Reframing UTAUT for Mandatory Public AI Services: A Case from Abu Dhabi, UAE

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***Abstract*—Artificial Intelligence (AI) is transforming public service delivery in the UAE, exemplified by Abu Dhabi's TAMM platform. This study employs an extended Unified Theory of Acceptance and Use of Technology (UTAUT) framework, substituting Behavioral Intention with User Satisfaction to reflect mandatory-use contexts. Using a sequential explanatory mixed-methods approach, the research collected survey responses from 137 TAMM users and conducted follow-up interviews. Key findings show that Effort Expectancy, Facilitating Conditions, and Social Influence significantly influence satisfaction. Moderating effects of gender and AI experience were also observed. The study offers theoretical extensions to UTAUT and strategic recommendations aligned with the UAE Digital Government Strategy 2025–2027.**

Keywords— Keywords—AI adoption, user satisfaction, UTAUT, government platforms, Abu Dhabi, TAMM, SmartPLS, trust

I. INTRODUCTION

The adoption of Artificial Intelligence (AI) by public sector organizations is reshaping government service delivery worldwide [1]. In the United Arab Emirates (UAE), specifically in Abu Dhabi Emirate, platforms like TAMM represent this digital evolution by integrating AI-driven features to enhance citizen interactions [2]. Abu Dhabi aims to be the first fully AI-powered government by 2027, supported by initiatives such as the Artificial Intelligence and Advanced Technology Council and the Digital Government Strategy 2025–2027 [3].

Despite these strategic ambitions, the success of AI initiatives hinges not just on deployment but on public satisfaction and acceptance [4]. This is particularly crucial in mandatory-use platforms where opting out is not feasible. Yet, limited empirical research exists on user satisfaction in such settings, especially in the Gulf context [5].

This study addresses this gap by extending the UTAUT model [6] traditionally focused on Behavioral Intention, by substituting it with User Satisfaction. It investigates how core UTAUT constructs—Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions—shape satisfaction with AI features on the TAMM platform in as the mandatory context to be utilized for any application to government services. It also explores how demographic factors such as age, gender, and prior AI experience moderate these relationships. As shown in Figure 1 is the research model used. Based on the UTAUT constructs and the study objectives, the following hypotheses are proposed:

- H1: Performance Expectancy has a significant positive effect on User Satisfaction.
- H2: Effort Expectancy has a significant positive effect on User Satisfaction.
- H3: Social Influence has a significant positive effect on User Satisfaction.
- H4: Facilitating Conditions have a significant positive effect on User Satisfaction.
- H5: User Experience significantly contributes to overall User Satisfaction.

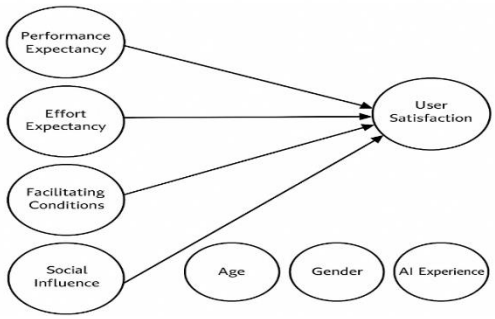

Figure 1: Research Model.

II. METHODOLOGY

This study adopts a sequential explanatory mixed-methods approach, combining both quantitative and qualitative research methods to explore the factors influencing user satisfaction with AI services on the TAMM platform in Abu Dhabi [7]. The methodology is designed to provide a comprehensive understanding of AI adoption in a mandatory-use government setting, specifically focusing on the user experience with AI-powered services.

The first phase consisted of a quantitative survey distributed to 137 users of the TAMM platform, using purposive sampling to ensure participants had experience with AI features. The survey consisted of questions designed to capture data on key factors influencing user satisfaction.

The survey was administered online through Google Forum and was structured around the key UTAUT constructs, such as Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, as well as the additional construct of User Satisfaction. The responses were recorded on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The second phase involved semi-structured interviews with TAMM workers to provide deeper insight into the quantitative findings, semi-structured interviews were conducted with three key stakeholders from the TAMM team. These individuals included a senior government employee, a policymaker, and an IT team member responsible for implementing AI features on the platform. The interviews focused on their perspectives on the challenges of AI adoption, strategic decisions, and user experiences with the platform. Thematic analysis was used due to its flexibility than other tools because it does not require any predefined theoretical framework [9]. The data from these interviews were analyzed using thematic analysis using ChatGPT to identify key themes related. As most of recent research uses Large model Language like ChatGPT to capture the main themes.

Ethical approval for this research was obtained from **Zayed University's Ethics Committee**, ensuring that all participants' rights and privacy were protected. Informed consent was obtained from all survey participants and interviewees, and the responses were anonymized to maintain confidentiality. In compliance with ethical research standards and privacy regulations, the data collected will not be shared with third parties without explicit consent from the participants. The findings from this research will only be disseminated in aggregate form or anonymized reports to ensure that no individual participant can be identified.

III. RESULTS AND KEY INSIGHTS

Quantitative analysis mainly relied on testing the hypothesis using path coefficient and it revealed that Effort Expectancy ($\beta = 0.252$, $p = 0.003$), Facilitating Conditions ($\beta = 0.304$, $p < 0.001$), and Social Influence ($\beta = 0.176$, $p = 0.029$) significantly influenced User Satisfaction. Performance Expectancy ($\beta = 0.135$, $p = 0.112$) did not show a significant effect. The model explained 48.2% of the variance in user satisfaction ($R^2 = 0.482$). as shown in Table 1 is the path coefficients.

	Original sample (O)	Sample mean (M)	P values
EE -> UES1	0.252	0.252	0.003
FC -> UES1	0.304	0.311	0
PE -> UES1	0.135	0.133	0.112
SI -> UES1	0.176	0.174	0.029

Table 1, Path Coefficients and Significance

Moderation analysis were tested using The Multi-Group Analysis (MGA) technique and Interaction Term Modeling in SmartPLS. The results showed gender and AI experience had significant moderating effects. For instance, Facilitating Conditions were more influential among female users, while Social Influence had a greater impact on users with no prior AI experience. While age did not showed any significance across the model constructs.

Qualitative insights supported these findings, emphasizing trust, usability, and the importance of hybrid human-AI interaction [10]. After writing the script of the main parts of the interview, the script was uploaded to ChatGPT with the following Command: "This is the script of interviews and the questions are based UTAUT extended with Satisfaction instead of use of behaviour, I want to capture the main themes using thematic analysis". After that the researcher manually checked the output and edit it. Next phase was to link every theme with the UTAUT construct and research hypothesis in order to be able to link them with the quantitative analysis.

Interview themes included AI as a government efficiency enabler, the ease of accessing services through multiple channels, the importance of support infrastructure, and ethical AI design considerations[11]. As shown in Table 2 the main themes was extracted from the interview script.

Theme	**UTAUT Construct**	**Related RQ & Hypothesis**	**Outcome**
AI Enhances Government Efficiency	Performance Expectancy	H1	Supported
Usability and Multichannel Design	Effort Expectancy	H2	Supported
Training and Support	Facilitating Conditions	H3	Supported
Managerial and Peer Influence	Social Influence	H4	Partially Supported
Hybrid Use and Trust	User Satisfaction	H5	Supported
Ethical AI Governance	Trust (Emergent)	-	Emergent

Table 2, Thematic analysis

IV. Conclusion

This study extends the UTAUT model by positioning User Satisfaction as a key outcome in mandatory-use government AI platforms. The findings affirm that usability, organizational support, and peer influence are central to AI service satisfaction in public systems.

A. Summarize Findings

The quantitative results highlighted that Effort Expectancy (EE) and Facilitating Conditions (FC) significantly impacted user satisfaction with AI services on the TAMM platform. These findings were echoed in the qualitative interviews, where participants emphasized the importance of ease of use and the availability of training and support. Users reported that their satisfaction increased when they could easily navigate the platform and had access to reliable support resources.

In contrast, Performance Expectancy (PE) did not show a significant effect on satisfaction, which was consistent with qualitative insights. While participants acknowledged the potential benefits of AI in terms of efficiency, their satisfaction was more influenced by usability and trust in the platform. Many users expressed that their satisfaction was driven by their ability to use the system with confidence, rather than solely by its performance improvements.

Finally, the Social Influence (SI) construct had a moderate effect on user satisfaction. Some interviewees indicated that government endorsements and peer recommendations played a role in their decision to use the platform. However, personal experiences with the system, particularly its usability and reliability, were found to have a stronger influence on overall satisfaction, suggesting that external pressures had less impact than direct user experience.

B. Key Contributions

Theoretical: Introduces User Satisfaction into UTAUT, adapting it to compulsory service contexts. This study makes the most significant innovation with the use of and extension of the UTAUT framework to Abu Dhabi's compulsion to utilize TAMM platform, one of the first comprehensive examination of AI acknowledgment in the Arab public part.

Practical: Highlights design implications for enhancing trust, usability, and accessibility. Furthermore, the study also confirms the results of a recent work of Rana et al. (2023) [13] on AI acceptance in public services, where they suggested to enrich the UTAUT with constructs such as trust in algorithms and perceived transparency. The most substantial contribution of the study is the realization of how User Experience outperforms the majority of UTAUT constructs in the scenarios of mandatory AI adoption. This finding is consistent with current advances in technology acceptance theory that proposes including experiential and affective aspects in the era of AI [14].

Methodological: Demonstrates the value of mixed-methods in understanding technology adoption. A cross-sectional design was used, capturing user attitudes and perceptions at one point in time only. This prevents the ability to monitor changes in user perceptions or satisfaction over a prolonged period.

C. Furture Direction

1. Longitudinal studies and designs should be used in future research tracking how user perceptions change over time as AI systems become more mature and users become more experienced.
2. Comparative studies across different national and cultural contexts would enable to disentangle universal adoption factors from the culture-specific ones. (Medaglia et al., 2023).
3. In-depth analysis of trust dimensions in AI systems. Future studies must distinguish the trust of technology from the trust of the government machinery to deploy it, and to trust the specific implementation of it.
4. Studies need to test various AI-human partnership systems to determine the most acceptable and effective division of labor between AI automation and human customer service.

Our recommended future research provides a clear direction to expand upon these project results in both theory and practice of AI adoption by government agencies. Through these research areas researchers will make better technology acceptance models that help governments correctly use AI in public services while keeping citizens happy.

More governments around the world use AI in operations so research about its implementation will gain greater importance. The actions of the Abu Dhabi reveal key practices that other governments can apply when they start adopting digital technology. New research on these conclusions and research gaps would enhance government practice with AI technology.

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