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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; Torpey, 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 (Apsynth, 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; Rosli 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 (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.

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 %
Social Media Platforms	Always	1060	74.1 %
	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

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

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:

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

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 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
	Worldcoin				
	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 0.400 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

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	0.158	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

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

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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