DIGITAL WALLET DYNAMICS: UNDERSTANDING THE POTENTIAL ADOPTION FACTORS OF WORLDCOIN IN THAILAND'S FINTECH SECTOR

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ABSTRACT

This research delves into the factors influencing the adoption of digital wallet technology, focusing specifically on the Worldcoin digital wallets among Thai individuals over 18 years old. Utilizing a convenience sampling method, the study analyzes responses from 1,430 participants, employing binary regression through statistical analysis software to examine the influence of various factors—demographic, social, motivational, technological, and economic—on the adoption of Worldcoin. The findings underscore the significance of gender, age, education level, occupation, monthly income, savings, existing digital wallet ownership, frequency of use, and social media engagement in shaping an individual's intention to adopt Worldcoin. Moreover, it identifies social support, social presence, trust, perceived risk, service reliability, perceived usefulness, ease of use, time savings, consumption, discounts, and promotions as significant determinants affecting Worldcoin adoption. The implications of these findings are significant for stakeholders in the FinTech sector, suggesting that a deeper understanding of these determinants can guide more effective strategies for promoting digital wallet adoption. By addressing the specific needs and concerns reflected in these factors, developers, marketers, policymakers, as well as other stakeholders, can enhance user engagement, improve service offerings, and ultimately drive wider acceptance and use of digital wallet technologies.

Keywords: *Digital Wallet, Adoption, Worldcoin, Financial Technology (FinTech)*

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CHAPTER 1

INTRODUCTION

1.1. Background of the Study

The COVID-19 virus outbreak has resulted in a significant economic slowdown due to restrictions on economic activities, including travel, face-to-face interactions, and the implementation of measures like lockdowns and work-from-home policies. These circumstances have forced the world to accelerate its economic revival through digital technology and various digital innovations. This new economic paradigm is referred to as the Digital Economy, which promotes efficiency in economic activities by utilizing various digital technologies. In this digital economy, businesses and economic activities can operate more efficiently and adapt to contemporary needs by offering services over the internet. For instance, products and services in the digital economy are often bought and sold online, known as electronic commerce (e-commerce), enabling people to make purchases from anywhere with internet access. Furthermore, the Digital Economy necessitates the adoption of financial innovations, such as digital financial systems, for transactions, transfers, and withdrawals. Additionally, the Digital Economy has led to changes in consumer behavior, business practices, and government policies, resulting in transformations in how businesses are conducted and managed. Companies that employ digital technology in their operations enhance their ability to meet customer demands, reduce production costs, and open up new revenue opportunities. This transformation in the digital economy has also had a significant impact on social and communication sciences, fostering continuous data creation and sharing, allowing nearly unrestricted access to information and knowledge for everyone (Asanprakit & Kraiwanit, 2023; Banga & te Velde, 2020; Xu et al., 2022).

Financial Technology, or FinTech, refers to the application of digital systems in various financial processes to make financial transactions more convenient, efficient, and systematically organized. In the current landscape of FinTech, it has significantly influenced consumer behavior as businesses have integrated online payment systems and various FinTech solutions into the buying and selling of products and services. These systems are accessible through websites, applications, and various digital devices such as smartphones, computers, and laptops. Particularly noteworthy is the fact that the COVID-19 pandemic has accelerated

Digital Disruption, driving the adoption of a new economic model, the Digital Economy. This has led to substantial growth in various forms of FinTech during this period (Barroso & Laborda, 2022; Subramanian, 2022). The ongoing technological innovations in various dimensions are reshaping society. The interconnectedness of the internet and the prevalence of smartphones have made advanced technology easily accessible to everyone. Industry 4.0 signifies a major transformation in the global economy and society, driven by technological advancements that revolutionize both internal and external organizational operations, enhancing digital interactions (Limna & Kraiwanit, 2022; Mourzis et al., 2022).

In recent years, Thailand has witnessed a remarkable surge in financial technology, commonly known as FinTech, transforming the traditional landscape of banking and finance. Spearheaded by government initiatives such as Thailand 4.0, the nation is swiftly embracing digitalization to propel its economy into the digital age. Supported by the Bank of Thailand's regulatory sandboxes, innovative FinTech startups are flourishing, catering to the evolving needs of consumers and businesses alike. With a burgeoning middle class and increasing smartphone penetration, digital payments and e-wallets have emerged as a cornerstone of Thailand's FinTech ecosystem. Platforms like PromptPay, TrueMoney, and Rabbit Line Pay have gained widespread acceptance, facilitated seamless transactions and reduced reliance on cash. Moreover, Thailand's FinTech scene extends beyond payments, encompassing diverse sectors such as peer-to-peer (P2P) lending, blockchain technology, insurance technology (InsurTech), and robo-advisory services. P2P lending platforms are empowering small and medium-sized enterprises (SMEs) with alternative financing options, fostering economic growth and financial inclusion. Meanwhile, the adoption of blockchain and cryptocurrency is gaining momentum, supported by regulatory frameworks governing digital asset businesses. In the insurance sector, InsurTech startups are leveraging technology to streamline insurance processes, enhance customer experience, and offer tailored insurance solutions. Additionally, the rise of robo-advisors is democratizing wealth management, making investment opportunities more accessible to retail investors through automated advisory services and personalized investment strategies. As Thailand embraces the digital revolution, its FinTech landscape continues to evolve, promising further innovation and disruption in the financial services industry (Bank of Thailand, n.d.; Moenjak et al., 2020; Karim et al., 2022; Kraiwanit, 2022; Kraiwanit et al., 2022; Sosa & Montes, 2022; Zheng, 2022).

Technavio (2023) has announced its latest market research report titled "Global Fintech Market 2023-2027," illustrated in Figure 1.1. The report projects that the global financial technology (fintech) market will expand by USD 277.22 billion from 2022 to 2027. This expansion reflects an expected compound annual growth rate of 20.5% during the forecast period. In 2022, the Asia-Pacific region held the largest share of the global market, and it is anticipated to experience an incremental growth of 39% over the projection period.

Figure 1.1. Global Fintech Market 2023-2027

Source: https://www.prnewswire.com/news-releases/fintech-market-2023-2027-a-descriptive-analysis-of-the-five-forces-model-market-dynamics-and-segmentation---technavio-301723159.html

Simultaneously, the economy is evolving towards new consumer behaviors, a change catalyzed by the convergence of economic, technological, and sociocultural factors in the era of the Digital Economy. Digital wallets have emerged as a technology that enables individuals to store, manage, and conduct transactions using digital currency. These digital wallets offer convenience, security, and accessibility, making them an appealing alternative to traditional payment methods. The growing popularity of digital wallets has emphasized the significance of understanding the factors that influence their acceptance and usage (Agarwal et al., 2020; Ilieva et al., 2023). In the realm of digital wallets, Worldcoin stands out as an innovative potential game-changer in the FinTech industry. Worldcoin aims to redefine the relationship between individuals and digital currency, creating a future of financial transactions with unique

products (Guo & Renaldi, 2022; Torpey, 2023). This study focuses on Worldcoin and explores the potential factors that impact individual decision-making regarding the acceptance of this technology in the Thai context.

1.2. Research Objective

The research explored the determinants that may influence the adoption of digital wallet technology, with a particular emphasis on assessing the potential effects and advantages of this technology within the FinTech sector. The study narrowed its scope to concentrate on the specific case of Worldcoin digital wallets.

1.3. Research Question

What are the potential factors influencing the adoption of Worldcoin digital wallets and how do these factors highlight the technology's potential impacts and advantages within the FinTech sector in the context of Thailand?

1.4. Scope of the Study

The scope of the study encompasses a comprehensive investigation into the factors that can impact the adoption of digital wallet technology, with a specific focus on evaluating the prospective implications and benefits of this technology within the burgeoning FinTech sector. The research will refine its focus to concentrate exclusively on the particular case of Worldcoin digital wallets. This research will employ a quantitative research method, utilizing online surveys as the data collection tool. The collected data will be analyzed to draw conclusions based on a study conducted with a sample group. The researchers conducted this study by distributing questionnaires to the sample group through Google Form.

1.5. Conceptual Framework

Demographic factors include characteristics such as age, gender, income, education, occupation, and marital status. These factors are often used to understand consumer behavior and preferences. In this context, they may be used to predict how different demographic groups are likely to adopt Worldcoin and digital wallet technology. For example, younger individuals

might be more inclined to embrace new technologies, while income levels can influence the ease of adoption. Social factors encompass elements related to an individual's social environment, including their social network, family, peers, and cultural background. Social influence plays a significant role in technology adoption. For example, if an individual's friends and family are early adopters of digital wallet technology, it may motivate them to follow suit. Cultural norms and values can also affect the acceptance of new payment methods. Motivation factors refer to the incentives and reasons that drive individuals to adopt digital wallet technology. These motivations can include convenience, security, cost savings, and the availability of rewards or incentives for using the technology. Understanding what motivates people can help predict their willingness to adopt Worldcoin or digital wallets. Technological factors encompass aspects related to the digital wallet technology itself. These factors may include the ease of use, security features, compatibility with various devices and platforms, and the availability of customer support. A well-designed, user-friendly digital wallet technology is more likely to be adopted. Economic factors pertain to the financial considerations that influence the adoption of digital wallet technology. This may involve the cost of using digital wallets, the potential for cost savings, transaction fees, and the overall economic benefits of using such technology. Understanding how adopting Worldcoin and digital wallets can impact an individual's finances is crucial in predicting adoption.

In researching the determinants that may influence the adoption of digital wallet technology, exemplified by Worldcoin, with a particular emphasis on assessing the potential effects and advantages of this technology within the FinTech sector, it is possible to create the conceptual framework (Figure 1.1.) as follows:

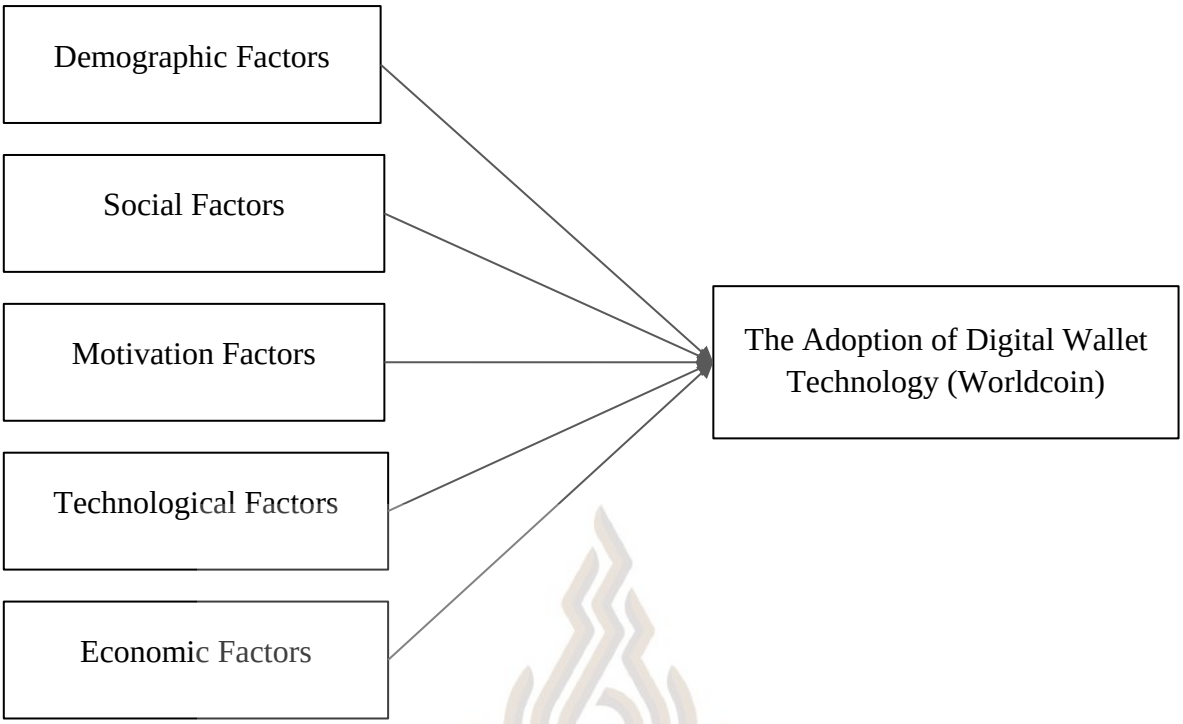

Figure 1.2. Conceptual Framework

This conceptual framework suggests that by examining these five categories of factors (demographic, social, motivation, technological, and economic), researchers or businesses can better understand and predict the adoption of digital wallet technology, specifically in the context of Worldcoin. By analyzing these aspects, they can tailor their strategies to target and attract the most likely adopters and address potential barriers to adoption.

1.6. Significant of the Study

This research carries significant importance in shedding light on the dynamics of digital wallet adoption. It meticulously examines the determinants that may influence individuals and businesses in their decision to embrace digital wallet technology. By doing so, it addresses a critical aspect of the modern financial landscape and provides valuable insights into consumer behaviors and industry trends. Furthermore, the study places a particular emphasis on assessing the potential effects and advantages of digital wallet technology within the rapidly evolving FinTech sector. As FinTech continues to reshape financial services, understanding the role and impact of digital wallets is of paramount importance. This research not only identifies potential

advantages but also highlights potential challenges and risks, contributing to a comprehensive understanding of the sector.

In a more specific context, the study narrows its focus to concentrate on the particular case of Worldcoin digital wallets. This targeted approach allows for an in-depth analysis of a real-world application of digital wallet technology, offering practical insights for individuals, businesses, and stakeholders associated with Worldcoin. The findings from this specific case can serve as a valuable reference for similar digital wallet implementations and FinTech innovations. Overall, this study's significance extends beyond its academic contributions, as its findings can inform decision-makers, policymakers, and industry leaders in optimizing their strategies and approaches in the ever-evolving realm of digital finance and technology.

CHAPTER 2

LITERATURE REVIEW

2.1. Financial Technology and Digital Wallet

FinTech, a portmanteau of "financial technology," represents the dynamic intersection of finance and cutting-edge technology. This rapidly evolving sector revolutionizes traditional financial services, leveraging innovations like blockchain, artificial intelligence, and mobile applications to enhance efficiency, accessibility, and security. From peer-to-peer lending platforms empowering individuals to invest and borrow without intermediaries, to robo-advisors offering personalized investment strategies, FinTech disrupts conventional banking models. Its transformative impact extends to payment systems, insurance, wealth management, and beyond, democratizing financial services and fostering financial inclusion on a global scale. In this digital era, FinTech not only streamlines processes but also fosters innovation, challenging established norms and driving the finance industry towards a more agile, inclusive, and technologically empowered future (Cumming et al., 2023; Jabbar, 2023).

According to Startup in Thailand (2022), Thailand has demonstrated a proactive stance in adopting emergent technologies to bolster its competitive positioning. Specifically, the financial sector within Thailand has exhibited notable initiatives aimed at fortifying its operational infrastructure, instituting stringent measures to safeguard consumer interests, and fostering the cultivation of pioneering technological solutions. Regulatory bodies in Thailand have demonstrated agility in promptly addressing deficiencies within the legal and regulatory apparatus, prompted by the evolving landscape of domestic and international FinTech enterprises. Figure 2.1. presents the Thai FinTech ecosystem.

Figure 2.1. Thai FinTech Ecosystem

Source: https://techsauce.co/report/fintech-thailand

FinTech has emerged as a transformative force in the financial industry, revolutionizing the way financial services are delivered and consumed. This innovative sector combines cutting-edge technology with finance to create more efficient, accessible, and convenient solutions for businesses and consumers alike. One of the key components of FinTech is the digital wallet, which has become increasingly popular for managing and transacting money in today's digital age (Chen et al., 2023; Uña et al., 2023).

Digital wallets, also known as e-wallets or mobile wallets, are virtual tools that allow users to store, manage, and make electronic payments securely through a smartphone or other devices. These wallets have gained prominence due to their user-friendly interfaces, speed, and convenience. Users can link their digital wallets to their bank accounts, credit cards, or other sources of funds, enabling them to make payments, transfer money, and perform various financial transactions with just a few taps on their devices. This technology has significantly reduced the need for carrying physical cash or cards, streamlining the payment process and

making it more efficient. The rise of digital wallets has led to a variety of benefits for consumers and businesses. One of the most notable advantages is enhanced security. Digital wallets use encryption and other advanced security measures to protect users' financial information, reducing the risk of fraud and unauthorized access. Digital wallets offer the convenience of quick and contactless payments, which is especially relevant in today's fast-paced world. Users can make payments with a simple tap or a scan, reducing the time spent in checkout lines and making online shopping more seamless. Additionally, digital wallets are often integrated with loyalty programs and reward systems, providing users with incentives to use them (Levitin, 2017; Kagan et al., 2023; Tookitaki, 2023). Furthermore, digital wallets play a pivotal role in financial inclusion, as they enable people without traditional banking access to participate in the digital economy. This is particularly important in regions with limited banking infrastructure, where digital wallets can serve as a gateway to financial services. These wallets have also spurred innovation by fostering the development of various FinTech services, such as peer-to-peer payment platforms and budgeting tools, which are integrated into the wallets to provide a comprehensive financial experience (Banerjee & Sinha, 2023; Finextra, 2023).

In Thailand, the FinTech and digital wallet sectors have experienced remarkable growth, underpinned by supportive regulatory frameworks and government initiatives aimed at fostering innovation and financial inclusion. The country's Securities and Exchange Commission (SEC) has implemented a regulatory framework to manage digital wallets and keys, ensuring clear guidelines for assessing risks, maintaining strict internal controls, and establishing procedures for managing digital wallets and keys. Businesses are required to comply with these regulations within six months from their effective date, underscoring Thailand's commitment to modernizing its financial ecosystem through digitalization (Kayed, 2023). According to Acclime Thailand (2023), Thailand's FinTech landscape is characterized by a blend of supportive governmental policies, a tech-savvy population, and a thriving startup ecosystem. The country has witnessed a surge in digital transactions, with e-wallets and mobile payment platforms gaining widespread popularity. The Thai government's proactive support is evident through various initiatives, including funding avenues, mentorship programs, and startup incubation programs, aimed at propelling the sector's expansion. Notably, the Thailand 4.0 initiative seeks to elevate the nation's financial infrastructure and foster the growth of FinTech enterprises, offering tax benefits, funding for research and development (R&D), startup support, and the establishment of special economic zones. For FinTech businesses looking to enter the Thai market, the Board of Investment (BOI) application presents

significant benefits, including tax incentives and promoted industries within the FinTech sector, such as digital payments and e-wallets, P2P lending platforms, blockchain technology, and InsurTech. The BOI certification offers numerous advantages for multinational fintech companies, including corporate income tax exemptions, foreign ownership permission, streamlined work permit and visa processes for expatriates, and land ownership rights for business operations. These developments signal a conducive environment for FinTech and digital wallets in Thailand, driven by a supportive regulatory framework and government initiatives that aim to foster innovation and financial inclusivity.

2.2. Worldcoin

Worldcoin, a digital identification platform, seeks to provide individuals worldwide with a convenient method for verifying their humanity, differentiating them from bots and artificial intelligence (AI) algorithms. It utilizes an iris-scanning device, the Orb, to create unique identification codes, known as IrisCodes, which are stored on the Worldcoin blockchain. World ID, the heart of the platform, enables users to "verify their humanness" online while safeguarding their privacy. The World App serves as a repository for user credentials and provides access to decentralized finance applications, while the Worldcoin cryptocurrency token is issued to users who create a World ID and download the app. The project has faced criticisms, including concerns about data privacy and exploitation, particularly in the developing world, where a significant number of users are located. Ethereum founder Vitalik Buterin and the MIT Technology Review have raised questions about data harvesting and informed consent (Curry & Weiner, 2023; George et al., 2023).

Figure 2.2. Worldcoin's Logo
Source: https://worldcoin.org/

As reported by Chow (2023) and Tong (2023), the development of Worldcoin is led by Altman, co-founder of Tools for Humanity, the company behind this initiative. Ironically, Altman has played a significant role in the AI gold rush, which exacerbates the very problem that Worldcoin aims to address. Worldcoin leverages cryptographic and blockchain tools commonly associated with cryptocurrencies to build its digital passport system, which also supports the Worldcoin crypto token and a payments platform. The World ID, created by the Orb's iris scanning, provides a "proof of personhood" that is associated with an individual's unique IrisCode and serves as the foundation of the platform. The IrisCode is detached from personal information and exists to prevent multiple World IDs for a single person. This identity is stored on the Worldcoin blockchain and is accessed using a cryptographically secure app. Worldcoin's Orb is available in various cities worldwide. The World App functions as a repository for World ID, ensuring privacy while facilitating access to decentralized finance applications. Additionally, it serves as a cryptocurrency wallet and can store Bitcoin, Ethereum, USDC, and potentially other cryptocurrencies in the future. The Worldcoin cryptocurrency token is granted to users upon creating a World ID and downloading the World App. A substantial number of Worldcoin tokens were airdropped to users during the platform's official launch, and it is listed on major cryptocurrency exchanges like KuCoin and Binance. Despite its ambitious goals, Worldcoin has faced criticism. Concerns have been raised about potential data privacy issues and exploitation, especially in regions such as Asia and Africa, where the platform has gained a substantial user base. Worldcoin has responded to these criticisms, asserting that it is primarily concerned with a user's uniqueness rather than their identity (Curry & Weiner, 2023; Hetler, 2023).

2.3. Demographic Factors

The theory related to demographic factors is of great importance in studying research on personal characteristics. This information is used to define marketing strategies, segment markets, and select target groups. Nessim and Wozniak (2001) provide the meaning of demographic characteristics, which refers to information about individuals such as age, gender, education, occupation, income, religion, and ethnicity. These factors influence consumer behavior and are commonly used as foundational characteristics that marketers consider for market segmentation. These variables are suitable criteria because demographic factors are

crucial and clearly measurable indicators in population research, making it convenient for segmentation (Hayes et al., 2023).

Gender is a significant variable in segmenting the population's preferences and behaviors, as different genders lead to different communication and decision-making behaviors. Marketers often use gender as part of their strategies to target and respond to consumer needs. Age can be used to segment consumer preferences because people of different ages have varying needs and interests. It also influences an individual's ability to comprehend information, with younger age groups often interested in trendy products and older age groups focusing more on health-related products. In addition, education level influences an individual's knowledge, attitudes, and decision-making abilities. People with different education backgrounds have varying needs and preferences, which marketers consider when segmenting markets. Marital Status is also a critical factor. Understanding the number and characteristics of individuals within a household who use specific products is essential for developing suitable marketing strategies. Moreover, marital status plays a crucial role in determining family decision-makers, helping tailor marketing strategies effectively. Income reflects economic and social status, indicating the purchasing power of individuals. Marketers use income as a criterion for segmentation to meet the diverse needs of target market groups. Different occupations reflect distinct lifestyles and interests, affecting consumer behavior and product choices (Aksorndee, 2017; Tiplerlerd, 2015).

In a broader context, demographics are essential for businesses to understand population characteristics, including size, distribution, and structure. Key demographic variables, such as gender, age, education level, occupation, and income, provide insights into consumer preferences and purchasing power. These factors help marketers tailor their strategies, segment their markets, and meet the diverse needs of their target audience. Additionally, lifestyle and cultural influences are considered to further understand and compare individual behavior and product preferences, as these aspects vary significantly across the population (Hayes et al., 2023; Hojnik et al., 2023).

2.4. Social Factors

Social factors play a significant role in shaping our behavior, attitudes, and overall well-being. Social influence is the process by which the presence or actions of others impact an

individual's thoughts, feelings, or behavior. It takes various forms, such as conformity, compliance, and obedience. Conformity involves adapting one's beliefs or behavior to match a group or social norm, often driven by a desire to fit in. Compliance occurs when individuals agree to a request or demand, sometimes without genuinely agreeing with it, influenced by factors like authority or social pressure. Obedience is a more explicit form of compliance, often seen in situations where people follow orders from an authority figure, as demonstrated in the Milgram experiment. Social norms, the unwritten rules of a society, also shape social influence (Cialdini & Goldstein, 2004; Gibson & Smart, 2017; Spielman et al., 2021). Social support, on the other hand, is the network of assistance, emotional comfort, and resources that individuals receive from their social circles, including family, friends, and communities. It plays a vital role in mental and physical well-being. Emotional support involves empathy and care, helping individuals cope with stress and adversity. Instrumental support provides tangible aid, such as practical assistance or financial help. Informational support offers guidance and advice, while appraisal support provides feedback and reassurance, often related to self-esteem and self-worth. Social support networks are essential for social and psychological well-being, serving as a buffer against the negative effects of stress and challenging life events (Hajli, 2014; Choi & Noh, 2020; Asanprakit & Limna, 2023). Furthermore, social presence has gained prominence as a crucial factor in the digital age. Social presence pertains to the extent to which individuals in virtual or mediated environments feel connected to others. The level of social presence depends on the medium used, with video chats offering higher social presence due to the ability to see facial expressions and body language. Social identity and emotional connection also play roles in social presence, influencing the strength of virtual relationships and communities (Jin et al., 2017; Kaye et al., 2017; Mallmann & Maçada, 2021).

Hajli (2014) provided valuable insights into the social factors that affect the quality of relationships and influence intentions related to social commerce. Molinillo et al. (2020) conducted a study to investigate the influence of social support and community-related factors on customer engagement and its connection to loyalty behaviors concerning social commerce websites. The study affirmed that social support played a substantial role in impacting customer engagement. Soodan and Rana (2020) also showed that social influence played a crucial role in shaping the intention to adopt electronic wallets in the state of Punjab, India. Moreover, Asanprakit and Limna (2023) highlighted the substantial influence of social factors in shaping consumers' intent to engage in social commerce. Key components such as social norms, social

identity, social support, and social comparison have been identified as pivotal factors affecting consumers' readiness to participate in social commerce.

2.5. Motivation Factors

Motivation factors such as trust, perceived risk, and reliability play a significant role in influencing people's decisions and behaviors. Trust, a fundamental motivational factor, is the cornerstone of many human interactions and decision-making processes. When trust is present, individuals are more inclined to engage in positive behaviors and make certain choices. It consists of components such as credibility, integrity, and benevolence, reflecting the perceived competence, honesty, and genuine care of the entity in question. Trust is pivotal in personal relationships, business transactions, and various other contexts, significantly impacting motivation and decision-making (Tams et al., 2018; Xie et al., 2023). Furthermore, perceived risk refers to how individuals assess potential negative consequences or uncertainties associated with a particular decision. Different types of perceived risk, including financial, psychological, and physical risk, can act as deterrents or motivators for specific actions. Reducing perceived risk or providing assurances can be a powerful motivator, as people are more likely to take action when they perceive lower risk linked to a decision (Amirtha et al., 2020; Alrawad et al., 2023; Poon & Tung, 2023). In addition, reliability plays a crucial role in various contexts, such as consumer choices, business relationships, and technology adoption. It encompasses factors like consistency, dependability, and quality. Reliability motivates individuals by minimizing uncertainty and the potential for negative surprises, fostering trust and positive experiences. When entities consistently perform as expected and deliver on their promises, they can motivate customer satisfaction, loyalty, and continued engagement (Al-Kuwaiti et al., 2009; Zhao et al., 2022).

Nguyen and Huynh (2018) conducted a study exploring the roles of perceived risk and trust in e-payment adoption. They found that perceived risk and trust play essential roles in the structural model of e-payment adoption. Razif et al. (2020) discovered several factors that exhibited a significant relationship with the acceptance of e-wallet platforms. These factors include behavioral intention, perceived privacy risk, trust, perceived overall risk, and perceived performance risk. Hossain et al. (2022) investigated the influence of trust on the intention to use e-wallet services and confirmed a positive and significant connection between trust and the

intention to use e-wallet services. In addition, Senali et al. (2023) demonstrated that perceived risk significantly influences the intention to adopt e-wallets.

2.6. Technological Factors

Technological factors, such as attitudes, perceived usefulness, and perceived ease of use toward using technology, are pivotal in shaping the adoption and utilization of new technologies. Attitudes toward using technology capture the user's overall feelings and beliefs regarding the technology. Positive attitudes are closely linked to technology adoption and engagement. When users find the technology enjoyable, relevant to their needs, or compatible with their existing habits, their attitudes become more favorable. Perceived usefulness revolves around the user's belief in the technology's ability to enhance performance and bring value. When individuals see a technology as beneficial, they are more likely to embrace it, particularly if it improves efficiency, effectiveness, or solves specific problems, and aligns with their needs. Perceived ease of use, on the other hand, focuses on the user's perception of how user-friendly and convenient the technology is to operate. A technology that is perceived as easy to use is more likely to be adopted. Features like intuitive design, accessible training, clear feedback mechanisms, and consistent functionality contribute to this perception of ease (Al-Adwan et al., 2023; Marikyan & Papagiannidis, 2023; Rosli et al., 2023).

In the study conducted by Limna et al. (2023), it was found that the way online consumers perceive the usefulness and ease of use of Facebook Live streaming significantly affects their intention to make a purchase. Specifically, the convenience of leaving comments and receiving timely responses from the host was identified as a key factor in creating a smooth and engaging shopping experience, which, in turn, plays a pivotal role in the consumer's decision-making process. The presence of informative content was observed to have a positive influence on customer attitudes and behaviors. Furthermore, Hossain et al. (2022) verified that perceived ease of use and perceived usefulness had a positive and significant connection to the intention to use e-wallet services. Senali et al. (2023) also uncovered that the intention to adopt e-wallets is significantly influenced by perceived usefulness, perceived ease of use.

2.7. Economic Factors

Economic factors are integral components of the economic landscape, significantly shaping both consumer behavior and business strategies. Income, as a central economic factor, serves as a fundamental determinant of an individual or household's purchasing power, influencing the types and quality of goods and services they can afford. It also plays a role in market segmentation, helping businesses tailor their offerings to specific income groups, and has broader implications for savings, investment, and overall economic growth within a society (Caswell et al., 2013; The Investopedia Team, 2023). Furthermore, consumption represents the actions of individuals or households as they utilize their income to meet their needs and desires. Consumer confidence, levels of debt, cultural influences, and economic cycles all influence consumption patterns. For businesses, understanding these factors is essential for planning and adapting to seasonal and cyclical variations in consumer behavior (Hampson et al., 2021; Maverick et al., 2022). In addition, promotion plays a key role in influencing consumer choices and market dynamics. Discounts are a promotional strategy with a direct connection to economic factors, and they play a pivotal role in influencing consumer behavior and economic dynamics. Economic health and consumer sentiment affect the effectiveness of promotional strategies. Businesses must adjust their promotional budgets and incentives in response to economic fluctuations and consumer perceptions. During times of economic uncertainty, businesses often tailor their promotions to emphasize value and savings (Das et al., 2021; Dwivedi et al., 2021; Siripipatthanakul et al., 2022).

Didied et al. (2022) unveiled that the appeal of promotions has a positive and significant impact on the interest in using e-wallets. Putri et al. (2022) indicated that cashback promotions have a positive and significant effect on the intention to use. These cashback promotions, offered by various e-wallet platforms, are seen as capable of enhancing user satisfaction, thereby motivating users to continue using the e-wallet in the future. Additionally, these promotions serve as a means to inform the market about a new product, introduce innovative usage methods, communicate price adjustments, explain product functionalities, detail the services provided by the company, and rectify misconceptions. Rambe and Bangsawan (2023) confirmed the impact of perceived benefits, convenience, discounts, safety, and risks on the intentions to use the Indonesian digital wallet application.

CHAPTER 3

METHODOLOGY

3.1. Research Strategy

This study employed a quantitative approach, a systematic and empirical method of studying a phenomenon using measurable data and statistical analysis. It involves the collection and analysis of numerical data to draw conclusions, make predictions, and identify patterns or relationships. In a quantitative approach, researchers typically define research questions or hypotheses and then design studies to gather relevant data. They use various methods to collect data, such as surveys, experiments, or observations, and convert qualitative observations or variables into numerical data. This data is often collected from a representative sample to generalize findings to a larger population. Statistical analysis is a key component of the quantitative approach (Bergin, 2018; Mohajan, 2020). The quantitative approach is a valuable research method for studying phenomena that can be measured and analyzed numerically. It provides a structured and rigorous framework for conducting research and generating empirical evidence (Ali & Bhaskar, 2016; Mulisa, 2022).

3.2. Sample and Sampling Technique

The study's respondents were Thai citizens aged 18 years and older who resided in Thailand. This demographic was selected to represent a cross-section of the Thai population capable of engaging with digital wallet technology in their financial activities. Convenience sampling was employed as the primary method for participant selection. Convenience sampling is a non-probabilistic technique where individuals are chosen based on their ease of accessibility; in this case, participants who were readily available and willing to take part in the study. The size of the sample group was determined by calculating the sample size using Cochran's formula (1977) at a 95% confidence level with a margin of error of ± 5%.

The formula includes:

$$n = \frac{P(1-P)Z^2}{d^2}$$

Where n = The desired sample size,

P = The population's proportion (0.5),

Z = The confidence level set by the researchers at a statistical significance level of 0.05, the value is 1.96 (95% confidence),

D = The proportion of acceptable margin of error (0.05).

Substitute the values into the formula:

$$n = \frac{0.50(1-0.50)(1.96)^2}{(0.05)^2}$$

$$n = \frac{0.25(3.8416)}{(0.0025)}$$

$$n = \frac{0.9604}{0.0025}$$

$$n = 384.16 = 385$$

For the precision of this research, the study's sample comprised a total of 1,430 participants. This size was determined based on practical considerations, including available resources, time constraints, and the feasibility of data collection within the research's scope. While convenience sampling may have introduced some sampling bias, the larger sample size aimed to mitigate this limitation by increasing the diversity of participants.

3.3. Research Instrument

This quantitative study utilized a questionnaire as a data collection tool. The researchers divided the questionnaire into two parts. Part 1 comprised preliminary screening questions that gathered basic demographic information about the respondents. It also included questions

related to an individual's behavior in using a digital wallet in Thailand. This section of the questionnaire was designed as a checklist. Part 2 encompassed the factors that could potentially impact the adoption of digital wallet technology, specifically examining the case of Worldcoin digital wallets. It placed a significant emphasis on evaluating the potential impacts and benefits of this technology within the FinTech sector. These factors encompassed social influences on the acceptance of the Worldcoin Wallet, technological influences on its adoption, motivations that influenced its acceptance, economic determinants affecting its acceptance, and the intention to use the Worldcoin Wallet.

3.4. Data Collection

Closed-ended questionnaires were conducted to collect the data. The questionnaire questions were developed based on reliable and valid research data. Furthermore, the questionnaire was pre-tested on 30 respondents to obtain a dedicated questionnaire, as recommended by Aithal and Aithal (2020). Moreover, the measurement instruments' validity was evaluated. Testing was performed to determine the dependability and accuracy of the measurement instruments. The data collection process consisted of four key steps. These steps were designed to ensure a systematic and comprehensive approach to gathering and analyzing data. In the first step, data collection involved the procurement of essential demographic information from the respondents. To be eligible for participation, respondents had to be Thai citizens aged 18 years or older, proficient digital wallet users, and possess significant experience in digital wallet usage. The research moved forward with the implementation of stratified sampling. This technique aims to select samples from subgroups with similar characteristics. Stratified sampling is essential for ensuring that the sample is representative and reflects the diversity within the population. The third step encompassed the distribution of questionnaires through online channels. These were disseminated via various social media platforms, adopting both individual and community-based approaches. This approach ensures accessibility and engagement across a broad spectrum of potential respondents. Subsequently, all received questionnaires underwent a thorough screening process. This screening was conducted to verify the completeness and appropriateness of the questionnaires, ensuring that they are fit for further data analysis.

To mitigate the potential for bias in the research process, a fundamental measure was instituted. Participants were strongly encouraged to provide their responses anonymously. By

assuring respondents of the anonymity of their feedback, the research aimed to promote candid and unfiltered responses. This approach was strategically chosen to enhance the reliability and validity of the data collected. Ethical considerations are of utmost importance in data collection processes (Bhandari, 2021). In this study, several ethical principles were followed to ensure the well-being and privacy of the participants. Informed consent was obtained from all participants, providing them with a clear understanding of the purpose, procedures, and potential risks and benefits of their involvement. Confidentiality was maintained by assigning pseudonyms to the participants and storing all data securely, ensuring that their identities remain anonymous. Participants had the right to withdraw from the study at any point without facing any negative consequences. Furthermore, data was analyzed and reported in an aggregated and anonymized manner to protect individual privacy. The study adhered to ethical guidelines and regulations, demonstrating a commitment to respecting the rights and well-being of the participants involved.

3.5. Data Analysis

Quantitative data was subjected to statistical analysis to uncover patterns and relationships within the dataset. Binary regression was employed to analyze the data. The collected data was analyzed using descriptive and inferential statistics. Descriptive statistics, comprising frequencies and percentages, were employed to summarize the demographic characteristics of the participants. Inferential statistics, which included chi-square tests and logistic regression, were used to explore associations and make predictions concerning the outcome variable based on the predictor variables. Logistic regression analysis was conducted to investigate the relationship between the predictor variables (gender, age, education, income, place of residence, and focus on factors) and the outcome variable. Initially, a baseline model was established with only the constant term. Subsequently, additional predictor variables were incorporated into the model to assess their contributions to the prediction of the outcome variable. The performance of the logistic regression models was assessed using various statistical measures, such as classification tables. These measures aided in evaluating the fit of the models, the overall predictive capability, and the accuracy percentage of the predictions. Descriptive statistics were employed to provide an overview of the sociodemographic characteristics of the sample group, their digital wallet usage behavior, and their attitudes toward the acceptance of the Worldcoin Wallet. This analysis encompassed social, technological, platform-related, and economic factors influencing the acceptance of the

Worldcoin Wallet, as well as their intention to use the Worldcoin Wallet in Thailand. The results were presented in tabular form, including percentages, frequency distributions, means, and standard deviations, utilizing pre-established statistical analysis tools.

3.5.1. Percentage and Frequency Distribution

$$P = \frac{F}{N} x100$$

Where: P = Percentage

F = Frequency (to be converted into percentage)

N = Total frequency count

3.5.2. Mean (Average)

$$\overline{X} = \frac{\Sigma x}{N}$$

Where: $\overline{X}$ = Mean

Σx = Sum of all scores

N = Total number of sample groups

3.5.3. Standard Deviation

$$S.D. = \sqrt{\frac{n\Sigma x^2 - (\Sigma x)^2}{n(n-1)}}$$

Where: S.D. = Standard Deviation

X = The score of the sample group

n = Number in the sample group

Σx^2 = Sum of squares of the sample group

$(\Sigma x)^2$ = Sum of all scores squared

These statistics offer a comprehensive overview and facilitate an understanding of the sample group's characteristics and behavior within the digital wallet context in Thailand.

3.5.4. Binary Logistic Regression Analysis Model

The analysis conducted is a Binary Logistic Regression Analysis Model, where variable values are denoted as Y, taking on two forms: Y = 0 (no event occurs) and Y = 1 (an event occurs). The relationship between the independent variable, denoted as X, and Y in this analysis exhibits an S-shaped pattern, as follows:

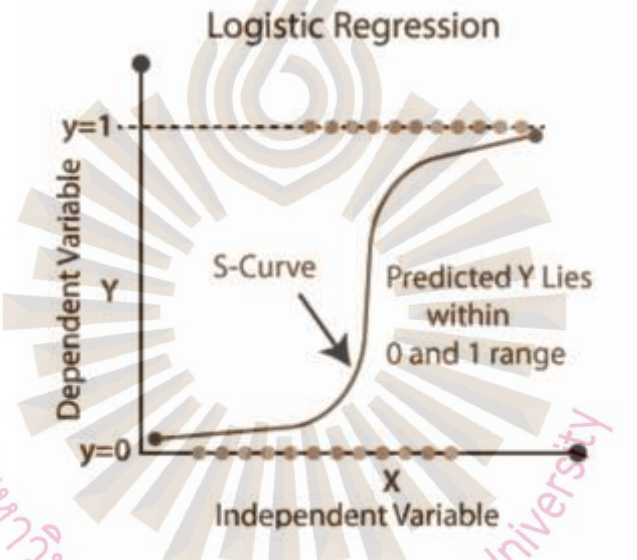

Figure 3.1. Binary Logistic Regression Analysis Model (Kanade, 2022)

3.5.4.1. Case 1 - Single Independent Variable

In the case of Simple Regression Analysis with only one independent variable, the equation can be represented in linear form. The details are as follows:

$$Y = \beta_0 + \beta_1 x + \varepsilon$$

For the analysis described above, when Y can take on two values, it is observed that the relationship between X and Y is not linear but takes the following form:

$$P(Y) = \frac{e^{\beta_0 + \beta_1 x}}{1 + e^{\beta_0 + \beta_1 x}}$$

3.5.4.2. Case 2 - Multiple Independent Variables

In the analysis mentioned above, equations with more than one independent variable take the following form:

$$P(y) = \frac{e^{b_0 + b_1 x_1 + \ldots + b_p x_p}}{1 + e^{b_0 + b_1 x_1 + \ldots + b_p x_p}}$$

Where: P(y) = Probability of an event occurring

Q(y) = Probability of an event not occurring

Q(y) = 1 - P(y)

P(y) greater than or equal to 0.5 indicates that an event occurs. P(y) less than 0.5 indicates that an event does not occur. Generally, 0.5 is commonly used as a threshold for data classification.

The value of the odds ratio (OR) represents the likelihood of an event occurring compared to the likelihood of it not occurring. If the odds value is greater than 1, it indicates that the likelihood of an event happening is higher than the likelihood of it not happening.

$$OR = \frac{P(y)}{Q(y)}$$

Logistic regression models are often expressed in the form of the log of the odds, known as Logit or Logistic Response Function. It is written in the equation as:

Log (Odds) = $\log\left(\frac{P(y)}{Q(y)}\right)$

Or Log (Odds) = $b_o + b_1 x_1 + \ldots b_p x_p$

3.5.5. Testing the Significance of Logistic Regression Coefficients

Testing the significance of logistic regression coefficients is an important step in understanding the relationship between independent variables and the probability of a binary outcome in logistic regression analysis. It helps determine whether a particular independent variable has a statistically significant impact on the outcome variable.

3.5.5.1. Wald Statistic

The Wald Statistic is used to test the hypothesis that the coefficient of the independent variable is not equal to 0. It follows a Chi-Square distribution. The Wald Statistic follows a Chi-Square distribution under the null hypothesis. Specifically, it follows a Chi-Square distribution with 1 degree of freedom because you are testing a single parameter (the coefficient). The Chi-Square distribution is a positively skewed distribution and depends on the degrees of freedom. The shape of the Chi-Square distribution becomes more symmetric as the degrees of freedom increase. To assess the significance of the coefficient estimate, the Wald Statistic is compared to the Chi-Square distribution table (or a statistical software package) to obtain a p-value. The p-value represents the probability of observing a Wald Statistic as extreme as the one calculated, assuming the null hypothesis is true. A small p-value (typically less than the chosen significance level, e.g., 0.05) indicates that you can reject the null hypothesis in favor of the alternative hypothesis.

If the p-value is less than the chosen significance level, it suggests that the coefficient is statistically significant, and you have evidence that the independent variable has a significant impact on the dependent variable. The hypotheses tested are as follows:

H0: bi = 0; i = 1, 2, … p (The independent variable has no effect on the Odds Ratio).

Hl: bi ≠ 0; i = l, 2, ⋯ p

3.5.5.2. Likelihood Function

The Likelihood Function, which includes the Full model (Li) and the Simple model (L0), is employed to test and transform the odds ratio using Log. The likelihood function and likelihood ratio test are used to assess the significance of the variables and their odds ratios in logistic regression models. Transforming the odds ratio using the logarithm is a common practice to understand and interpret the effect of these variables on the outcome in terms of log-odds. This results in the Likelihood-Ratio Test Statistics.

$$-2\log\left(\frac{L_0}{L_1}\right) = -2\left[\log(L_0) - \log(L_1)\right] = -2LL$$

3.5.5.3. Hosmer-Lemeshow Goodness of Fit Test

The Hosmer-Lemeshow Goodness of Fit Test is a statistical test used to assess how well a logistic regression model fits the observed data. It is commonly employed to evaluate the goodness of fit in binary classification models, such as logistic regression models, by comparing the predicted probabilities with the observed outcomes. The Hosmer-Lemeshow test uses a Chi-Square test statistic to compare the observed and expected frequencies in these bins. The Chi-Square statistic measures the difference between the observed and expected values in each bin. The null hypothesis (H_0) in the Hosmer-Lemeshow test is that there is no difference between the observed and expected frequencies, indicating a good fit of the logistic regression model. The alternative hypothesis (Ha) is that there is a significant difference, suggesting a poor fit. The test calculates the Chi-Square statistic and its associated p-value. If the p-value is less than a chosen significance level (e.g., 0.05), the null hypothesis would be rejected, and it can be concluded that the model does not fit the data well. If the p-value is significant (i.e., less than the chosen significance level), it suggests that the logistic regression model does not provide a good fit for the observed data. This could indicate that the model has shortcomings in capturing the relationship between the predictor variables and the binary outcome. The hypotheses tested are:

H_0: The model is a good fit.

H_1: The model is not a good fit.

3.5.5.4. Cox & Snell R Square (Rcs^2)

Goodness of fit in logistic regression is a measure of how well the logistic regression model fits the observed data. It assesses whether the model adequately explains the variability in the binary outcome variable. In the context of linear regression, the coefficient of determination (R-squared) is used to quantify the percentage of variance in the dependent variable that is explained by the independent variables. It ranges from 0 to 1, with 1 indicating a perfect fit. Unlike linear regression, logistic regression does not use R-squared to measure the percentage of variance explained, as the logistic model does not directly predict the dependent variable. Instead, logistic regression models are primarily concerned with modeling the probability of a binary outcome. Cox & Snell pseudo R-squared and other similar statistics are used in logistic regression to provide a measure of how well the model fits the data. These pseudo R-squared statistics range from 0 to 1 but are not directly interpreted as the percentage of variance explained. They are a measure of how much better the model fits the data compared to a null model (a model with no predictors). In summary, This test examines the goodness of fit of the model and explains the percentage of variance in logistic regression analysis. Generally, Cox & Snell R Square is less than or equal to 1.

3.5.5.5. Nagelkerke R Square (R^2_N)

Nagelkerke's R-squared is used to assess the goodness of fit in logistic regression and to provide an estimate of the proportion of variance in the binary outcome variable that is explained by the model's predictors. In general, the value of Nagelkerke R Square is greater than Cox & Snell R Square. Nagelkerke's R-squared, like other pseudo R-squared statistics, is a value that ranges from 0 to 1. An R^2_N value of 0 indicates that the model does not explain any of the variance in the dependent variable, while an R^2_N value of 1 suggests that the model perfectly explains all the variance. However, achieving an R^2_N of 1 is rare in practice.

CHAPTER 4

RESULTS

4.1. General Data Characteristics of the Respondents

Table 4.1 provides a comprehensive snapshot of the respondents' demographic characteristics, digital wallet usage, savings, income, and social media platform preferences, contributing to a clearer understanding of the sample's general profile.

Table 4.1. General Data Characteristics of the Respondents

General Information		Frequency	Percentage
Gender	Female	721	50.4%
	Male	709	49.6%
Age	18 - 25 years old	189	13.2%
	26 - 30 years old	523	36.6%
	31 - 35 years old	288	20.1%
	36 - 40 years old	245	17.2%
	41 years old or over	185	12.9%
Educational Level	Diploma	199	13.9%
	Bachelor’s degree	487	34.1%
	Master’s degree or higher	744	52.0%
Occupation	Government employee	451	31.54%
	Employee	410	28.67%
	Entrepreneur	355	24.82%
	Freelance	162	11.33%
	Students	52	3.64%
Monthly Income	15,000 THB or less	369	25.8%
	15,001 - 30,000 THB	281	19.7%
	30,001 - 45,000 THB	235	16.4%

	45,001 - 60,000 THB	83	5.8%
	60,001 - 75,000 THB	73	5.1%
	75,001 THB or more	389	27.2%
Monthly Saving	5,000 THB or less	661	46.2%
	5,001 - 10,000 THB	276	19.3%
	10,001 - 15,000 THB	76	5.3%
	15,001 THB or more	417	29.2%
Digital Wallet	WeChat	993	69.4%
	AIS Pay	339	23.7%
	Line Pay	53	3.7%
	True Money	37	2.6%
	PromptPay	8	0.6%
Frequency	Seldom	120	8.4%
	Sometimes	92	6.4%
	Usually	158	11.1%
	Always	1,060	74.1%
Social Media Platforms	Facebook	849	59.4%
	Instagram	460	32.1%
	Line	68	4.8%
	TikTok	32	2.2%
	X	21	1.5%
	Total	1,430	100%

Table 4.1 provides an overview of the general data characteristics of the respondents involved in the study. The respondents were almost evenly divided by gender, with 721 females (50.4%) and 709 males (49.6%). The respondents were divided into five age groups. The majority were between 26 to 30 years old (523 respondents, 36.6%), followed by 31 to 35 years old (288 respondents, 20.1%), 36 to 40 years old (245 respondents, 17.2%), 18 to 25 years old (189 respondents, 13.2%), and 41 years old or over (185 respondents, 12.9%). The respondents' education levels varied, with the majority holding a Master's degree or higher (744

respondents, 52.0%), followed by those with a Bachelor's degree (487 respondents, 34.1%), and those with a Diploma (199 respondents, 13.9%). Diverse occupations are represented, with government employees forming the largest group (31.54%), followed by employees (28.67%), entrepreneurs (24.82%), freelancers (11.33%), and students (3.64%). The monthly income of respondents varied widely, with the largest group earning 75001 THB or more (389 respondents, 27.2%), followed by those earning 15000 THB or less (369 respondents, 25.8%), and the other groups falling between these extremes. In terms of savings, 46.2% of respondents (661 individuals) reported saving 5000 THB or less monthly, while 29.2% (417 individuals) saved 15001 THB or more. The table indicates the digital wallet preferences of the respondents. WeChat was the most popular choice (993 respondents, 69.4%), followed by AIS Pay (339 respondents, 23.7%) and Line Pay (53 respondents, 3.7%). Regarding how often respondents used digital wallets, the majority stated they always use them (1060 respondents, 74.1%), while a smaller fraction reported using them usually (158 respondents, 11.1%) or sometimes (92 respondents, 6.4%). The table also looks at social media platform usage among respondents. Facebook was the most popular (849 respondents, 59.4%), followed by Instagram (460 respondents, 32.1%), and Line (68 respondents, 4.8%).

4.2. The Potential Factors Influencing the Adoption of Worldcoin

4.2.1. Influences of Demographic Factors

Table 4.2. Omnibus Test of the Model's Performance

		Chi-square	df	Sig.
Step 1	Step	519.948	9	0.005
	Block	519.948	9	0.005
	Model	519.948	9	0.005

As depicted in Table 4.2, the chi-square value of 519.948 surpasses the critical value at a significance level of 0.05, considering the presence of 9 degrees of freedom. This observation signifies that the dependent variable is significantly influenced by all the independent variables encompassed within the model. In essence, this indicates that the combined influence of the

independent variables carries substantive significance in determining the outcome of the dependent variable.

Table 4.3. The Model Summary

Step	-2 log likelihood	Cox & Snell R square	Nagelkerke R square
1	1314.473[a]	0.305	0.422

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

As presented in Table 4.3, the model, characterized by an R-squared value of 0.422, indicates that it elucidates roughly 42.2% of the variance in the outcome. Furthermore, the significance value of 0.05 underscores that the relationship between the independent variables and the dependent variable holds statistical significance at the 5% level.

Table 4.4. Classification Table for Back-Testing

			Predicted		
	Observed		Worldcoin		Percentage correct
			No	Yes	
Step 1	Worldcoin	No	819	124	86.9%
		Yes	249	238	48.9%
	Overall percentage				73.9%

Note: The cut-off value is .500.

As indicated in Table 4.4, the classification results revealed that the model, incorporating all potential independent variables, demonstrated the capability to predict the Worldcoin wallet usage in Thailand with an accuracy rate of 73.9% for cases, employing a cut-off value of 0.500 or 50%.

Table 4.5. Variables in the Model

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Gender	-1.942	0.176	122.099	1	0.000	0.143
	Age	-0.508	0.095	28.497	1	0.000	0.602
	Education	0.545	0.159	11.743	1	0.001	1.724
	Occupation	0.236	0.067	12.303	1	0.000	1.267
	Monthly Income	-0.617	0.097	40.829	1	0.000	0.539
	Monthly Saving	1.064	0.093	132.028	1	0.000	2.897
	Digital Wallet	-1.800	0.146	152.480	1	0.000	0.165
	Frequency	-0.413	0.082	25.201	1	0.000	0.662
	Social Media	-0.591	0.121	23.725	1	0.000	0.554
	Constance	3.837	0.583	43.361	1	0.000	46.374

a. Variable(s) entered in step 1: Gender, age, education, occupation, monthly income, monthly savings, digital wallet, frequency, social media

The predictive regression equation of Model 1 using the coefficients from Table 4.5 can be described by the following equation:

$$P = \frac{1}{1+e^{-z}} \quad \text{---------- Model 1}$$

where P is an individual's intent to use the Worldcoin wallet in Thailand, and Z = 3.837 – 1.942(gender) – 0.508(age) + 0.545(education) + 0.236(occupation) – 0.617(monthly income) + 1.064(monthly savings) – 1.800(digital wallet) – 0.413(frequency) – 0.591 (social media).

The statistical analysis delineated in Table 4.5 meticulously explores the influence of various independent variables on the propensity of individuals to adopt the Worldcoin wallet

within Thailand. This investigation identifies several determinants—gender, age, education level, occupation, monthly income, monthly savings, current digital wallet ownership, frequency of digital wallet use, and social media engagement—as pivotal in shaping an individual's intention to utilize Worldcoin. A noteworthy finding is the gender-based differential in the adoption intent, with a transition from female (coded as 0) to male (coded as 1) leading to a pronounced decrease in the likelihood of Worldcoin utilization. The quantified effect illustrates a reduction from a baseline value of 1 to 0.143, indicative of a substantial decline of 0.857 in adoption intent among males compared to females. Further, the analysis reveals an age-related decrement in the intent to adopt Worldcoin, with each incremental unit of age diminishing the likelihood from a normative value of 1 to 0.602, thus marking a reduction of 0.398. This suggests that younger individuals exhibit a greater propensity towards adopting Worldcoin. Conversely, educational attainment exhibits a positive correlation with Worldcoin adoption intent. An increase by one educational level enhances the intention to adopt by a factor of 1.724, denoting a significant positive influence of higher education on digital wallet adoption. Occupational status also plays a significant role, with each elevation in occupational level correlating with a 1.267-fold increase in the intent to adopt Worldcoin. This underscores the impact of professional status on technological adoption behaviors. Monthly income, however, demonstrates an inverse relationship with Worldcoin adoption intent. For each unit increment in monthly income, there is a reduction in the adoption intent from 1 to 0.539, reflecting a decrease of 0.461, suggesting that higher income individuals may exhibit reservations towards adopting new financial technologies like Worldcoin. In contrast, an increase in monthly savings significantly boosts the likelihood of adopting Worldcoin, with each unit increase resulting in a 2.897-fold elevation in adoption intent, highlighting the role of financial savings behavior in predisposing individuals towards digital wallet adoption. Ownership of a digital wallet negatively impacts the intent to adopt Worldcoin, as each unit increase leads to a reduced likelihood from 1 to 0.165, a decrease of 0.835. This may suggest a loyalty or comfort with existing digital wallet solutions. Usage frequency and social media engagement both negatively influence the adoption intent. An increase in usage frequency and social media engagement results in reduced adoption likelihood to 0.662 and 0.554, respectively, indicating decreases of 0.338 and 0.446. These findings may reflect the complex interplay between technology usage patterns and the adoption of new financial technologies. This analysis elucidates the multifaceted influences on the intention to adopt Worldcoin in Thailand, underscoring the interrelations between demographic factors, economic behaviors, and technology engagement in shaping digital wallet adoption preferences.

4.2.2. Influences of Social, Motivational, Technological, and Economic Factors

Table 4.6. Omnibus Test of the Model's Performance

		Chi-square	df	Sig.
Step 1	Step	461.808	12	0.005
	Block	461.808	12	0.005
	Model	461.808	12	0.005

As depicted in Table 4.6, the chi-square value of 461.808 surpasses the critical value at a significance level of 0.05, considering the presence of 12 degrees of freedom. This observation signifies that the dependent variable is significantly influenced by all the independent variables encompassed within the model. In essence, this indicates that the combined influence of the independent variables carries substantive significance in determining the outcome of the dependent variable.

Table 4.7. The Model Summary

Step	-2 log likelihood	Cox & Snell R square	Nagelkerke R square
1	1372.612[a]	0.276	0.382

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

As presented in Table 4.7, the model, characterized by an R-squared value of 0.382, indicates that it elucidates roughly 38.2% of the variance in the outcome. Furthermore, the significance value of 0.05 underscores that the relationship between the independent variables and the dependent variable holds statistical significance at the 5% level.

Table 4.8. Classification Table for Back-Testing

Observed			Predicted		
			Worldcoin		Percentage correct
			No	Yes	
Step 1	Worldcoin	No	855	88	90.7%
		Yes	284	203	41.7%
Overall percentage					74.0%

Note: The cut-off value is .500.

Table 4.8 reveals that the model, incorporating all potential independent variables, demonstrated the capability to predict the Worldcoin wallet usage in Thailand with an accuracy rate of 74.0% for cases, employing a cut-off value of 0.500 or 50%.

Table 4.9. Variables in the Model

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Social Support	1.877	0.272	47.720	1	0.000	6.533
	Social Presence	0.942	0.158	35.661	1	0.000	2.566
	Trust	0.607	0.179	11.486	1	0.001	1.835
	Perceived Risk	-0.511	0.192	7.092	1	0.008	0.600
	Service Reliability	1.366	0.190	51.662	1	0.000	3.920
	Perceived Usefulness	0.590	0.292	4.071	1	0.044	1.804
	Perceived Ease of Use	-0.629	0.275	5.233	1	0.022	0.533
	Time Saving	-0.794	0.229	11.981	1	0.001	0.452

	Convenience	0.207	0.221	0.882	1	0.348	1.231
	Consumption	-1.326	0.227	34.209	1	0.000	0.266
	Discount	-0.690	0.203	11.507	1	0.001	0.502
	Promotion	-1.967	0.298	43.616	1	0.000	0.140
	Constance	-7.431	1.003	54.843	1	0.000	0.001

a. Variable(s) entered in step 1: Social support, social presence, trust, perceived risk, service reliability, perceived usefulness, perceived ease of use, time saving, convenience, consumption, discount, promotion

The predictive regression equation of Model 2 using the coefficients from Table 4.9 can be described by the following equation:

$$P = \frac{1}{1+e^{-z}} \quad \text{---------- Model 2}$$

where P is an individual's intent to use the Worldcoin wallet in Thailand, and Z = – 7.431 + 1.877(social support) + 0.942(social presence) + 0.607(trust) – 0.511(perceived risk) + 1.366(service reliability) + 0.590(perceived usefulness) – 0.629(perceived ease of use) – 0.794(time saving) – 1.326(consumption) – 0.690(discount) – 1.967(promotion).

The empirical analysis delineated in Table 4.9 systematically explicates the statistical relevance of each independent variable with respect to the propensity of individuals in Thailand to utilize the Worldcoin wallet. The analysis discerns that the variables such as social support, social presence, trust, perceived risk, service reliability, perceived usefulness, perceived ease of use, time savings, consumption, discounts, and promotions significantly impinge upon the dependent variable: the inclination towards adopting Worldcoin technology. More precisely, an increment by one unit in social support is correlated with an augmentation in the likelihood of adopting Worldcoin by a factor of approximately 6.533. An analogous increase in social presence amplifies the odds of adopting the digital wallet by about 2.566 times. Furthermore, an elevation in trust towards the digital wallet significantly enhances the probability of its adoption by an estimated 1.804 times. Conversely, perceived risk is inversely associated with the adoption of Worldcoin, where a unit increase in perceived risk correlates with a reduction

in the likelihood of Worldcoin adoption, decreasing the odds to 0.600. This reduction signifies a notable decline in adoption intent by 0.400 units. Moreover, the reliability of the service profoundly influences the likelihood of adoption in a positive manner. There is an approximate 3.920-fold increase in the likelihood of adopting Worldcoin corresponding to each unit increase in perceived service reliability. In terms of usability, perceived usefulness bolsters the propensity for adoption, with each unit increase enhancing the intention to adopt Worldcoin by a factor of 1.804. Contrastingly, perceived ease of use demonstrates a negative correlation with Worldcoin adoption; an increase by one unit in this variable diminishes the likelihood of utilizing the Worldcoin wallet from 1 to 0.533, reflecting a decrement of 0.467. Furthermore, the factors of time savings, consumption, discounts, and promotions exhibit diverse negative impacts on the intention to adopt Worldcoin. Specifically, for each unit increment in time savings, there is a reduction in the adoption likelihood from 1 to 0.452, highlighting a decrease of 0.548. Similarly, an increment in consumption correlates with a decrease in adoption likelihood from 1 to 0.266, indicating a significant decline of 0.734. The influences of discounts and promotions follow suit, with unit increases resulting in respective decreases in adoption likelihood to 0.502 and 0.140, signifying declines of 0.498 and 0.860, respectively.

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1. Discussions

The research investigated determinants influencing the utilization of the Worldcoin wallet within the Thai context. It elucidated that an individual's propensity towards adopting the wallet was shaped by multifaceted elements including demographic and socio-economic characteristics such as gender, age, educational attainment, occupational status, monthly income, savings levels, existing digital wallet ownership, frequency of use, and social media interaction. Significantly, gender disparities were evident, with females demonstrating a higher propensity towards Worldcoin wallet adoption than males. This distinction could be ascribed to variations in financial behaviors, rates of technology acceptance, or payment method preferences, corroborating the findings of Prachayanant et al. (2023), who noted a gender-based discrepancy in cryptocurrency game engagement. Conversely, the research highlighted an inverse relationship between age and wallet usage intention, potentially attributable to generational differences in technological receptiveness and payment method preferences, aligning with Doungpitak et al. (2023)'s conclusions regarding age and digital competencies. Educational level emerged as a positive influences on wallet adoption likelihood, suggesting that higher education levels enhance comprehension of digital wallets' benefits and security features, fostering trust and willingness to adopt such technologies. This concurrence is supported by the investigations of Thetlek et al. (2023) and Doungpitak et al. (2023), highlighting education's role in the digital sphere and token economy. The analysis further indicated that individuals in higher-status occupations were more inclined towards Worldcoin wallet utilization, reflecting potentially greater financial resources, familiarity with fintech, and openness to novel payment methodologies. These observations resonate with the insights provided by Siri and Kraiwanit (2023) regarding occupational status and financial behaviors. Interestingly, an inverse correlation was noted between monthly income levels and the inclination to adopt the Worldcoin wallet, suggesting that higher-income individuals might adhere to more traditional financial practices. This notion is parallel to findings by Shaengchart et al. (2023) regarding income's influence on market dynamics within Thailand's internet service sector, and by Thetlek et al. (2023) concerning the token economy. Furthermore, individuals with higher savings exhibited greater inclination towards Worldcoin wallet

adoption, potentially due to increased financial security, aligning with findings by Siri and Kraiwanit (2023) on savings impact on financial decision-making. Ownership of an existing digital wallet deterred the adoption of Worldcoin, possibly reflecting satisfaction with current services and resistance to change, echoing Wannasawang and Kraiwanit (2023)'s findings on digital wallet selection behaviors. Moreover, a paradoxical relationship emerged between Worldcoin wallet usage frequency and adoption intention, suggesting a possible saturation effect among current users, supported by Duangsin and Kraiwanit (2023)'s research on service usage patterns. Lastly, intensive social media engagement correlated negatively with the intention to use Worldcoin wallet, possibly due to privacy and security concerns or satisfaction with existing payment methods, aligning with Elareshi et al. (2023), Jangjarat et al. (2023), Nazir et al. (2023), and Singharat et al. (2023)'s analyses on social media's impact on technological adoption and online consumer behavior.

The analysis further explored the influence of various factors on the inclination to adopt Worldcoin technology, shedding light on the complexities of technology acceptance. Among the variables studied, social support, social presence, trust, perceived risk, and service reliability stand out as significant determinants of adoption likelihood. Social support and social presence both positively affect individuals' likelihood to adopt Worldcoin, underscoring the importance of social factors in the decision-making process regarding new technologies. The study's findings align with those of Kulviwat et al. (2009), indicating that social influence and adoption attitude positively affect consumers' intentions to adopt an innovation. Specifically, the effect of social influence on adoption intention is entirely mediated by consumer attitude. Moreover, the relationship between social influence and adoption intention strengthens when an innovation is consumed publicly rather than privately. Similarly, trust towards the digital wallet plays a crucial role, with increased trust associated with a higher probability of adoption, highlighting the need for trustworthy digital services. Consistent with Khan and Abideen (2023), perceived trust moderates the relationship between perceived risk and usage behavior of digital wallets. Concerns over potential adverse outcomes may make customers hesitant to use the technology, highlighting the significance of perceived trust in the acceptance and usage of digital wallets. Consumers who trust in the reliability of the service provider are more likely to use the service and recommend it to others. Conversely, perceived risk inversely impacts the willingness to adopt Worldcoin, indicating that higher perceived risks discourage adoption. This suggests that addressing and mitigating perceived risks could be essential for increasing technology uptake. Khan and Abideen (2023) found that perceived

risk significantly mediates the relationship between behavioral intention and usage behavior of digital wallets. If an individual perceives a significant level of risk associated with using a digital wallet, their behavioral intention to use the digital wallet decreases. Furthermore, an individual's actual usage behavior of a digital wallet is influenced by their level of perceived risk, even if they initially intend to use the digital wallet. Service reliability also significantly influences the adoption likelihood, with greater reliability enhancing the willingness to adopt the wallet, emphasizing the critical role of dependable service in user acceptance. Aligned with Rachmawati et al. (2022), the reliability factors of trust, along with regulations and policies, greatly influenced the intention to use electronic government services. Wong and Mo (2019) also verified that when consumers perceive a service as honest and reliable, it significantly boosts their intention to use the service, due to their strong belief in it. In terms of usability, perceived usefulness positively correlates with the intention to adopt Worldcoin, indicating that recognizing the benefits and effectiveness of the digital wallet is pivotal. Consistent with the findings of Tian et al. (2023), perceived usefulness is positively associated with behavioral intention to use mobile payment services. However, perceived ease of use exhibits a surprising negative correlation, suggesting that other factors might overshadow the simplicity of using the wallet in the adoption decision process. In accordance with Gunawan et al. (2019), perceived ease of use negatively and insignificantly affects consumer attitudes, while perceived usefulness positively and significantly influences consumer attitudes. Furthermore, perceived ease of use has a positive yet insignificant effect on purchase decisions, just as perceived usefulness exhibits a positive but insignificant impact on purchase decisions. Additionally, consumer attitudes significantly and positively affect purchase decisions. Additionally, time savings, consumption, discounts, and promotions were found to have diverse negative impacts on the intention to adopt Worldcoin. These findings suggest that while these factors are typically considered benefits, they may not necessarily increase the likelihood of new technology adoption in this context. Consistent with Rashaduzzaman (2020), time savings were not identified as significantly influencing the development of online apparel purchase intentions. Chen and Weber (2010) found that while discounts affect bidding behavior and market outcomes in a second-price, sealed-bid auction, they do not alter bidders' intentions to participate in such auctions. Nguyen and Nguyen (2022) revealed that promotional incentives did not directly impact the intention to use mobile wallets. Instead, this relationship was mediated by social influence and compatibility factors.

5.2. Conclusions

The research delves into factors influencing the adoption of the Worldcoin wallet in Thailand, identifying demographic and socio-economic characteristics such as gender, age, education, job status, and digital engagement as key determinants. Specifically, it notes a higher inclination among females towards Worldcoin wallet adoption, attributing this trend to differences in financial behaviors and technology acceptance. Age inversely affects wallet usage intention, suggesting younger generations are more receptive to new technologies, which parallels findings in digital literacy research. Higher education correlates with a greater likelihood of adopting digital wallets, emphasizing the role of understanding in technology adoption. Furthermore, the study observes that individuals in higher occupational statuses show more openness to adopting Worldcoin, possibly due to better financial literacy and exposure to fintech. However, there's an unexpected negative correlation between higher income levels and wallet adoption, hinting at a preference for traditional financial practices among the wealthier. Conversely, higher savings levels correlate positively with the inclination to adopt Worldcoin, reflecting financial security's role in embracing new technologies. Interestingly, existing digital wallet users displayed resistance to switching to Worldcoin, underscoring the challenges new entrants face in changing consumer habits. A paradox emerges with frequent users showing less intention to adopt new wallets, indicating satisfaction or saturation with current solutions. Moreover, intense social media engagement surprisingly correlates negatively with adoption intention, possibly due to privacy concerns.

The study also highlights the significant impact of social factors, trust, perceived risk, and service reliability on adoption intentions. Trust and social support notably enhance the likelihood of adopting Worldcoin, while perceived risk and service reliability concerns deter potential users. Notably, the study contradicts expectations regarding perceived ease of use, which showed a negative correlation with adoption intention, suggesting that simplicity alone does not drive the adoption of new technologies. Finally, the research indicates that while time savings, consumption, discounts, and promotions generally benefit users, they do not necessarily increase the likelihood of adopting new technologies like Worldcoin, aligning with previous studies indicating that such factors might not significantly influence the adoption intentions in digital financial contexts.

5.3. Research Implications

The research on Worldcoin wallet adoption in Thailand provides multifaceted insights significant for different sectors. On an academic level, it adds depth to the literature on digital payment adoption by uncovering surprising influences, such as the significant roles demographic factors play and how individual perceptions nuanced impact technology adoption. This discovery encourages further academic exploration into the socio-psychological drivers or barriers affecting the uptake of digital financial instruments. The nuanced understanding of demographic impacts, particularly, opens new avenues for research into personalized technology engagement strategies.

For practitioners in the industry, this study highlights the necessity of tailoring product attributes and marketing approaches to meet the distinct expectations and profiles of different user groups, with a strong emphasis on fostering trust and resolving compatibility issues. The insights gained can guide financial educators and tech developers in crafting more precise educational materials and designing interfaces that resonate more effectively with target users, enhancing the overall user experience. Moreover, the research advises regulatory authorities to forge conducive environments fostering the safe and efficient expansion of digital payment systems, addressing legal, security, and usability concerns. By doing so, they can aid in accelerating the adoption rate while ensuring user protection and system integrity.

In essence, this study provides a holistic view that could significantly influence the trajectory of technology development, marketing strategies, and regulatory frameworks within the digital wallet sector. By addressing these critical areas, stakeholders can collectively advance the adoption and usability of digital payment solutions, potentially setting a benchmark for similar innovations globally.

5.4. Policy Recommendations

To further enhance the adoption and security of digital wallets in Thailand, a comprehensive and detailed policy framework is required. Regulators should develop and enforce a clear set of guidelines that not only protect users but also foster transparency and prevent fraudulent activities within digital wallet operations. These guidelines should include standardized security protocols such as two-factor authentication and end-to-end encryption,

ensuring the integrity of transactions and personal data. Nationwide educational campaigns are crucial. They should not only inform the public about the functionalities and advantages of digital wallets but also educate them on cybersecurity practices and how to identify potential scams. This educational push should target diverse demographic groups to ensure widespread understanding and adoption. Financial inclusion policies should focus on eliminating barriers for the unbanked and underbanked segments, ensuring digital wallet services are accessible and affordable. This might include developing low-cost wallet options or subsidizing internet access in remote areas, enabling broader economic participation. The government should encourage a fertile environment for innovation by providing financial incentives such as grants or tax breaks for startups and companies developing digital payment solutions. This approach should aim to stimulate competition but also ensure consumer protection standards are maintained. Partnerships are key; therefore, fostering collaborative efforts between the government, financial institutions, and fintech companies can lead to the development of interoperable and user-friendly digital wallet platforms. Such collaborations could also extend to educational institutions for research and development purposes, enhancing the technological underpinnings of digital wallets. Mandatory security measures should be rigorously enforced, with clear guidelines for digital wallet providers. Users should be encouraged, through educational campaigns, to adopt secure online practices, reducing the risk of fraud and theft. Finally, establishing a monitoring and evaluation system is critical to track the adoption rates, user satisfaction, and security incidents related to digital wallets. This system should inform policy adjustments and interventions, ensuring the digital wallet ecosystem remains robust, secure, and inclusive. Through continuous assessment and responsive policy-making, Thailand can ensure the successful integration of digital wallets into its financial landscape, promoting economic growth and digital inclusivity.

5.5. Limitations and Recommendations for Future Studies

The study focusing on the adoption of Worldcoin digital wallets among Thai adults offers valuable insights while acknowledging certain limitations inherent in its design. The use of convenience sampling and the restriction to a specific demographic within Thailand may not accurately reflect the broader population's perspectives, highlighting the necessity for future research to employ randomized sampling techniques and to broaden its demographic and geographic scope for enhanced universality. Additionally, the research's reliance on cross-sectional data and self-reported responses could limit understanding of long-term trends and

introduce response biases. Future investigations could benefit from adopting longitudinal study designs and incorporating objective data metrics, such as actual user interaction logs from digital wallet providers, to obtain a more comprehensive and unbiased view of consumer behavior. Expanding these research dimensions would not only provide a richer and more detailed understanding of the factors driving digital wallet adoption but also enable FinTech stakeholders to develop more targeted and effective strategies. By considering these enhancements, future studies can pave the way for more refined approaches, ultimately fostering wider acceptance and optimized utilization of digital wallet technologies across varied user segments and geographical locales.

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APPENDIX

Appendix A

Ethical Clearance Certificate

COA. No. RSUERB2023-109

Certificate of Approval
By
Ethics Review Board of Rangsit University

COA. No.	COA. No. RSUERB2023-109
Protocol Title	Digital Wallet Dynamics: Understanding the Potential Adoption Factors of Worldcoin in Thailand's FinTech Sector
Principle Investigator	Asst. Prof. Tanpat Kraiwanit, Ph.D.
Co-Investigator	Peerapat Wattanasin Pongsakorn Limna
Affiliation	Faculty of Economics, Rangsit University
How to review	Expedited Review
Approval includes	1. Project proposal 2. Information sheet 3. Informed consent form 4. Data collection form/Program or Activity plan

Date of Approval: 25 July 2023
Date of Expiration: 25 July 2025

The prior mentioned documents have been reviewed and approved by Ethics Review Board of Rangsit University based Declaration of Helsinki, The Belmont Report, CIOMS Guideline and International Conference on Harmonization in Good Clinical Practice or ICH-GCP

RSU-ERB
25 JUL 2023

Signature.....
(Associate Professor Dr. Panan Kanchanaphum)
Chairman, Ethics Review Board for Human Research

Ethics Review Board of Rangsit University, 5th floor, Arthit Ourairat Building (Bldg.1) Rangsit University

Appendix B

Questionnaire

Digital Wallet Dynamics: Understanding the Potential Adoption Factors of Worldcoin in Thailand's FinTech Sector

Your responses to this questionnaire are essential for data analysis and interpretation. Consequently, we ask for your assistance in answering the questionnaire based on your opinions and facts. The information you provide in this questionnaire will be kept confidential to analyze the data obtained.

5 = Strongly Agree
4 = Agree
3 = Neutral
2 = Disagree
1 = Strongly Disagree

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1. Gender
- Female
- Male

2. Age
- 18 - 25 years old
- 26 - 30 years old
- 31 - 35 years old
- 36 - 40 years old
- 41 years old or over

3. Educational Level
- Diploma
- Bachelor’s degree
- Master’s degree or higher

4. Occupation
- Government employee
- Employee
- Entrepreneur
- Freelance
- Students

5. Monthly Income
- 15,000 THB or less
- 15,001 - 30,000 THB
- 30,001 - 45,000 THB
- 45,001 - 60,000 THB
- 60,001 - 75,000 THB
- 75,001 THB or more

6. Monthly Saving
- 5,000 THB or less
- 5,001 - 10,000 THB
- 10,001 - 15,000 THB
- 15,001 THB or more

7. Digital Wallet
- WeChat
- AIS Pay
- Line Pay
- True Money
- PromptPay

8. Frequency
- Seldom
- Sometimes
- Usually
- Always

9. Social Media Platforms

- Facebook
- Instagram
- Line
- TikTok
- X

10. The Potential Adoption Factors of Worldcoin in Thailand's FinTech Sector

The Potential Adoption Factors of Worldcoin in Thailand's FinTech Sector	**5**	**4**	**3**	**2**	**1**
1. Friends or people in society sharing their experiences with using e-wallets allow you to learn through the experiences of others.					
2. E-wallets enable us to create a society, friends, and member groups					
3. You trust that the e-wallet platform is a secure platform for transactions.					
4. Conducting transactions on the e-wallet does not make you feel that it is an action susceptible to fraud or data theft.					
5. Merchants on the e-wallet platform are trustworthy in their services.					
6. E-wallet is beneficial for you in conducting financial transactions.					
7. You find using the e-wallet platform easy.					
8. You feel that using the e-wallet saves you time.					
9. Using the E wallet platform provides you with convenience.					
10. You are likely to use the e-wallet platform continuously.					
11. You are likely to use the e-wallet platform if there are good discounts.					
12. You are inclined to use the e-wallet platform if there are good promotions.					

Appendix C

Publication

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Digital wallet dynamics: Perspectives on potential Worldcoin adoption factors in a developing country's FinTech Sector

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ABSTRACT

In the dynamic digital environment, the emergence of digital wallets like Worldcoin signifies a transformative trend. This study examines the factors that influence the adoption of digital wallets in Thailand, focusing specifically on the Worldcoin wallet. The primary aim is to identify and analyze the potential determinants that affect user decisions to adopt this technology. Employing a quantitative research methodology, structured questionnaires were administered to 1430 participants to gather data, subsequently subjected to binary logistic regression analysis. This analysis aimed to discern the relationship between various independent variables, encompassing social support, social presence, trust, perceived risk, service reliability, perceived usefulness, perceived ease of use, time saving, convenience, consumption, discount, and promotion, and the dependent variable of Worldcoin wallet adoption. The findings underscore that factors such as social support, social presence, and trust positively influence adoption, emphasizing the significance of community building and trust establishment. Conversely, perceived risk acts as a deterrent to adoption, underscoring the imperative of addressing security concerns. While service reliability and perceived usefulness serve as catalysts for adoption, perceived ease of use does not exhibit a similar effect, implying potential usability issues. Furthermore, economic incentives such as discounts do not yield a significant impact on adoption, suggesting their secondary role as motivators. This study underscores the critical importance of trust, usability, and security in facilitating the broader adoption of Worldcoin and analogous technologies within the Thai context and beyond.

1. Introduction

In the modern era, the relentless pace of technological advancements across various sectors is reshaping societal norms and structures. The expansion of internet connectivity and the ubiquitous presence of smartphones have democratized access to state-of-the-art technologies, paving the way for an inclusive technological landscape. This transformation is further accentuated by the emergence of Industry 4.0, which signifies a paradigm shift in the global economic and social framework. Characterized by substantial technological innovations, Industry 4.0 is revolutionizing both the internal operations and external interactions of organizations, leading to enhanced digital engagements and redefining traditional business models (Javaid et al., 2022; Mourtzis et al., 2022; Yaqub and Alsabban, 2023). Simultaneously, economic shifts are mirroring changes in consumer behaviors, which are increasingly being shaped by the convergence of economic, technological, and sociocultural factors in this new digital economy era. Against this backdrop, digital wallets emerge as a pivotal technological innovation, streamlining the way in which transactions are conducted in the digital realm (Gasanov et al., 2022; Thaker et al., 2023; Uribe-Linares et al., 2023). They offer a modern solution for the storage, management, and execution of digital currency transactions, standing out due to their convenience, enhanced security measures, and ease of accessibility. These features make digital wallets an attractive alternative to traditional financial transaction methods, highlighting the evolving nature of consumer preferences and financial interactions. As the adoption of digital wallets continues to rise, understanding the various factors that influence their acceptance and use becomes crucial. The interplay between user-friendly design, perceived utility, and trustworthiness, alongside broader socio-economic trends and regulatory

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landscapes, shapes the user's decision-making process regarding the adoption of these innovative platforms. This complex web of determinants underscores the multifaceted nature of technological adoption in the digital age, where innovations like digital wallets are not just reshaping financial transactions but also reflecting broader shifts in societal and economic dynamics (Agarwal et al., 2020; Ilieva et al., 2023; Noer et al., 2023).

According to Ajanapanya (2023), Chantanusornsiri (2023), Farah and El-Moudden (2023), Kraiwanit et al. (2023), and Oladotun (2023), digital wallets in Thailand are rapidly transforming the financial landscape, enhancing convenience and broadening financial inclusion across the nation. As Thailand progresses towards a digital economy, these wallets offer critical services such as easy online transactions, seamless money transfers, and inclusive banking solutions for the unbanked or underbanked populations. This technological shift not only supports the local economy by streamlining payments but also integrates Thailand more deeply into the global financial system, making it easier for tourists and expatriates to manage their finances. The adoption of digital wallets is crucial for maintaining Thailand's competitive edge in the digital age, fostering economic growth and enhancing the daily financial interactions of its citizens. With Thailand's concerted effort to advance its digital economy, the introduction of Worldcoin could significantly enhance financial inclusion by providing digital asset access to its substantial unbanked and underbanked population. This would democratize financial services, creating fresh opportunities for savings, payments, and investments. Moreover, the integration of such technologies could facilitate transactions within Thailand's dynamic tourism industry, offering tourists a secure and straightforward means to manage their funds. Additionally, incorporating Worldcoin into Thailand's financial ecosystem could streamline cross-border transactions, which is essential given the significant number of expatriates and migrant workers in the country. Ultimately, adopting Worldcoin could position Thailand as a pioneer in the burgeoning global digital currency market, promoting broader economic growth and enhancing international connectivity.

In the domain of digital finance, Worldcoin is an innovative decentralized cryptocurrency that seeks to establish a unified global economy by offering a universally accessible currency. It emerges as a prominent disruptor within the financial technology (FinTech) sector. With a mission centered on redefining the interaction between individuals and digital currencies, Worldcoin introduces a transformative paradigm in financial transactions through its distinctive offerings. Beyond mere convenience, digital wallets, exemplified by Worldcoin, assume a pivotal role in advancing economic empowerment and facilitating seamless financial exchanges. Particularly salient in developing nations where conventional banking infrastructures are either inadequate or inaccessible to substantial portions of the populace, digital wallets serve as critical instruments in mitigating the financial divide (George et al., 2023; Kraiwanit et al., 2023; Temel, 2023). The adoption of digital wallets like Worldcoin is a complex phenomenon influenced by a range of interconnected factors. Socio-economic conditions, regulatory environments, and cultural attitudes towards technology significantly impact the uptake. Additionally, social dynamics, personal motivations, technological accessibility, and economic incentives all play critical roles. For instance, in regions with advanced technology and favorable regulations, digital wallets are likely to see higher adoption rates. Conversely, in areas with technological barriers or cultural skepticism towards new financial solutions, uptake may be slower. Ultimately, the successful adoption of digital wallets depends on a harmonious alignment of these diverse elements, ensuring that they cater to the needs, expectations, and circumstances of potential users (Bommer et al., 2022; Mombeuil, 2020; Kumari et al., 2023; Uribe-Linares et al., 2023).

While there is substantial research on digital wallets and FinTech innovations, the specific examination of Worldcoin, particularly within the Thai context, remains significantly underexplored in scholarly literature. Prior studies, such as those by Thavorn et al. (2020) on the adoption of PromptPay by Thai micro-retailers, and Vongchavalitkul et al. (2022) regarding post-pandemic banking technology in Thailand, have not addressed the unique dynamics of Worldcoin adoption. This oversight is particularly noteworthy as different digital wallets may follow distinct adoption paths influenced by their specific technological attributes, regulatory settings, and demographic factors—elements that general FinTech studies may overlook. Additionally, while previous research has shed light on broad trends in FinTech adoption, it frequently fails to capture the nuances of rapidly evolving technologies like Worldcoin, which may interact uniquely with local economic conditions and cultural norms. This research aims to bridge this gap by conducting an in-depth analysis of the factors influencing Worldcoin's adoption in Thailand, aiming to deepen our understanding of the determinants that promote or impede user acceptance of this digital wallet. By centering on Worldcoin, this study contributes to the broader discourse on digital financial tools and enhances our comprehension of how specific technologies are adopted across varying cultural and economic landscapes. This exploration promises to provide timely and relevant insights for both academics and practitioners in the field of FinTech, offering a detailed perspective on the complex interplay between technology and user behavior in a rapidly changing digital environment. Through this investigation, the research will illuminate the intricacies of Worldcoin adoption in Thailand, providing valuable contributions to the ongoing development of the digital economy.

1.1. Research objective

The primary objective is to identify and analyze the potential key factors that influence user decisions to adopt Worldcoin digital wallets in Thailand.

1.2. Research question

What are the potential key factors that influence user decisions to adopt Worldcoin digital wallets in Thailand, and how do these factors impact their adoption choices?

Concluding the introduction, this study aims to address a significant gap in the existing literature by exploring the specific factors that influence the adoption of Worldcoin digital wallets in Thailand. Despite extensive research on digital wallets and FinTech innovations, the unique dynamics of Worldcoin adoption have not been thoroughly examined within the Thai context. This research will not only delineate the key determinants that drive or deter Worldcoin usage but will also investigate its broader economic impacts and potential to transform the digital financial landscape in Thailand. Through this focused analysis, the study seeks to contribute valuable insights into the adoption mechanisms of emerging digital financial technologies, enhancing our understanding of their integration into the digital economy.

The paper is organized into six primary sections. It begins with an introduction, followed by a comprehensive literature review in the second section. The third section details the research methodology employed. Subsequently, the fourth section reports the study's results. The fifth section interprets these results, discussing the findings in depth. The final section concludes the paper, addressing its limitations and offering recommendations for future research.

2. Literature review

In the evolving FinTech landscape, digital wallets have become essential tools that significantly alter transaction methodologies worldwide. They are not only redefining the financial sector but also fostering financial inclusion, especially in developing nations. These platforms enable users to store, handle, and transfer funds effortlessly through mobile devices, proving particularly beneficial for those without traditional banking access, thus promoting inclusivity (Omarini, 2018; Palmié et al., 2020; Taherdoost, 2023). In Thailand, digital

wallets are rapidly gaining traction, driven by a national push towards digitalization and a growing e-commerce sector. As part of the Thai government's National e-Payment initiative, which aims to transition the country towards a cashless society, digital wallets are increasingly viewed as a vital component of financial technology that offers users convenience, speed, and enhanced security for transactions. This move is also supported by the widespread use of smartphones and improving internet infrastructure, making digital wallets accessible to a broad segment of the population. For consumers and businesses alike, the adoption of digital wallets is not just a trend but a significant shift towards more efficient, transparent, and secure financial transactions, fostering greater financial inclusion and supporting Thailand's economic growth. This digital shift is particularly crucial in accommodating the diverse needs of local consumers and international tourists, further solidifying Thailand's position as a modern, connected economy in Southeast Asia (Appsynth, n.d.; Ajanapanya, 2023; Chantanusornsiri, 2023; Tookitaki, 2023). Furthermore, the introduction of Worldcoin offers a fascinating evolution in digital currency, setting itself apart with its novel approach. Worldcoin aims to revolutionize financial transactions with unique features that could enhance usability, security, and accessibility, potentially transforming how people interact with money, especially in regions where financial infrastructure is less developed (Kraiwanit et al., 2023; Worldcoin, n.d.).

This study focuses on analyzing how social, motivational, technological, and economic elements influence the adoption of Worldcoin in the FinTech arena. It begins by assessing social factors such as social support and social presence, analyzing how these elements shape attitudes toward adopting new financial technologies. Notably, in environments where digital currencies are viewed positively, higher adoption rates are observed, highlighting the significance of societal norms and peer influence on the acceptance of innovations like Worldcoin. The study further investigates motivational factors, exploring personal incentives that drive the adoption of digital wallets. Key motivations include trust, perceived risk, reliability, time savings, and convenience. Understanding these motivations is vital for developing strategies that encourage users to transition from traditional financial systems to more modern, digital alternatives. Technologically, the research evaluates the perceived usefulness and ease of use of Worldcoin, recognizing these as crucial determinants of adoption. Insights gained from this analysis assist in refining the technology to better align with user expectations, enhancing user experience and functionality. Economically, the study examines how factors like cost-effectiveness, discounts, and promotional strategies impact user decisions to adopt Worldcoin. This assessment helps to gauge the economic appeal of Worldcoin, offering insights into how financial considerations influence user adoption rates. Overall, the research provides a comprehensive overview of the various dynamics that affect the integration of Worldcoin into the FinTech landscape. By examining these multiple dimensions, the study aims to offer detailed insights into the factors that promote the broader acceptance and use of Worldcoin in the sector.

2.1. Social factors

Social factors play a significant role in shaping our behavior, attitudes, and overall well-being. Social influence is the process by which the presence or actions of others impact an individual's thoughts, feelings, or behavior. It takes various forms, such as conformity, compliance, and obedience. Conformity involves adapting one's beliefs or behavior to match a group or social norm, often driven by a desire to fit in. Compliance occurs when individuals agree to a request or demand, sometimes without genuinely agreeing with it, influenced by factors like authority or social pressure. Obedience is a more explicit form of compliance, often seen in situations where people follow orders from an authority figure, as demonstrated in the Milgram experiment. Social norms, the unwritten rules of a society, also shape social influence (Cialdini and Goldstein, 2004; Gibson and Smart, 2017; Spielman et al., 2021). Social support, on the other hand, is the network of assistance, emotional comfort, and resources that individuals receive from their social circles, including family, friends, and communities. It plays a vital role in mental and physical well-being. Emotional support involves empathy and care, helping individuals cope with stress and adversity. Instrumental support provides tangible aid, such as practical assistance or financial help. Informational support offers guidance and advice, while appraisal support provides feedback and reassurance, often related to self-esteem and self-worth. Social support networks are essential for social and psychological well-being, serving as a buffer against the negative effects of stress and challenging life events (Hajli, 2014; Choi and Noh, 2020). Furthermore, social presence has gained prominence as a crucial factor in the digital age. Social presence pertains to the extent to which individuals in virtual or mediated environments feel connected to others. The level of social presence depends on the medium used, with video chats offering higher social presence due to the ability to see facial expressions and body language. Social identity and emotional connection also play roles in social presence, influencing the strength of virtual relationships and communities (Jin et al., 2017; Kaye et al., 2017; Mallmann and Maçada, 2021).

Hajli (2014) offered significant contributions to understanding the social determinants impacting relationship quality and intention formation within the context of social commerce. Furthermore, Molinillo et al. (2020) conducted empirical research elucidating the influence of social support and community-related variables on customer engagement, thereby elucidating its implications for loyalty behaviors in the domain of social commerce websites. The study substantiated the pivotal role of social support in shaping customer engagement dynamics. Complementarily, Soodan and Rana (2020) contributed insights regarding the influential role of social factors in shaping adoption intentions towards electronic wallet technologies within the regional context of Punjab, India.

Hypothesis 1. Social support positively influences an individual's intent to use the Worldcoin wallet in Thailand.

Hypothesis 2. Social presence positively influences an individual's intent to use the Worldcoin wallet in Thailand.

2.2. Motivation factors

Motivation factors such as trust, perceived risk, reliability, time saving, and convenience play a significant role in influencing people's decisions and behaviors. Trust, a fundamental motivational factor, is the cornerstone of many human interactions and decision-making processes. When trust is present, individuals are more inclined to engage in positive behaviors and make certain choices. It consists of components such as credibility, integrity, and benevolence, reflecting the perceived competence, honesty, and genuine care of the entity in question. Trust is pivotal in personal relationships, business transactions, and various other contexts, significantly impacting motivation and decision-making (Tams et al., 2018; Xie et al., 2023). Perceived risk refers to how individuals assess potential negative consequences or uncertainties associated with a particular decision. Different types of perceived risk, including financial, psychological, and physical risk, can act as deterrents or motivators for specific actions. Reducing perceived risk or providing assurances can be a powerful motivator, as people are more likely to take action when they perceive lower risk linked to a decision (Amirtha et al., 2020; Alrawad et al., 2023; Poon and Tung, 2023). Convenience and time-saving factors are crucial in determining whether consumers choose to deepen their engagement with a service provider or discontinue the relationship. Advances in internet and technology have significantly enhanced convenience across various aspects of consumer life. Particularly with the advent of mobile technology, consumers increasingly prioritize experiences that save time and reduce effort, valuing the convenience that these technological solutions offer (Ishak et al., 2023). In addition, reliability plays a crucial role in various

contexts, such as consumer choices, business relationships, and technology adoption. It encompasses factors like consistency, dependability, and quality. Reliability motivates individuals by minimizing uncertainty and the potential for negative surprises, fostering trust and positive experiences. When entities consistently perform as expected and deliver on their promises, they can motivate customer satisfaction, loyalty, and continued engagement (Al-Kuwaiti et al., 2009; Zhao et al., 2022).

Nguyen and Huynh (2018) conducted an empirical investigation into the determinants of e-payment adoption, specifically focusing on the roles of perceived risk and trust. Their findings underscored the crucial significance of perceived risk and trust within the structural framework of e-payment adoption. Razif et al. (2020) conducted research aimed at identifying factors influencing the acceptance of e-wallet platforms. Their study revealed several significant factors, including behavioral intention, perceived privacy risk, trust, perceived overall risk, and perceived performance risk, all of which exhibited noteworthy relationships with e-wallet platform acceptance. Hossain et al. (2022) delved into the influence of trust on the intention to utilize e-wallet services. Their study corroborated a positive and statistically significant association between trust and the intention to use e-wallet services.

Hypothesis 3. Trust positively influences an individual's intent to use the Worldcoin wallet in Thailand.

Hypothesis 4. Perceived risk positively influences an individual's intent to use the Worldcoin wallet in Thailand.

Hypothesis 5. Service reliability positively influences an individual's intent to use the Worldcoin wallet in Thailand.

Hypothesis 6. Time saving positively influences an individual's intent to use the Worldcoin wallet in Thailand.

Hypothesis 7. Convenience positively influences an individual's intent to use the Worldcoin wallet in Thailand.

2.3. *Technological factors*

Technological factors, such as attitudes, perceived usefulness, and perceived ease of use toward using technology, are pivotal in shaping the adoption and utilization of new technologies. Attitudes toward using technology capture the user's overall feelings and beliefs regarding the technology. Positive attitudes are closely linked to technology adoption and engagement. When users find the technology enjoyable, relevant to their needs, or compatible with their existing habits, their attitudes become more favorable. Perceived usefulness revolves around the user's belief in the technology's ability to enhance performance and bring value. When individuals see a technology as beneficial, they are more likely to embrace it, particularly if it improves efficiency, effectiveness, or solves specific problems, and aligns with their needs. Perceived ease of use, on the other hand, focuses on the user's perception of how user-friendly and convenient the technology is to operate. A technology that is perceived as easy to use is more likely to be adopted. Features like intuitive design, accessible training, clear feedback mechanisms, and consistent functionality contribute to this perception of ease (Al-Adwan et al., 2023; Marikyan and Papagiannidis, 2023; Rois et al., 2023).

In the study conducted by Limna et al. (2023), it was elucidated that online consumers' perceptions of the usefulness and ease of use of Facebook Live streaming markedly influence their purchase intentions. Specifically, the convenience associated with leaving comments and receiving prompt responses from hosts emerged as a critical element in facilitating a seamless and engaging shopping experience, thereby exerting a substantial impact on consumer decision-making processes. Additionally, the presence of informative content was identified as a significant driver of favorable customer attitudes and behaviors. Moreover, Hossain et al. (2022) corroborated the positive and statistically significant relationship between perceived ease of use, perceived usefulness, and the intention to utilize e-wallet services. Similarly, Senali et al. (2023) revealed that the intention to adopt e-wallets is significantly shaped by perceptions of their usefulness and ease of use.

Hypothesis 8. Perceived usefulness positively influences an individual's intent to use the Worldcoin wallet in Thailand.

Hypothesis 9. Perceived ease of use positively influences an individual's intent to use the Worldcoin wallet in Thailand.

2.4. *Economic factors*

Economic factors are integral components of the economic landscape, significantly shaping both consumer behavior and business strategies. Income, as a central economic factor, serves as a fundamental determinant of an individual or household's purchasing power, influencing the types and quality of goods and services they can afford. It also plays a role in market segmentation, helping businesses tailor their offerings to specific income groups, and has broader implications for savings, investment, and overall economic growth within a society (Carwell et al., 2013; The Investopedia Team, 2023). Furthermore, consumption represents the actions of individuals or households as they utilize their income to meet their needs and desires. Consumer confidence, levels of debt, cultural influences, and economic cycles all influence consumption patterns. For businesses, understanding these factors is essential for planning and adapting to seasonal and cyclical variations in consumer behavior (Hampson et al., 2021; Maverick et al., 2022). In addition, promotion plays a key role in influencing consumer choices and market dynamics. Discounts are a promotional strategy with a direct connection to economic factors, and they play a pivotal role in influencing consumer behavior and economic dynamics. Economic health and consumer sentiment affect the effectiveness of promotional strategies. Businesses must adjust their promotional budgets and incentives in response to economic fluctuations and consumer perceptions. During times of economic uncertainty, businesses often tailor their promotions to emphasize value and savings (Das et al., 2021; Dwivedi et al., 2021; Siripipatthanakul et al., 2022).

Didied et al. (2022) unveiled that the appeal of promotions has a positive and significant impact on the interest in using e-wallets. Putri et al. (2022) indicated that cashback promotions have a positive and significant effect on the intention to use. These cashback promotions, offered by various e-wallet platforms, are seen as capable of enhancing user satisfaction, thereby motivating users to continue using the e-wallet in the future. Additionally, these promotions serve as a means to inform the market about a new product, introduce innovative usage methods, communicate price adjustments, explain product functionalities, detail the services provided by the company, and rectify misconceptions. Rambe and Bangsawan (2023) confirmed the impact of perceived benefits, convenience, discounts, safety, and risks on the intentions to use the Indonesian digital wallet application.

Hypothesis 10. Consumption positively influences an individual's intent to use the Worldcoin wallet in Thailand.

Hypothesis 11. Discount positively influences an individual's intent to use the Worldcoin wallet in Thailand.

Hypothesis 12. Promotion positively influences an individual's intent to use the Worldcoin wallet in Thailand.

3. Methodology

This research employed a quantitative methodology for data collection, which involved the deployment of a rigorously crafted online questionnaire. The development of this questionnaire was preceded by comprehensive literature reviews, encompassing an array of academic journals, scholarly articles, books, and authoritative digital platforms. This review focused extensively on FinTech and digital wallet usage in the digital economy. Drawing from the insights garnered from these

scholarly sources, a set of preliminary questions was formulated. To ensure the validity and relevance of the questionnaire, a pilot test was conducted involving an evaluation by five domain experts. Their review was structured around assessing the Item Objective Congruence (IOC) index of the questionnaire, with the criteria that an acceptable index value must be at least 0.50. Remarkably, this process resulted in IOC values ranging between 0.80 and 1.00, affirming the high quality and suitability of the questionnaire in terms of relevance, clarity, and linguistic precision. The final version of the questionnaire, in English with Thai subtitles, was disseminated through several online platforms, notably LINE, WhatsApp, and Facebook Messenger, to ensure wide accessibility and participation. The questionnaire was disseminated over a period of approximately eight weeks, from January to February 2024. This timeframe was selected to allow adequate time for a large number of participants to respond while keeping the data collection phase concise enough to maintain momentum and relevance. Ethical considerations were paramount; hence, participants were explicitly requested to provide consent for the use of their responses in scholarly publication. Those unwilling to provide consent were provided with the alternative to opt out of the survey seamlessly. These measurement development processes in this research were meticulously structured to ensure that the quantitative data collected were both reliable and valid, directly reflecting the objectives of the study on the factors influencing the adoption of the Worldcoin wallet in Thailand.

The study's sample consisted of Thai individuals aged 18 and above who had experience using digital wallets. Specific inclusion and exclusion criteria were established to ensure a representative sample and align closely with the research objectives. Participants were required to be Thai residents, aged 18 or older, with prior experience using digital wallets, and proficient in either Thai or English. These requirements were set to guarantee that respondents were legally capable of providing informed consent, had relevant experience with the subject matter, and could understand the survey questions. Excluded from the study were individuals under 18, non-residents of Thailand, those without any digital wallet experience, and individuals not proficient in Thai or English. This exclusion helped to focus the study on the intended population and avoid data integrity issues from language misunderstandings or irrelevant consumer experiences. These carefully defined criteria ensured that the collected data were pertinent and could reliably inform on the dynamics of digital wallet adoption within the Thai context.

To estimate the sample size for their study, the researchers utilized Yamane's formula, a method that calculates the required sample size based on the given confidence level, margin of error, and population size. The parameters were set as follows: a significance level (α) of 0.05, indicating a 5 % chance of a Type I error where the null hypothesis might be incorrectly rejected; a confidence level of 95 %, standard in social science research, which suggests that the sample accurately reflects the population 95 % of the time; and a margin of error of ± 5 %, which determines how much the answers from the sample can deviate from those of the total population. Based on these parameters, Yamane's formula indicated a minimum sample size of 384 participants. However, to enhance the study's statistical robustness and address potential anomalies in data distribution, the sample size was significantly increased to 1430 participants. This expansion greatly exceeds the calculated minimum, aiming to ensure a more reliable and accurate dataset by reducing sampling error and increasing the study's power to detect smaller effects. This careful adjustment in sample size strengthens the overall validity of the research findings, providing a robust basis for analyzing the factors influencing digital wallet adoption.

This research utilized a convenience sampling technique to select participants. Such sampling is typical in exploratory studies for its accessibility. Convenience sampling was used likely due to the practical ease of accessing a specific subset of the population—individuals aged 18 and above who had experience using digital wallets. This sampling method allows for easier and quicker data collection from a readily accessible subset of the population that meets the study criteria, although it may introduce bias as it does not randomize the selection of participants. To counteract the potential biases inherent in non-random sampling, several measures were implemented to maintain data integrity. First, respondent anonymity was preserved to reduce social desirability bias, thus fostering more honest feedback. Ethical transparency was upheld by obtaining participant consent and providing an option to opt out, which promoted genuine participation. The substantial increase in sample size, well beyond the minimum requirement, enhanced the study's statistical reliability. Additionally, the questionnaire underwent rigorous testing and validation by domain experts for its relevance and clarity, ensuring the collection of dependable data. These strategies were crucial for maintaining the scientific rigor of the study, enabling more trustworthy conclusions despite the limitations associated with convenience sampling.

The research explored factors that affect an individual's propensity to adopt the Worldcoin wallet within the Thai context. The selection of independent variables, including social support, social presence, trust, perceived risk, service reliability, perceived usefulness, ease of use, time-saving advantages, convenience, consumer behavior patterns, discounts, and promotional incentives, was conducted with meticulous attention to their pertinent roles and potential impacts on digital wallet adoption rates. The methodological approach to data analysis was layered, beginning with the employment of descriptive statistical techniques to lay the groundwork for an initial understanding of the collected data. This was followed by a more detailed examination using binary logistic regression to analyze the potential factors influencing the adoption of the Worldcoin wallet in Thailand. Binary logistic regression is appropriate when the dependent variable is binary (adopting vs. not adopting the Worldcoin wallet). Each independent variable, such as social support, trust, perceived risk, etc., is analyzed to determine its impact on the likelihood of wallet adoption. To convert variables into binary code, Binary Encoding of Categorical Variables was used. Categorical variables, such as yes/no responses, were converted into binary format, with 0 representing "no" and 1 representing "yes." In binary logistic regression, the estimation typically involves calculating the odds ratios for each independent variable. These ratios measure the impact of a one-unit increase or the presence (versus absence) of a variable on the likelihood of adopting the Worldcoin wallet. The coefficients from the regression represent the log-odds of the outcome, and exponentiating these coefficients yields the odds ratios, which explain the magnitude and direction of an effect. This analytical process was designed to elicit significant findings, thereby enriching the academic discourse and enhancing our comprehension of the variables that drive the adoption of Worldcoin in the Thai landscape.

4. Results

A comprehensive dataset was collected from a cohort of 1430 Thai participants. These participants contributed to the study by completing online questionnaires in a conscientious manner. Following the collection phase, the data underwent a systematic coding process followed by rigorous analytical procedures. These steps were meticulously conducted to ensure the research objectives were met effectively and that the analysis aligned with the established research framework.

As delineated in Table 1, the gender distribution among the study's participants is nearly balanced, with females constituting 50.4 % (n = 721) and males comprising 49.6 % (n = 709). The predominant age group is 26–30 years, representing 36.6 % of respondents, with subsequent age groups displaying a decremental percentage distribution. Educational attainment predominantly consists of individuals holding a Master's degree or higher (52 %), succeeded by Bachelor's degree holders (34.1 %), and individuals with a Diploma (13.9 %). The respondents' occupational backgrounds are varied, with the largest proportion being government employees (31.54 %), followed by private sector employees (28.67 %), entrepreneurs (24.82 %), freelancers (11.33 %), and students (3.64 %). In terms of income, the most

Table 1
General data characteristics of the respondents.

General Information		Frequency	Percentage
Gender	Female	721	50.4 %
	Male	709	49.6 %
Age	18–25 years old	189	13.2 %
	26–30 years old	523	36.6 %
	31–35 years old	288	20.1 %
	36–40 years old	245	17.2 %
	41 years old or over	185	12.9 %
Educational Level	Diploma	199	13.9 %
	Bachelor's degree	487	34.1 %
	Master's degree or higher	744	52.0 %
Occupation	Government employee	451	31.54 %
	Employee	410	28.67 %
	Entrepreneur	355	24.82 %
	Freelance	162	11.33 %
	Students	52	3.64 %
Monthly Income	15,000 THB or less	369	25.8 %
	15,001–30,000 THB	281	19.7 %
	30,001–45,000 THB	235	16.4 %
	45,001–60,000 THB	83	5.8 %
	60,001–75,000 THB	73	5.1 %
	75,001 THB or more	389	27.2 %
Monthly Saving	5000 THB or less	661	46.2 %
	5,001–10,000 THB	276	19.3 %
	10,001–15,000 THB	76	5.3 %
	15,001 THB or more	417	29.2 %
Digital Wallet	WeChat	993	69.4 %
	AIS Pay	339	23.7 %
	Line Pay	53	3.7 %
	True Money	37	2.6 %
	PromptPay	8	0.6 %
Frequency	Seldom	120	8.4 %
	Sometimes	92	6.4 %
	Usually	158	11.1 %
	Always	1060	74.1 %
Social Media Platforms	Facebook	849	59.4 %
	Instagram	460	32.1 %
	Line	68	4.8 %
	TikTok	32	2.2 %
	X (Twitter)	21	1.5 %
Total		1430	100 %

represented bracket earns above 75,001 THB (27.2 %), with remaining participants spread across diverse income levels. Savings trends show that the majority (46.2 %) report having 5,000 THB or less, with 29.2 % saving more than 15,001 THB. Preference for digital wallets indicates WeChat as the predominant choice (69.4 %), followed by AIS Pay (23.7 %), and Line Pay (3.7 %). Digital wallet usage frequency reveals that a substantial portion of respondents consistently utilize their digital wallets (74.1 %), while others report usual (11.1 %), occasional (6.4 %), or infrequent (8.4 %) use. Social media usage patterns depict Facebook as the most prevalent platform (59.4 %), trailed by Instagram (32.1 %), Line (4.8 %), and TikTok (2.2 %). This data provides critical insights into the demographic, educational, occupational, and digital engagement characteristics of the study's participants, offering a foundation for analyzing digital wallet adoption trends within the Thai context.

As illustrated in Table 2, the chi-square value of 461.808 exceeds the critical value at a significance level of 0.05, with 12 degrees of freedom taken into account. This finding indicates a statistically significant relationship between the dependent variable and all the independent variables incorporated in the model. Thus, it suggests that the collective impact of the independent variables holds substantive importance in influencing the outcome of the dependent variable.

As depicted in Table 3, the model, as indicated by an R-squared value of 0.382, explains approximately 38.2 % of the variance in the outcome. Additionally, the significance value of 0.05 suggests that the relationship between the independent variables and the dependent variable is statistically significant at the 5 % level.

As shown in Table 4, the classification results demonstrate that the model, inclusive of all potential independent variables, exhibited the ability to forecast Worldcoin wallet usage in Thailand with an accuracy rate of 74.0 % for cases, utilizing a cut-off value of 0.500 or 50 %.

The predictive regression equation of Model 1 using the coefficients from Table 5 can be described by the following equation:

$$P = \frac{1}{1 + e^{-z}} \quad \text{(Model 1)}$$

where P is an individual's intent to use the Worldcoin wallet in Thailand, and Z = − 7.431 + 1.877(social support) + 0.942(social presence) + 0.607(trust) − 0.511(perceived risk) + 1.366(service reliability) − 0.794 (time saving) + 0.590(perceived usefulness) − 0.629(perceived ease of use) − 1.326(consumption) − 0.690(discount) − 1.967(promotion).

The empirical analysis delineated in Table 5 systematically explicates the statistical relevance of each independent variable with respect to the propensity of individuals in Thailand to utilize the Worldcoin wallet. The regression analysis for the Worldcoin wallet in Thailand produced significant findings for several variables affecting adoption. Social support (H1), with a significance level of 0.000, substantially increases the likelihood of adoption, demonstrating its critical role in user decisions. Similarly, social presence (H2) also significantly enhances adoption intentions, with the same low p-value, underscoring its importance. Trust (H3) further supports adoption, with a p-value of 0.001, indicating a strong trust basis is essential for uptake. Conversely, perceived risk (H4), despite its negative correlation, significantly impacts user decisions (Sig. = 0.008), suggesting that risk perceptions are crucial to address in adoption strategies. Service reliability (H5) emerges as a robust predictor with a very low p-value, affirming its positive influence on adoption. Interestingly, time saving (H6), though negatively linked, is still a significant factor, indicating that the perceived time efficiency may not always align with adoption motivations. On the other hand, convenience (H7) did not significantly influence adoption (p-value of 0.348), suggesting that other factors might be more critical in the decision-making process. Perceived usefulness (H8) was found to be a positive influencer, with a p-value of 0.044, enhancing user intent to adopt. Although perceived ease of use (H9) shows a negative coefficient, it significantly affects adoption decisions (Sig. = 0.022), hinting at possible complexities in user interaction with the wallet. Moreover, consumption (H10) negatively influences intent, yet significantly so (Sig. = 0.000), pointing to an inverse relationship between consumption behaviors and wallet adoption. Discounts (H11) and promotions (H12), both with strong negative impacts (Sig. = 0.001 and 0.000 respectively), significantly deter adoption intentions, suggesting that these marketing strategies may need reconsideration or adjustment. These results provide a nuanced view of the factors that promote or hinder the adoption of the Worldcoin wallet in Thailand, highlighting the complex interplay of incentives and barriers within the digital wallet landscape.

The analysis discerns that variables such as social support, social presence, trust, perceived risk, service reliability, perceived usefulness,

Table 2
Omnibus test of the model's performance.

		Chi-square	df	Sig.
Step 1	Step	461.808	12	0.005
	Block	461.808	12	0.005
	Model	461.808	12	0.005

Table 3
The model summary.

Step	-2 log likelihood	Cox & Snell R square	Nagelkerke R square
1	1372.612[a]	0.276	0.382

[a] . Estimation terminated at iteration number 6 because parameter estimates changed by less than.001.

Table 4
Classification table for back-testing.

	Observed		Predicted		
			Worldcoin		Percentage correct
			No	Yes	
Step 1	Worldcoin	No	855	88	90.7 %
		Yes	284	203	41.7 %
	Overall percentage				74.0 %

Note: The cut-off value is .500.

perceived ease of use, time savings, consumption, discounts, and promotions significantly impinge upon the dependent variable: the inclination towards adopting Worldcoin technology. More precisely, an increment by one unit in social support is correlated with an augmentation in the likelihood of adopting Worldcoin by a factor of approximately 6.533. An analogous increase in social presence amplifies the odds of adopting the digital wallet by about 2.566 times. Furthermore, an elevation in trust towards the digital wallet significantly enhances the probability of its adoption by an estimated 1.804 times. Conversely, perceived risk is inversely associated with the adoption of Worldcoin, where a unit increase in perceived risk correlates with a reduction in the likelihood of Worldcoin adoption, decreasing the odds to 0.600. This reduction signifies a notable decline in adoption intent by 0.400 units. The reliability of the service profoundly influences the likelihood of adoption in a positive manner. There is an approximate 3.920-fold increase in the likelihood of adopting Worldcoin corresponding to each unit increase in perceived service reliability. In terms of usability, perceived usefulness bolsters the propensity for adoption, with each unit increase enhancing the intention to adopt Worldcoin by a factor of 1.804. Contrastingly, perceived ease of use demonstrates a negative correlation with Worldcoin adoption; an increase by one unit in this variable diminishes the likelihood of utilizing the Worldcoin wallet from 1 to 0.533, reflecting a decrement of 0.467. Furthermore, the factors of time savings, consumption, discounts, and promotions exhibit diverse negative impacts on the intention to adopt Worldcoin. Specifically, for each unit increment in time savings, there is a reduction in the adoption likelihood from 1 to 0.452, highlighting a decrease of 0.548. Similarly, an increment in consumption correlates with a decrease in adoption likelihood from 1 to 0.266, indicating a significant decline of 0.734. The influences of discounts and promotions follow suit, with unit increases resulting in respective decreases in adoption likelihood to 0.502 and 0.140, signifying declines of 0.498 and 0.860, respectively.

5. Discussion

The analysis explored the influence of various factors on the inclination to adopt Worldcoin technology, shedding light on the complexities of technology acceptance. The adoption of Worldcoin is influenced by several key predictors, each playing a distinct role in shaping user decisions. Social support and social presence both positively impact adoption, emphasizing the importance of community and peer influence in embracing new technologies. Trust is another critical factor, as higher trust in Worldcoin increases the likelihood of adoption by alleviating security and privacy concerns. Conversely, perceived risk negatively affects adoption, with higher risks such as security concerns or potential financial losses deterring users. Service reliability also significantly boosts adoption prospects; reliable and consistent service encourages users to adopt and continue using Worldcoin. Perceived usefulness positively correlates with adoption, indicating that users are more likely to adopt Worldcoin if they perceive it as beneficial and effective. Surprisingly, Perceived ease of use shows a negative correlation, suggesting that ease alone is insufficient to drive adoption without favorable perceptions of other factors. Lastly, time savings, consumption, discounts, and promotions have unexpectedly negative impacts on adoption, suggesting that these typically positive factors do not necessarily increase the likelihood of adopting new technology in this context. Addressing these dynamics is crucial for strategies aimed at increasing Worldcoin adoption, focusing on enhancing trust, reliability, and perceived usefulness, while managing perceived risks and ease of use.

Social support and social presence both positively affect individuals' likelihood to adopt Worldcoin, underscoring the importance of social factors in the decision-making process regarding new technologies. The study's findings align with those of Kulviwat et al. (2009), indicating that social influence and adoption attitude positively affect consumers' intentions to adopt an innovation. Specifically, the effect of social influence on adoption intention is entirely mediated by consumer attitude. Moreover, the relationship between social influence and adoption intention strengthens when an innovation is consumed publicly rather than privately. Similarly, trust towards the digital wallet plays a crucial role, with increased trust associated with a higher probability of adoption, highlighting the need for trustworthy digital services. Consistent with Khan and Abideen (2023), perceived trust moderates the relationship between perceived risk and usage behavior of digital wallets. Concerns over potential adverse outcomes may make customers hesitant to use the technology, highlighting the significance of perceived trust in the acceptance and usage of digital wallets. Consumers who trust in the reliability of the service provider are more likely to use the service and recommend it to others.

Conversely, perceived risk inversely impacts the willingness to adopt Worldcoin, indicating that higher perceived risks discourage adoption. This suggests that addressing and mitigating perceived risks could be essential for increasing technology uptake. Khan and Abideen (2023) found that perceived risk significantly mediates the relationship between behavioral intention and usage behavior of digital wallets. If an individual perceives a significant level of risk associated with using a

Table 5
Variables in the model.

		B	S.E.	Wald	df	Sig.	Exp(B)	Results
Step 1[a]	H1: Social support	1.877	0.272	47.720	1	0.000	6.533	Accepted
	H2: Social presence	0.942	0.134	35.661	1	0.000	2.566	Accepted
	H3: Trust	0.607	0.179	11.486	1	0.001	1.835	Accepted
	H4: Perceived risk	-0.511	0.192	7.092	1	0.008	0.600	Accepted
	H5: Service reliability	1.366	0.190	51.662	1	0.000	3.920	Accepted
	H6: Time saving	-0.794	0.229	11.981	1	0.001	0.452	Accepted
	H7: Convenience	0.207	0.221	0.882	1	0.348	1.231	Rejected
	H8: Perceived usefulness	0.590	0.292	4.071	1	0.044	1.804	Accepted
	H9: Perceived ease of use	-0.629	0.275	5.233	1	0.022	0.533	Accepted
	H10: Consumption	-1.326	0.227	34.209	1	0.000	0.266	Accepted
	H11: Discount	-0.690	0.203	11.507	1	0.001	0.502	Accepted
	H12: Promotion	-1.967	0.298	43.616	1	0.000	0.140	Accepted
	Constance	-7.431	1.003	54.843	1	0.000	0.001	Accepted

a. Variable(s) entered in step 1: Social support, social presence, trust, perceived risk, service reliability, time saving, convenience, perceived usefulness, perceived ease of use, consumption, discount, promotion

digital wallet, their behavioral intention to use the digital wallet decreases. An individual's actual usage behavior of a digital wallet is influenced by their level of perceived risk, even if they initially intend to use the digital wallet. Furthermore, service reliability also significantly influences the adoption likelihood, with greater reliability enhancing the willingness to adopt the wallet, emphasizing the critical role of dependable service in user acceptance. Aligned with Rachmawati et al. (2022), the reliability factors of trust, along with regulations and policies, greatly influenced the intention to use electronic government services. Wong and Mo (2019) also verified that when consumers perceive a service as honest and reliable, it significantly boosts their intention to use the service, due to their strong belief in it.

In terms of usability, perceived usefulness positively correlates with the intention to adopt Worldcoin, indicating that recognizing the benefits and effectiveness of the digital wallet is pivotal. Consistent with the findings of Tian et al. (2023), perceived usefulness is positively associated with behavioral intention to use mobile payment services. However, in this study, perceived ease of use exhibits a surprising negative correlation, suggesting that other factors might overshadow the simplicity of using the wallet in the adoption decision process. In accordance with Gunawan et al. (2019), perceived ease of use negatively and insignificantly affects consumer attitudes, while perceived usefulness positively and significantly influences consumer attitudes. Additionally, the ease of using the wallet has an insignificant effect on whether people decide to purchase with it, similar to the limited impact of perceived usefulness. Importantly, if consumers have a positive attitude towards the wallet, they are much more likely to actually use it.

Time savings, consumption, discounts, and promotions were found to have diverse negative impacts on the intention to adopt Worldcoin. These findings suggest that while these factors are typically considered benefits, they may not necessarily increase the likelihood of new technology adoption in this context. Consistent with Rashaduzzaman (2020), time savings were not identified as significantly influencing the development of online apparel purchase intentions. Chen and Weber (2010) found that while discounts affect bidding behavior and market outcomes in a second-price, sealed-bid auction, they do not alter bidders' intentions to participate in such auctions. Nguyen and Nguyen (2022) revealed that promotional incentives did not directly impact the intention to use mobile wallets. Instead, this relationship was mediated by social influence and compatibility factors.

6. Conclusion

The empirical analysis provided in the research comprehensively evaluates the impact of various factors on the inclination of Thai individuals to adopt the Worldcoin wallet. The study highlights that social support, social presence, and trust markedly enhance the likelihood of embracing this digital wallet technology. These findings underscore the importance of building a strong community and trust around the Worldcoin wallet to foster adoption. Conversely, perceived risk negatively impacts the willingness to adopt Worldcoin, indicating that addressing and mitigating users' security and risk concerns should be a priority for the digital wallet's developers and marketers. Interestingly, while service reliability and perceived usefulness positively influence the adoption decision, perceived ease of use does not align in a similar manner. This suggests that while users value the functionality and reliability of the digital wallet, there might be concerns or misunderstandings regarding its ease of use that could hinder adoption. Moreover, the findings reveal that economic incentives such as discounts and promotions, alongside perceived time savings and consumption levels, do not necessarily promote a higher adoption rate. This could indicate that while financial incentives are attractive, they are not the primary drivers for adopting new financial technologies like Worldcoin. The study underscores the complexity of factors influencing digital wallet adoption in Thailand. For Worldcoin or similar technologies to gain wider acceptance, strategies should not only focus on enhancing the service's reliability and usefulness but also on building trust, improving ease of use, and addressing potential users' security concerns.

This research contributes significantly to both scholarly understanding and practical strategies in digital finance, particularly regarding the adoption dynamics of digital wallets in emerging markets like Thailand. Academically, it enriches the literature by introducing empirical data on lesser-studied variables like social presence and service reliability in digital wallet adoption, offering a fresh perspective that enhances our global understanding of financial technology trends. This study also provides methodological insights, setting a precedent for future research in technology adoption with its comprehensive analytical approach. The study enhances the existing theoretical framework on digital wallet adoption by introducing how social factors like community influence and trust play a critical role in technology acceptance, particularly in the context of emerging markets like Thailand. It extends previous models by demonstrating the impact of perceived risks and the relative unimportance of economic incentives such as discounts and promotions in decision-making processes. This suggests a more complex interplay of factors that influence technology adoption than previously theorized, emphasizing the need for a tailored approach in different cultural and economic contexts. For practitioners, the findings provide several practical recommendations. In terms of social factors, it's vital for companies to build strong community connections and establish trust around their products. Initiating engaging, credible social media campaigns and leveraging influencer partnerships can significantly boost social influence and support. Regarding motivational factors, companies should tackle the perceived risks linked to digital wallet usage, potentially through enhanced security features and clear communication about data privacy and protection. In the realm of technological factors, emphasizing the digital wallet's ease of use and overall usefulness is crucial. Providers should ensure their platforms are user-friendly and offer distinctive features that address local preferences and needs. Concerning economic factors, while discounts and promotions may not substantially drive adoption, they can still be strategically employed in wider campaigns that bolster trust and utility. By focusing on these key areas, digital wallet providers can better cater to the needs of potential users and, consequently, increase adoption rates. For policymakers, this study underlines the importance of creating a regulatory environment that supports secure, reliable, and user-friendly digital finance solutions. By fostering a digital ecosystem that prioritizes user education and robust security standards, stakeholders can facilitate a smoother transition towards comprehensive digital financial inclusion. Therefore, the implications of this research extend beyond academia, offering valuable insights for businesses, regulators, and developers aiming to accelerate digital wallet adoption in similar socio-economic landscapes.

6.1. Limitations and recommendations for future studies

This research, focused on the adoption of Worldcoin digital wallets among Thai adults, provides significant insights despite its limitations. The use of convenience sampling and the restriction to a specific age group within Thailand may limit the study's broader applicability. These constraints highlight the need for future research to utilize more diverse sampling methods and to broaden both the geographic and demographic scope to enhance generalizability. Additionally, the reliance on cross-sectional and self-reported data curtails the ability to establish causality and may introduce bias. This underscores the value of longitudinal studies and the integration of objective usage data for a more accurate and comprehensive analysis. In this study, nonresponse bias testing was not conducted, a limitation that is recognized within the research methodology. Such testing is crucial for validating the representativeness of the survey respondents relative to the target population. Without this testing, there is a risk that the conclusions may not fully represent the views of the entire population targeted by the study. Future research should include nonresponse bias testing in its design,

possibly employing techniques such as comparing early and late respondents or conducting follow-ups with a sample of nonrespondents. Furthermore, this study did not utilize respondents' profiles as control or moderating variables, which limits understanding of how demographic factors could influence the outcomes. Omitting these variables may restrict the generalizability of the findings across different demographic groups, as factors such as age, gender, and education level often impact behavior and preferences significantly. For future research, it is recommended to incorporate these demographic profiles to deepen the analysis and enhance the applicability of the results. Including such variables could provide clearer insights into targeted strategies for digital wallet adoption and ensure that findings are more representative of the broader population. Implementing these measures will help ensure that the findings are robust and representative of the entire population of interest. Future studies are encouraged to address these gaps, potentially offering a deeper, more nuanced understanding of digital wallet adoption dynamics. This could aid stakeholders in the FinTech sector in developing strategies that are more effective in driving the uptake of digital wallet technologies, catering to a broader spectrum of user needs and preferences for enhanced engagement and adoption.

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Ethical statement

This research has undergone ethical review and approval by the Ethics Review Board of Rangsit University. The approval number is COA.No. RSUERB2023-109.

CRediT authorship contribution statement

Tanpat Kraiwanit: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Pongsakorn Limna:** Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Peerapat Wattanasin:** Writing – review & editing, Writing – original draft, Visualization, Software, Resources, Investigation, Formal analysis, Conceptualization.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors used ChatGPT to check for spelling and grammar errors. After using this tool, the authors reviewed and edited the content as needed and take(s) full responsibility for the publication's content.

Declaration of Competing Interest

The authors declare no conflict of interest.

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