-based framework for the tourism industry. | Qualitative method with semi-structured interview. | Importance to study technology adoption models of cryptocurrency payments from the travelers' perspective. |