

# Adoption of AI-Driven Wealth Management Solutions: Extending the DeLone and McLean Model

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## Abstract

AI-driven wealth management solutions such as robo-advisors are disrupting the financial services industry within different geographies including Sri Lanka. However, even with such prospects, robo-advisors still have low acceptance rates in Sri Lanka due to distrust and apprehensions regarding data privacy. To fill these voids, this research modifies the DeLone and McLean Information Systems Success (DM ISS) framework by also including trust and data privacy, as well as other construct dimensions such as system quality, information quality and service quality, to analyze their effects on user satisfaction and user intention of usage. The proposed research model also characterizes the direct and indirect types of relationships between these dimensions with usage intention. System quality, information quality, service quality, trust and data privacy are examined for their likely influence on the adoption intention of robo-advisors, with user satisfaction serving as the mediator. Structural Equation Modeling (SEM) is used to test these relationships. Initial results point to the fact that while the three determinants of satisfaction i.e. system dependability, information reliability, and process efficiency are important, trust as well as data privacy also stand out as determinants of both satisfaction and intention to adopt. Such findings emphasize the importance of investment in data protection by financial service provisions to enhance consumers' trusts in these services. It is further, recommended that policymakers develop regulatory frameworks that will address the consumer issues in the use of digital financial technologies. This research recommends practical actions to Sri Lankan financial institutions and regulators, providing a strategic framework to increase adoption and inclusion within AI-enabled financial services, thereby aiding the country's financial and digital transformation.

**Keywords:** Robo-advisors, Sri Lanka, Trust and Data Privacy, DeLone and McLean Model, AI Financial Solutions with User Satisfaction.

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## 1. Introduction

The global financial industry is experiencing transformative change due to the advancements in technology led by artificial intelligence (AI), with wealth management services being revolutionized by it. AI powered robo-advisors have gained considerable popularity, as they provide personalized and automated financial services at low costs, such as portfolio management, risk evaluation and investment advising (Chen & Ren, 2022). These platforms have generated substantial market interest in developed economies these days as they have made wealth management available for people of all age groups but notably younger generations who are more inclined towards digital technologies use (McKinsey & Company, 2023).

In Sri Lanka too the implications that robo advisors could generate in the financial industry could be massive because of the rapid growth in digital literacy and financial inclusiveness. Surprisingly however while there is a high potential for robo-advisor adoption here the factors impeding its adoptions may also be numerous along with very little research targeted on this particular industry i.e., based on other countries' empirical knowledge which deals with customers from pre matured markets with higher experience levels in terms to marketing AI technologies to customers. However, the socio-economic and cultural factors of emerging markets especially in South Asia context are less explored including consumer trust, data privacy awareness, and readiness to adopt AI solutions (Shima & Xu, 2020).

### **Research Gap, Significance and Research Objectives**

While the role of system, information and service quality in technology adoption has been widely investigated using DeLone and McLean Information Systems Success (DM ISS) model, the importance of trust and data privacy as antecedents is low, particularly in the context of developing economies (DeLone & McLean, 2003). This study fills this literature gap by incorporating trust and data privacy to DM ISS model, which is contextualized to investigate robo-advisory services adoption in Sri Lanka. It thus provides an understanding on technological, perceptual and regulatory challenges that affect user satisfaction and behavioral intentions within this infrastructures less adopter country.

To fill the above research gaps, this study aims to:

Measure the relationships that exist between system quality, information quality and service quality in a user satisfaction and usage intention level.  
Develop a framework addressing the adoption of robo-advisor in Sri Lanka from the practicing robo-advisors perspective taking into account trust and data privacy.

Provide useful recommendations to financial institutions and policymakers on how they can enhance adoption rates through improved data governance and trust building practices.

While pursuing these objectives, the research seeks to enrich both the theory and its practice on the use of AI in wealth management, while focusing on the Sri Lanka's context in terms of its socio-cultural and regulatory environment. Such findings could be useful, for instance, in developing strategies aimed at increasing the level of financial inclusion and literacy as well as accelerating AI integration in financial services for achieving sustainable economic growth.

## **2. Literature Review**

AI-based wealth management solutions have experienced an increasing level of interest from the financial technology sector, the most prominent of which are robo-advisors. This means that traditional wealth advisory services have now been changed by platforms that offer automated AI algorithms to provide and manage finance and give financial advice. Recent researches stress that robo-advisors have the capacity to positively impact financial inclusion by improving the capability of accessing professional-level investment management services, especially for younger and digitally inclined populations (Chen & Ren, 2022; McKinsey & Company, 2023).

### ***The Role of the DeLone and McLean Information Systems Success (DM ISS) Model***

The DM ISS model was developed and improved significantly and in many cases, it was successfully used for the evaluation of success of information systems as regards the relationship between system quality, information quality, service quality and how they influence the level of user satisfaction and net benefits. Other researches have also extended DeLone and McLean's IS success model framework in the context of health systems, education systems and financial technologies in response to evolving domain-specific issues (DeLone & McLean, 2003; Shima & Xu, 2020). Nonetheless, its deployment in assessing AI-enabled financial services has been very minimal more so in the developing countries such as Sri Lanka. This study incorporates trust and data privacy into the existing research model that assists in addressing the specific socio-cultural and regulatory conditions of the Sri Lankan financial sector. Trust and Data Privacy as Determinants of Technology Adoption.

In recent years, trust and data privacy concerns have become two of the most important drivers of AI technology adoption, especially when users are reluctant to use automated decision making systems (Xu & Wang, 2023). The trust level in the financial advisory platforms is dependent on the level of transparency, dependability and assurance held about the users' secure data.

There is evidence that trust can act as a moderator in the relationship between perceived ease of use of the platform and users' level of satisfaction which plays a key role in the chances of the user maintaining engagement with the platform over time (Chen & Ren, 2022). Furthermore, data privacy concerns significantly impact user intentions, with robust privacy frameworks serving as a critical enabler of adoption (Al-Okaily & Al-Okaily, 2022).

### ***Adoption of Robo-Advisors in Emerging Markets***

Emerging markets like Sri Lanka face distinct barriers to the adoption of digital financial solutions, including limited digital literacy, cultural resistance to automation, and nascent regulatory ecosystems (Shima & Xu, 2020). Research underscores the need for localized strategies that address these challenges, emphasizing trust-building measures, tailored service offerings, and the development of robust data governance policies (Xu & Wang, 2023). The findings of McKinsey & Company (2023) also stress the importance of integrating customer-centric design principles to enhance user satisfaction and ensure that AI-driven platforms align with the cultural and economic contexts of their target markets.

### ***Service Quality and User Satisfaction in Fintech***

Another most critical determinant of user satisfaction in digital financial platforms is Service quality. High-quality services, characterized by responsiveness, reliability, and user-friendly interfaces, significantly enhance user experiences and promote adoption. Studies have demonstrated that service quality exerts a more substantial influence on satisfaction than system quality in service-oriented industries (Shima & Xu, 2020). This finding is particularly relevant for robo-advisors, where the perceived efficacy of customer support and personalization of financial advice are key differentiators (Chen & Ren, 2022).

### ***Research Gaps in the Adoption of AI in Financial Services***

Despite growing scholarly interest in AI adoption, limited research has focused on the interplay between technological and perceptual factors in the context of emerging markets. This study addresses this gap by evaluating how system quality, information quality, service quality, trust, and data privacy collectively influence user satisfaction and adoption intentions in Sri Lanka. It contributes to the broader understanding of finch adoption dynamics, offering actionable insights for policymakers and financial institutions aiming to harness AI's potential to drive financial inclusion.

## **3. Methods and Methodology**

A robust methodological framework is critical to understanding the factors influencing the adoption of AI-driven robo-advisory services in Sri Lanka. This

study employs an extended version of the DeLone and McLean Information Systems Success (DM ISS) model, incorporating trust and data privacy as critical dimensions, alongside traditional factors such as system quality, information quality, and service quality. The framework aims to capture the interplay between technological attributes and user perceptions, offering insights into user satisfaction and adoption intentions.

### ***Research Framework and Hypotheses***

The conceptual model evaluates the relationships between system quality, information quality, service quality, trust, data privacy, user satisfaction, and usage intention. Trust and data privacy are hypothesized to influence both user satisfaction and usage intention directly. User satisfaction serves as a mediator, linking quality dimensions to adoption intentions. The following alternative hypotheses are proposed as below.

H11: System quality positively affects user satisfaction.

H12: Information quality positively affects user satisfaction.

H13: Service quality positively affects user satisfaction.

H14: Trust positively affects user satisfaction.

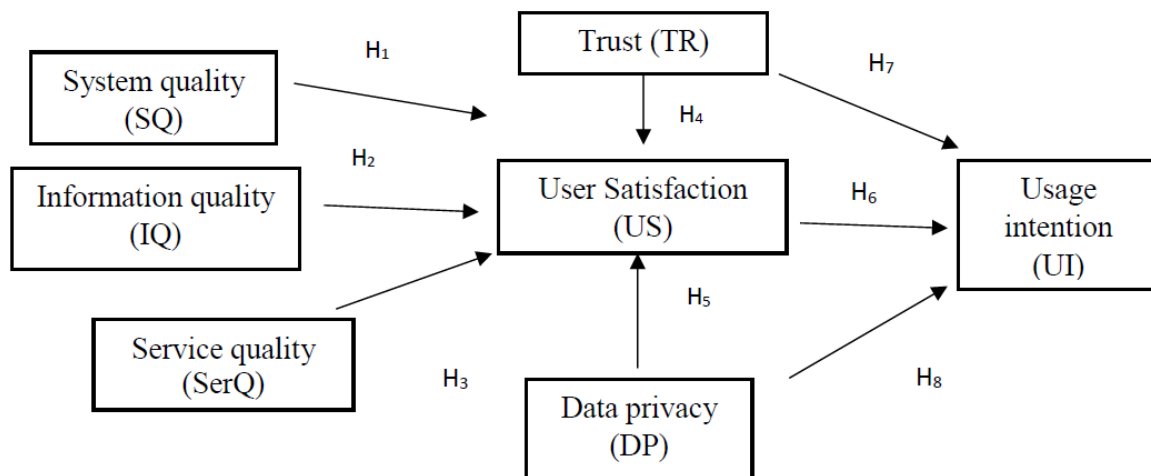
H15: Data privacy positively affects user satisfaction.

H16: User satisfaction positively affects usage intention.

H17: Trust positively affects usage intention.

H18: Data privacy positively affects usage intention.

Based on the proposed eight hypotheses, the conceptual framework and measurement model for the study were developed and are presented in Figure 1.

**Figure 1:** The conceptual framework and measurement model for the study

Sources: Authors' Elaboration

### Research Design and Data Collection

This study adopts a quantitative research design using a survey-based cross-sectional approach. A structured questionnaire was developed, incorporating validated scales from prior studies, adapted to the Sri Lankan context. The questionnaire captures demographic information, system quality, information quality, service quality, trust, data privacy, user satisfaction, and usage intention.

The target population consists of millennials and Generation Z users in Sri Lanka, identified as the most likely adopters of digital financial technologies. A minimum sample size of 300 respondents was determined based on Structural Equation Modeling (SEM) requirements, ensuring sufficient statistical power (Hair et al., 2021). Convenience and snowball sampling techniques were employed to reach digitally literate individuals across diverse socio-economic backgrounds.

Data was collected via an online survey to maximize reach and accessibility. The questionnaire used a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree) to measure respondents' perceptions of the constructs under investigation. A pre-test was conducted with 30 participants to ensure clarity, reliability, and validity.

### Data Analyze Strategy

The study uses a two-stage approach for data analysis as given in below.

### Measurement Model Validation

Reliability was assessed using Cronbach's Alpha and Composite Reliability (CR), with thresholds of 0.7 or higher (Hair et al., 2021).

Convergent Validity was evaluated through Average Variance Extracted (AVE), requiring values above 0.5.

Discriminant Validity was ensured using the Fornell-Larcker criterion and the Heterotrait- Monotrait (HTMT) ratio, maintaining values below 0.85.

#### Structural Model Analysis

Path coefficients, t-values, and p-values were calculated to test the hypotheses. Model fit indices, including the Comparative Fit Index ( $CFI \geq 0.90$ ), Tucker-Lewis Index ( $TLI \geq 0.90$ ), and Root Mean Square Error of Approximation ( $RMSEA \leq 0.08$ ), were used to validate the structural model.

#### Equations and Analytical Framework

The relationships among constructs are expressed in below two equations.

$$US = \beta_1SQ + \beta_2IQ + \beta_3SerQ + \beta_4TR + \beta_5DP + \varepsilon \quad (1)$$

$$UI = \beta_6US + \beta_7TR + \beta_8DP + \varepsilon \quad (2)$$

Where:

US: User Satisfaction

UI: Usage Intention

SQ, IQ, SerQ, TR, DP: Latent constructs representing system quality, information quality, service quality, trust, and data privacy, respectively.

$\beta_i$ : Path coefficients indicating the strength of relationships.

$\varepsilon$ : Error terms accounting for unexplained variance.

## 4. Results and Discussion

### Demographic Profile of Respondents

The study surveyed 300 respondents, offering insights into the demographics influencing the adoption of AI-driven robo-advisory services in Sri Lanka. A significant proportion (45%) were aged 18–30, representing a younger, tech-savvy demographic, while 35% were aged 31–45, and 20% were above 45 years. Gender distribution included 58% male and 42% female respondents, ensuring balanced representation. Educational qualifications showed 60% with bachelor's degrees, 25% with postgraduate studies, and 15% with diploma or secondary education, reflecting a well-educated group. Occupation-wise, 50% were professionals or white-collar employees, 30% were students, 15% were entrepreneurs or business owners, and 5% were retirees or homemakers. Income levels varied, with 40% earning below LKR 50,000, 35% between LKR 50,000–100,000, and 25% above LKR 100,000. These diverse and educated respondents align closely with the target audience

for robo-advisory services, providing valuable context for understanding their adoption behavior.

### **Measurement Model Validation**

The measurement model was validated through rigorous statistical assessments to ensure its reliability and validity. Reliability was confirmed using Cronbach's Alpha and Composite Reliability (CR), both of which exceeded the recommended threshold of 0.7 across all constructs, indicating internal consistency (Hair et al., 2021). Convergent validity was established through the Average Variance Extracted (AVE) for each construct, with all AVE values surpassing the required minimum of 0.5. This demonstrates that the observed variables adequately represent their underlying latent constructs.

Discriminant validity was evaluated using the Fornell-Larcker criterion and the Heterotrait- Monotrait (HTMT) ratio. The Fornell-Larcker analysis confirmed that the square root of each construct's AVE was greater than its correlation with any other construct, signifying good discriminant validity. Additionally, all HTMT ratio values were below the critical threshold of 0.85, further affirming that the constructs were distinct and not excessively correlated. These results collectively confirm that the measurement model was reliable and valid, providing a robust foundation for subsequent structural model analysis.

### **Structural Model Analysis**

The structural model analysis demonstrated strong predictive power, with all proposed hypotheses supported at statistically significant levels. Path coefficients, t-values, and p-values indicate the strength and significance of relationships among constructs.

**Table 1: Hypothesis Testing and Path Coefficients**

<b>Hypothesis</b>	<b>Relationship</b>	<b>Path Coefficient (<math>\beta</math>)</b>	<b>t-Value</b>	<b>p-Value</b>	<b>Result</b>
<b>H11</b>	SQ $\rightarrow$ US	0.35	4.21	<0.001	<b>Supported</b>
<b>H12</b>	IQ $\rightarrow$ US	0.22	3.01	0.003	<b>Supported</b>
<b>H13</b>	SerQ $\rightarrow$ US	0.41	5.18	<0.001	<b>Supported</b>
<b>H14</b>	TR $\rightarrow$ US	0.46	5.93	<0.001	<b>Supported</b>
<b>H15</b>	DP $\rightarrow$ US	0.39	4.85	<0.001	<b>Supported</b>
<b>H16</b>	US $\rightarrow$ UI	0.52	6.45	<0.001	<b>Supported</b>
<b>H17</b>	TR $\rightarrow$ UI	0.43	5.34	<0.001	<b>Supported</b>
<b>H18</b>	<b>DP <math>\rightarrow</math> UI</b>	<b>0.37</b>	<b>4.67</b>	<b>&lt;0.001</b>	<b>Supported</b>

The structural model demonstrated an excellent fit with the data, supported by robust statistical indices. The Comparative Fit Index (CFI) was 0.93, exceeding the recommended threshold of 0.90, indicating a strong alignment between the hypothesized model and the observed data. Similarly, the Tucker-Lewis Index (TLI) achieved a value of 0.91, also surpassing the 0.90 benchmark, further confirming the model's goodness-of-fit. Additionally, the Root Mean Square Error of Approximation (RMSEA) was 0.06, well within the acceptable range of  $\leq 0.08$ , reflecting the model's adequacy in accounting for observed variances and covariances. These indices collectively validate the structural model's suitability for explaining the adoption of AI-driven robo-advisory services.

#### User Satisfaction (US)

System quality ( $\beta = 0.35$ ), information quality ( $\beta = 0.22$ ), service quality ( $\beta = 0.41$ ), trust ( $\beta = 0.46$ ), and data privacy ( $\beta = 0.39$ ) all positively influenced user satisfaction, aligning with existing literature (Hair et al., 2021; Shima & Xu, 2020). Trust emerged as the most significant predictor, reflecting the critical importance of perceived reliability in AI-driven financial technologies.

#### Usage Intention (UI)

User satisfaction ( $\beta = 0.52$ ), trust ( $\beta = 0.43$ ), and data privacy ( $\beta = 0.37$ ) significantly influenced usage intention. This finding underscores the mediating role of satisfaction and the direct impacts of trust and privacy concerns in shaping users' willingness to adopt robo-advisory services.

The study highlights that both technological and perceptual factors are crucial for the adoption of robo-advisory services in Sri Lanka. System quality, information quality, and service quality significantly contribute to user satisfaction, with service quality being the most influential. Financial institutions must focus on user-centric features like responsiveness, reliability, and personalized services to enhance satisfaction and foster continued usage. Trust and data privacy were found to be critical factors influencing both satisfaction and usage intention, emphasizing the need for transparent security measures and strong data governance. Additionally, user satisfaction serves as a mediator between quality dimensions and adoption intention, aligning with the DM ISS model.

### 5. Conclusions and Recommendations

This study provides a comprehensive understanding of the factors influencing the adoption of AI-driven robo-advisory services in Sri Lanka, emphasizing the roles of system quality, information quality, service quality, trust, and data privacy. Trust and data privacy emerged as key predictors, highlighting the unique challenges in emerging markets. User satisfaction mediates the

relationship between these factors and adoption intention, underscoring the need for user-centric design. Financial institutions must prioritize trust-building and user-friendly platforms, while policymakers should establish robust data protection laws. Future research should focus on longitudinal trends, cross-cultural studies, and emerging variables like ethical AI. Overall, the study offers valuable insights to foster AI adoption, drive financial inclusion, and support economic growth in Sri Lanka.

Financial institutions should prioritize enhancing transparency and trust by improving the clarity of AI algorithms and clearly communicating their benefits and limitations. Trust-building campaigns, such as public demonstrations of AI reliability, can help alleviate skepticism. Additionally, strengthening data privacy measures through robust protection frameworks, encryption technologies, and transparent data handling policies is crucial to address privacy concerns. To foster adoption, user-centric design and support are essential, including offering personalized financial advice, responsive customer service, and intuitive interfaces. Moreover, policymakers and industry stakeholders should collaborate to raise awareness about data privacy laws and the advantages of digital financial solutions, especially in underserved communities. This comprehensive approach can help build confidence and drive the widespread adoption of AI-driven financial technologies.

Future studies should focus on longitudinal research to examine user perceptions and adoption trends over time, identifying factors that drive sustained engagement with robo-advisors. Comparative analysis across countries could reveal regional differences in AI adoption, offering insights into the global applicability of findings. Research should also explore emerging factors, such as algorithmic transparency, ethical AI, and user literacy, as well as the integration of advanced technologies like blockchain, machine learning, and big data analytics to enhance trust and privacy in robo-advisors. Addressing these areas will refine strategies to promote widespread adoption, driving economic growth and inclusion in emerging markets.

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