Professionals' Attitudes and Behaviors Towards E-Payment Adoption in Egypt Post-Covid-19

Alexander Chen
University of Central Arkansas

João Rodrigues
University of Central Arkansas

Sayed ElSayed Elkhouly
Ain Shams University

Mohamed Abd EIDayem
Midocean University

The global rise of electronic payment services necessitates understanding the factors shaping adoption and usage patterns in Egypt, experiencing rapid growth in e-payment and economy. The implications of the interval's perception of the COVID-19 pandemic and vaccination are noteworthy. To explore these dynamics, a survey was conducted among students and faculty at a public University in Cairo, Egypt. We examined e-payment adoption using frequency of usage, money spent, percentage of expenditures, and an aggregated measure. Among demographics, working status and income had more influence than age, gender, and education. Regression models showed that gender, income, perceived ease of use, perceived risk, and social influence significantly predicted various dependent variables. However, perceived usefulness, incentives, perceived trust, and vaccine importance had limited relevance in e-payment adoption post-COVID-19. Given the limited sample size, further research is recommended.

Keywords: e-payments, Egypt, social influence, perceived ease of use

INTRODUCTION

The financial landscape in Egypt is undergoing significant transformation, with the advent of new regulatory measures and the emergence of innovative payment providers at local, regional, and international levels, particularly in the aftermath of the COVID-19 pandemic. The Egyptian government has been instrumental in this shift, initiating measures to promote cashless transactions, such as incentivizing government employees to adopt electronic payment channels for salary disbursement. The COVID-19 pandemic has acted as a catalyst, accelerating the transition to digital payments as consumers seek contactless and convenient financial transaction methods, thereby disrupting the traditional cash-based system. According to the World Bank Group (2021), this shift is enhancing financial inclusion, driving a

surge in digital payments, and expanding formal financial services globally. The expansion is fostering new economic opportunities, reducing the gender gap among account holders, and fortifying household resilience to withstand financial shocks better, as indicated by the Global Findex 2021 database (World Bank Group, 2021).

In recent years, Egypt has witnessed a notable increase in the adoption of electronic payment systems, spurred by governmental initiatives aimed at fostering financial inclusion and advancing digitization. The country is navigating a transition from a primarily cash-based society to one embracing e-payments (El Gohary, 2019). However, despite the presence of a substantial tech-savvy population and a smartphone penetration rate of 80-90% in major markets, the reliance on cash remains prevalent in Egypt (Chan et al., 2021). A mere one-third of retail transactions are conducted electronically, attributed to the lack of robust digital payment infrastructure and services, limited staffing in customer and merchant communities, and a prevailing cultural inclination towards cash (Chan et al., 2021). Cash continues to be the preferred mode of payment in several Arab countries, with Egypt leading, where 70% of consumers opt for cash on delivery (World Cash Report, 2018).

Households in Egypt infrequently make use of any official financial services. Credit is less frequent than savings tools, with postal savings being twice as common as bank savings among both the uneducated and the literate. The use of financial services significantly rises as the household head's education level rises. Less than 1% of the families questioned have traditional loans, and no households have formal credit or capital-market assets in Egypt (Nasr, 2022). Mobile wallets and digital payment platforms have experienced significant growth and adoption among the population. Major players in the Egyptian market include Fawry, Etisalat's Flous, Vodafone's M-Pesa, and CIB's Mobile Wallet.

The Internet infrastructure, website usability, and connection with the financial sector need significantly more, even with the existing systems given by the Egyptian government. (El Gohary, 2019) The adoption of an electronic financial system could play a key role in Egypt's ability to reap the full benefits of unprecedented economic growth and global connectivity in the past decade. The Egyptian government took steps to work towards a robust electronic payment economy in 2018 with Decree No. 760. and a debt collection system (Youssry Saleh Law Firm, 2020). Besides providing a more efficient and effective system, the Egyptian government is also seeking to stabilize the Egyptian pound, which is expanding at around 7% annually, to counter increasing incentives for citizens to adopt foreign currencies and engage in black market trading, especially in decentralized cryptocurrencies (O'Neill, 2022).

The result of this study will help scholars and policymakers understand the implications and opportunities based on public perception and willingness to adopt e-payment. This paper examines the relationship between five demographic variables, i.e., age, gender, employment status, education level, and income, with e-payment behavior. Six main perceptions, i.e., incentives, perceived usefulness, perceived usability, social impact, perceived risk, perceived trust, and COVID-19 vaccination) will also be examined.

This study will contribute to the overall economic and consumption analysis of e-payment adoption in Egypt, especially post-COVID-19. The techniques utilized to gather, examine, and data cleaning will be described, along with the study's outcomes. Lastly, this study will provide remarks on encouraging both customers and the government to use e-payment.

REVIEW OF THE LITERATURE

Electronic payments encompass a range of definitions within the existing literature. They are recognized as crucial mechanisms enabling individuals and organizations to make payments securely and conveniently over the Internet. These payment systems not only serve as gateways to global technological advancements but also play a pivotal role in driving the success of e-commerce and e-business (Slozko & Pello, 2015). In addition, electronic payment systems have enhanced efficiency, reduced fraud risks, and fostered innovation within the global payment ecosystem, thereby transforming traditional payment methods (Oladeji, 2014). The adoption and usage of such systems are influenced by various factors, including financial literacy and behavioral traits, and they have been observed to have a significant impact on different regions and demographic groups (Long, Morgan, & Yoshino, 2023).

Theoretical Background

The Technology Acceptance Model (TAM) serves as the foundational framework for various models that explore user preferences and perceptions regarding electronic payment services (Chen et al., 2018; Chen et al., 2020). According to Surendran (2012), TAM has emerged as a widely used theory to elucidate individuals' acceptance of information systems. The TAM model postulates that technology adoption hinges on two primary factors: perceived ease of use and perceived usefulness. When users perceive new technology as easy and convenient to use, they are more inclined to adopt it. TAM draws its roots from the Theory of Rational Action (TRA) formulated by Fishbein and Ajzen (1975). TRA suggests that an individual's behavior is influenced by their attitudes towards the intended action and how they perceive others' opinions about their behavior. Essentially, individuals evaluate outcomes, revise prior beliefs, reflect on their attitudes toward the action, and consciously make decisions in their best interests. Subjective norms, as defined by Fishbein and Ajzen (1975), encompass a person's perception of whether most individuals they care about believe they should engage in a specific behavior. Lastly, an attitude refers to an individual's positive or negative sentiments regarding the performance of a goal-oriented behavior (Fishbein & Ajzen, 1975).

Fred Davis' research findings suggest that attitudes toward technology adoption are influenced by perceived usefulness and perceived ease of use, as well as the impact of social norms and the practical application of technology (Davis, 1989). In a study conducted by researchers from universities in the United Arab Emirates and Jordan, it was found that students' utilization of electronic payment services is significantly influenced by perceived benefits, performance expectations, security/permissions, privacy concerns, and perceived risk (Salloum et al., 2019). Another study highlighted the significant role of factors such as perceived ease of use, enjoyment, trust, social influence, perceived security, and attitude toward behavior in shaping the adoption of electronic payments, finding that these factors have a significant relationship with the behavioral intention to use e-payment systems (Rahayu, 2022). This study explores seven key concepts, namely perceived usefulness, perceived ease of use, incentives, perceived risk, perceived trust, social influence, and vaccination perception, to gain insights into the adoption of electronic payments.

HYPOTHESIS DEVELOPMENT

Incentives

The available literature provides evidence that incentives have a significant influence on individuals' intentions to adopt e-payment services, irrespective of the incentive amount, type, or promotional duration (Zhao & Zhang, 2019). Banka (2013) also emphasizes the importance of incentives in promoting the adoption of electronic payments, highlighting that financial education, cash rewards, and ease of use play a role in shaping consumer adoption, while tax breaks and ease of use impact merchant adoption. A recent study conducted in Haryana found that reluctance to adopt cashless systems in certain areas was due to a lack of digital literacy, preventing people from using coupons and earning cashback incentives, among other concerns (Gaur & Verma, 2023). Based on these findings, we propose a positive correlation between incentives and the adoption of e-payment services.

H1a: *Incentives (INC) are positively related to the composite e-payment adoption construct (UsagePos).*

H1b: *Incentives (INC) are positively related to Frequency of Use.*

H1c: *Incentives (INC) are positively related to the amount spent per month via e-payment.*

H1d: *Incentives (INC) are positively related to the percent of monthly expenses made via e-payment.*

Perceived Usefulness

An individual's perception of the usefulness of an application plays a crucial role in their decision to adopt it, as it influences their belief in its ability to enhance their job performance (Davis, 1989). In a study conducted in Semarang, it was found that perceived usefulness mediates the relationship between perceived security and usability (Ardiansah et al., 2019). Another study conducted among Malaysian Alipay users revealed that perceived usefulness was the strongest predictor factor towards consumers' intention to use Alipay in an emerging market, emphasizing the efficiencies and conveniences of Alipay over other e-wallet systems for conducting financial activities (Tian et al., 2023). Based on the Technology Acceptance Model (TAM) and existing empirical research, we put forth the hypothesis that perceived usefulness has a positive impact on e-payment behavior.

H2a: *Perceived Usefulness (PU) is positively related to the composite e-payment adoption construct (UsagePos).*

H2b: *Perceived Usefulness (PU) is positively related to Frequency of Use.*

H2c: *Perceived Usefulness (PU) is positively related to the amount spent per month via e-payment.*

H2d: *Perceived Usefulness (PU) is positively related to the percent of monthly expenses made via e-payment.*

Perceived Ease of Use

Perceived ease of use refers to the extent to which potential users perceive an application as being easy to use and believe that the benefits of using it outweigh the effort required (Davis, 1989). Simplifying offerings and providing clear guidelines and instructions can help alleviate consumer concerns and facilitate the adoption of new technologies, such as e-payment services (Atteya, 2012). A study conducted in 2014 on Nigerian e-banking systems found a strong correlation between perceived usability and consumer intention to use (Tella and Olasina, 2014). Therefore, it is reasonable to assume that the adoption of e-payments is positively associated with perceived ease of use.

H3a: *Ease of Use (EU) is positively related to the composite e-payment adoption construct (UsagePos).*

H3b: *Ease of Use (EU) is positively related to Frequency of Use.*

H3c: *Ease of Use (EU) is positively related to the amount spent per month via e-payment.*

H3d: *Ease of Use (EU) is positively related to the percent of monthly expenses made via e-payment.*

Perceived Risk

Perceived risk refers to the uncertainty associated with a product or service and the anticipated outcomes of its usage (Bauer, 1960). A study conducted on internet users in Malaysia found a significant negative impact on their intention to adopt e-payment services due to perceived risk (Chin & Ahmad, 2013). Another study based on 200 respondents in Ho Chi Minh City indicated that 38% of e-payment adoption can be explained by a model that considers perceived risk and trust (Nguyen & Huynh, 2018). Several other studies, including Xin et al. (2015), Teoh et al. (2013), Wang et al. (2003), and Lee (2009), have also identified a statistically significant relationship between a lower level of perceived risk and the intention to adopt e-payment systems. Therefore, perceived risk has a negative impact on the adoption of e-payments.

H4a: *Perceived Risk (PR) is negatively related to the composite e-payment adoption construct (UsagePos).*

H4b: *Perceived Risk (PR) is negatively related to Frequency of Use.*

H4c: *Perceived Risk (PR) is negatively related to the amount spent per month via e-payment.*

H4d: *Perceived Risk (PR) is negatively related to the percent of monthly expenses made via e-payment.*

Perceived Trust

The significance of perceived trust in using e-payments is enhanced when perceived usefulness and usability are also considered significant. The intention to use technology strongly correlates with ease of use and perceived usefulness. However, a study conducted on millennial college students in Indonesia found that perceived security becomes a better predictor of behavior once opinions are considered (Ardiansah et al., 2019). In a survey on Iranians' perceptions of security and trust, Barkhordari et al. (2017) revealed that access to security guidelines and general security has a significant impact on trust, which, in turn, positively influences the adoption of e-payment services. They also recommend further investigation into the influence of demographic factors on adopting e-payments (Barkhordari et al., 2017). Additionally, Xin et al. (2015) suggest that psychological characteristics and factors such as confidence, willingness, the perceived reputation of the provider, and uncertainty avoidance affect individuals' usage of e-payment systems. Therefore, perceived trust plays a positive role in influencing the adoption of e-payments.

H5a: *Perceived Trust (PT) is positively related to the composite e-payment adoption construct (UsagePos).*

H5b: *Perceived Trust (PT) is positively related to Frequency of Use.*

H5c: *Perceived Trust (PT) is positively related to the amount spent per month via e-payment.*

H5d: *Perceived Trust (PT) is positively related to the percent of monthly expenses made via e-payment.*

Social Influence

Social influence refers to the degree to which an individual is susceptible to suggestions from interpersonal relationships that affect their attitudes, perceptions, and beliefs (Bearden et al., 1989). In a survey conducted on Indonesian electronic money users, it was found that word-of-mouth plays a crucial role in the adoption of e-payments by merchants and small business owners who seek more information and assurance (Khatimah et al., 2019). A study conducted in 2010 on Korean citizens also revealed a positive correlation between social influence and the adoption of e-payments, primarily measured through advertising and word-of-mouth (Jeon & Ha, 2010). Furthermore, close relationships have a significant impact on social influence, as evidenced by the positive correlation between students' intention to use e-payment systems and other subjective norms in Malaysia (Jusoh & Teng, 2019). Therefore, it can be presumed that social influence and the adoption of e-payments are positively associated.

H6a: *Social Influence (SI) is positively related to the composite e-payment adoption construct (UsagePos).*

H6b: *Social Influence (SI) is positively related to Frequency of Use.*

H6c: *Social Influence (SI) is positively related to the amount spent per month via e-payment.*

H6d: *Social Influence (SI) is positively related to the percentage of monthly expenses made via e-payment.*

COVID-19 Vaccine

An ongoing indicator of unrelated technological adoption is the COVID-19 vaccine. Recent research conducted in Indonesia has revealed that perceived usefulness and perceived ease of use significantly influence the perception of the COVID-19 vaccine (Faturohman et al., 2021). Vaccine acceptance can be influenced by various factors, such as perceived risk, vaccine efficacy, informational density, and job types, as examined in previous studies (Harapan et al., 2020). This study aims to establish a connection between

consumer attitudes toward the COVID-19 vaccine and their adoption of e-payment technologies through exploratory inquiries. Based on our hypothesis, it is anticipated that a stronger perception of the vaccine will be positively associated with the adoption of e-payment methods.

H7a: *Vaccine Perception is positively related to the composite e-payment adoption construct (UsagePos).*

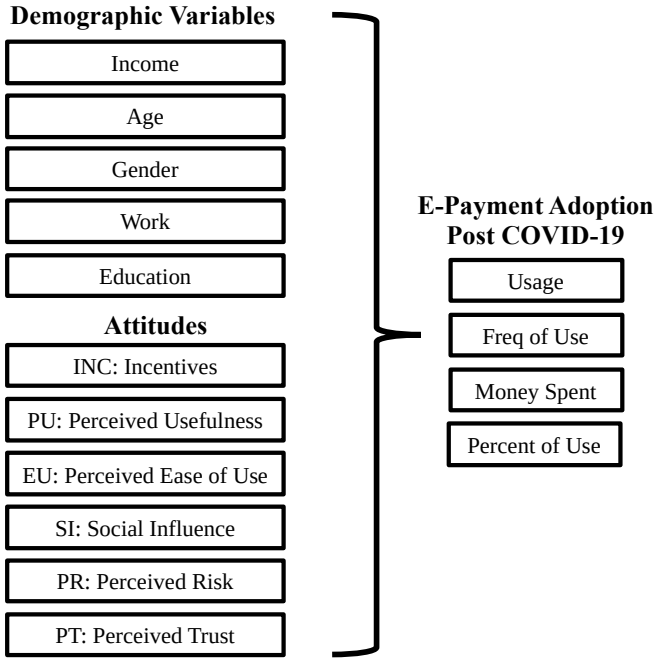
H7b: *Vaccine Perception is positively related to Frequency of Use.*

H7c: *Vaccine Perception is positively related to the amount spent per month via e-payment.*

H7d: *Vaccine Perception is positively related to the percentage of monthly expenses made via e-payment.*

The theoretical framework for this study is depicted in Figure 1. The study will examine four distinct measures of dependent variables, namely composite use, frequency of use, amount of money spent, and percentage of monthly expenditure. The analysis will also consider the influence of five demographic variables, namely income, age, gender, work, and education. The independent variables of interest in this study include incentives, perceived usefulness, perceived ease of use, social influence, perceived risk, and perceived trust.

FIGURE 1
PROPOSED E-PAYMENT MODEL



METHODOLOGY

In 2021, a comprehensive bilingual survey was conducted in English and Arabic, utilizing the advanced Qualtrics platform. The survey was strategically disseminated to a diverse group of students and staff members at a prominent public university located in Cairo, Egypt. Employing the method of convenience sampling. Participants were effectively reached out to through various communication mediums, including email and social media channels, ensuring a broad spectrum of respondents. The survey successfully garnered approximately 100 valid responses, reflecting a notable level of engagement from the university

community. However, it is pertinent to note that due to the presence of a significant number of missing responses for certain pivotal questions, the analysis was meticulously conducted with a refined dataset consisting of only 52 cases. This rigorous approach was adopted to maintain the integrity and accuracy of the research findings.

The survey instrument was meticulously structured into three distinct sections. The initial section delved into attitudes and perceptions, leveraging a 7-point Likert scale to enable participants to articulate their viewpoints comprehensively. Subsequently, the second section probed into usage patterns, utilizing 5-point Likert scales to evaluate the frequency with which participants engaged with various devices, software, activities, and items pertinent to e-payment systems. Additionally, this segment gathered data on the monthly frequency of e-payment usage, the aggregate monthly expenditure incurred through e-payment, and the proportion of monthly expenses transacted through e-payment systems. The third and concluding section encompassed demographic queries designed to profile the participants effectively. This included inquiries into their age group, employment status, student status, educational background, gender, and income level, thereby providing a holistic view of the diverse respondent pool.

The study primarily consisted of male participants (80.8%), resulting in a significant skewness in the data that poses challenges when comparing genders. The majority of respondents (n = 13, or 25%) fell within the 36-40 age group (refer to Table 1). The average age was 37.35, with a standard deviation of 9.6. Among the respondents, approximately 41 (78.8%) were employed full-time, while 10 (19.3%) were part-time workers or unemployed. The education level of the sample was notably high, with only 5.8% representing high school graduates, 23.1% holding a four-year college degree, and 67.3% holding a master's degree. The higher percentage of respondents with a master's or higher education can be attributed to the fact that the sample was drawn from a university with a substantial faculty and staff population. It is important to note that the extreme skewness in education and employment may limit the variance among respondents with lower education levels.

TABLE 1
DESCRIPTIVE STATISTICS FOR DEMOGRAPHIC VARIABLES

Variables	**Frequencies**	**Percentage**	**Mean**	**S.D.**
Gender			0.82*	0.4
Female	9	17.3		
Male	42	80.8		
Missing	1	1.9		
Total	52	100.0		
Age			37.35**	9.6
18-20	4	7.7		
21-25	0	0.0		
26-30	8	15.4		
31-35	9	17.3		
36-40	13	25.0		
41-45	6	11.5		
46-50	8	15.4		
51-55	2	3.8		
56-60	0	0.0		
61 and over	1	1.9		
Missing	1	1.9		
Total	52	100.0		

Variables	Frequencies	Percentage	Mean	S.D.
Work			0.87*	0.3
Unemployed	3	5.8		
Part-Time	7	13.5		
Full-Time	41	78.8		
Missing	1	1.9		
Total	52	100.0		
Education			18.94***	2.1
High School	3	5.8		
2 Year Vocational Degree	1	1.9		
4 Year College Degree	12	23.1		
Master's Degree or higher	35	67.3		
Missing	1	1.9		
Total	52	100.0		
Income (EGP)			11,959.18	5,087.60
1,000 or less	2	3.8		
1,000-2,000	0	0.0		
2,001-4,000	0	0.0		
4,000-6,000	2	3.8		
6,001-8,000	6	11.5		
8,001-10,000	10	19.2		
10,001-12,000	7	13.5		
12,001-15,000	10	19.2		
15,001-20,000	4	7.7		
20,001 and over	8	15.4		
Missing	3	5.8		
Total	52	100.0		

*Male = 0 and Female = 1; Full-time=1, Part-time=0.5, and Unemployed=0

**Each category is coded to its mean age

***Each category is coded to the usual number of years required to complete the level of education

An analysis utilizing Cronbach's alpha was meticulously conducted on the six primary constructs, employing SPSS software (refer to Table 2). The derived results underscored the significance of each item for the Egyptian respondents, with the alpha coefficient for both perceived ease of use and post-COVID-19 usage being the lowest at 0.882. These alpha coefficients, all surpassing the 0.7 thresholds, affirm construct reliability in accordance with established guidelines (Nunnally, 1978 & Lance et al., 2006).

The mean scores observed for perceived ease of use (6.94), perceived usefulness (6.16), and incentives (5.12) were notably high, indicating that Egyptians attribute considerable value to ease of use, perceived usefulness, and incentives in comparison to other factors.

The assessment of social influence was executed through a series of meticulously crafted questions utilizing a Likert scale. Participants were prompted to express their level of agreement or disagreement on a 7-point scale, reflecting the influence wielded by various entities such as family, friends, colleagues, superiors, IT professionals, authorities, mass media, and social media. The computed average value for social influence stood at 4.41, aligning closely with the scores for perceived risk (4.72) and perceived confidence (4.81). These findings denote that in the Egyptian context, incentives, perceived risk, perceived trust, and social influence are comparatively less pivotal factors.

To accurately assess e-payment usage, a composite variable was formulated by merging three dependent variables: frequency of monthly e-payment use, the total amount of money expended monthly, and the proportion of monthly expenditure via e-payment. Each of these variables was ordinally coded to

encapsulate the varying degrees or intensities of e-payment usage. Average scores were calculated for the composite variable, denoted as USAGE. The reliability of this composite usage measure was scrutinized using Cronbach's alpha, resulting in a value of 0.882, which signifies a commendable level of internal consistency. This amalgamated measure offers a comprehensive evaluation of individuals' e-payment usage and is delineated in Table 2, serving as a representative indicator of their overall engagement with e-payment services.

TABLE 2
CRONBACH ALPHAS AND DESCRIPTIVE ANALYSIS OF MAJOR CONSTRUCTS

	Items	Alpha	Mean	S.D.
INC	4	0.885	5.21	1.73
PU	8	0.923	6.16	1.26
EU	5	0.882	6.94	1.41
SI	10	0.916	4.41	1.69
PR	5	0.933	4.72	1.75
PT	4	0.936	4.81	1.79
USAGE	3	0.882	5.12	1.87

INC: Incentives
PU: Perceived Usefulness
EU: Ease of use
SI: Social Influence
PR: Perceived Risk
PT: Perceived Trust

RESULTS

In this study, the measurement of e-payment usage encompassed three key questions aimed at capturing different aspects of participants' e-payment behavior. The first question sought to assess the frequency of e-payment usage, asking respondents to indicate how often they used e-payment services per month. The results revealed that 57.7% of the total valid respondents reported using e-payment services between 1 and 6 times per month, with 17.3% indicating usage of 1-2 times per month. On average, the Egyptian participants reported using e-payment services approximately 6.58 times per month.

The second question focused on the amount of money spent via e-payment per month, expressed in Egyptian pounds (EGP). The findings indicated that the expenditure varied, with 26.9% of respondents spending between 2,501 and 5,000 EGP (approximately 125-250 USD) monthly. Furthermore, 15.4% of participants reported spending between 201 and 800 EGP (approximately 10-40 USD) per month, while approximately 17.3% spent between 5,001 and 8,000 EGP (approximately 250-400 USD) per month. If we use the mid-values for each group as estimates, we found that Egyptians in the sample spent about 3,532.35 on average monthly via e-payment systems.

The third question explored the percentage of monthly expenses paid via e-payment. The survey revealed that only a small proportion of respondents (1.9%) did not utilize e-payment systems for money transfers or payments. About 28.8 percent of the respondents spent 21-30 percent of their monthly expenditure via e-payment systems. About 25 percent of the respondents spent 41-60 percent of their monthly expenditure via e-payments.

To summarize e-payment adoption behaviors, we found the Egyptian participants reported a monthly frequency of 6.58 times per month with a standard deviation of 3.83. The monthly expenditures were found to be 3,532.35 EGP (approximately 179.69 USD), with a standard deviation of 3,176.79 EGP (approximately 161.61 USD). The mean percentage of e-payment usage was found to be 32.84% per month, with a standard deviation of 22.19%.

TABLE 3
DESCRIPTIVE STATISTICS FOR DEPENDENT VARIABLES

Variables	Frequencies	Percentage	Mean	S.D.
Freq of Use			6.58	3.83
0	0	0.0		
1-2	9	17.3		
3-4	5	9.6		
5-6	16	30.8		
7-8	7	13.5		
9-10	6	11.5		
11-12	2	3.8		
13 or more	6	11.5		
Missing	1	1.9		
Total	52	100.0		
Money Spent (EGP)			3,532.35	3,176.79
0	1	1.9		
1-200	3	5.8		
201-400	5	9.6		
401-800	3	5.8		
801-1,200	8	15.4		
1,201-2,500	3	5.8		
2,501-5,000	14	26.9		
5,001-8,000	9	17.3		
8,001-12,000	4	7.7		
12,000 and over	1	1.9		
Missing	1	1.9		
Total	52	100.0		
Percent of Use			32.84	22.19
0	2	3.8		
1-10	6	11.5		
11-20	6	11.5		
21-30	15	28.8		
31-40	4	7.7		
41-50	7	13.5		
51-60	6	11.5		
61-70	1	1.9		
71-80	1	1.9		
81-90	3	5.8		
91-100	0	0.0		
Missing	1	1.9		
Total	52	100.0		

Table 4 elucidates the outcomes of the bivariate analysis undertaken in this study, encompassing various items that represent the dependent variables (items 1-4), demographic variables (items 5-8), and major constructs derived from the literature (items 9-16).

A noteworthy finding was the negative correlation observed between gender and usage, implying a higher propensity among males to utilize e-payment methods compared to females. Despite this correlation, it failed to attain statistical significance, thereby suggesting that the relationship between gender and e-payment usage was not statistically significant in this study. This observation aligns with prior research

where gender demonstrated a negative, yet significant, impact on e-payment adoption (Chen, 2021). In a similar vein, the analysis did not uncover any statistically significant associations between education or age and e-payment usage, diverging from past studies that identified a positive and significant correlation between these variables and e-payment adoption. The absence of significant relationships in this study could potentially be ascribed to the skewed distribution of these three variables, as previously discussed.

Furthermore, the analysis brought to light that working status held statistical significance in relation to e-payment adoption and usage. This infers that individuals engaged in full-time employment exhibit a higher likelihood of availing of e-payment services compared to their part-time or unemployed counterparts. This correlation is in harmony with expectations, given that individuals with stable and regular employment are likely to possess enhanced access to and familiarity with e-payment systems stemming from their financial transactions and necessities.

Income also emerged as a variable exhibiting a positive correlation with e-payment usage, indicating a greater inclination among higher-income individuals to adopt e-payment services. Individuals with elevated income levels are likely to have access to abundant financial resources and exhibit a heightened readiness to adopt digital payment methods, seeking convenience, efficiency, and access to an extensive array of goods and services.

Considering the demographic variables collectively, working status and income level were identified as the statistically significant variables in this study pertaining to e-payment adoption and usage. These observations are in concordance with prior research conducted on the Egyptian populace (Chen et al., 2021), indicating that the impact of working status and income on e-payment behavior is a consistent pattern in the Egyptian context of e-payment adoption.

Within the array of six tested constructs and usage metrics, solely perceived ease of use emerged as statistically significant in our sample, as delineated in Table 4. This denotes that participants' perception of the simplicity associated with utilizing e-payment systems significantly influenced their adoption and engagement with these platforms.

Intriguingly, the remaining constructs, encompassing incentives, perceived usefulness, and perceived importance of vaccines, did not exhibit statistical significance in relation to e-payment adoption and usage. This insinuates that elements such as financial incentives or the perceived advantages and value inherent in e-payment systems did not exert a substantial impact on the behavior of the participants within our sample. Additionally, social influence did not manifest any significance in our study, indicating that the sway of interpersonal relationships, including family, friends, and colleagues, on participants' attitudes and behaviors toward e-payment adoption, was not statistically significant.

It remains imperative to acknowledge that these findings are inherently specific to our sample and may not extend to other populations or contexts. Exploration through further research is requisite to discern the underlying reasons for the absence of significance in other constructs and to ascertain the applicability of these findings across diverse populations or settings.

Given the presence of correlations among independent variables, a stepwise regression analysis was executed to discern the most impactful independent variables. The results of this analytical approach are depicted in Table 5. All the models exhibited statistical significance at the 0.01 level, with the model showcasing a high adjusted R square for Composite usage at 34.7%, Frequency of use at 54.9%, the Amount spent monthly at 17.3%, and percentage of paid expenses at 13.8%. These outcomes indicate that the variance of the dependent variables can be elucidated by our models within a range of 13.8% to 54.9%. Among the quartet of models, the most robust predictive model was identified for monthly usage frequency (54.9%), while a less potent model emerged for predicting the percentage of monthly spending (13.8%).

TABLE 4
PEARSON CORRELATION

	Mean	S.D.	1	2	3	4	5	6	7	8	9	11	12	13	14	15	16
1. Usage	5.1	1.9	1														
2. Freq of Use	6.58	3.83	0.873**	1													
3. Money Spent	3532.35	22.19	0.898**	0.709**	1												
4. Percent of Use	32.84	22.19	0.920**	0..711**	.818**	1											
5. Age	37.35	9.62	0.234	0.248	0.252	0.129	1										
6, Work	0.13	0.28	0.366**	0.297*	0.266	0.286*	0.369**	1									
7. Education	18.94	2.09	0.177	0.078	0.263	0.138	0.464**	.0311*	1								
8. Gender	0.82	0.39	-0.024	-0.061	0.044	-0.01	0.174	0.065	0.21	1							
9. INC	5.32	1.68	0.142	0.254	0.015	0.154	-0.18	0.097	-0.195	-.346*	1						
11. PU	6.23	1.19	0.165	0.185	-0.038	0.249	-0.274	0.139	0.057	-0.003	0.308*	1					
12. EU	6.96	1.34	0.325*	0.342*	0.143	0.257	0.049	0.235	0.063	0.03	0.232	0.643**	1				
13. SI	4.46	1.64	-0.032	-0.101	-0.056	0.048	-0.052	0.121	0.111	0.065	0.445**	0.187	0.156	1			
14. PR	4.62	1.87	0.141	0.27	-0.038	0.04	0.039	0.127	-0.101	0.002	0.374**	0.475**	0.634**	0.255	1		
15. Income	11959.18	5087.6	0.370**	0337*	0.473**	0.286*	0.711**	0329*	.0308*	0.183	-0.158	-0.207	0.019	-0.072	0.175	1	
16. Vaccine Perception	5.82	1.4	0.195	0.19	0.003	0.177	0.143	0.036	-0.026	0.007	0.118	0.132	0.343*	0.027	0.156	-0.074	1

*Significant at 0.05 level
*Significant at 0.01 level

This study harnessed the capabilities of multiple predictive models to unravel the myriad factors influencing diverse facets of e-payment behavior. These models illuminated the variables that significantly impact composite use, frequency of usage, money spent, and percentage of use. Let us explore each of these models in detail:

1. **Composite Use Model:** This model unveiled two significant variables. Perceived ease of use surfaced as a positive predictor (t = 3.896), indicating that individuals finding e-payment systems user-friendly are more inclined towards composite use. Conversely, social influence manifested a negative correlation (t = -2.954), suggesting that elevated levels of social influence correlate with diminished levels of composite use.
2. **Frequency of Usage Model:** This model incorporated three significant variables. Gender exhibited a negative correlation (t = -2.884), suggesting a higher frequency of e-payment usage among males compared to females. Social influence also demonstrated a negative impact (t = -4.514), signifying that individuals swayed by social factors are prone to a lower frequency of e-payment usage. Moreover, perceived risk emerged as a positive predictor (t = 5.527), denoting that individuals deeming e-payment systems less risky are inclined to frequent usage.
3. **Money Spent Model:** This model pinpointed income as a pivotal variable (t = 2.77), indicating a propensity among higher-income individuals to transact larger sums through e-payment systems. An elevated disposable income facilitates more substantial transactions via e-payment, culminating in increased spending.
4. **Percent of Expenditure Model:** This model discerned perceived ease of use as a significant predictor (t = 2.475), implying that individuals who find e-payment systems convenient are likely to allocate a higher percentage of their transactions to e-payment methods.

In the parametric tests, only one demographic variable, gender, was identified as significant. Gender exhibited a t score of -2.884 in the model, with the frequency of e-payment use as the dependent variable. This negative relationship suggests that, in terms of frequency, men are more likely than women to use e-payment. Several factors could explain this negative correlation. Behavioral differences between genders might play a role, with men potentially exhibiting more inclination towards adopting new technologies and a higher comfort level with the risks associated with digital transactions. Diverging needs and preferences, as well as variations in economic activities engaged by men and women, might also contribute to this discrepancy in frequency of use. Women might express more concerns about the security and privacy of online transactions, leading to their less frequent use of e-payment systems. Additionally, disparities in access to technology, marketing strategies targeting predominantly male audiences, and prevailing social and cultural norms regarding gender roles in financial decision-making can further elucidate the observed negative relationship.

Despite gender's influence on the frequency of e-payment use, it did not predict the percentage of monthly expenditure or the amount spent monthly. On the other hand, income, another demographic variable (t = 2.77), emerged as a significant predictor of monthly spending. This suggests a logical connection between the amount of money spent via e-payment and disposable income, highlighting that as income increases, so does the propensity to spend more through e-payments. In summary, among the demographic variables studied, gender solely affects the overall frequency of e-payment use, while income influences the total amount spent. No other demographic variables were identified as significant predictors in the stepwise regression models, underscoring the pivotal roles of gender and income in shaping e-payment behaviors.

TABLE 5
STEPWISE REGRESSION ANALYSIS

	Usage		**Freq of Use**		**Money Spent**		**Percent of Use**	
	U.C. B	*t*	*U.C. B*	*t*	*U.C. B*	*t*	*U.C. B*	*t*
Constant	2.332	1.668	9.202	4.723	521.293	0.408	-9.848	-0.571
Gender			-3.754	-2.884**				
EU	0.767	3.896**					6.106	2.475*
SI	-0.525	-2.954**	-1.493	-4.514**				
PR			1.672	5.527**				
Income					0.265	2.77**		
R Square (Adj)	0.347		0.549		0.173		0.138	
F	9.508		13.985		7.675		6.124	
Sig.	0.001		0.000		0.009		0.019	

Legend: U.C. B = Unstandardized Coefficients B
Level of significance at 0.05 = * and 0.01**

CONCLUSION

In the exploration of e-payment usage, demographic factors have been identified to hold a minor role. The distributions of Age, Education, and Gender are skewed, truncating the variance of these variables. The statistical significance observed in prior research remains unconfirmed in this study. A bivariate Pearson correlation has unveiled the statistical significance of working status and income. This suggests that individuals engaged in full-time work, earning a higher income, exhibit a propensity to spend more and utilize e-payment systems. Findings from Chen et al. (2021) indicate consistency in gender and ease of use, while Work, perceived usefulness, and perceived risk demonstrate inconsistency.

Given the interrelation of independent variables, a stepwise regression was executed. Gender and income emerged as pivotal demographic factors in forecasting diverse e-payment behavior models. The regression models reveal ease of use, perceived risk, and social influence as the strongest predictors of adoption. The influence of family, friends, peers, supervisors, experts, government, news media, and social media proves significant for the adoption of e-payments in Egypt. Conversely, the impacts of incentives, perceived usefulness, and perceived trust are less pronounced.

In juxtaposition with prior research conducted in Egypt, notable variations have been discerned (Chen et al., 2021). In the era following Covid-19, working status and income stand out as the paramount demographic variables. The study establishes the critical nature of ease of use and perceived risk as attitudinal or perceptional variables. Additionally, a discernible impact of social influence on e-payment adoption has been noted. The perception of vaccines does not hold significance in e-payment behaviors. These variables serve as foundational elements for the formulation and advancement of future e-payment initiatives in Egypt.

However, the study encounters limitations in the data set utilized. A prominent weakness lies in the lack of diverse representation, with respondents solely comprising faculty, students, or professors. Given that Egyptians in academia receive a salary nearly double the average monthly Egyptian wage (Middlebury Institute, 2013), the study lacks diversity. Another limitation is the sample size, necessitating enhanced representation with a broader spectrum of cases. The skewed proportions of respondents in terms of Gender, Age, and Education hinder rigorous analysis. Therefore, an extension of research with a more representative sample is advocated.

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