

Satuwakaf Indonesia App in the Eye of Indonesian Youth: Comparing Millennials and Gen Z Preferences

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ABSTRACT

Keywords:

Satuwakaf Indonesia App; Digital Waqf; Millennial; Gen Z; Altruism;

Background: Indonesia's demographic bonus provides an opportunity to expand digital waqf participation among Millennials and Generation Z through the Satuwakaf Indonesia application. However, limited research has examined the behavioral and technology acceptance factors influencing youth participation in digital waqf, particularly comparing these two generational cohorts.

Research Gap: Studies specifically examining the Satuwakaf Indonesia application remain scarce because it represents a relatively recent innovation. Existing studies have largely investigated digital waqf adoption in general without comparing Millennial and Generation Z preferences, despite their distinct social, economic, and technological characteristics. Previous research has predominantly adopted either behavioral or technology adoption perspectives in isolation.

Novelty: This study integrates the Theory of Planned Behavior, the Extended Technology Acceptance Model, and altruism into a unified framework to explain digital waqf adoption. It provides one of the earliest empirical investigations of the Satuwakaf Indonesia application as Indonesia's national digital waqf platform and compares Millennial and Generation Z cohorts using Multi-Group Analysis.

Method: A quantitative approach within a sequential explanatory mixed-method design was employed. Data from 428 respondents were analyzed using Partial Least Squares Structural Equation Modeling, Multi-Group Analysis, and robustness testing.

Results: Attitude, subjective norm, perceived behavioral control, perceived ease of use, perceived usefulness, outcome satisfaction, expectation, and altruism significantly influenced digital waqf intention, whereas process satisfaction did not significantly affect expectation. Altruism also strengthened the relationships between TPB constructs and behavioral intention. Multi-group analysis indicated that the structural model was generally consistent across Millennials and Generation Z, with a significant difference only in the relationship between outcome satisfaction and expectation.

Conclusion: Integrating TPB, ETAM, and altruism provides a comprehensive framework for explaining digital waqf adoption and offers practical guidance for improving digital waqf platforms and increasing youth participation. The Indonesian Waqf Board should prioritize enhancing user experience, transparency of waqf fund management, and altruism-based marketing strategies.

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INTRODUCTION

Indonesia is entering a demographic dividend era characterized by the dominance of the Millennial and Generation Z cohorts as the country's largest productive-age population. Statistics Indonesia projects that the demographic dividend will reach its peak between 2030 and 2045, when approximately 69.3% of the population will be of working age, with the majority belonging to these two generations (Bappenas, 2019; BPS, 2022). This demographic transition presents a significant opportunity to stimulate national economic growth. However, previous studies have emphasized that a demographic dividend does not automatically translate into economic development. Instead, its success depends on the quality of human capital, labor productivity, technological adaptability, and public policies capable of addressing the characteristics and needs of the productive-age population (Aini et al., 2025; Bloom et al., 2003; Muhaemin, 2021; Sitanggang et al., 2025; Sulistiawati, 2021). Conversely, if not managed effectively, the demographic dividend may exacerbate unemployment, widen economic inequality, and intensify social challenges among younger generations (Bloom et al., 2003).

Tabel 1. Composition of the Indonesian Population by Generation in 2025

Generation	Year of Birth	Age	Population (thousands of people)	Presentation
Gen Alpha	2013–2025	0–12	57.917,80	20,36%
Gen Z	1997–2012	13–28	71.074,10	24,99%
Milenial	1981–1996	29–44	69.097,90	24,29%
Gen X	1965–1980	45–60	54.876,80	19,29%
Baby Boomers+	≤1964	≥61	31.472,30	11,07%
Total			284.438,90	100%

Sumber: (BPS, 2025)

As presented in Table 1, the Millennial and Generation Z cohorts collectively account for nearly half of Indonesia's population and constitute the largest share of the country's productive-age workforce. Their demographic dominance positions these two generations as key drivers in determining the successful realization of Indonesia's demographic dividend and the achievement of the Golden Indonesia 2045 vision. Nevertheless, young people continue to face substantial economic challenges. The open unemployment rates among individuals aged 15–19 and 20–24 remain the highest compared with other age groups. These challenges are further compounded by rising living costs, intensifying labor market competition, and increasing economic uncertainty, which have contributed to the emergence of economic anxiety among younger generations (Arnett, 2015; BPS, 2025; De Witte, 2005).

The characteristics of the Millennial and Generation Z cohorts also differ substantially from those of previous generations, as both have grown up in environments profoundly shaped by rapid advances in digital technology. Millennials experienced the transition from the conventional era to the digital age, whereas Generation Z was born into a world where the Internet had already become an integral part of everyday life from an early age (Dimock, 2019; Francis & Hoefel, 2018; Prensky, 2001). This technological transformation has resulted in both generations becoming the largest Internet user groups in Indonesia, reflecting the country's high level of Internet penetration (APJII, 2025). Consequently, digitalization has reshaped economic behavior through the widespread adoption of digital financial services, such as mobile banking, digital wallets, and the Quick Response Code Indonesian Standard (QRIS), which offer greater convenience, efficiency, and enhanced transaction experiences compared with conventional financial systems (Bank Indonesia, 2025; Davis, 1989a). Furthermore, the rapid growth of social commerce and community-based digital platforms indicates that the economic behavior of younger generations is increasingly driven by digital experience, perceived ease of use, and social connectedness within digital ecosystems (Hajli, 2015).

This digital transformation has also reshaped philanthropic practices through the emergence of digital philanthropy, which refers to the mobilization, management, and distribution of charitable funds through digital technologies (Belleflamme et al., 2015; McDougale & Lam, 2014; Saxton & Wang, 2014). In the context of Muslim societies, digitalization has expanded access to Islamic social finance instruments, including zakat, infaq, sadaqah, and waqf, through various digital payment platforms, mobile applications, the Quick Response Code Indonesian Standard (QRIS), and Sharia-compliant crowdfunding platforms (Kasri & Chaerunnisa, 2022a). Previous studies have demonstrated that younger generations are more receptive to technology-enabled philanthropic activities because they

perceive them as more convenient, transparent, and compatible with their digitally oriented lifestyles (Akbar et al., 2025).

Among various Islamic social finance instruments, waqf possesses a distinctive characteristic by emphasizing the sustainability of benefits, enabling it to support long-term development in education, healthcare, economic empowerment, and social welfare (Ascarya, 2022; Mohsin, 2019; Shaikh, 2017). Although Indonesia has enormous potential for cash waqf collection, its actual realization remains substantially below its estimated potential (Badan Wakaf Indonesia, 2021). This gap suggests that the primary challenge in advancing waqf in Indonesia no longer lies in its normative or religious legitimacy, but rather in increasing public participation through innovative approaches capable of engaging the productive-age population more effectively (Kasri & Chaerunnisa, 2022a).

As part of the modernization of Indonesia's national waqf ecosystem, the Indonesian Waqf Board (Badan Wakaf Indonesia, BWI), in collaboration with Bank Indonesia, launched the Satuwakaf Indonesia application as an integrated digital platform designed to facilitate the nationwide collection and management of waqf funds (Badan Wakaf Indonesia, 2023). The platform is expected to enhance the accessibility, transparency, and convenience of waqf transactions through multiple digital payment channels. However, the successful implementation of such a platform depends not only on its technological sophistication but also on its ability to accommodate users' preferences, expectations, and experiences, particularly those of the Millennial and Generation Z cohorts, who constitute the largest segment of digital technology users (Venkatesh et al., 2012). In the context of digital waqf, individuals' decisions to adopt a digital platform are influenced not only by perceived ease of use and perceived usefulness, but also by their user experience, satisfaction with both the waqf process and its outcomes, and the underlying prosocial motivations that drive philanthropic behavior (Bekkers & Wiepking, 2011; Chamid & Olanunmi, 2025; Davis, 1989a; Kasri & Chaerunnisa, 2022a; Wixom & Todd, 2005).

Despite the growing body of literature on digital waqf, several research gaps remain. First, studies specifically examining the Satuwakaf Indonesia application as Indonesia's national digital waqf platform remain scarce, primarily because it represents a relatively recent innovation. Second, existing studies have largely investigated digital waqf adoption in general without comparing the preferences of the Millennial and Generation Z cohorts, despite their distinct social, economic, and technological characteristics (Francis & Hoefel, 2018). Third, previous research has predominantly adopted either behavioral or technology adoption perspectives in isolation. Consequently, limited attention has been given to integrating the Theory of Planned Behavior (TPB), the Extended Technology Acceptance Model (ETAM), and altruism within a single conceptual framework to provide a more comprehensive explanation of digital waqf adoption (Ajzen, 1991; Bekkers & Wiepking, 2011; Davis, 1989b; Wixom & Todd, 2005).

Building upon these research gaps, this study offers three primary contributions. First, it investigates the Satuwakaf Indonesia application, a relatively new digital waqf platform that has received limited attention in the existing literature. Second, it compares the digital waqf preferences of the Millennial and Generation Z cohorts using Partial Least Squares Structural Equation Modeling–Multi-Group Analysis (PLS-SEM-MGA), thereby providing empirical evidence on generational differences in digital waqf adoption. Third, it integrates the Theory of Planned Behavior (TPB), the Extended Technology Acceptance Model (ETAM), and altruism into a unified conceptual framework to provide a more comprehensive understanding of digital waqf adoption. Accordingly, this study aims to examine the behavioral and technology acceptance factors influencing Millennials' and Generation Z's intentions to use the Satuwakaf Indonesia application for digital waqf and to compare their adoption preferences in order to provide strategic insights for developing a digital waqf ecosystem that is more responsive to the characteristics of Indonesia's younger generations.

Theory of Planned Behavior and Digital Waqf Intention

The Theory of Planned Behavior (TPB) posits that an individual's intention to perform a particular behavior is determined by three primary constructs: attitude, subjective norm, and perceived behavioral control (Ajzen, 1991). In the context of digital waqf, individuals are more likely to adopt a digital waqf platform when they hold favorable attitudes toward digital waqf, perceive social support from significant others, and believe they possess the necessary resources and capabilities to perform waqf through the application. Previous studies have consistently demonstrated that these three TPB constructs positively

influence both waqf intention and the adoption of digital Islamic social finance instruments (Hiyanti et al., 2020; Kasri & Chaerunnisa, 2022a). Based on these theoretical and empirical arguments, the following hypotheses are proposed:

- H1: Attitude positively influences the intention to perform digital waqf through Satuwakaf Indonesia.
- H2: Subjective norm positively influences the intention to perform digital waqf through Satuwakaf Indonesia.
- H3: Perceived behavioral control positively influences the intention to perform digital waqf through Satuwakaf Indonesia.

Extended Technology Acceptance Model and User Expectation

Beyond behavioral factors, individuals' decisions to adopt a digital waqf platform are also influenced by their perceptions of the underlying technology. The Extended Technology Acceptance Model (ETAM) extends the Technology Acceptance Model (TAM) by incorporating users' post-adoption experiences through process satisfaction and outcome satisfaction, thereby providing a more comprehensive explanation of how user experiences shape expectations toward an information system (Bhattacharjee, 2001; Davis, 1989b; Wixom & Todd, 2005). In the context of digital waqf, perceived ease of use is expected to enhance both perceived usefulness and users' expectations regarding the quality of the platform. Furthermore, satisfaction with the transaction process as well as satisfaction with the social outcomes generated by waqf are expected to strengthen users' expectations and encourage their continued intention to use the Satuwakaf Indonesia application. Based on these theoretical and empirical arguments, the following hypotheses are proposed:

- H4: Perceived ease of use positively influences perceived usefulness.
- H5: Perceived ease of use positively influences expectation toward Satuwakaf Indonesia.
- H6: Perceived usefulness positively influences expectation toward Satuwakaf Indonesia.
- H7: Process satisfaction positively influences expectation toward Satuwakaf Indonesia.
- H8: Outcome satisfaction positively influences expectation toward Satuwakaf Indonesia.
- H9: Expectation positively influences the intention to perform digital waqf through Satuwakaf Indonesia.

Altruism and Digital Waqf Intention

Unlike the adoption of commercial technologies, the decision to adopt digital waqf is influenced not only by the perceived benefits of technology but also by individuals' social and spiritual motivations. Altruism refers to an individual's willingness to help others without expecting direct personal rewards (Bekkers & Wiepking, 2011). Within the context of Islamic philanthropy, altruism is regarded as an intrinsic motivation that encourages participation in zakat, infaq, sadaqah, and waqf (Mujahidah & Rusydiana, 2023a; Nuryitmawan, 2022). Therefore, this study proposes that altruism not only has a direct positive effect on digital waqf intention but also strengthens the relationships between the core constructs of the Theory of Planned Behavior (TPB), namely attitude, subjective norm, and perceived behavioral control, and individuals' intentions to perform digital waqf.

In the context of Islamic philanthropy, altruism extends beyond the general notion of helping others without expecting personal rewards. Islamic teachings conceptualize altruistic behavior through values such as *ithar* (selflessness), which emphasizes prioritizing the needs of others over one's own interests, and *ihsan* (excellence and sincerity in doing good), which encourages Muslims to perform charitable acts solely for the pleasure of Allah. Although these concepts are rooted in Islamic ethics, they are operationalized in this study through behavioral indicators adapted from Batson (2011), including helping others, sharing without expecting rewards, empathy, social responsibility, and generosity. These indicators capture the practical manifestation of *ithar* and *ihsan* in everyday charitable behavior, making them conceptually relevant for explaining participation in digital waqf among Muslim youth.

- H10: Altruism positively influences the intention to perform digital waqf through Satuwakaf Indonesia.
- H11: Altruism positively moderates the relationship between attitude and digital waqf intention.

H12: Altruism positively moderates the relationship between subjective norm and digital waqf intention.

H13: Altruism positively moderates the relationship between perceived behavioral control and digital waqf intention.

Generational Difference

The Millennial and Generation Z cohorts exhibit distinct characteristics in terms of technological experience, economic orientation, and digital behavior (Dimock, 2019; Francis & Hoefel, 2018). These differences may lead to variations in their preferences and decision-making processes regarding the adoption of digital waqf. Accordingly, this study employs Partial Least Squares Structural Equation Modeling–Multi-Group Analysis (PLS-SEM-MGA) to examine whether the structural relationships among the proposed constructs differ significantly between the two generational cohorts.

H14: The structural relationships among TPB, ETAM, altruism, and digital waqf intention differ significantly between Millennials and Generation Z.

METHOD

Research Design

This study represents the quantitative phase of a sequential explanatory mixed-methods design, aiming to examine the relationships among the proposed constructs while comparing the digital waqf adoption mechanisms of the Millennial and Generation Z cohorts through the SatuWakaf Indonesia application. The proposed research model integrates the Theory of Planned Behavior (TPB), the Extended Technology Acceptance Model (ETAM), and altruism to explain individuals' intentions to adopt digital waqf. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), complemented by Partial Least Squares Multi-Group Analysis (PLS-SEM-MGA) to examine whether the structural relationships among the proposed constructs differ significantly between the two generational cohorts.

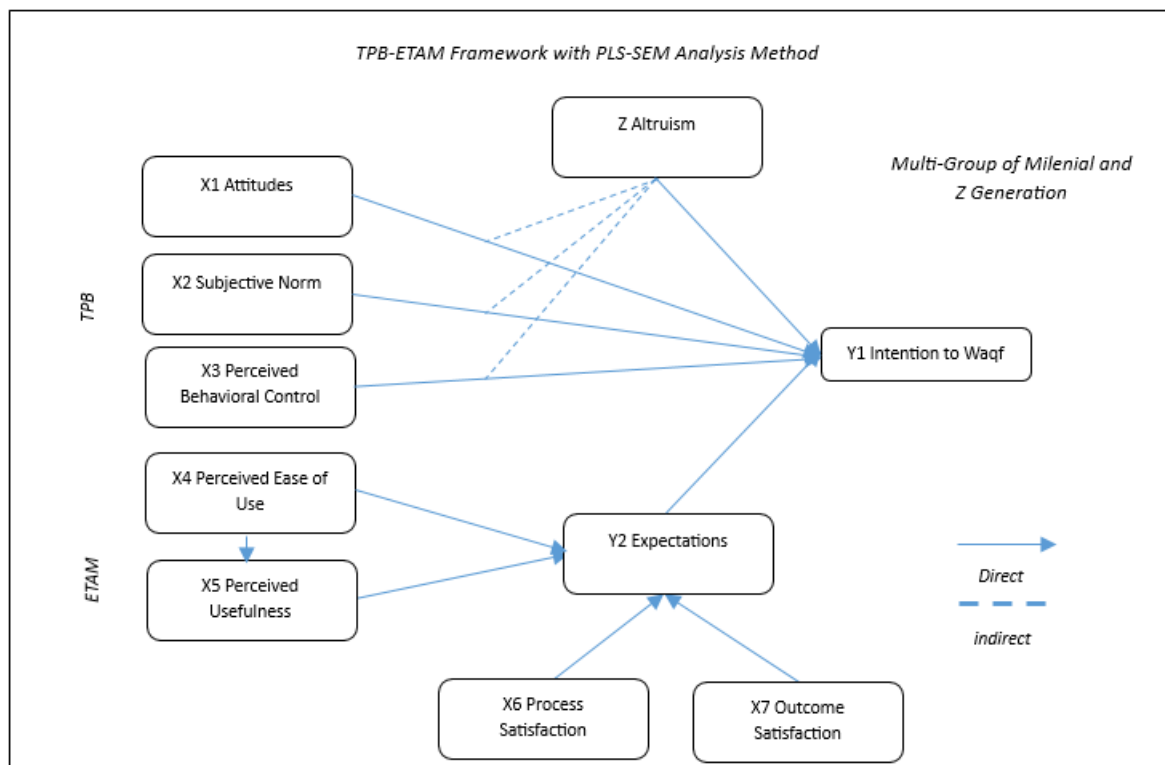


Figure 1. Research Framework

Population and Sampling

Universitas Brawijaya students were selected as the research population because: 1) they possess characteristics aligned with the research objectives—specifically, representing Millennials and Generation Z, who demonstrate relatively high levels of digital literacy, access to technology, and exposure to digital financial services; and 2) the student body exhibits a diverse demographic distribution, including: a) gender—as of 2025, the undergraduate student population at Universitas Brawijaya comprised 26,116 male and 37,610 female students (BPS, 2025); and b) geographic origin the Rector of Universitas Brawijaya noted that over the past five years, 50% of the student body has consisted of applicants from various provinces across Indonesia, while the remaining 50% originated from East Java (D. Mayasari & Dani, 2023). This diversity is further evidenced by the presence of numerous “Forda” (Regional Forums) at the university, with over 40 such forums representing more than 19 provinces across Indonesia (Oky, 2015).

Respondents were required to meet the following inclusion criteria: (1) undergraduate students at Universitas Brawijaya born between 1997 and 2012 (Generation Z); (2) undergraduate and postgraduate students born between 1981 and 1996 (Millennials); and (3) individuals who were familiar with the Satuwakaf Indonesia application or similar digital waqf platforms. Following the 10-times rule for PLS-SEM, the minimum recommended sample size is ten times the largest number of indicators used to measure a latent construct (Hair et al., 2019). Given that the proposed model comprised eight latent constructs, this study targeted a minimum sample of 100 respondents representing both the Millennial and Generation Z cohorts. In addition, the minimum sample size was estimated using Slovin's formula based on the total student population of Universitas Brawijaya in 2025. According to institutional statistics, the university had 63,726 undergraduate, 4,035 master's, 2,361 doctoral, and 4,163 diploma students, resulting in a total population of 74,285 students. Applying Slovin's formula with a 5% margin of error yielded the following minimum sample size:

$$n = \frac{N}{1 + Ne^2}$$

Description:

- $N = 74,285$
- $e = 0.05$

$$n = \frac{74,285}{1 + 74,285(0.05)^2} = \frac{74,285}{1 + 185.71} = \frac{74,285}{186.71} \approx 398$$

Based on these calculations, the researcher set the target respondents for this study at a minimum of 400 respondent.

Measurement of Variables

This study employed ten latent constructs, namely attitude, subjective norm, perceived behavioral control, perceived ease of use, perceived usefulness, process satisfaction, outcome satisfaction, expectation, altruism, and behavioral intention. All measurement items were adapted from previously validated instruments and modified to reflect the context of the Satuwakaf Indonesia application. The operational definitions and measurement items for each construct are presented in Table 2.

Table 2. Indicator Variables

No	Variable	Indicator	Item
1	Attitude, (Ajzen, 1991; Kasri & Chaerunnisa, 2022b; Yusfiarto et al., 2020)	1. Positive evaluation of digital waqf	ATT1. Using the Satuwakaf Indonesia application for waqf is a good idea.
		2. Social benefits	ATT2. Using a digital application for waqf is a wise choice.
		3. Personal value congruence	

			ATT3. Digital waqf through the application benefits society. ATT4. I have a positive attitude toward digital waqf. ATT5. Digital waqf is consistent with my personal values. ATT6. I support the use of digital applications for waqf.
2	Subjective Norm. (Abdullah & Sapiei, 2018; Ajzen, 1991; Hiyanti et al., 2020)	1. Family influence 2. Peer influence 3. Religious leader influence 4. Digital community influence	SN1. My family supports me in performing waqf through the application. SN2. My friends support digital waqf activities. SN3. The religious leaders I follow support digital waqf. SN4. My social environment views digital waqf positively. SN5. The opinions of people who are important to me influence my decision to perform waqf.
3	Perceived Behavioral Control. (Ajzen, 1991; Hiyanti et al., 2020)	1. Ability 2. Resources 3. Self-control	PBC1. I have the ability to use this application. PBC2. I have adequate access to use this application. PBC3. I have sufficient knowledge about digital waqf. PBC4. I find it easy to perform waqf through the application. PBC5. Performing waqf is entirely under my control.
4	Perceived ease of use (Davis, 1989a; Venkatesh & Bala, 2008)	1. Easy to learn 2. Easy to understand 3. Easy to operate 4. Easy to interact with 5. Easy to navigate	PEOU1. The application is easy to learn. PEOU2. The application's features are easy to understand. PEOU3. The application is easy to navigate. PEOU4. Information within the application is easy to find. PEOU5. Overall, the application is easy to use.
5	Perceived usefulness (Davis, 1989b; Kasri & Chaerunnisa, 2022a; Venkatesh et al., 2003)	1. Improve performance 2. Enhances effectiveness 3. Increases productivity 4. Usefulness 5. Facilitates task completion	PU1. The application makes it easier for me to perform waqf. PU2. The application improves the effectiveness of the waqf process. PU3. The application helps me obtain waqf-related information. PU4. The application makes waqf activities more practical. PU5. The application is useful in supporting my waqf activities.
6	Process satisfaction, (Bhattacharjee, 2001; Ramayah & Lee, 2012; Wixom & Todd, 2005)	1. Satisfaction with interaction 2. Satisfaction with system quality 3. Satisfaction with ease of use 4. Satisfaction with information accessibility 5. Satisfaction with experience	PS1. I am satisfied with the process of using the application. PS2. I am satisfied with the application's interface. PS3. I am satisfied with the system speed. PS4. I am satisfied with the ease of making waqf payments PS5. I am satisfied with my overall experience using the application.

7	Outcome satisfaction (Bhattacharjee, 2001; Kasri & Chaerunnisa, 2022a; Mujahidah & Rusydiana, 2023b; Wixom & Todd, 2005)	1. Satisfaction with outcomes 2. Satisfaction with benefits 3. Satisfaction with impact 4. Satisfaction with transparency 5. Satisfaction with achievements	OS1. I am satisfied with the social benefits generated by the waqf.
			OS2. I am satisfied with the transparency of waqf management.
			OS3. I am satisfied with the reports on the utilization of waqf funds.
			OS4. I am satisfied with the impact of the waqf programs
			OS5. I am satisfied with the outcomes of the distributed waqf.
8	Altruism (Batson, 2011)	1. Helping others 2. Social concern 3. Self-sacrifice 4. Empathy 5. Social responsibility 6. Generosity	ALT1. I enjoy helping others.
			ALT2. I am willing to share without expecting anything in return.
			ALT3. I feel responsible for helping society.
			ALT4. I feel happy when I can benefit others.
			ALT5. I care about the well-being of society.
			ALT6. Helping others is an important part of my life.
9	Expectation (Bhattacharjee, 2001; Venkatesh et al., 2012)	1. Expectation of good system performance 2. Expectation of ease of use 3. Expectation of information availability 4. Expectation of transaction security 5. Expectation of service satisfaction	EXP1. I expect the Satuwakaf Indonesia application to make it easier for me to perform waqf.
			EXP2. I expect the application to be easy to learn and use..
			EXP3. I expect the application to provide complete and clear information about waqf programs.
			EXP4. I expect the application to provide transparent reports on the utilization of waqf funds.
			EXP5. I expect the application to ensure the security of my data and waqf transactions.
			EXP6. I expect the application to provide a satisfying user experience.
			EXP7. I expect the application to improve the effectiveness of waqf activities.
			EXP8. I expect the application to provide comprehensive information.
			EXP9. I expect the application to facilitate my continuous participation in waqf.
			EXP10. I expect the application to enhance my trust in waqf management.
10	Intention to Use Satuwakaf App, (Ajzen, 1991; Kasri & Chaerunnisa, 2022a; Venkatesh et al., 2012)	1. Preference for the application 2. Primary choice 3. Attractiveness of the application 4. Willingness to recommend 5. Continued preference 6. Preference over alternatives	INT1. I prefer using the Satuwakaf Indonesia application over other waqf methods.
			INT2. The Satuwakaf Indonesia application is one of my primary choices when I want to perform waqf.
			INT3. I intend to use the Satuwakaf Indonesia application for future waqf activities.
			INT4. I am willing to recommend the Satuwakaf Indonesia application to others.

			INT5. I intend to continue using the Satuwakaf Indonesia application whenever it is available.
			INT6. I find the Satuwakaf Indonesia application more attractive than other digital waqf platforms.
			INT7. I intend to access waqf program reports through the application.
			INT8. I intend to follow the progress of waqf programs through the application.
			INT9. I intend to use the application as my primary platform for performing waqf.
			INT10. I expect to use the application frequently.

Structural Model

The relationships among the proposed constructs were examined using a Partial Least Squares Structural Equation Modeling (PLS-SEM) structural model that integrates the Theory of Planned Behavior (TPB) and the Extended Technology Acceptance Model (ETAM). The structural model was specified as follows:

1. Intention equation (TPB + Moderator of Altruism)

$$Y_1 = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 Z + \beta_5 (X_1 \cdot Z) + \beta_6 (X_2 \cdot Z) + \beta_7 (X_3 \cdot Z) + \varepsilon_1$$

2. Expectations equation (ETAM + Satisfaction)

$$Y_2 = \beta_8 X_4 + \beta_9 X_5 + \beta_{10} X_6 + \beta_{11} X_7 + \varepsilon_2$$

3. Use Behavior equations

$$Y_1 = \beta_{14} Y_2 + \varepsilon_1$$

Furthermore, differences in the structural relationships between the Millennial and Generation Z cohorts were examined using Partial Least Squares Multi-Group Analysis (PLS-SEM-MGA). This procedure was employed to determine whether the proposed structural relationships differed significantly across the two generational groups, thereby providing empirical evidence of potential generational differences in the determinants of digital waqf adoption.

Data Analysis

Data were analyzed using SmartPLS 4 following the standard PLS-SEM analytical procedure, which consisted of evaluating both the measurement model (outer model) and the structural model (inner model). The measurement model assessment included indicator reliability, convergent validity (outer loadings and average variance extracted (AVE)), discriminant validity using the heterotrait–monotrait ratio (HTMT), and internal consistency reliability assessed through Cronbach's alpha and composite reliability. Subsequently, the structural model was evaluated by examining the path coefficients, bootstrapping results, and the coefficient of determination (R^2). Differences in the structural relationships between the Millennial and Generation Z cohorts were further assessed using Partial Least Squares Multi-Group Analysis (PLS-SEM-MGA) at a 5% significance level. Finally, the robustness of the proposed model was assessed through a quadratic effect analysis to examine the potential presence of nonlinear relationships among the proposed constructs.

RESULTS

Respondent's Profile

A total of 428 valid questionnaires were included in the analysis. The respondents comprised 282 Generation Z participants (66%) and 146 Millennials (34%). The gender distribution was relatively balanced, consisting of 225 males (52%) and 203 females (48%). Most respondents resided in East Java (22%), followed by West Java (11%) and Central Java (9%), and represented a wide range of faculties at Universitas Brawijaya. Overall, the demographic characteristics indicate that the sample adequately represents diverse generational groups, gender, geographical backgrounds, and academic disciplines, providing a suitable basis for subsequent statistical analyses.

Table 3. Demographic Characteristic

Variable	Desc	F	%
Generation	Milenial	146	0.34
	Z	282	0.66
Gender	Male	225	0.52
	Female	203	0.48
Domiscile	Jawa Timur	96	0.22
	Jawa Barat	48	0.11
	Jawa Tengah	39	0.9
	DKI Jakarta	36	0.8
	Banten	18	0.4
	Bali	17	0.4
	DIY	17	0.4
	Sumatera Barat	12	0.3
	Kalimantan Timur	14	0.3
	Sulawesi Selatan	11	0.3
	Kalimantan Barat	10	0.2
	Sumatera Utara	10	0.2
	NTB	9	0.2
	Lampung	9	0.2
	NAD	9	0.2
	Kalimantan Selatan	8	0.2
	Kalimantan Tengah	8	0.2
	Sumatera Selatan	8	0.2
	Sulawesi Utara	6	0.1
	Kalimantan Utara	6	0.1
	NTT	6	0.1
	Gorontalo	6	0.1
	Sulawesi Barat	6	0.1
	Sulawesi Tengah	5	0.1
	Etc.	14	0.4
Faculty	FEB	74	0.17
	VOKASI	41	0.9
	FTAB	36	0.8
	FIB	21	0.5
	FH	30	0.7
	FIA	36	0.8
	FISIP	35	0.8
	FK	18	0.5
	FBIPK	21	0.4
	FPIK	23	0.5
	FSTeM	16	0.4
	FT	26	0.6
	FILKOM	11	0.3
	FAST	10	0.2
	FKG	13	0.3
	FIKES	9	0.2
	FKH	8	0.1
Total		428	100%

Measurement Model Assessment

The measurement model was evaluated to assess the validity and reliability of all proposed constructs. The PLS-SEM estimation results are illustrated in Figure 2.

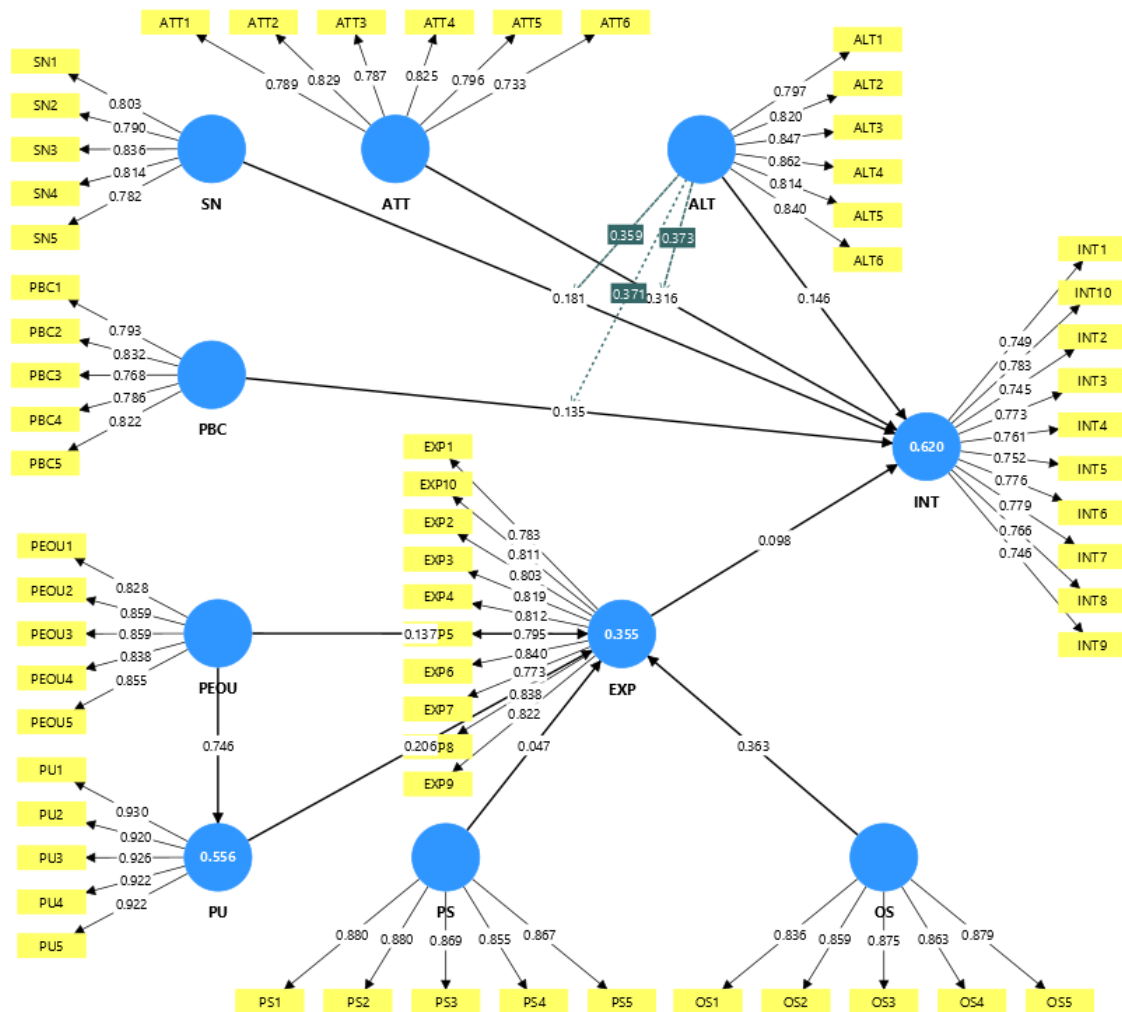


Figure 2. PLS-SEM Algorithm Result

The results indicate that all measurement items achieved outer loadings exceeding the recommended threshold of 0.70, thereby satisfying the criterion for indicator reliability. The outer loading values ranged from 0.733 to 0.862, indicating that all measurement items adequately represented their respective latent constructs.

Table 4. Outer Loading

Items	AL T	AT T	EX P	IN T	OS	PB C	PEO U	PS	PU	SN	AL T x AT T	AL T x SN	AL T x PB C
ALT1	0.797												
ALT2	0.820												
ALT3	0.847												
ALT4	0.862												
ALT5	0.814												

ALT6	0.84 0												
ATT1		0.78 9											
ATT2		0.82 9											
ATT3		0.78 7											
ATT4		0.82 5											
ATT5		0.79 6											
ATT6		0.73 3											
EXP1			0.78 3										
EXP10			0.81 1										
EXP2			0.80 3										
EXP3			0.81 9										
EXP4			0.81 2										
EXP5			0.79 5										
EXP6			0.84 0										
EXP7			0.77 3										
EXP8			0.83 8										
EXP9			0.82 2										
INT1				0.74 9									
INT10				0.78 3									
INT2				0.74 5									
INT3				0.77 3									
INT4				0.76 1									
INT5				0.75 2									
INT6				0.77 6									
INT7				0.77 9									
INT8				0.76 6									
INT9				0.74 6									
OS1					0.83 6								
OS2					0.85 9								
OS3					0.87 5								

OS4					0.86 3								
OS5					0.87 9								
PBC1						0.79 3							
PBC2						0.83 2							
PBC3						0.76 8							
PBC4						0.78 6							
PBC5						0.82 2							
PEOU 1							0.828						
PEOU 2							0.859						
PEOU 3							0.859						
PEOU 4							0.838						
PEOU 5							0.855						
PS1								0.88 0					
PS2								0.88 0					
PS3								0.86 9					
PS4								0.85 5					
PS5								0.86 7					
PU1									0.93 0				
PU2									0.92 0				
PU3									0.92 6				
PU4									0.92 2				
PU5									0.92 2				
SN1										0.80 3			
SN2										0.79 0			
SN3										0.83 6			
SN4										0.81 4			
SN5										0.78 2			
ALT x ATT											1.00 0		
ALT x PBC												1.00 0	
ALT x SN												1.00 0	

Furthermore, all constructs demonstrated satisfactory convergent validity, with Average Variance Extracted (AVE) values ranging from 0.582 to 0.854, exceeding the recommended threshold of 0.50. In addition, composite reliability values ranged from 0.875 to 0.957, while Cronbach's alpha values ranged from 0.861 to 0.957, indicating a high level of internal consistency reliability across all constructs.

Table 5. Average Variance Extracted, Composite Reliability, and Cronbach's Alpha

Variables	Average Variance Extracted (AVE)	Composite Reliability	Cronbach's Alpha
Attitude	0.630	0.891	0.883
Subjective Norm	0.648	0.882	0.865
Perceived Behavioral Control	0.641	0.875	0.861
Altruism	0.689	0.934	0.911
Perceived Ease of Use	0.719	0.904	0.902
Perceived Usefulness	0.854	0.957	0.957
Process Satisfaction	0.758	0.922	0.920
Outcome Satisfaction	0.744	0.915	0.914
Expectation	0.656	0.942	0.942
Intention	0.582	0.921	0.920

Discriminant validity was further assessed using the Fornell–Larcker criterion. The results indicate that the square root of the Average Variance Extracted (AVE) for each construct exceeded its correlations with all other constructs, thereby confirming adequate discriminant validity. Accordingly, all constructs satisfied the recommended discriminant validity criterion and were deemed suitable for subsequent structural model assessment.

Table 6. Discriminant Validity: Fornell-Larcker Criterion Test

Variables	ALT	ATT	EXP	INT	OS	PBC	PEOU	PS	PU	SN
ALT	0.830									
ATT	0.036	0.794								
EXP	0.038	-0.045	0.810							
INT	0.139	0.370	0.077	0.763						
OS	0.034	-0.043	0.512	-0.040	0.862					
PBC	-0.086	0.027	0.074	0.187	0.001	0.801				
PEOU	0.042	-0.019	0.452	-0.057	0.408	-0.015	0.848			
PS	0.018	0.011	0.251	-0.048	0.278	0.014	0.292	0.870		
PU	0.008	0.015	0.465	-0.034	0.392	0.003	0.746	0.309	0.924	
SN	-0.045	0.061	-0.037	0.224	-0.036	0.017	0.023	0.053	0.056	0.805

Structural Model Assessment

The structural model was evaluated to assess its explanatory power for the endogenous constructs. The results indicate that the highest coefficient of determination (R^2) was observed for behavioral intention ($R^2 = 0.620$), indicating that the integrated Theory of Planned Behavior (TPB), Extended Technology Acceptance Model (ETAM), and altruism collectively explained 62.0% of the variance in individuals' intentions to adopt the Satuwakaf Indonesia application. The remaining endogenous constructs also demonstrated satisfactory explanatory power in accordance with the recommended PLS-SEM criteria, suggesting that the proposed structural model possesses adequate predictive capability.

Table 7. R-Square

	R-square
EXP	0.355
INT	0.620
PU	0.556

The proposed hypotheses were evaluated using the bootstrapping procedure implemented in SmartPLS to examine the direct relationships among the proposed constructs. The results indicate that most of the hypothesized relationships were statistically supported, whereas several relationships were found to be statistically insignificant. These findings suggest that both behavioral factors and technology acceptance factors contribute to explaining individuals' intentions to adopt the Satuwakaf Indonesia application, although their effects vary across the proposed relationships. The detailed results of the hypothesis testing are presented in Table 7.

Table 8. Hypotesis Testing Results

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Exp.
ATT -> INT	0.316	0.318	0.036	8.710	0.000	H1 Accepted
SN -> INT	0.181	0.184	0.036	4.994	0.000	H2 Accepted
PBC -> INT	0.135	0.141	0.037	3.695	0.000	H3 Accepted
PEOU -> PU	0.746	0.746	0.023	32.049	0.000	H4 Accepted
PEOU -> EXP	0.137	0.138	0.059	2.306	0.021	H5 Accepted
PU -> EXP	0.206	0.204	0.060	3.423	0.001	H6 Accepted
OS -> EXP	0.363	0.365	0.040	9.030	0.000	H7 Accepted
PS -> EXP	0.047	0.049	0.045	1.039	0.299	H8 Declined
EXP -> INT	0.098	0.099	0.034	2.934	0.003	H9 Accepted
ALT -> INT	0.146	0.146	0.050	2.918	0.004	H10 Accepted
ALT x ATT -> INT	0.373	0.363	0.046	8.064	0.000	H11 Accepted
ALT x SN -> INT	0.359	0.347	0.047	7.616	0.000	H12 Accepted
ALT x PBC -> INT	0.371	0.352	0.057	6.510	0.000	H13 Accepted

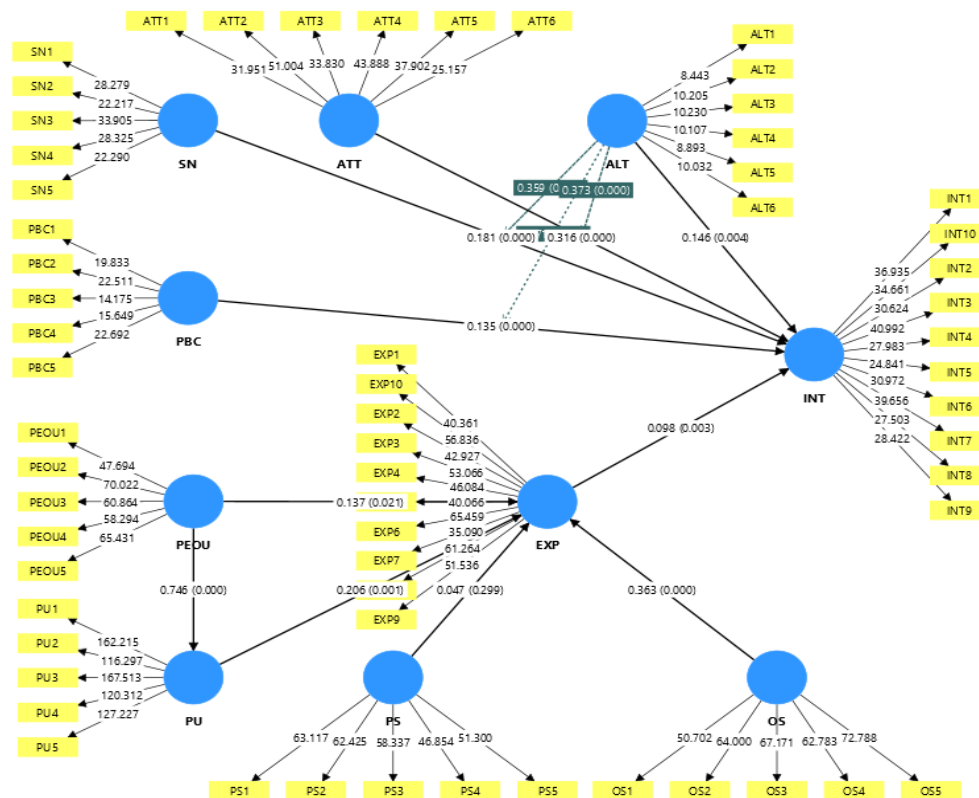


Figure 3. PLS Bootstrapping Results

Multi-Group Analysis

To examine whether the structural relationships differed between the Millennial and Generation Z cohorts, this study employed two Partial Least Squares Multi-Group Analysis (PLS-SEM-MGA) techniques: Bootstrapping MGA and Permutation MGA. Both methods were applied to enhance the robustness of the group comparison by assessing the statistical significance of differences in the structural path coefficients between the two generational cohorts using complementary non-parametric procedures.

Table 9. Bootstrapping Multi-Group Analysis

Variables	Difference (Gen Z – Milenial)	1-tailed (Gen Z vs Milenial) p value	2-tailed (Gen Z vs Milenial) p value
ALT -> INT	-0.067	0.715	0.570
ALT x ATT -> INT	0.075	0.226	0.452
ALT x PBC -> INT	-0.083	0.758	0.484
ALT x SN -> INT	-0.005	0.581	0.839
ATT -> INT	-0.002	0.512	0.976
EXP -> INT	-0.021	0.599	0.801
OS -> EXP	0.191	0.015	0.031
PBC -> INT	-0.049	0.719	0.562
PEOU -> EXP	0.235	0.056	0.111
PEOU -> PU	-0.087	0.969	0.063
PS -> EXP	0.090	0.168	0.336
PU -> EXP	-0.129	0.827	0.346
SN -> INT	0.075	0.200	0.399

The Bootstrapping Multi-Group Analysis (MGA) results indicate that only a limited number of structural relationships differed significantly between the Millennial and Generation Z cohorts, whereas

the majority of the hypothesized relationships showed no statistically significant differences. These findings suggest that, despite the distinct characteristics of the two generations, the underlying mechanisms driving the intention to adopt the Satuwakaf Indonesia application are largely consistent across both generational cohorts.

Table 10. Permutation Multi-Group Analysis

Variables	Original (Gen Z)	Original (Milenial)	Original difference	Permutation mean difference	2.5%	97.5%	Permutation p value
ALT -> INT	0.117	0.184	-0.067	-0.000	-0.189	0.257	0.514
ALT x ATT -> INT	0.382	0.307	0.075	0.025	-0.138	0.245	0.345
ALT x PBC -> INT	0.337	0.421	-0.083	0.041	-0.144	0.304	0.421
ALT x SN -> INT	0.359	0.364	-0.005	0.031	-0.138	0.249	0.956
ATT -> INT	0.321	0.324	-0.002	-0.001	-0.144	0.152	0.981
EXP -> INT	0.092	0.113	-0.021	0.001	-0.142	0.135	0.784
OS -> EXP	0.447	0.256	0.191	-0.006	-0.170	0.175	0.029
PBC -> INT	0.120	0.170	-0.049	-0.011	-0.171	0.155	0.556
PEOU -> EXP	0.224	-0.011	0.235	-0.002	-0.254	0.241	0.069
PEOU -> PU	0.702	0.789	-0.087	0.002	-0.098	0.100	0.090
PS -> EXP	0.124	0.034	0.090	-0.005	-0.208	0.187	0.400
PU -> EXP	0.184	0.313	-0.129	0.009	-0.240	0.258	0.321
SN -> INT	0.206	0.131	0.075	-0.008	-0.159	0.141	0.345

The Permutation Multi-Group Analysis (MGA) results further confirmed these findings, indicating that most structural path coefficients did not differ significantly between the Millennial and Generation Z cohorts. The consistency of the findings across both the Bootstrapping MGA and Permutation MGA procedures provides robust evidence that the proposed structural model is largely invariant across the two generational groups and that the observed group differences are not attributable to sampling variation or distributional characteristics.

Robustness Test

A robustness test was conducted using a quadratic effect (nonlinear effect) analysis to determine whether the relationships among the proposed constructs followed a linear or nonlinear pattern. A relationship was considered nonlinear when the quadratic effect was statistically significant ($p < 0.05$), whereas a p-value greater than 0.05 indicated that the relationship remained predominantly linear.

Table 11. Quadratic Effect Robustness Test

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Exp.
QE (ALT) -> INT	-0.010	-0.009	0.027	0.360	0.719	Supported
QE (ATT) -> INT	-0.045	-0.045	0.030	1.515	0.130	Supported
QE (SN) -> INT	-0.000	-0.003	0.028	0.011	0.991	Supported
QE (PBC) -> INT	0.009	0.008	0.029	0.327	0.744	Supported
QE (ALT) -> INT	-0.008	-0.009	0.027	0.298	0.765	Supported
QE (ATT) -> INT	-0.046	-0.046	0.030	1.532	0.126	Supported
QE (EXP) -> INT	-0.001	0.002	0.024	0.034	0.973	Supported
QE (OS) -> EXP	0.016	0.014	0.025	0.640	0.522	Supported
QE (PBC) -> INT	0.009	0.008	0.029	0.326	0.744	Supported
QE (PEOU) -> EXP	-0.005	-0.004	0.023	0.210	0.834	Supported
QE (PEOU) -> PU	-0.036	-0.035	0.032	1.122	0.262	Supported
QE (PS) -> EXP	0.004	-0.000	0.019	0.205	0.838	Supported
QE (PU) -> EXP	-0.033	-0.032	0.021	1.557	0.119	Supported
QE (SN) -> INT	-0.001	-0.003	0.028	0.034	0.973	Supported

The absence of significant quadratic effects is also theoretically consistent with the conceptual foundations of this study. Both the Theory of Planned Behavior (TPB) (Ajzen, 1991) and the

Technology Acceptance Model (TAM) (Davis, 1989), including its extended formulations, conceptualize the relationships among behavioral beliefs, technology perceptions, and behavioral intentions as predominantly linear. In the context of digital waqf adoption, more favorable attitudes, stronger perceived behavioral control, greater perceived usefulness, higher expectations, and stronger altruistic motivation are expected to increase individuals' intention to participate, rather than producing diminishing returns or reversing effects at higher levels. Likewise, perceived ease of use is theoretically expected to continuously enhance perceived usefulness and user expectations, while outcome satisfaction reinforces positive expectations without implying a saturation point. Therefore, the absence of significant nonlinear relationships is not only statistically supported but also aligns with the theoretical assumptions underlying TPB and ETAM, indicating that the linear structural specification employed in this study is conceptually appropriate.

The quadratic effect analysis revealed no significant nonlinear effects across any of the hypothesized relationships (all $p > 0.05$). These findings indicate that all relationships among the proposed constructs can be adequately represented by linear functions, with no evidence of either U-shaped or inverted U-shaped relationships. Consequently, the proposed structural model can be considered robust, suggesting that the estimated path coefficients obtained from the hypothesis testing are stable and that no additional nonlinear model specification is required.

DISCUSSION

Theory of Planned Behavior and Behavioral Intention (H1-H3)

The bootstrapping results indicate that all three Theory of Planned Behavior (TPB) constructs have positive and significant effects on behavioral intention to adopt the Satuwakaf Indonesia application. Attitude exhibited the strongest effect ($\beta = 0.316$, $t = 8.710$, $p < 0.001$), followed by subjective norm ($\beta = 0.181$, $t = 4.994$, $p < 0.001$) and perceived behavioral control ($\beta = 0.135$, $t = 3.695$, $p < 0.001$). Since all t-statistics exceeded the critical value of 1.96 and all p-values were below 0.05, Hypotheses 1 (H1), 2 (H2), and 3 (H3) were supported (H1-H3 Supported), confirming that attitude, subjective norm, and perceived behavioral control positively influence individuals' behavioral intention to adopt the Satuwakaf Indonesia application for digital waqf.

The findings indicate that all three core constructs of the Theory of Planned Behavior (TPB), attitude, subjective norm, and perceived behavioral control, have a positive and significant influence on behavioral intention to adopt the Satuwakaf Indonesia application. These results suggest that the intention of Millennials and Generation Z to participate in digital waqf is shaped not only by their perceptions of technology but also by their personal evaluations of digital waqf, social influences from their surrounding environment, and their perceived capability to use the application effectively. Accordingly, the Theory of Planned Behavior provides a robust theoretical framework for explaining the formation of behavioral intention in the context of technology-enabled Islamic philanthropy.

Among the three TPB determinants, attitude emerged as the strongest predictor of behavioral intention, followed by subjective norm and perceived behavioral control. This finding suggests that individuals are primarily motivated to adopt the Satuwakaf Indonesia application when they perceive digital waqf as beneficial, easy to use, secure, and aligned with Islamic values. Although social support from family members, peers, and religious leaders also contributes to strengthening behavioral intention, its influence is less pronounced than individuals' personal evaluations of digital waqf. Furthermore, respondents' confidence in their ability to operate the application, together with adequate Internet access and familiarity with digital technology, also enhances their intention to adopt digital waqf, albeit to a lesser extent than the other two TPB constructs.

These findings are consistent with the Theory of Planned Behavior proposed by (Ajzen, 1991), which posits that individuals' behavioral intentions are determined by their attitudes toward the behavior, perceived social norms, and perceived behavioral control. In the context of digital waqf, the present study demonstrates that these three determinants remain highly relevant, despite the integration of digital technology into the philanthropic process. Rather than diminishing the importance of established psychological determinants, digital technology reinforces their role by providing a platform through which cognitive evaluations, social influences, and perceived behavioral control are translated into digital

waqf adoption. This finding suggests that the successful adoption of digital waqf platforms depends not only on technological innovation but also on users' underlying behavioral and psychological motivations.

The present findings are consistent with previous studies on digital waqf, which have identified attitude, subjective norm, and perceived behavioral control as key determinants of individuals' intentions to adopt technology-enabled Islamic philanthropy platforms, including the studies (Kasri & Chaerunnisa, 2022a; Ryandono et al., 2025; Yusfiarto et al., 2020). More importantly, this study extends the existing literature by demonstrating that the explanatory power of the Theory of Planned Behavior (TPB) remains robust when integrated with the Extended Technology Acceptance Model (ETAM) in the context of the Satuwakaf Indonesia application. This integrated perspective suggests that the intention to adopt digital waqf is shaped not only by behavioral determinants, as proposed by the TPB, but also by users' perceptions of technology and their post-adoption experiences. Consequently, the findings support the view that digital waqf adoption is a multidimensional process in which behavioral, technological, and experiential factors jointly influence individuals' adoption intentions.

From a practical perspective, these findings suggest that strategies to promote digital waqf adoption should extend beyond improving the technical features of the application. The Indonesian Waqf Board (BWI) and nazhir institutions should foster positive public attitudes by increasing awareness of the social and religious benefits of digital waqf, strengthen supportive social norms through collaboration with religious leaders and community organizations, and ensure that the application remains user-friendly and accessible to diverse user groups. By simultaneously addressing these behavioral, social, and technological dimensions, stakeholders can enhance individuals' intentions to adopt digital waqf, particularly among the Millennial and Generation Z cohorts, through the Satuwakaf Indonesia application.

Extended Technology Acceptance Model and Behavioral Intention (H4-H9)

The bootstrapping results indicate that the Extended Technology Acceptance Model (ETAM) was largely supported. Perceived ease of use had a strong positive effect on perceived usefulness ($\beta = 0.746$, $t = 32.049$, $p < 0.001$), thereby supporting Hypothesis 4 (H4 supported). It also exerted a positive effect on expectation ($\beta = 0.137$, $t = 2.306$, $p = 0.021$), supporting Hypothesis 5 (H5 supported). Furthermore, perceived usefulness positively influenced expectation ($\beta = 0.206$, $t = 3.423$, $p = 0.001$), confirming Hypothesis 6 (H6 supported). In contrast, process satisfaction did not have a significant effect on expectation ($\beta = 0.047$, $t = 1.039$, $p = 0.299$), leading to the rejection of Hypothesis 7 (H7 rejected). Conversely, outcome satisfaction emerged as a significant determinant of expectation ($\beta = 0.363$, $t = 9.030$, $p < 0.001$), supporting Hypothesis 8 (H8 supported). Finally, expectation had a positive and significant effect on behavioral intention to adopt the Satuwakaf Indonesia application ($\beta = 0.098$, $t = 2.934$, $p = 0.003$), thereby supporting Hypothesis 9 (H9 supported). Overall, these findings confirm that most of the proposed relationships within the ETAM are statistically supported, with the exception of the relationship between process satisfaction and expectation.

The findings demonstrate that the constructs of the Extended Technology Acceptance Model (ETAM) play a significant role in explaining individuals' behavioral intention to adopt the Satuwakaf Indonesia application. Overall, the relationships among perceived ease of use, perceived usefulness, process satisfaction, outcome satisfaction, and expectation support the technology acceptance mechanism that ultimately influences behavioral intention. These results indicate that the adoption of a digital waqf platform is determined not only by behavioral factors, as explained by the Theory of Planned Behavior (TPB), but also by users' experiences while interacting with the digital platform and their evaluations of the benefits gained from using the application. Accordingly, the ETAM complements the TPB by explaining how users' experiences shape expectations and subsequently strengthen their intention to adopt digital waqf.

The findings further reveal that perceived ease of use has a positive effect on both perceived usefulness and expectation, indicating that the easier the Satuwakaf Indonesia application is to learn and operate, the greater the perceived benefits and users' expectations toward the platform. Intuitive navigation, a simple transaction process, and a user-friendly interface reduce the barriers to adoption, allowing users to focus on their primary objective of performing digital waqf in a convenient, secure, and efficient manner. These findings reinforce the Technology Acceptance Model (TAM), which posits that perceived ease of use is a fundamental antecedent of perceived usefulness. Extending this

perspective, the present study demonstrates that ease of use also contributes to shaping users' expectations, suggesting that a positive initial interaction with the application not only enhances perceptions of its utility but also strengthens confidence in its future performance. This mechanism is particularly important in the context of digital Islamic social finance, where user trust and confidence are essential for encouraging technology adoption.

Beyond perceived ease of use, the findings also indicate that perceived usefulness, process satisfaction, and outcome satisfaction positively contribute to shaping users' expectations toward the Satuwakaf Indonesia application. Users who perceive the application as providing tangible benefits, offering a smooth transaction process, and delivering a satisfying waqf experience are more likely to develop higher expectations regarding its future use. These findings suggest that users' experiences are shaped not only by the application's technical aspects but also by their perceptions that the waqf process is transparent, efficient, and capable of generating social impact in line with the objectives of waqf. In this context, process satisfaction reflects the quality of users' experiences while interacting with the application, whereas outcome satisfaction represents users' satisfaction with the benefits obtained after completing the waqf transaction. Together, these two dimensions complement each other in shaping users' expectations regarding the quality of the digital waqf service.

Meanwhile, expectation has a positive effect on behavioral intention, indicating that users with higher expectations regarding service quality are more likely to continue using the Satuwakaf Indonesia application as a platform for digital waqf. This finding suggests that expectation serves as a psychological mechanism that bridges users' experiences with their intention to continue using the digital platform. In other words, positive experiences gained throughout the waqf process enhance users' confidence that the application will continue to meet their needs in future use, thereby strengthening their behavioral intention to adopt the platform.

From a theoretical perspective, these findings support the development of the Extended Technology Acceptance Model (ETAM), which considers users' experiences as a critical component in explaining the continued adoption of technology. Unlike the classical Technology Acceptance Model (TAM), which primarily emphasizes perceived ease of use and perceived usefulness, the ETAM suggests that both process satisfaction and outcome satisfaction play important roles in shaping users' expectations, which subsequently influence their behavioral intention to adopt the technology. These findings are also consistent with previous studies on digital financial services and Islamic philanthropy, which have emphasized that the quality of users' experiences is a key determinant of the continued use of digital platforms. However, this study extends the existing literature by demonstrating that this mechanism also applies to the context of digital waqf, particularly through the Satuwakaf Indonesia application, which integrates technological innovation and Islamic philanthropy within a single digital ecosystem.

From a practical perspective, these findings suggest that the development of the Satuwakaf Indonesia application should focus not only on adding new features but also on enhancing the overall user experience. Simplifying the transaction process, improving system performance, providing transparent information, and delivering regular reports on the utilization of waqf funds are expected to strengthen users' perceived usefulness, increase user satisfaction, and foster positive expectations toward the platform. Accordingly, the application's development strategy should prioritize the creation of a consistent and valuable user experience in order to strengthen individuals' behavioral intention to continue participating in digital waqf.

The Moderating Role of Altruism (H10-H13)

The bootstrapping results indicate that altruism not only has a direct positive effect on behavioral intention to adopt the Satuwakaf Indonesia application for digital waqf but also serves as a moderating variable that strengthens the relationships between attitude, subjective norm, and perceived behavioral control and behavioral intention. Specifically, the direct effect of altruism on behavioral intention yielded an original sample coefficient (β) of 0.146, a t-statistic of 2.918, and a p-value of 0.004, thereby supporting Hypothesis 10 (H10). Furthermore, the interaction effect between altruism and attitude produced a coefficient of 0.373 ($t = 8.064$; $p < 0.001$), the interaction between altruism and subjective norm yielded a coefficient of 0.359 ($t = 7.616$; $p < 0.001$), and the interaction between altruism and perceived behavioral control produced a coefficient of 0.371 ($t = 6.510$; $p < 0.001$). All t-statistics

exceeded the critical value of 1.96, and all p-values were below 0.05. Therefore, Hypotheses 11, 12, and 13 were supported (H11-H13 supported).

These findings provide important empirical insights. Altruism not only serves as a direct determinant of individuals' behavioral intention to adopt the Satuwakaf Indonesia application for digital waqf but also strengthens the effects of the three core constructs of the Theory of Planned Behavior (TPB) on the formation of behavioral intention. In other words, individuals with higher levels of altruism are more likely to translate their positive attitudes toward digital waqf, perceived social support, and confidence in their ability to use the digital application into stronger intentions to participate in digital waqf. Notably, the moderating effects of altruism ($\beta = 0.359-0.373$) were substantially greater than its direct effect ($\beta = 0.146$). This finding indicates that the primary contribution of altruism in this study lies not merely in promoting prosocial behavior but in functioning as a psychological mechanism that strengthens the relationships between cognitive and social determinants and individuals' behavioral intention to adopt digital waqf.

These findings are supported by several previous studies. Bonang et al. (2024) found that Perceived Ihsan, which represents the altruistic dimension in Islam, has a positive effect on individuals' intentions to use digital cash waqf platforms. This finding suggests that concern for social welfare is one of the key determinants of digital waqf adoption. Similarly, Nuryitmawan (2022) reported that altruism significantly influences individuals' intentions to participate in waqf, alongside religiosity and trust in waqf management institutions. Consistent evidence was also reported by Sayuti & Amin (2020), who demonstrated that integrating altruistic values into the Theory of Planned Behavior (TPB) enhances the model's explanatory power in predicting Malaysians' intentions to donate through cash waqf. Furthermore, Kasri & Chaerunnisa (2022a) and Ryandono et al. (2025) consistently found that prosocial values, trust, and social motivation make significant contributions to the formation of individuals' intentions to adopt digital waqf platforms.

From a practical perspective, these findings imply that strategies to increase digital waqf participation should not rely solely on technological improvements or the simplification of transaction processes. The Indonesian Waqf Board (BWI), nazhir institutions, and the developers of the Satuwakaf Indonesia application should implement educational initiatives that foster social responsibility, empathy, and a culture of giving, particularly among the Millennial and Generation Z cohorts. Campaigns highlighting the social impact of waqf, the presentation of beneficiary stories, transparent reporting of program achievements, and the dissemination of Islamic philanthropic values through digital media are expected to strengthen individuals' altruistic orientation. As these altruistic values become more deeply embedded, the positive effects of attitude, subjective norm, and perceived behavioral control on individuals' intentions to adopt digital waqf through digital platforms are likely to become even stronger.

Generational Differences in Digital Waqf Adoption (H14)

Finally, this study conducted a comparative analysis of the Millennial and Generation Z cohorts regarding their behavioral intention to adopt the Satuwakaf Indonesia application for digital waqf. Multi-Group Analysis (MGA) was employed to examine whether the structural mechanisms underlying behavioral intention differed between the two generational cohorts. This analysis was undertaken because Millennials and Generation Z possess distinct social characteristics, technological experiences, and decision-making patterns, which may lead to differences in the relationships among the proposed constructs. According to Kusairi et al. (2025), Multi-Group Analysis is an important procedure in PLS-SEM for assessing whether the structural relationships among latent constructs are invariant or differ significantly across respondent groups.

The Permutation Multi-Group Analysis (MGA) results indicate that, overall, the structural model developed in this study exhibits a relatively consistent pattern of relationships across the Millennial and Generation Z cohorts. Of the thirteen structural paths examined, only one relationship showed a statistically significant difference in the path coefficient, namely the relationship between outcome satisfaction and expectation (Outcome Satisfaction $\rightarrow$ Expectation), with a path coefficient difference of 0.191 and a permutation p-value of 0.029. Since the permutation p-value was below the 5% significance level, the findings confirm that the effect of outcome satisfaction on shaping users' expectations differs significantly between the two generational cohorts.

This difference suggests that Generation Z is more sensitive to the outcomes obtained from using the Satuwakaf Indonesia application than the Millennial cohort. Among Generation Z, satisfaction with the outcomes of digital waqf, including the transparency of waqf reports, the social benefits generated, the success of waqf programs, and the perceived impact on beneficiaries, plays a stronger role in shaping users' expectations regarding the future use of the application. In contrast, although this relationship was also significant among the Millennial cohort, its effect was relatively weaker. These findings are consistent with Francis & Hoefel (2018), who argued that Generation Z places greater emphasis on digital experiences that provide rapid, transparent, and measurable feedback. Similarly, Susanti et al. (2025) found that Generation Z tends to evaluate digital services based on their actual experiences and the benefits obtained after use, rather than solely on their initial perceptions of the technology.

Overall, the Multi-Group Analysis (MGA) results support Hypothesis 14 (H14 supported). The differences between the Millennial and Generation Z cohorts were not observed across the entire structural model but were limited to the relationship between outcome satisfaction and expectation. These findings imply that the overall development strategy for the Satuwakaf Indonesia application can generally be implemented uniformly across both generational cohorts. However, enhancing the transparency of program outcomes, providing more comprehensive reporting on the social impact of waqf, and presenting tangible evidence of social benefits are expected to have a greater influence on shaping the expectations of Generation Z users than those of the Millennial cohort.

This study also contributes to the growing literature on digital Islamic social finance in several ways. First, it extends previous digital waqf studies by integrating the Theory of Planned Behavior (TPB), the Extended Technology Acceptance Model (ETAM), and altruism into a unified framework, thereby demonstrating that digital waqf adoption is jointly shaped by behavioral, technological, and prosocial factors rather than by technology acceptance alone. Second, this study provides one of the earliest empirical investigations of the Satuwakaf Indonesia application as Indonesia's national digital waqf platform. Third, by comparing Millennials and Generation Z using PLS-SEM Multi-Group Analysis, the study shows that the structural mechanisms underlying digital waqf adoption are largely invariant across generations, with only limited differences in the relationship between outcome satisfaction and expectation. These findings enrich the emerging body of knowledge on digital Islamic social finance by highlighting the importance of integrating technological usability with Islamic philanthropic values to promote sustainable waqf participation.

From a practical perspective, the findings provide several implications for the Indonesian Waqf Board (BWI). Since outcome satisfaction exerts the strongest influence on users' expectations, BWI should prioritize enhancing transparency and demonstrating the tangible social impact of waqf programs through real-time impact reporting, periodic project updates, and accessible financial accountability reports within the Satuwakaf Indonesia application. Furthermore, to strengthen users' expectations—particularly among Generation Z—BWI should integrate educational features such as interactive digital waqf learning modules, personalized donation recommendations, progress tracking, and user-friendly interfaces that simplify the waqf process. These initiatives are expected to reinforce users' confidence in the platform while encouraging sustained participation in digital waqf.

CONCLUSION

This study demonstrates that the Theory of Planned Behavior (TPB) and the Extended Technology Acceptance Model (ETAM) effectively explain the intentions of the Millennial and Generation Z cohorts to adopt the Satuwakaf Indonesia application for digital waqf. All TPB constructs exerted positive effects on behavioral intention, with attitude emerging as the strongest determinant. From the technology acceptance perspective, perceived ease of use, perceived usefulness, outcome satisfaction, and expectation contributed significantly to the formation of behavioral intention, whereas process satisfaction had no significant effect on expectation. In addition, altruism not only had a direct positive effect on behavioral intention but also strengthened the relationships between the TPB constructs and individuals' intentions to adopt digital waqf.

The PLS-SEM Multi-Group Analysis (MGA) results indicate that most structural relationships were consistent across the Millennial and Generation Z cohorts, with a significant difference observed only in the relationship between outcome satisfaction and expectation. These findings suggest that, despite the distinct digital characteristics of the two generations, the underlying mechanisms driving the

intention to adopt digital waqf platforms are largely similar. Accordingly, this study contributes to the existing literature by integrating the Theory of Planned Behavior (TPB), the Extended Technology Acceptance Model (ETAM), and altruism into a unified framework for explaining digital waqf adoption, thereby extending the literature on technology adoption within the context of Islamic social finance.

The Indonesian Waqf Board (BWI) and nazhir institutions should prioritize enhancing the user experience by improving the application's ease of use, increasing the transparency of waqf fund management, and communicating the social impact of waqf in a more informative manner to strengthen outcome satisfaction and users' expectations. Furthermore, BWI should emphasize the role of altruism by doing altruism-based marketing strategy. Future research is recommended to expand the respondent population beyond the university setting, examine actual use through a longitudinal research design, and incorporate additional factors, such as religiosity, trust, system quality, and social media influence, to further enrich the understanding of digital waqf adoption.

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AUTHOR CONTRIBUTION STATEMENT

Conceptualization, research design, methodology development, and the formulation of the integrated TPB-ETAM-altruism framework were carried out by Muhammad Reyhanmukly, Asfi Manzilati, Aji Purba Trapsila, and Izzah Salsabila. Data collection, including questionnaire distribution and administration to Millennial and Generation Z respondents at Universitas Brawijaya, was conducted by Muhammad Reyhanmukly. Formal analysis, including measurement model assessment, structural model evaluation, Multi-Group Analysis using PLS-SEM, and robustness testing, was performed by Muhammad Reyhanmukly and Asfi Manzilati. Original draft preparation and writing were conducted by Muhammad Reyhanmukly and Izzah Salsabila, while review, editing, and revision were performed by Asfi Manzilati and Aji Purba Trapsila. All authors have read and approved the final version of the manuscript and agree to be accountable for all aspects of this work.

AI DISCLOSURE STATEMENT

During the preparation of this work, the author(s) used AI-assisted tools, such as grammar checkers and language enhancement software, solely for the purpose of improving readability and refining the language of the manuscript. No generative AI tools were used for statistical data analysis using PLS-SEM, interpretation of results, conceptual framework development, or core scientific writing. The authors take full responsibility for the originality, accuracy, and integrity of the research findings and the final content of this article.

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CONFLICTS OF INTEREST

The authors declare that there are no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. The research was conducted independently, and the results are presented objectively and without bias. The authors have no affiliation with or financial interest in the Indonesian Waqf Board (BWI), Bank Indonesia, or any digital waqf platform that could be perceived as influencing the analysis or conclusions of this study.

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