ACCEPTANCE AND USE OF DIGITAL PAYMENTS BY ITALIAN CONSUMERS

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ABSTRACT

This paper investigates the factors affecting the adoption of digital payments by Italian consumers. The theoretical framing for this study is based on the unified theory of acceptance and use of technology in a consumer context (UTAUT2), to which we add three factors that might be of interest when analyzing the adoption of digital payments, namely government incentives, privacy concerns and tax evasion aversion. To empirically assess the proposed research model, we gathered data through a web-based survey and analyzed them using Partial Least Squares - Structural Equation Modeling. The results suggest that the main structure of UTAUT2 is confirmed, with the only exception of price value, which is found to be insignificant. In addition, government incentives and tax evasion aversion have a significant positive impact on the behavioral intention to adopt digital payments, whereas privacy concerns have a significant negative effect on the same construct. Theoretical and empirical implications are discussed.

Keywords*: digital payments, consumer, UTAUT2, government incentives.*

1. INTRODUCTION

Digital payments facilitate transactions, benefiting consumers, retailers and merchants (Zhang *et al.*, 2019). In doing so, they have a positive impact on the modernization of a whole country, by enabling innovative services otherwise impossible to deliver, e.g. smart mobility services, and by fostering the adoption of e-commerce. Moreover, digital payments may also be a tool through which hindering tax evasion (Sung, Awasthi and Lee, 2017). In fact, cash payments enable the seller to easily hide the transaction history, thereby facilitating underreporting of revenues. In contrast, any digital payment method, by being traceable, makes evasion more difficult (Immordino and Russo, 2018) and may increase the perceived probability of detection, thereby improving compliance (Madzharova, 2020). Several governments tried implementing policies to foster traceable payments in the attempt of reducing tax evasion and providing benefits to the society as a whole. For instance, in 1999 South Korea introduced a program to promote payments made using credit cards, debit cards, and electronic cash receipts in Business to Consumer (B2C) transactions (Sung, Awasthi and Lee, 2017) while in 2019 the Italian government introduced the so-called Piano Italia Cashless, i.e. a policy designed to foster digital payments while reducing cash usage.

The aim of the paper is to investigate the factors affecting the adoption of digital payments by Italian consumers, with the ambition of providing the Italian public institutions as well as digital payment providers with insights on consumers behavior that could help in fostering the adoption of digital payments. For the purpose of the analysis, we applied the unified theory of acceptance and use of technology in a consumer context (UTAUT2*)* proposed by Venkatesh et al. (2012), since it is more explanatory compared to previous models to predict the behavioral intention to use a technology (Sivathanu, 2019). To this

theory, we added three constructs that might be of interest when analyzing the adoption of digital payments, namely (i) the role of government incentives, (ii) concerns related to privacy, which could prevent people from adopting the technology and (iii) the degree of aversion towards tax evasion.

From a theoretical viewpoint, extant studies applying UTATU2 to the payment industry have mainly focused on mobile payment methods, without analyzing other digital payment instruments such as credit or debit cards (Patil, Rana and Dwivedi, 2018). However, most of the policies adopted by governments are not limited to foster mobile payments alone, but target digital payments in general. Moreover, the investigation of the impact of government support has been suggested in previous researches (Sivathanu, 2019).

The rest of the paper is organized as follows. Section 2 describes the empirical context. Section 3 summarizes the research model together with the hypotheses. In sections 4 we present the research methodology. Section 5 and 6 provide, respectively, the main findings and discussion, together with limitations and suggestions for future research.

2. EMPIRICAL CONTEXT

Digital payments are defined as transactions made for the purchase of goods or services, made by digital means only. More specifically, we include in this definition payment cards, which are defined by Bank of Italy[1] as instruments that enable holders to pay sellers directly at the POS terminals (in-store payments) or over the internet (e-commerce). Payment cards can be credit cards, debit cards or prepaid cards (e-money). The definition comprehends also mobile payments, i.e. transactions initiated by mobile phones, tablets or wearable devices. We did not include cheques, since they are paper-based instruments, and bank transfer and direct debits since they are not common in B2C transactions and were not targeted by the *Piano Italia Cashless.*

The Italian case is of particular interest. The infrastructure for the acceptance of digital payments is well developed, having 60,647 POS terminal per million inhabitants, significantly above EU average (32,663), and 1.99 payment cards per capita, slightly above EU average (1.92) (European Central Bank, 2021). Nevertheless, digital payments are underused. In 2020 Italian citizens made on average 80.7 transactions with payment cards, well below the EU average (145.8) (European Central Bank, 2021). In addition, from a practical perspective, tax evasion is an urgent issue in Italy. According to the studies accomplished by CASE (2020), in 2018 the overall European Union (EU) VAT gap in the 28 States of the EU (United Kingdom included), was €140 billion (11% of VAT total tax liability) and the largest nominal gap was observed in Italy (€ 35 billion, 25% of VAT total tax liability). Reducing the tax gap has been indicated by the Italian government as one of the objectives of the National Recovery and Resilience Plan, i.e. the plan devised by Italy in order to absorb the Next Generation EU, which is the temporary recovery instrument devised by the EU to help repair the immediate economic and social damage brought about by the coronavirus pandemic. This objective will be pursued also by fostering the adoption of cashless payments in Italy. For this reason, the Italian government introduced in 2019 the policy called *Piano Italia Cashless*. The policy includes both incentives and deterrents that target both consumers and retailers, with the

[1] https://www.bancaditalia.it/compiti/sispaga-mercati/strumenti-pagamento/index.html?com.dotmarketing.htmlpage.language=1

goal of fostering the usage of digital payments by Italian consumers, in order to reduce cash usage and, eventually, tax evasion. For our analysis, we will focus on the incentives granted to consumers.

The Italian government has devised two incentives for this target. The first one is the so-called Cashback. The incentive granted to the consumer a 10% reimbursement on the purchase of goods if the transaction was made in store and with payment cards. It was active for two periods: from December 8th 2020 to December 31st 2020 and from January 1st 2021 to June 30th 2021. To obtain the bonus, consumers had to reach a minimum of 10 transactions in the first period and of 50 transactions in the second period. In addition, thresholds were imposed to the amount of the reimbursement: each consumer could receive a maximum of 15€ per transaction and 150€ in the two periods.

The second incentive is a receipt lottery introduced on February 1st 2021 and still ongoing. It is a lottery where the ticket number is incorporated in the receipt. In order to take part to the lottery, the consumer needs first to register to the dedicated website and get a lottery code. Next, it is necessary to show the retailer the lottery code and pay using digital payments. The consumer will then receive, virtually, a lottery ticket per each euro spent.

3. RESEARCH MODEL AND HYPOTHESES

Venkatesh et al. (2003) analyzed eight theories used to investigate why individuals accept and use new information technology. As a result, the authors formulated the Unified Theory of Acceptance and Use of Technology (UTAUT). UTAUT includes four constructs, namely performance expectancy, effort expectancy, social influence and facilitating conditions, which are moderated by gender, age, experience and voluntariness of use. Subsequently, Venkatesh et al. (2012) proposed a revision of UTAUT in order to investigate technology adoption by consumers. The new theory, called UTAUT2, incorporates three new constructs –price value, hedonic motivation and habits – while the voluntariness of use moderator was excluded. We decided using UTATU2 in this study since it is more explanatory compared to previous models (Sivathanu, 2019).

The theory, however, does not include some factors that might be of interest when analyzing the adoption of digital payments, namely (i) the role of government incentives, (ii) concerns related to privacy, which can prevent people from adopting the technology and (iii) the degree of aversion towards tax evasion.

Government incentives are defined as financial motivations for people to take certain actions (Krugmann, 2020). We decided to include government incentives since they are measures specifically designed to affect consumers' behavior and therefore should have an impact on the acceptance and use of digital payments. Moreover, the investigation of the impact of government support has been suggested in previous researches (e.g., Sivathanu, 2019).

Privacy concerns are defined as "concerns about possible loss of privacy as a result of a voluntary or surreptitious information disclosure" following a transaction made through a digital payment instrument (Dinev and Hart, 2006). Privacy concerns may lead consumers to safeguarding behaviors that may negatively affect the engagement with a technology (Soodan and Rana, 2020; Stewart and Segars, 2002) and therefore should be included in the proposed extended model.

Tax evasion aversion indicates the aversion of a consumer towards tax evasion. Digital payment methods, by being traceable, makes tax evasion more complicated (Immordino and Russo, 2018). Therefore, a buyer who is highly concerned about the negative externalities brought about by tax evasion may choose to pay with digital means only, to prevent the seller from evading taxes. For this reason, we decided to include tax evasion aversion in the model as well.

The proposed research model applies UTAUT2 to investigate the drivers to the behavioral intention to adopt digital payments. The drivers include performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), price value (PV), habits (HA), government incentives (Gov), privacy concern (PC) and tax evasion aversion (TEA). Table 1 defines the constructs and Figure 1 shows the research model with the proposed hypotheses. Hypotheses from H1 to H8 refer to UTAUT2 model. Hypotheses H9 to H11 are related to the constructs added by the authors. All hypotheses imply a positive correlation between the related constructs, with the only exception of H10.

Construct	Items	Definition
PE	PE_1 PE_2 PE_3	"The degree to which using a technology will provide benefits to consumers in performing certain activities" (Venkatesh et al., 2012)
EE	EE_1 EE_2 EE_3	"The degree of ease associated with consumers' use of technology" (Venkatesh et al., 2012)
SI	SI_1 SI_2 SI_3	"The extent to which consumers perceive that important others (e.g. family and friends) believe they should use a particular technology" (Venkatesh et al., 2012)
FC	FC_1 FC_2	"The extent to which consumers perceive that important others (e.g. family and friends) believe they should use a particular technology" (Venkatesh et al., 2012)
HM	HM_1 HM_2 HM_3	"The fun or pleasure derived from using a technology"(Venkatesh et al., 2012).
PV	PV_1 PV_2 PV_3	"Consumers' cognitive tradeoff between the perceived benefits of the applications and the monetary cost for using them" (Venkatesh, Thong and Xu, 2012)
HA	HA_1 HA_2 HA_3	"The extent to which an individual believes the behavior to be automatic" (Venkatesh et al., 2012).
BI	BI_1 BI_2 BI_3	Consumer willingness to adopt digital payments
Gov	Cashback Lott_use	Financial motivations for people to take certain actions (Krugmann, 2020)
PC	PC_1 PC_2 PC_3	"Concerns about possible loss of privacy as a result of a voluntary or surreptitious information disclosure" following a transaction made through a digital payment instrument (Dinev and Hart, 2006).

TEA	TEA_1 TEA_2 TEA_1	The aversion of a consumer towards tax evasion

Table 1 - Description of the constructs in the model

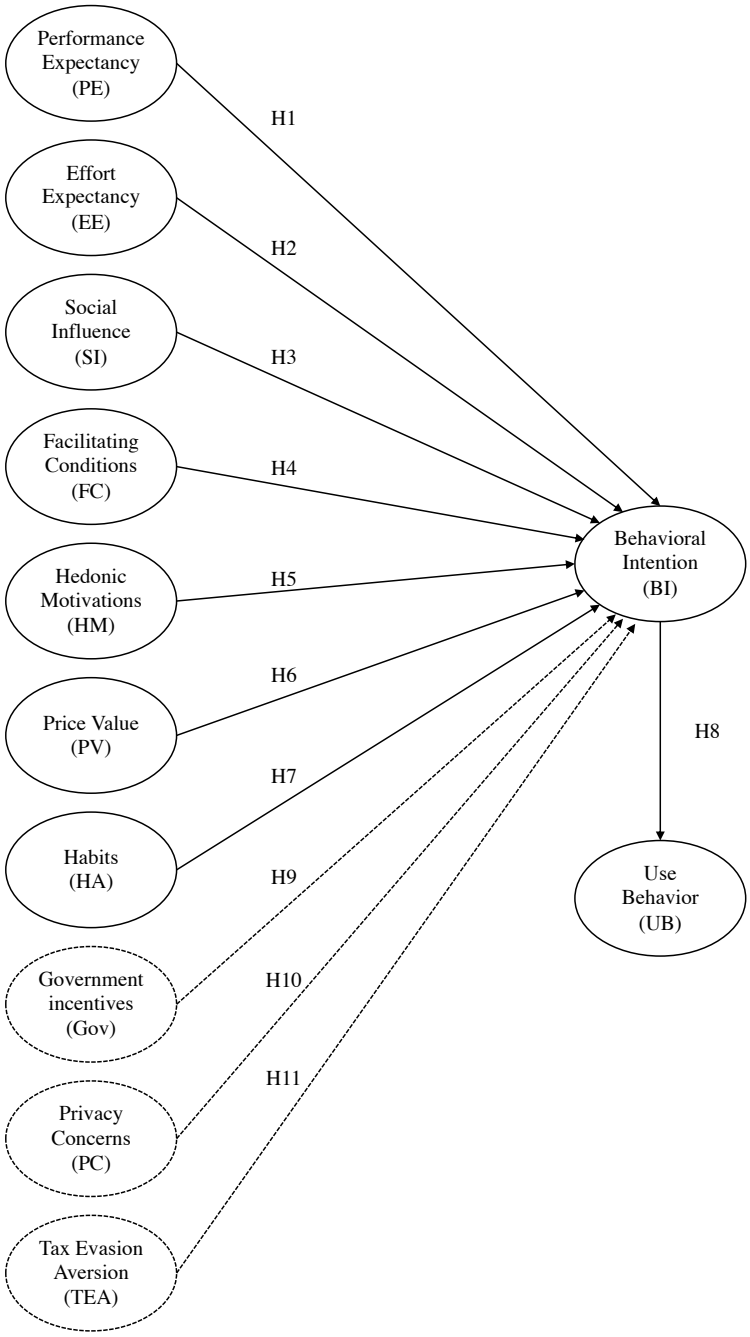

Figure 1. Proposed research model and hypotheses. New constructs are shown as dotted lines

4. RESEARCH METHODOLOGY

The target population is Italian consumers using any form of digital payments, as defined in section 2. To collect the data, we designed a questionnaire which included constructs

and scales all derived from previous studies (Venkatesh et al., 2003; Dinev and Hart, 2006; Venkatesh, Thong and Xu, 2012). We used 5-point Likert scale, ranging from "strongly disagree" to "strongly agree" to measure the various items.

All factors were measured through reflective indicators, with the only exceptions of use behavior (UB) and government incentives (Gov). UB was measured as a formative compositive index of frequency of digital payments use. Respondents were provided with a list of the five main digital payment method types, namely prepaid cards, debits cards, credit cards, mobile wallet and mobile payment app, and were asked to indicate their usage frequency for each instrument. The anchors of the 5-point Likert scale ranged from "never" to "always". Gov was measured as a formative compositive index of frequency of receipt lottery use and the participation to the cashback. The frequency of receipt lottery use was measured using a 5-point Likert scales with anchors ranging from "never" to "always", whereas the participation to the cashback initiative was measured through a dummy variable equal to 1 if the respondents had taken part in the incentives, 0 otherwise.

The questionnaire was designed and administered in Italian, in order to avoid biases related to the translation. The survey was carried out using CAWI methodology, thus the population of reference is Italian users of digital payments, aged 18 to 75. The online survey was conducted between November 2021 and December 2021. A total of 2,000 answers were gathered. Of these, 1,894 were considered valid since no questions related to the model was left unanswered. More specifically, 106 were discarded since the respondents stated that they do not use nor possess any digital payment instrument. These answers were excluded because the objective of the study is to investigate why digital payment users adopt the technology.

We first check normality by testing the skewness and kurtosis of each indicator. The p-values of the tests were all equal to 0.00, meaning that the null hypothesis of normal distribution is rejected. Data were then analyzed using Partial Least Squares (PLS) - Structural Equation Modeling (SEM), which is "a causal modeling approach aimed at maximizing the explained variance of the dependent latent constructs" (Hair, Ringle and Sarstedt, 2011). We resorted to PLS-SEM since it is usually suggested when (i) the research goal is extending an existing structural theory, (ii) the structural model includes formative constructs, (iii) the structural model is complex, i.e. it includes many constructs, (iv) data are nonnormal to some extent (Hair, Ringle and Sarstedt, 2011). Stata17 software was used to run the statistical analyses, together with the plssem package (Venturini and Mehmetoglu, 2019).

5. RESULTS

Results are provided using the two step approach: first the measurement model is evaluated and then the structural model is examined (Hamdollah and Purya, 2016).

The first step is to evaluate the measurement model's reliability and validity (Hair et al., 2011). Reflective constructs have been assessed with respect to their reliability and validity. Indicator reliability was assessed by verifying that the factor loadings are all greater than 0.7 (Hair et al., 2011). Finding a factor loading smaller than 0.7 for the item FC_3, we decided to exclude the variable from the analysis and to revert to two-item measurement for the latent variable FC. Construct reliability was tested by computing the Cronbach's alpha, which exceeded the minimum threshold of 0.7 for every construct

(Hamdollah and Purya, 2016). Convergent validity was tested using average variance extracted (AVE). The AVE should exceed the minimum threshold of 0.5, indicating that the latent variable explain at least half of the variance of its indicators (Hamdollah and Purya, 2016). Discriminant validity was tested by using two measures. First, we checked that an indicator's loading with its associated latent variable is higher than the cross-loadings (Hair, Ringle and Sarstedt, 2011). Then, the Fornell-Larcker criterion (Fornell and Larcker, 1981) was applied, testing whether the AVE of each latent construct is higher than the latent construct's squared correlation with the other latent constructs. Gov and UB were measured using two and five formative indicators, respectively, and had weights between 0.26 and 0.86 and 0.20 and 0.53, respectively.

The measurement model was found to be reliable and valid, therefore the path analysis was carried out. We ran two separate models to the support for the baseline UTAUT2 model (direct effects only) and the proposed extended model. We first test for multicollinearity by computing the variance inflation factors (VIFs), which were found to be less than the threshold of 5 (Venkatesh et al., 2012) in both models, thereby suggesting that multicollinearity was not a major issue in our study.

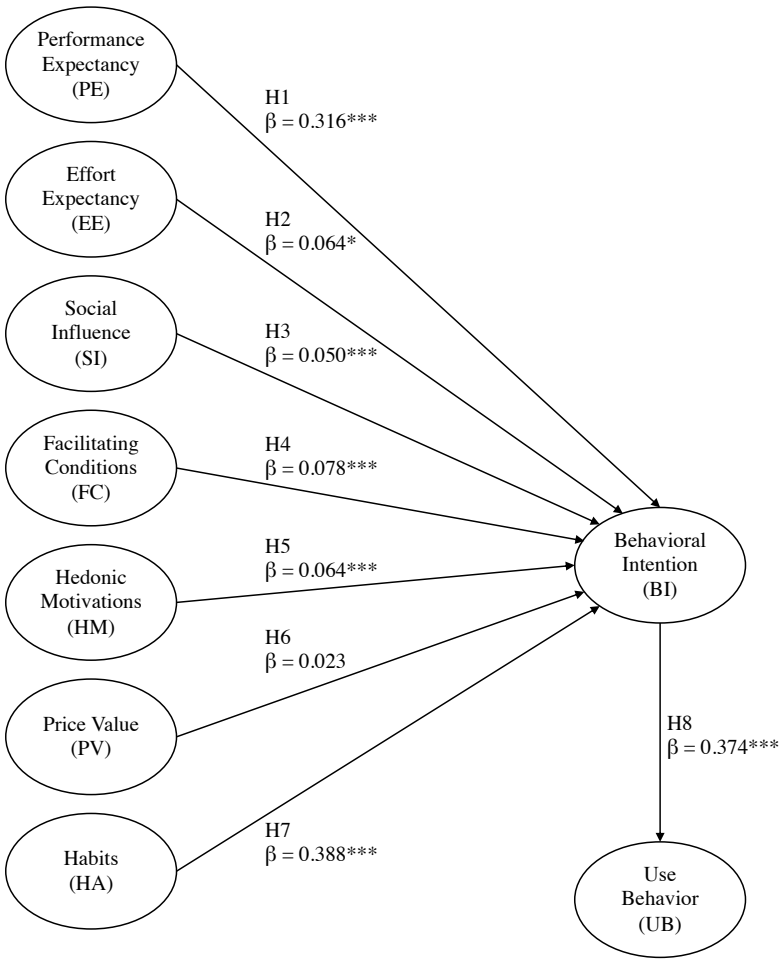

Figure 2 – Structural model results: UTAUT2 model (*p < 0.05; **p < 0.01 ; ***p < 0.001 ; all other correlation are insignificant)

As shown in Figure 2 the main structure of UTAUT2 was confirmed, with the only exception of PV, which is surprisingly found to be insignificant. Similarly, when the three

proposed additional constructs were added to the model, significant path coefficients were found with all latent variables, with the only exception of PV (Figure 3).

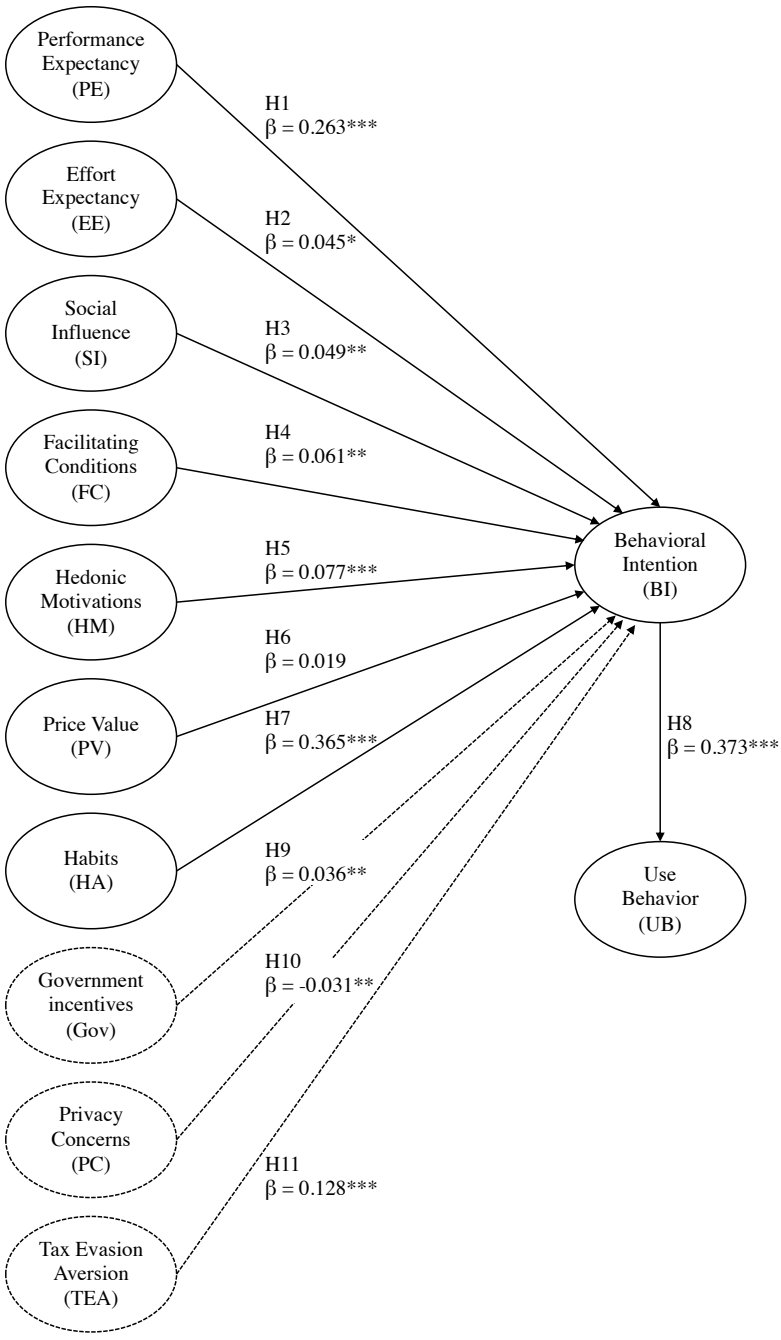

Figure 3 – Structural model results: extended model, new constructs are shown as dotted lines (*p < 0.05; **p < 0.01 ; ***p < 0.001 ; all other correlation are insignificant)

R^2 was computed in order to assess the amount of variance in the endogenous constructs that is explained by the exogenous constructs (Hair et al., 2017). Generally speaking, the higher R^2, the higher the in-sample predictive accuracy of the model, however there is no general threshold for acceptable R^2 values, since it depends on the research disciplines as well as the model complexity (Hair et al., 2017). The average R^2 computed for the UTAUT2 model was quite high at 43.9 percent, while the average R^2 of the extended model was slightly higher at 44.5 percent. We reran the tests for both models with

significant paths only, i.e. excluding PV, to verify the change in the average R^2. We found that it decreased by only 0.06 percent and 0.02 percent respectively.

The quality of the structural model was assessed by looking at the redundancy Index. Redundancy shows "the amount of variance in the indicators measuring the variable that is explained by the exogenous latent variables that predict the endogenous variable" (Venturini and Mehmetoglu, 2019). Generally speaking, the higher the redundancy the higher the predictive power of the latent independent variable since no cut-off threshold has been suggested for redundancy so far (Hamdollah and Purya, 2016). The average redundancy of the UTAUT2 specification was equal to 0.542, whereas the average redundancy of the extended specification was slightly higher at 0.551.

6. DISCUSSION

6.1 THEORETICAL CONTRIBUTIONS

This study adds value to the existing theory on the adoption of digital payments by extending the framework to prepaid, credit and debit cards, instead of considering mobile payments alone.

We also contribute to the existing literature by further testing the explanatory power of UTAUT2. Our findings confirm the main structure of UTAUT2, with the only exception of PV. PV is found to have no explanatory power on BI when applied to the digital payment technology, in contrasts with the extant literature. This raises questions about the importance of PV in explaining the adoption of digital payments. A possible explanation is that digital payments providers do not charge consumers for every transaction but applies monthly fees for payments cards. In some cases, there are no fee at all for payment cards while mobile payment methods are usually free for the consumer. For these reasons it might be difficult for a consumer to evaluate a tradeoff between the perceived benefits of the technology and the monetary cost for using it; therefore, the role played by PV is not relevant. Our finding suggests that future research should further investigate the effect of PV on the BI to adopt a technology.

Our major theoretical contribution is integrating UTAUT2 with three new constructs, which are found to be relevant when studying the adoption of digital payment methods by consumers in a developed country like Italy. First, to our knowledge, the study is unique as it examined the adoption of digital payments during the introduction of Piano Italia Cashless in Italy, thereby allowing for the investigation of the impact of government support on the adoption of a given technology. By doing so, we also answer Sivathanu's (2019) call for further investigation of the role of government support in the adoption of digital payment by consumers. The role of government incentives could be tested further, in order to contribute to the generalizability of our finding. Second, we contribute to the literature by proving that privacy concerns are a deterrent to the adoption of digital payment. The importance of protecting one's privacy is becoming more and more relevant, especially when adopting digital technologies. Our finding suggests that future studies on consumer's adoption of a digital technology should take the effects of privacy into account.

6.2 PRACTICAL IMPLICATIONS

On the basis of the empirical research described above, it is found that the constructs PE, EE, SI, FC, HM, HA, Gov, PC and TEA have a significant positive influence on the BI to adopt digital payment, which in turn positively affect the actual UB of the technology.

The positive effect of PE suggest that digital payment providers and public authorities as well should enhance the benefits that digital payments provide in the daily life in order to increase users' awareness. Similarly, the positive impact of EE may encourage digital payment providers to work constantly to simplify the user experience of the payment process, in order to reduce the effort required to the consumer, thereby increasing the BI to use such instruments. A proper user experience that makes digital payments fun and pleasurable to use may also booster HM, thereby increasing the BI to adopt digital payments. The influence of other people (SI) is found to be significant as well. Consequently, digital payment providers are encouraged to foster higher social interaction in the use of such instrument, for instance by offering zero-fee peer-to-peer transactions. Encouraging world of mouth can also persuade consumers to adopt digital payments, for example by introducing rewards to extant users who bring new customers. Improving customer care, thereby enhancing the FC, could also help in fostering the BI to adopt digital payments. Digital payments provider could also leverage the positive impact of HA, for instance by providing benefits for frequent and loyal users.

Public institutions can play a pivotal role in fostering the adoption of digital payments as well. The model proved that the incentives designed by the Italian government had a positive impact on the BI to adopt the technology, which may encourage the Italian government itself to maintain such incentives in place and other governments to introduce similar policies. Public institutions are also encouraged to introduce, or to keep enforcing, laws that safeguard consumers' privacy when using digital payment instruments. Finally, the positive effect of TEA on BI might also suggest that public authorities should develop an institutional communication program about the negative externalities of tax evasion. The objective of such a program should be to increase consumers' awareness about the negative effects of tax evasion and, therefore, the importance of the fight against it.

6.3 LIMITATIONS AND FUTURE RESEARCH

The main limitation of the study refers to data gathering. The survey was conducting using CAWI methodology, therefore it targets consumers that are already familiar with digital instruments, such as PCs. Future researchers are encouraged to integrate CAWI methodology with other technology-free methods, e.g. CATI or CAPI. Moreover, the effects of sociodemographic variable, such as gender, occupation, education and income level, may be analyzed in future studies. We also suggest to further investigate the effect of price value, to assess its impact on the behavioral intention to adopt a technology. Finally, future studies may address the impact of government incentives as well, in order to improve the generalizability.

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