

Influence of AI-Enabled Digital Payment Systems on Mental Accounting Among Gen-Z

Journal of Development Economics and Management Research Studies (JDMS)
A Peer Reviewed Open Access International Journal
ISSN: 2582 5119 (Online)



Crossref Prefix No: 10.53422
11 (19), 94-102, January-March, 2024
@Center for Development Economic Studies (CDES)

Reprints and permissions

<https://www.cdes.org.in/>

<https://www.cdes.org.in/about-journal/>

Influence of AI-Enabled Digital Payment Systems on Mental Accounting Among Gen-Z

Dr. Tabitha Durai¹ and H. Lalitha²

Abstract

Artificial Intelligence (AI) plays an important role in finance, especially in digital payment systems, which are taking over cash as the de-facto payment mode, mainly among Gen-Z. Mode or source of payment can impact the cognitive process underlying spending – mental accounting. This study aims to ascertain whether the features of AI-enabled digital payment systems used by Gen-Z have an influence on mental accounting behaviours exhibited by them. Data was collected from 100 respondents selected using convenience sampling, through a self-structured questionnaire administered online. It was found that majority of the respondents preferred mobile payment apps and that there was a positive correlation between the variables. The results of this study underline the importance of AI in digital payments scenario, and is of particular use to AI developers and consumers.

Keywords: Artificial Intelligence, Mobile Payment Apps, Gen-Z, Mental Accounting behaviour, Digital payments.

INTRODUCTION

Artificial intelligence is the study of how to build or program computers to enable them to do what minds can do (Boden, 1996). It refers to the concept that machines can be improved to assume some capabilities normally thought to be human intelligence such as learning, adapting, self-correction etc. (The new international Webster's comprehensive dictionary of the English language, encyclopaedic edition). Financial Stability Board (2017) defines AI as 'the theory and development of computer systems to be able to perform tasks that have traditionally required human intelligence'. In this century, Artificial Intelligence has evolved from being an academic field to becoming a key factor in the social and economic mainstream technologies including banking, medical diagnosis, autonomous vehicles as well as voice-activated assistance (Frank, 2019).

¹ Assistant Professor, Department of Commerce, Madras Christian College, Chennai.

² Research Scholar, Department of Commerce, Madras Christian College, Chennai.

In finance, digital payment systems is one area where AI has multiple uses. Digital payments systems comprise of several mediums that facilitate transaction of money through digital or online modes, without any physical exchange of funds. All around the world, many countries are shifting away from cash-based transactions to digital payment systems (Capgemini, 2019). Digital payment systems are perceived as advantageous over traditional cash-based payment systems due to features such as rewards and discounts, convenience, simplicity and ease of use, accessibility, time-saving and quickness, safety and security, integration of funds across accounts and lowered transaction costs. Artificial intelligence is utilised in digital payments through features such as chatbots, customisation/personalisation, fraud prevention, regulatory compliance and credit scoring (Fernandez, 2019). Usage of AI-enabled digital payment systems are increasing worldwide, and has spiked because of the COVID-19 pandemic (Purba et al, 2021). The source of payment influences the way we think and consume, and so the cognitive process underlying our spending, i.e. mental accounting, is subject to change (Huebner et al, 2020).

Mental accounting is defined as “the set of cognitive operations used by individuals and households to organize, evaluate, and keep track of financial activities” (Thaler, 1999). It has several components, some of which are explained as follows:

Utility perception

According to Kahneman and Tversky (1974), costs spent are not necessarily viewed as losses. Based on this observation and on the prospect theory propounded by them and Thaler (1985) proposes two types of utility – acquisition utility and transaction utility – gained by a person on making a payment. Acquisition utility is defined as the excess of the ‘mental value’ of a product over its price. It is similar to the economic concept of consumer surplus. Transaction utility is defined as the utility gained by a person based on the perception that they are getting a favourable ‘deal’ out of the transaction.

Recall ability

According to Soman (1999), payment by a non-cash mode makes it difficult to recall the details of the payment made. People find it difficult to leave a strong memory trace when they make Hou et. al. (2021)

Categorisation

Categorisation is the process by which information is organised into groups based on commonalities to facilitate quick recall and judgement of relevant information for the purpose of evaluating decisions at hand (Henderson and Peterson, 1992). Zhang and Sussman (2017) explain that categorizing funds helps facilitate processing information in ways necessary for evaluating spending opportunities. Soman (2003) observes that consumption and spending are affected in relation to payment method chosen for categorisation.

Temporal framing and Evaluation frequency

Different mental accounts have different timeframes based on their categorisation. Thus they are evaluated at different frequencies as well. These are influenced by choice-bracketing, the cognitive grouping of mental accounts that is advantageous for accomplishment of goals (Read, Loewenstein and Rabin, 1998).

Malleability

Mental accounts are adjustable and changes can be introduced whenever required to accommodate additional consumption or saving (Cheema and Soman, 2006)

Decoupling

Introduced by Prelec and Loewenstein in 1998, it refers to the separation of pleasure in consumption from the pain of payment. According to Chatterjee and Rose (2012), this phenomenon is witnessed in non-cash payment methods such as credit cards. Trope and Liberman (2010) reason that this is due to opacity and psychological distance of these forms of payment.

This study aims to find out influence of features of AI-enabled digital payment systems on mental accounting behaviour. Hou et al (2021) have researched the influence of digital payment system on consumption from a mental accounting viewpoint. Similarly, several researches [Hancock and Humphrey (1997), Raghuram and Srivatsava, (2008), Chatterjee and Rose (2012) to name a few] have been done on the influence of credit cards on mental accounting.

According to Zhang and Sussman (2018), the intersection between mental accounting and technological advances especially in the financial industry are currently underexplored. This study undertakes to contribute to the research gap mentioned by inclusion of the various forms of AI-enabled digital payment systems as a whole, by considering the common features, as well as the special features introduced or enhanced by AI in these systems. Thus, this study does not limit itself to a particular type or form of digital payment, like credit cards.

This study aims to ascertain the most preferred form of digital payment systems used by the respondents. The extent to which AI-enabled digital payment systems are able to influence the cognitive practices of people is the crux of this research. Accordingly, the following null hypotheses are formed:

H₀₁ – There is no relationship between common features of AI-enabled Digital Payment systems used and mental accounting behaviours of the respondents

H₀₂ – There is no relationship between special features of AI-enabled Digital Payment systems used and mental accounting behaviours of the respondents

This study also contributes to the research on mental accounting behaviours on Gen-Z, which is a growing area of research that has garnered researchers' interest during the previous few years.

METHODS AND MEASURES

This section of the study details the study participants and their characteristics. It also explains the instruments and procedures followed for data collection and describes the statistical tools used.

Gen-Z are the future of the global workforce, and are estimated to be more than one-fourth of the total global population. Pekerti & Arli, (2017) define Gen-Z as those born after 1995. Gentina E (2020) underlines the importance of researching the Gen-Z, especially in Asian countries, where research is lacking. Thus, this study analyses forms of AI-enabled digital payment systems used by Gen-Z as well as the influence of the features of these systems on their mental accounting behaviours.

A self-structured questionnaire was constructed with two sections –

1. ‘Personal details’ section requiring respondents to fill out demographic and socio-economic details
2. ‘Digital payments’ section requiring respondents to give opinions upon statements using a five-point Likert scale.

The questionnaire was prepared and circulated using Google Forms to 100 respondents selected using convenience sampling method. Descriptive statistics were used for analysis and interpretation of data collected. A five-point Likert scale (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree) was used to collect data on respondents’ opinions towards features of AI-enabled digital payment systems as well as mental accounting behaviours. For the Likert scale questions, Sullivan and Artino (2013) surmise that Cronbach’s Alpha or similar tests must be used to prove inter-correlation of items on the Likert scale, in order to justify use of mean scores and standard deviation for analysis. Accordingly, Cronbach’s Alpha was calculated for general and AI features of digital payment systems and mental accounting behaviours:

Table 1: Cronbach’s Alpha

Likert scale label	Cronbach’s Alpha
General features of Digital payment systems	0.946
AI features of Digital payment systems	0.925
Mental accounting behaviours	0.901

It is clear from the above table that Cronbach alpha values are robust, proving the reliability of the instrument and allowing the use of mean scores. Mean scores were used to calculate Pearson’s Correlation coefficient to attain the research objectives.

RESULTS

After the data was coded using MS-Excel, it was analysed using SPSS (v22) to achieve the aforementioned objectives of the study. The results are presented for each objective chosen, preceded by the results of analysis of the personal details provided by the respondents:

Table 2: – Personal details of the respondents

Variable	Category	Percentage (%)
Age	Below 18 years	26
	18 – 20 years	27
	21 – 23 years	16
	24 – 26 years	31
Gender	Male	51
	Female	49
Current status	Student	55
	Working	31
	Neither	14
Income range p.m.	Below ₹25,000/-	48
	₹25,000/- to ₹50,000/-	22
	₹50,000/- to ₹ 75,000/-	22
	Above ₹ 75,000/-	8

Thus, the majority of the respondents (31%) were from the 24-26 age group, followed by the 18-20 group (27%) and almost equally by the below 18 age group (26%). A slight majority of the respondents were male (51%), the balance being female (49%). More than half the respondents (55%) were students, followed by working respondents (self-employed/salaried). 48% of the respondents had an approximate monthly income of below ₹25,000/-, while 22% of the respondents had approximate monthly incomes of ₹25,000/- to ₹50,000/- as well as ₹50,000/- to ₹ 75,000/-

Forms of AI-enabled digital payment systems preferred by the respondents

The various AI enabled digital payment systems were listed out with the respondents being able to choose any and all forms of digital payment systems that they use. The results are displayed in Table 3.

Table 3: Forms of AI-enabled Digital Payment Systems

Digital payment system used by the respondents	Number of respondents	Percentage of respondents (%)
Mobile payment apps	77	37.20
Debit cards	47	22.70
Internet banking	44	21.26
Bank credit cards	17	8.20
Digital wallets	9	4.35
IMPS	6	2.90
RTGS	5	2.42
AePS (Aadhar enabled Payment System)	2	0.97

Thus, it is clear that mobile payment apps are the most commonly used digital payment systems, with 37.2% of the respondents preferring it over other forms of digital payment systems. Debit cards (22.7%) and internet banking (21.26%) are the other preferred forms of digital payment systems used.

Influence of AI enabled digital payment systems on mental accounting behaviours

Pearson's correlation was performed to find out the relationship between mental accounting behaviours and features of AI enabled digital payment systems. It was found that the Pearson's correlation co-efficient (r) at 0.01 level between mental accounting behaviours and common features of digital payment systems was $r = +0.574$, whereas it was $r = +0.504$ between mental accounting and AI features. In light of the results of the correlation analysis, the status of the hypotheses formed is as follows:

Table 4: Status of Hypotheses proposed

H ₀ proposed	p value (sig.)	Inference	Result
H ₀₁ – there is no relationship between common features of digital payment systems and mental accounting behaviours	0.000 (<0.001)	H ₀₁ rejected Alternative hypothesis H _{A1} accepted	There is relationship between common features of digital payment systems and mental accounting behaviours
H ₀₂ – there is no relationship between AI features of digital payment systems and mental accounting behaviours	0.000 (<0.001)	H ₀₂ rejected Alternative hypothesis H _{A2} accepted	There is relationship between AI features of digital payment systems and mental accounting behaviours

Thus, there is a moderate positive correlation between common features of digital payment systems and mental accounting behaviours. There is a similar moderate positive correlation between AI features of digital payment systems and mental accounting behaviours. (Akoglu, 2018)

DISCUSSION

This study aimed to find out the most used AI-enabled digital payment systems. Analysis using descriptive statistics shows that mobile payment apps are the most preferred form of digital payment systems for majority of the respondents. This is in accordance with the increase in popularity of such apps in India (Gupta SB and Yadav RK, 2020). In addition, this is in accordance with the extensive ownership and usage of smartphones prevalent in Gen-Z (Gentina, 2020).

This study also aimed to find out the influence of AI-enabled digital payment systems on mental accounting behaviours exhibited by the respondents. Null hypothesis was stated denying any relationship between the variables. However, rejection of the null hypothesis due to moderate positive correlation between the variables indicates that the mental accounting behaviours of Gen-Z is impacted by usage of AI-enabled digital payment systems. With AI poised to play a leading role in the area of digital payments, this influence is bound to increase in the foreseeable future.

CONCLUSION

This study has displayed the importance of AI-enabled digital payment systems by way of ascertaining its relationship with mental accounting behaviour. With mobile payment apps being identified as the most preferred form of digital payment system used, the results of this study may be of use to AI developers in formulating those features that further increase usage of digital payment systems.

Huebner et al (2020) state that though AI in digital payment systems have their own advantages, there is a danger of consumers being lulled into a false sense of self-control over their spending. They have suggested a technical solution in the form of an app that aids mental

accounting by advocating and helping to implement reduced credit card spending. They also state in their work that their solution could be adapted to cater for any other form of digital payment. This could be of help to Gen-Z, who, according to Май, M. A. (2019) are 'unique'. Future research could be done by comparing different forms of AI-enabled digital payment systems against each other with respect to their influence on mental accounting behaviour.

This study is yet another proof that AI is the order of the day, and will inevitably influence our lives, not only through what we do, but also through what we think. It is up to every individual person to ensure that they utilise the advantages offered by AI-enabled digital payment systems in an efficient and effective way.

REFERENCES:

1. Boden, M. A. (Ed.). (1996): Artificial intelligence. Elsevier.
2. Stephenson Smith, S. (2003): The new international webster's comprehensive dictionary of the English language: deluxe encyclopaedic edition (No. REF 428.03 STE. CIMMYT.).
3. Capgemini (2019): World Payments Report. Available online: <https://worldpaymentsreport.com/>
4. Fernández, A. (2019): Artificial intelligence in financial services. Banco de Espana Article, 3, 19.
5. Purba, J., Samuel, S., & Budiono, S. (2021): Collaboration of digital payment usage decision in COVID-19 pandemic situation: Evidence from Indonesia. International Journal of Data and Network Science, 5(4), pp 557-568.
6. Huebner, J., Fleisch, E., & Ilic, A. (2020): Assisting mental accounting using smartphones: Increasing the salience of credit card transactions helps consumer reduce their spending. Computers in Human Behavior, 113, 106504.
7. Thaler, R. H. (1999): Mental accounting matters. Journal of Behavioral decision making, 12(3), pp 183-206.
8. Tversky, A., & Kahneman, D. (1974): Judgment under Uncertainty: Heuristics and Biases: Biases in judgments reveal some heuristics of thinking under uncertainty. science, 185(4157), pp1124-1131.
9. Thaler, R. (1985): Mental accounting and consumer choice. Marketing science, 4(3), pp 199-214.
10. Soman, D. (1999): Effects of payment mechanism on spending behavior: the illusion of liquidity. Journal of Consumer Research, 27(4), pp 460-474.

11. Hou, L., Hsueh, S. C., & Zhang, S. (2021): Digital payments and households' consumption: A mental accounting interpretation. *Emerging Markets Finance and Trade*, 57(7), pp 2079-2093.
12. Henderson, P. W., & Peterson, R. A. (1992): Mental accounting and categorization. *Organizational Behavior and Human Decision Processes*, 51(1), pp 92-117.
13. Zhang, C. Y., & Sussman, A. B. (2017): The role of mental accounting in household spending and investing decisions. *Client Psychology*. New York: Wiley, Chicago Booth Research Paper, (19-07).
14. Soman, D. (2003): The effect of payment transparency on consumption: Quasi-experiments from the field. *Marketing Letters*, 14, pp 173-183.
15. Read, D., Loewenstein, G., Rabin, M., Keren, G., & Laibson, D. (2000): Choice bracketing. *Elicitation of preferences*, pp 171-202.
16. Cheema, A., & Soman, D. (2006): Malleable mental accounting: The effect of flexibility on the justification of attractive spending and consumption decisions. *Journal of Consumer Psychology*, 16(1), pp 33-44.
17. Prelec, D., & Loewenstein, G. (1998): The red and the black: Mental accounting of savings and debt. *Marketing science*, 17(1), pp 4-28.
18. Chatterjee, P., & Rose, R. L. (2012): Do payment mechanisms change the way consumers perceive products? *Journal of Consumer Research*, 38(6), pp 1129-1139.
19. Trope, Y., & Liberman, N. (2010): Construal-level theory of psychological distance: Correction to Trope and Liberman (2010).
20. Hancock, D., & Humphrey, D. B. (1997): Payment transactions, instruments, and systems: A survey. *Journal of Banking & Finance*, 21(11-12), pp 1573-1624.
21. Raghurir, P., & Srivastava, J. (2008): Monopoly money: The effect of payment coupling and form on spending behavior. *Journal of experimental psychology: Applied*, 14(3), p 213.
22. Zhang, C. Y., & Sussman, A. B. (2018): Perspectives on mental accounting: An exploration of budgeting and investing. *Financial Planning Review*, 1(1-2), e1011.
23. Pekerti, A. A., & Arli, D. (2017): Do cultural and generational cohorts matter to ideologies and consumer ethics? A comparative study of Australians, Indonesians, and Indonesian migrants in Australia. *Journal of Business Ethics*, 143, pp 387-404.

24. Gentina, E. (2020): Generation Z in Asia: a research agenda. The new Generation Z in Asia: Dynamics, differences, digitalisation, pp 3-19.
25. Sullivan, G. M., & Artino Jr, A. R. (2013): Analysing and interpreting data from Likert-type scales. Journal of graduate medical education, 5(4), pp 541-542.
26. Akoglu, H. (2018): User's guide to correlation coefficients. Turkish journal of emergency medicine, 18(3), pp 91-93.
27. Gupta, S. B., & Yadav, R. K. (2020): Study of Growing Popularity of Payment Apps in India. Test Engineering and Management, 82, pp 16110-16119.
