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# Drivers of Meta-Banking Adoption: The Role of Perceived Value and Trust in Technology

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***Abstract***

*This study investigates the determinants of consumers' intention to adopt meta-banking services, focusing on Perceived Value as a key mediator and Trust in Technology as a crucial moderator. Drawing on established technology acceptance theories, we developed a research model examining how Compatibility, Facilitating Conditions, Perceived Ease of Use, Perceived Enjoyment, Perceived Usefulness, Personal Innovativeness in IT, and Technostress influence Perceived Value, which in turn affects Adoption Intention. Data were collected via an online survey from 312 Jordanian consumers with prior AR/VR experience and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). Results confirmed that all hypothesized factors significantly influence Perceived Value, with Technostress having a negative impact. Perceived Value strongly predicted Adoption Intention. Importantly, Trust in Technology positively moderated the relationship between Perceived Value and Adoption Intention. These findings provide theoretical insights and practical guidance for financial institutions developing meta-banking strategies.*

***Keywords:*** *Meta-banking, Metaverse, Perceived Value, Trust in Technology, Personal Innovativeness, Technostress, UTAUT, Jordan.*

## Introduction

The ways customers interact with banks are changing quickly. We are moving past a time when banking only meant visiting physical branches or using basic websites and mobile apps. A new idea, initially termed meta-banking, but which we will refer to herein as metaverse banking, is emerging. This concept holds significant potential to reshape how people will manage their finances in the future (Singh & Rani, 2024; Zainurin et al., 2023). To articulate; imagine a customer stepping into a virtual bank office, talking with a digital bank employee, or looking at financial products in a 3D space. This gives a picture of metaverse banking. It involves providing banking services within these new virtual metaverse worlds. This is made possible by exciting technologies such as virtual reality (VR) and augmented reality (AR) (Iqbal et al., 2024; Nguyen et al., 2023). This isn't just a minor adjustment. Instead, it represents a major shift that aims to make banking more interesting for customers and possibly more efficient for the banks

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themselves (Ooi et al., 2023). We believe that the future will go to the metaverse in many contexts as for now billions from tech giants spent on developing the infrastructure.

Meta-banking could also involve unique digital items known as Non-fungible tokens or NFTs (Mohamed & Faisal, 2024; Singh & Rani, 2024). Importantly, these digital assets can frequently be connected back to real-world money through established banking systems. This connection builds a bridge between these new virtual economies and the traditional financial world (Zainurin et al., 2023).

To understand why metaverse banking is becoming such an important topic now, looking back at how banking has changed is helpful. For a very long time, banking meant going to an actual building. There, you would talk face-to-face with bank staff (Farah et al., 2018). This traditional method certainly helped build trust between banks and their customers. However, it wasn't always the most convenient or efficient way to handle finances. Later, technologies like Automated Teller Machines (ATMs) appeared. The introduction of these machines marked a significant shift, allowing customers to perform basic transactions without needing direct help from a person (Farah et al., 2018; Mohamed & Faisal, 2024). Following that, online banking allowed people to manage their accounts using computers. Then came mobile banking, using smartphones and tablets, which made banking possible almost anywhere and at any time (Farah et al., 2018; Mohamed & Faisal, 2024). Each of these developments made banking easier and more efficient. Metaverse banking is now seen by many as the next major step in this evolution. It aims to take the digital experience to a completely new level of immersion (Nguyen et al., 2023; Ooi et al., 2023). It relies on progress in VR, AR, blockchain technology (which supports cryptocurrencies), and artificial intelligence (AI) to create these rich, interactive virtual banking worlds.

The potential advantages offered by metaverse banking seem considerable, affecting both customers and the banking institutions. For individuals using banking services, this approach presents a fundamentally new way to engage. Instead of the customers just looking at numbers on a flat screen, they have the ability to visualize their financial future in three dimensions. Could explore different investment options interactively. Or may opt to receive personalized advice from advanced AI virtual assistants (Iqbal et al., 2024; Jung et al., 2024). Such an immersive experience could potentially make banking feel less like a chore and more like an engaging activity. It might even help some users better understand complex financial ideas (Yaseen et al., 2024; Nguyen et al., 2023). Furthermore, metaverse banking promises greater convenience. It allows access to sophisticated banking services from almost anywhere, removing the need to travel to a physical branch (Ooi et al., 2023).

On the other hand, from the banks' point of view, metaverse banking opens up possibilities for improved operational efficiency. Running virtual branches will cost less than maintaining physical branches. Artificial intelligence can handle many routine customer questions. This frees up human employees to focus on more complex issues and provide deeper support (Ooi et al., 2023; Singh & Rani, 2024). Banks can build stronger relationships over time. It will help banks attracting new customer targets, particularly younger generations who are often highly comfortable navigating virtual environments (Hassaan, 2024). And for bank employees, such as increased flexibility in work arrangements, enabling them to serve customers from different locations within the metaverse platform (Ooi et al., 2023).

However, just because this technology exists and offers benefits doesn't mean people will automatically start using it. The success of meta-banking heavily depends on whether customers

are willing to adopt it (Nguyen et al., 2023; Yaseen et al., 2024). This is where the main challenge lies. We currently don't fully understand what makes someone weather or not to adopt meta-banking services. In surveying recent metaverse banking scholarship, researchers have adopted a variety of methodological approaches and theoretical lenses. Several studies used qualitative designs—most notably, Hassaan (2024) conducted semi-structured interviews in Pakistan to identify adoption facilitators and inhibitors, whereas Mohamed and Faisal (2024) engaged industry experts to examine metaverse-enabled innovation in banking. By contrast, numerous works employed quantitative methods: Yaseen et al. (2024) tested the unified theory of acceptance and use of technology (UTAUT) to predict user intentions toward "meta-banking," while Alhanatleh, Khaddam, and Alzghoul (2024) combined the Trust Theoretic Model, Task-Technology Fit, and theory of planned behavior to explore intentions to adopt metaverse Islamic mobile banking. Other quantitative investigations include Naeem, Arfaoui, and Yarovaya's (2024) application of advanced econometric techniques (e.g., CAViaR, TVP-VAR) to uncover contagion effects from AI to metaverse-related sectors; Nguyen et al. (2023) developed a new UTAUMT model to study metaverse banking adoption; and Kumar and Shankar (2024) examined perceived anthropomorphism, immersion, trust, and distrust using dual-factor theory. Additional works have mapped the wider landscape of metaverse finance and fintech: (Tandon et al., 2023) undertook a bibliometric analysis of fintech, highlighting blockchain and metaverse themes; Ooi et al. (2023) discussed four key areas where metaverse might disrupt corporate and retail banking; and Aysan, Gozgor, and Nanaeva (2024) employed scenario-based foresight to delineate the future of metaverse-based financial services. Others investigated context-specific drivers: Kim and Nam (2024) explored cultural differences in metaverse content (including banking), Alshurafat, Arabiat, and Shehadeh (2024) integrated religiosity within the TAM to predict adoption in Islamic banks, and Al-Afeef et al, (2024) analyzed how metaverse-driven trust and product features shape Islamic banking performance. Complementary discussions on the emergence of metaverse in financial services appear in Mozumder et al, (2023) who highlighted new revenue streams for metaverse participants; Singh (2023), who examined AI's role in regulatory compliance for UK financial institutions (with a nod to metaverse opportunities); Aloulou et al, (2023) who focused on fintech adoption in the UAE; and Zainurin et al, (2022) who defined "metaverse banking" conceptually and speculated on its future growth trajectory. Collectively, these works underscore the diverse and rapidly evolving research landscape of metaverse banking, spanning qualitative and quantitative designs, multiple theoretical frameworks (e.g., UTAUT, TAM, trust models) and various regional contexts. Despite those endeavors, There's a significant gap in research specifically looking at why people might adopt metaverse (Al-Adwan et al., 2024). Most studies on technology adoption focus on less complex technologies or different contexts. Meta-banking is unique because it combines finance, which requires high trust and security, with immersive virtual worlds that are still new and unfamiliar to many (Jung et al., 2024; Hassaan, 2024).

To help fill this knowledge gap, this research focuses on two central ideas: Perceived Value and Trust in Technology. We believe these are particularly important for understanding meta-banking adoption. Perceived Value is essentially the overall benefit a user feels they get from using a service, considering both the good parts (like convenience or enjoyment) and the bad parts (like effort or cost) (Farah et al., 2018; Yaseen et al., 2024). It's about the user's personal calculation of "Is this worth it for me?". In the context of something new like meta-banking, users will likely need to see clear value before they decide to try it and stick with it (Al-Adwan, Jafar, & Sitar-T, 2024). We think that several other factors influence how much value a user perceives.

The second key idea is Trust in Technology. Banking involves sensitive personal and financial information, so trust is always crucial (Yaseen et al., 2024; Nguyen et al., 2023). In meta-banking, this becomes even more critical because the environment is virtual, and the technologies are complex and sometimes decentralized (like blockchain) (Iqbal et al., 2024; Chan et al., 2022). Users need to trust that the platform is secure, their data is private, the transactions are reliable, and the system will work as expected (Farooq et al., 2024; Choung et al., 2022). Without this trust, even a valuable service might be rejected (Chan et al., 2022). We propose that trust doesn't just directly influence adoption but might also affect how perceived value translates into the intention to adopt.

This study investigates how several specific factors contribute to the Perceived Value of meta-banking. These factors, identified from previous research on technology adoption. Our main goal is to understand how these factors work together. Specifically; Compatibility, Facilitating conditions, Perceived ease of use, Perceived enjoyment, Perceived usefulness, Personal innovativeness in IT, Technostress influence the Perceived Value consumers associate with meta-banking. Then, to examine how this Perceived Value, along with Trust in Technology as moderator, ultimately affects their intention to adopt meta-banking services. Therefore, the research will answer:

1. Which of these factors (compatibility, facilitating conditions, perceived ease of use, perceived enjoyment, perceived usefulness, personal innovativeness in IT, and technostress) affecting how valuable consumers perceive meta-banking to be?

2. Does perceiving meta-banking as valuable strongly lead to an intention adopt meta-banking?

3. Does having trust in the technology make users more likely to adopt meta-banking if they perceive it as valuable? How does lack of trust affect this?

By answering these questions, this research hopes to make important contributions. From a theoretical perspective, we aim to test and potentially refine existing ideas about technology adoption by applying them to the unique case of meta-banking. We focus specifically on the roles of perceived value and trust, which seem particularly relevant here but need more empirical investigation in this context (Yaseen et al., 2024; Iqbal et al., 2024). From a practical standpoint, our findings should be very useful for the banking industry and technology developers. Understanding which factors are most important to potential users is therefore essential. This knowledge can significantly help banks in designing better virtual services. The goal is to make these new offerings genuinely useful, easy to navigate, enjoyable to interact with, and fundamentally trustworthy. Furthermore, knowing what matters to users allows banks to craft more effective marketing messages. It also helps them provide the right kind of support to encourage people to try and adopt these new platforms. Ultimately, the purpose of this research is to develop a clearer understanding of what drives individuals to either accept or reject meta-banking concepts. Such insights are vital for guiding the successful development and introduction of this next generation of financial services.

## Literature Review

### Theoretical Foundation

Foundational models such as the Technology Acceptance Model (TAM) offered crucial early insights, particularly highlighting the importance of how useful people perceive a technology to

be -Perceived Usefulness (PU)- and how easy they find it to use - Perceived Ease of Use (PEOU)- (Davis, 1989), subsequent models aimed for a more capteruing more variables for understanding the acceptance of new technologies such as the Unified Theory of Acceptance and Use of Technology -UTAUT1 and 2- (Venkatesh et al., 2012). It was specifically refined to better understand technology acceptance and usage from an individual consumer's perspective This specific focus makes UTAUT2 particularly relevant for meta-banking. After all, meta-banking is fundamentally a consumer-oriented financial service, despite its delivery through innovative technological channels. The original UTAUT had already integrated key concepts from several preceding theories, including TAM, to offer a unified perspective. UTAUT2 builds upon this foundation. It incorporates additional factors considered especially significant in voluntary, consumer-driven contexts – situations where people choose whether or not to use a technology. Furthermore, the developers of UTAUT2 acknowledged the potential, and indeed the occasional necessity, of adding new variables to the model. This flexibility allows researchers to enhance its explanatory power within specific contexts, like the emerging field of meta-banking.

**Factors Influencing Perceived Value of Meta-Banking**

Grasping what leads users to recognize value in a new technology such as meta-banking is fundamental. It helps us predict whether they are likely to adopt it. Perceived value is not a simple, single idea. Instead, it represents a combination of various beliefs and feelings that a user develops about the service (Jadil et al., 2021; Nguyen et al., 2023). Drawing upon previous research that examined why people adopt technologies, particularly in consumer areas like banking, we can pinpoint several key elements. These elements are thought to shape how valuable users ultimately perceive meta-banking to be. The following discussion will explore these factors individually. We will use existing studies, mentioned earlier in our review of the literature, to explain how each specific factor might influence the perceived value associated with using banking services within the metaverse environment.

**Compatibility**

compatibility refers to how well a new technology fits into a person's existing life (Nguyen et al., 2023). This includes several aspects: their personal values, their previous experiences with similar technologies, and their current needs and daily habits (Al-Adwan et al., 2024). When considering meta-banking, compatibility becomes particularly important. Customers need to feel that dealing with banking services within the metaverse aligns well with their established banking practices. Their comfort levels with technology in general also play vital role (Alshurafat et al., 2024; Iqbal et al., 2024; Farooq et al., 2024; Tariq et al., 2024).

Studies showed that when users perceive a technology as compatible with their existing systems and ways of working, they generally report higher satisfaction and are more inclined towards regular use (Jadil et al., 2021; Kumar et al., 2024). For instance, Al-Adwan et al., (2024) found that compatibility significantly influences students' attitudes when deciding whether to adopt new educational technologies Moreover, how well a technology aligns with cultural or religious values, like Sharia principles within Islamic banking contexts, represents another critical dimension of compatibility. This alignment can strongly influence user trust and acceptance (Alshurafat et al., 2024).

**Hypothesis H1:** Compatibility will positively influence the perceived value of meta-banking.

**Facilitating Conditions**

Facilitating condentions refers to the support and resources that users believe are available to assist them in using a technology (Kumar et al., 2023). Users need to feel sure that the necessary infrastructure is in place. the technical help from customer support is a must (Ooi et al., 2023).

Meta-banking depends on technology and infrastructure that are way advanced to traditional online banking. Users will require access to suitable devices – and this will likely include virtual reality (VR) or augmented reality (AR) hardware for the full experience. Stable, high-quality internet connections are also essential. Furthermore, users need assurance that technical support is readily available should they encounter difficulties while navigating the virtual banking environment (Hassaan, 2024). Research based on the UTAUT model consistently shows that facilitating conditions influence usage behavior and user satisfaction (Jadil et al., 2021; Yaseen et al., 2024). Studies indicate that having adequate organizational and technical support makes users feel more confident and reduces barriers to adoption (Farah et al., 2018; Kumar et al., 2024). Although some studies find facilitating conditions may not directly drive intention when other factors are accounted for (Xie et al., 2021). In contrast, Al-Adwan, Jafar, & Sitar-T (2024) argued that users perceive strong facilitating conditions, they are likely to feel less anxiety about potential difficulties, which can enhance their overall perception of the technology's value. Therefore, we expect that users who believe they have the necessary support and resources to use meta-banking will perceive it as more valuable.

- **Hypothesis H2:** Facilitating conditions will positively influence the perceived value of meta-banking.

**Perceived Ease of Use**

Perceived Ease of Use is a classic factor in technology adoption, originating from the Technology Acceptance Model (TAM). It refers to how effortless a person believes using a particular technology will be (Davis, 1989). Navigating virtual environments, controlling avatars, and interacting with virtual interfaces can be challenging for some users, especially those less familiar with such technologies (Ooi et al., 2023). Therefore, meta-banking platforms must be designed with user-friendliness in mind (Alshurafat et al., 2024; Tariq et al., 2024). Research consistently shows that PEOU positively influences user attitudes and intentions to adopt various technologies, including mobile banking and blockchain systems (Farah et al., 2018; Farooq et al., 2024). When users find a technology easy to use, it reduces frustration, saves time and effort, and builds confidence (Chan et al., 2022). we expect that when a bank provides strong facilitating conditions for metaverse banking (such as user-friendly VR apps, customer support for technical issues, and maybe affordable access to VR equipment), users will feel the service is convenient and low-hassle, thereby increasing its perceived value.

**Hypothesis H3:** Perceived ease of use will positively influence the perceived value of meta-banking.

**Perceived Enjoyment (PE)**

Perceived enjoyment refers to the extent to which an activity is found to be inherently pleasurable or fun, aside from any functional benefits (van der Heijden, 2004). It represents an intrinsic motivation to use a technology. Enjoyment has been incorporated into extended TAM models and UTAUT2 (as "hedonic motivation") as a significant factor, particularly for novel or hedonic technologies (Venkatesh et al., 2012). When using a technology is enjoyable, users gain

intrinsic value from the experience itself, which can augment the overall *perceived value*. In the value-based adoption model, perceived enjoyment is considered a key *benefit* (E. Kim & Kyung, 2025). If meta-banking services can provide a sense of novelty, fun, or immersive enjoyment, this positive affect will enhance the value they attach to the service. Prior research confirms that enjoyment can significantly impact users' attitudes and value perceptions. Early studies in emerging technology identified enjoyment as an important driver of perceived value in mobile internet adoption, even if instrumental benefits were the primary factor (H. W. Kim et al., 2007). More recently, experiential technologies like augmented reality and virtual reality have been shown to derive much of their appeal from enjoyment; users are more inclined to adopt these technologies when they find them fun to use (Rahim et al., 2022).

Enjoyment is expected to be a particularly strong factor in the context of meta-banking. The immersive, interactive, and often visually rich nature of metaverse platforms offers significant potential for creating engaging and enjoyable banking experiences (Jung et al., 2024; Hassaan, 2024). Studies have shown that perceived enjoyment significantly influences the adoption of technologies used in leisure or consumer contexts, such as mobile services or metaverse commerce (Farah et al., 2018;Al-Adwan et al., 2024). When users find the experience of using meta-banking genuinely enjoyable, it adds a layer of value beyond mere functionality. This intrinsic satisfaction can make them more likely to use the service and perceive it as a worthwhile addition to their lives.

- **Hypothesis H4:** Perceived enjoyment will positively influence the perceived value of meta-banking.

**Perceived Usefulness (PU)**

Perceived Usefulness refers to the degree to which a person believes that using a particular technology will enhance their job performance or, in a consumer context, help them achieve their goals more effectively (Alshurafat et al., 2024). It's about the practical benefits – does this technology help me do things better, faster, or more efficiently?

Usefulness is arguably the most fundamental driver of technology adoption. People generally use technologies because they expect them to provide some advantage or help them accomplish a task (Yaseen et al., 2024; Kumar et al., 2023). For meta-banking, perceived usefulness could stem from various aspects: perhaps accessing banking services 24/7 in an immersive way, receiving highly personalized financial advice from AI agents, visualizing complex financial data more clearly, or conducting transactions more efficiently within the metaverse environment (Iqbal et al., 2024; Ooi et al., 2023). Numerous studies across different technological domains have confirmed the strong positive impact of perceived usefulness on adoption intention and perceived value (Farah et al., 2018; Alshurafat et al., 2024; Choung et al., 2022). If users believe that meta-banking offers real, tangible benefits that improve how they manage their finances or interact with their bank, they are highly likely to perceive it as valuable.

- **Hypothesis H5:** Perceived usefulness will positively influence the perceived value of meta-banking.

**Personal Innovativeness in IT (PIIT)**

People differ in their general attitude towards new technologies. Personal Innovativeness in IT refers to an individual's inherent willingness to try out new and unproven information technologies (Yaseen et al., 2024; Farah et al., 2018). Some people are naturally curious and

eager to experiment with the latest gadgets and software (early adopters), while others prefer to wait until a technology is well-established and proven (late adopters).

This personal trait is highly relevant to the adoption of cutting-edge technologies like meta-banking. Individuals who score high on personal innovativeness are expected to be more open-minded and less resistant to trying meta-banking services, even in the early stages when the technology might be less polished or widely understood (Tariq et al., 2024; Jadil et al., 2021). They might be more likely to see the potential benefits and overlook initial complexities or risks (Mohamed & Faisal, 2024). (Vu et al., 2024) examined ride-hailing apps and found that customers' personal innovativeness had a positive impact on their perceived *hedonic* and *utilitarian* value of the service. Furthermore, innovative people tend to perceive new technologies more favorably regarding their usefulness, ease of use, and compatibility (Choung et al., 2022). Their inherent openness and curiosity may lead them to explore the features of meta-banking more readily and appreciate its novel aspects, thus perceiving higher value compared to less innovative individuals. They might see challenges as opportunities rather than obstacles (Jadil et al., 2021).

- **Hypothesis H6:** Personal innovativeness in IT will positively influence the perceived value of meta-banking.

**Technostress**

While technology offers many advantages, it also be a source of stress for some people. This phenomenon is often referred to as Technostress. Technostress is generally defined as the stress people experience when they feel unable to cope with new technologies (Yaseen et al., 2024).

Technostress represents a possible hinder to the adoption of meta-banking. Users need to learn new interfaces and figure out how to navigate new virtual environments. They also need to manage digital assets and very likely will have concerns regarding security or privacy within the metaverse. These factors can certainly induce stress for some (Singh & Rani, 2024; Nguyen et al., 2023). Research suggests that technostress can indeed act as a significant hurdle. It often negatively affects users' attitudes and their intentions when deciding whether to adopt new technologies (Yaseen et al., 2024; Al-Adwan, Jafar, & Sitar-T, 2024). Therefore, we believe that when users feel stressed of using meta-banking, it will reduce their perception of its overall value. The negative feelings linked to technostress can easily overshadow potential benefits, such as usefulness or enjoyment. This makes the technology seem less appealing and ultimately less worthwhile to adopt.

**Hypothesis H7:** Technostress will negatively influence the perceived value of meta-banking.

**Perceived Value and Intention to Adopt Meta-Banking**

Perceived value is generally defined as the user's overall evaluation of the utility of a product or service based on perceptions of what is received (benefits) versus what is given (costs) (Zeithaml, 1988). In the context of technology adoption, the Value-Based Adoption Model (VAM) positions perceived value as a direct antecedent of adoption intention – users weigh the combined benefits of a technology against the costs (monetary, time, effort, risk) and if the net value is favorable, they form an intention to adopt (Kim et al., 2007). A substantial body of recent research supports the pivotal role of perceived value in driving intention, across various technologies. For instance, studies on mobile services, e-commerce, and FinTech consistently find that when users perceive high value in the offering, they show stronger behavioral intention

to use it (Rihidima et al., 2022). Kapoor et al. (2022) found that perceived value is a fundamental factor for predicting customer intentions. In our meta-banking scenario, perceived value encapsulates all the aforementioned benefits (usefulness, enjoyment, compatibility, etc.) minus the costs (effort, fees, risks). If a customer concludes that using the metaverse for banking offers substantial advantages (e.g., convenience of remote access, richer interaction, time savings, unique experience) with acceptable costs or downsides, they will be inclined to adopt it. Recent studies in the Middle East lend credence to this value-intention link. For example, Yaseen et al. (2024) found in their meta-banking adoption model that perceived value is a key determinant of Jordanian customers' intention to adopt meta-banking, and their findings showed a strong positive effect of value on intention. Likewise, Al-Muamen, Al-Azzam, and Al-Adwan (2020) found in a digital banking context that perceived value significantly predicted Jordanian customers' intention to shift to new banking technologies.

**Hypothesis H8:** Perceived value of meta-banking will positively influence the intention to adopt meta-banking.

### The Moderating Role of Trust in Technology

While perceived value is crucial, it might not tell the whole story on its own. Another critical element, especially when dealing with financial matters and complex technology, is Trust. Trust in technology refers to a user's belief in the reliability, integrity, security, and competence of a technological system (Choung et al., 2022; Farooq et al., 2024). It's the feeling of confidence that the technology will work as expected, keep information safe, and operate without hidden risks or failures (Yaseen et al., 2024; Chan et al., 2022).

Trust is absolutely essential in banking. People entrust banks with their money and sensitive personal data. When banking moves into the metaverse – a virtual space built on complex technologies like VR, AR, AI, and potentially blockchain – the need for trust becomes even more pronounced (Iqbal et al., 2024; Nguyen et al., 2023). Users need assurance that their virtual transactions are secure from fraud, their personal data won't be misused or breached, the virtual advisors (whether human avatars or AI) are reliable, and the platform itself is stable (Mohamed & Faisal, 2024; Ooi et al., 2023). Concerns about privacy, data security, potential cyberattacks, and the reliability of virtual interactions are significant barriers that can only be overcome by establishing strong user trust (Dubey et al., 2023; Singh & Rani, 2024). Alalwan et al. (2017) found that in Jordan's mobile banking adoption, trust was a significant direct determinant of intention. While in recent empirical work by Alhanatleh et al. (2024) on Islamic metaverse banking in Jordan underscores that metaverse trust is pivotal for user intentions. Furthermore, Kumar et al., (2023) found that trust moderates the relationship between behavioral intention and actual use in mobile banking. In other words, those with higher trust were more likely to act on their intentions. Likewise, we expect that in meta-banking, trust will make users more confident in acting on the value they see in the service.

- **Hypothesis H9:** Trust in technology will positively moderate the relationship between the perceived value of meta-banking and the intention to adopt meta-banking

## Methodology

The research utilized quantitative approach using an online questionnaire distributed online via social media. However, given that meta-banking is an emerging concept and still not utilized in Jordan. The researchers targeted respondents who have prior experience with AR (Augmented Reality) or VR (Virtual Reality) to ensures that the participants can articulate on meta-banking

services. Therefore, a screening question at the very beginning of the questionnaire was asked to the respondents whether they have ever used AR or VR technologies. Those who answered "No" were directed to submit the form without completing the rest of the questionnaire, while those who answered "Yes" proceeded to the full set of questions.

Data collection took place between May and September 2024. A total of 618 responses were received. Among these, 312 respondents indicated prior experience with AR/VR technologies and completed the entire questionnaire. These 312 valid responses constituted the final sample for data analysis. The illustration of the demographic data is shown in table 1.

| **Question** | **Option** | **Responses** |
|---|---|---|
| VR / AR experience | Yes | 312 |
| | No | 618 |
| Age | 18–24 | 62 |
| | 25–34 | 111 |
| | 35–44 | 78 |
| | 45–54 | 46 |
| | 55 and above | 15 |
| Gender | Male | 186 |
| | Female | 126 |
| Education | Less than high school | 37 |
| | High school diploma or equivalent | 36 |
| | Bachelor's degree | 211 |
| | Master's or Doctorate degree | 28 |
| Online - Mobile banking familiarity | Very familiar | 141 |
| | Somewhat familiar | 98 |
| | Not very familiar | 55 |
| | Not familiar at all | 18 |

Table 1. Respondent's profile

Data were analyzed using Smart PLS version 4, following a two-step approach: first evaluating the measurement model for reliability and validity, followed by assessing the structural model to test the hypothesized relationships as seen in figure 1.

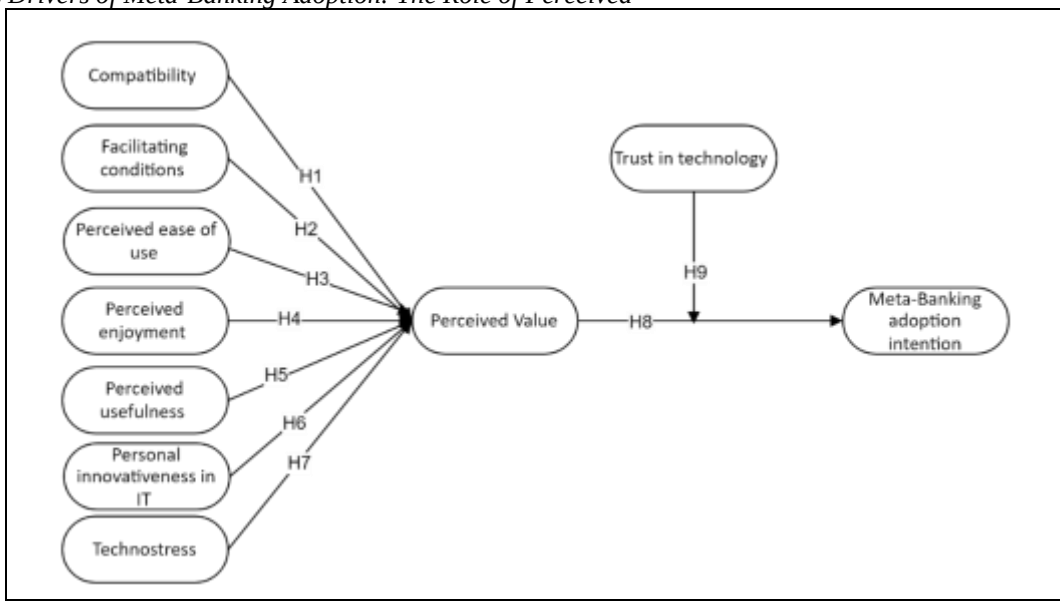


Figure 1. Research Model

To ensure the robustness of the measurement model, an initial assessment of all items' factor loadings, reliability, and validity indicators was conducted. Items that did not meet the minimum loading criterion of 0.70 were removed to enhance the model's overall quality (Hair et al., 2022). Specifically, Fcon4, PEU3, and Str4 were excluded from further analysis due to their insufficient loading values. After refining the item set, the model was recalculated to confirm its reliability and validity.

As illustrated in Table 2, all remaining items exhibited loadings surpassing the 0.70 threshold, thereby supporting the convergent validity of the measurement model (Hair et al., 2022). The Cronbach's alpha (α) and composite reliability (CR) coefficients for all constructs exceeded 0.70. Furthermore, the average variance extracted (AVE) values ranged between 0.56 and 0.75, exceeding the 0.50 threshold confirming convergent validity (Fornell & Larcker, 1981).

| **Factors** | **Items** | **Loadings** | **α** | **CR (rho_c)** | **AVE** |
|---|---|---|---|---|---|
| Compatibility | Comp1 | 0.809 | 0.75 | 0.86 | 0.66 |
| | Comp2 | 0.823 | | | |
| | Comp3 | 0.813 | | | |
| Perceived enjoyment | Enj1 | 0.869 | 0.86 | 0.91 | 0.71 |
| | Enj2 | 0.829 | | | |
| | Enj3 | 0.823 | | | |
| | Enj4 | 0.846 | | | |
| Facilitating conditions | Fcon1 | 0.785 | 0.76 | 0.86 | 0.68 |
| | Fcon2 | 0.83 | | | |
| | Fcon3 | 0.851 | | | |
| Personal innovativeness in IT | Inno1 | 0.763 | 0.74 | 0.84 | 0.56 |

| | | | | | |
|---|---|---|---|---|---|
| | Inno2 | 0.78 | | | |
| | Inno3 | 0.731 | | | |
| | Inno4 | 0.723 | | | |
| Meta-Banking adoption intention | Int1 | 0.85 | 0.89 | 0.92 | 0.75 |
| | Int2 | 0.86 | | | |
| | Int3 | 0.864 | | | |
| | Int4 | 0.889 | | | |
| Perceived ease of use | PEU1 | 0.787 | 0.74 | 0.83 | 0.56 |
| | PEU2 | 0.724 | | | |
| | PEU3 | 0.621 | | | |
| | PEU4 | 0.846 | | | |
| Perceived usefulness | Perf1 | 0.81 | 0.77 | 0.85 | 0.59 |
| | Perf2 | 0.779 | | | |
| | Perf3 | 0.739 | | | |
| | Perf4 | 0.75 | | | |
| Technostress | Str1 | 0.823 | 0.78 | 0.87 | 0.70 |
| | Str2 | 0.851 | | | |
| | Str3 | 0.833 | | | |
| Trust in technology | Trt1 | 0.861 | 0.89 | 0.92 | 0.75 |
| | Trt2 | 0.898 | | | |
| | Trt3 | 0.84 | | | |
| | Trt4 | 0.871 | | | |
| Perceived Value | Val1 | 0.836 | 0.88 | 0.92 | 0.73 |
| | Val2 | 0.835 | | | |
| | Val3 | 0.908 | | | |
| | Val4 | 0.843 | | | |

Table 2. Measurement Model

Additionally, discriminant validity was examined using the Heterotrait-Monotrait (HTMT) ratio. As presented in Table 3, all HTMT values fell below the threshold of 0.85 (Henseler et al., 2015) ,indicating adequacy of discriminant validity.

| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
|---|---|---|---|---|---|---|---|---|---|---|
| **1. Compatibility** | | | | | | | | | | |
| **2. Facilitating conditions** | 0.69 | | | | | | | | | |
| **3. Meta-Banking adoption intention** | 0.58 | 0.50 | | | | | | | | |
| **4. Perceived Value** | 0.80 | 0.72 | 0.63 | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **5. Perceived ease of use** | 0.55 | 0.52 | 0.45 | 0.73 | | | | | | |
| **6. Perceived enjoyment** | 0.65 | 0.55 | 0.52 | 0.73 | 0.57 | | | | | |
| **7. Perceived usefulness** | 0.65 | 0.60 | 0.51 | 0.75 | 0.60 | 0.58 | | | | |
| **8. Personal innovativeness in IT** | 0.61 | 0.70 | 0.54 | 0.73 | 0.59 | 0.63 | 0.65 | | | |
| **9. Technostress** | 0.74 | 0.56 | 0.53 | 0.76 | 0.59 | 0.64 | 0.61 | 0.62 | | |
| **10. Trust in technology** | 0.54 | 0.48 | 0.64 | 0.67 | 0.45 | 0.46 | 0.48 | 0.52 | 0.51 | |

Table 3. Heterotrait-Monotrait Ratio (HTMT) For Discriminant Validity

To ensure multicollinearity was not a concern, variance inflation factor (VIF) values were assessed prior to examining the structural relationships, with all VIF values remaining well below the commonly accepted cutoff of 5.0 (Hair et al., 2022). As shown in Table 4 and figure 2, all the hypothesized direct and moderating effects were supported. Compatibility (H1, $\beta = 0.194$, $T = 4.872$, $p < 0.001$), Facilitating conditions (H2, $\beta = 0.143$, $T = 3.706$, $p < 0.001$), Perceived ease of use (H3, $\beta = 0.183$, $T = 4.011$, $p < 0.001$), Perceived enjoyment (H4, $\beta = 0.165$, $T = 3.868$, $p < 0.001$), Perceived usefulness (H5, $\beta = 0.171$, $T = 3.700$, $p < 0.001$), Personal innovativeness in IT (H6, $\beta = 0.109$, $T = 2.294$, $p < 0.05$), and Technostress (H7, $\beta = -0.157$, $T = 3.398$, $p < 0.01$) all exerted significant influences on Perceived Value, with Technostress demonstrating a negative effect. Moreover, Perceived Value exhibited a strong positive impact on Meta-Banking adoption intention (H8, $\beta = 0.334$, $T = 5.941$, $p < 0.001$), while Trust in technology moderated this relationship ($\beta = 0.119$, $T = 2.659$, $p < 0.01$), amplifying the effect of Perceived Value when users had higher trust levels.

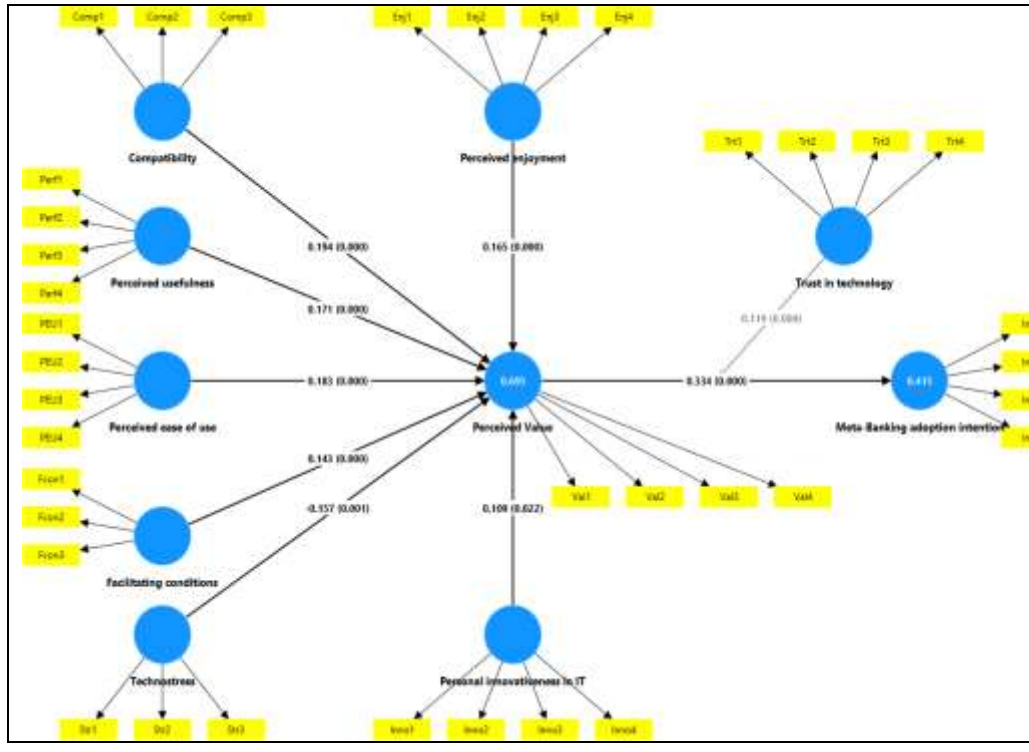


Figure 2. Structural Model

In addition to the significance of the path coefficients, the effect sizes ($f^2$) were examined. According to Cohen's guidelines (Cohen, 2013), $f^2$ values of 0.02 (small), 0.15 (medium), and 0.35 (large) effects. When focusing on the effect sizes ($f^2$) influencing Perceived Value, Compatibility and Perceived ease of use emerged as the strongest contributors (both $f^2 = 0.07$), followed by Perceived usefulness ($f^2 = 0.06$), Perceived enjoyment ($f^2 = 0.05$), and then Facilitating conditions and Technostress (both $f^2 = 0.04$). Personal innovativeness in IT ($f^2 = 0.02$) exerted the smallest effect.

| | **Path** | **VIF** | **$f^2$** | **β** | **Confidence intervals** | | **STDEV** | **T value** | **P value** | **Result** |
|---|---|---|---|---|---|---|---|---|---|---|
| H1. | Compatibility → Perceived Value | 1.86 | 0.07 | 0.194 | 0.115 | 0.272 | 0.040 | 4.872 | 0.000 | **Accepted** |
| H2. | Facilitating conditions → Perceived Value | 1.68 | 0.04 | 0.143 | 0.071 | 0.221 | 0.038 | 3.706 | 0.000 | **Accepted** |
| H3. | Perceived ease of use → Perceived Value | 1.52 | 0.07 | 0.183 | 0.095 | 0.274 | 0.046 | 4.011 | 0.000 | **Accepted** |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| H4. | Perceived enjoyment → Perceived Value | 1.78 | 0.05 | 0.165 | 0.080 | 0.246 | 0.043 | 3.868 | 0.000 | **Accepted** |
| H5. | Perceived usefulness → Perceived Value | 1.68 | 0.06 | 0.171 | 0.079 | 0.264 | 0.046 | 3.700 | 0.000 | **Accepted** |
| H6 | Personal innovativeness in IT → Perceived Value | 1.75 | 0.02 | 0.109 | 0.011 | 0.199 | 0.048 | 2.294 | 0.022 | **Accepted** |
| H7. | Technostress → Perceived Value | 1.81 | 0.04 | -0.157 | -0.244 | -0.063 | 0.046 | 3.398 | 0.001 | **Accepted** |
| H8. | Perceived Value → Meta-Banking adoption intention | 1.56 | 0.12 | 0.334 | 0.222 | 0.443 | 0.056 | 5.941 | 0.000 | **Accepted** |
| H9. | Trust in technology x Perceived Value → Meta-Banking adoption intention | 1.03 | 0.02 | 0.119 | 0.031 | 0.208 | 0.045 | 2.659 | 0.008 | **Accepted** |

Table 4. Hypotheses Testing (Direct and Moderation)

The explanatory power of the structural model was evaluated by examining the coefficient of determination ($R^2$) for the endogenous constructs. As presented in Table 3, the model accounted for 41.5% of the variance in Meta-Banking adoption intention ($R^2$ = 0.415) and 69.5% in Perceived Value ($R^2$ = 0.695). Furthermore, predictive performance was evaluated using $Q^2$predict. Shmueli et al. (Shmueli et al., 2019) argue that $Q^2$predict values above zero signify the predictive relevance of the model. The $Q^2$predict values for Meta-Banking adoption intention (0.411) and Perceived Value (0.675) were well above zero. Additionally, for each item, which compares Partial Least Squares (PLS) estimates with those of a corresponding linear model (LM), further supported the model's robustness. Except for one indicator (Val3). Overall, these results affirm the model's strong predictive performance.

| Construct | Item | $Q^2$predict | PLS_RMSE | LM_RMSE | PLS < LM | $Q^2$predict | R-square |
|---|---|---|---|---|---|---|---|
| Meta-Banking adoption intention | Int1 | 0.263 | 1.057 | 1.134 | √ | 0.411 | 0.415 |
| | Int2 | 0.311 | 1.025 | 1.075 | √ | | |
| | Int3 | 0.296 | 1.060 | 1.116 | √ | | |
| | Int4 | 0.358 | 1.013 | 1.048 | √ | | |
| Perceived Value | Val 1 | 0.461 | 0.893 | 0.922 | √ | 0.675 | 0.695 |
| | Val 2 | 0.483 | 0.879 | 0.913 | √ | | |
| | Val 3 | 0.598 | 0.757 | 0.755 | x | | |
| | Val 4 | 0.430 | 0.901 | 0.921 | √ | | |

Table 5. Assessment of Predictive Performance and Explanatory Power

## Discussion and Implications

This research set out to understand what influences consumers' intentions regarding adopting meta-banking services. We paid special attention to the role of perceived value and how trust in technology might affect this decision. Our findings offer useful information about this new field. The results from our analysis strongly support the model we developed. These results fit well with the literature of how people adopt technology, such as the UTAUT2 model and the Value-based Adoption Model (VAM) (Yaseen et al., 2024; Kim et al., 2007). Specifically, our study discovered that when users believe meta-banking will be useful and easy to use, they tend to view the meta-banking as more valuable. This finding in lined with previous studies, including the traditional online and mobile banking services many people use today (Farah et al., 2018; Farooq et al., 2024).

Furthermore, the results confirmed that Compatibility, Facilitating Conditions, and Perceived Enjoyment were all positively affecting to how valuable users perceive meta-banking. The positive effect of Compatibility makes sense; research often shows that people accept new technologies more readily if those technologies fit smoothly into their existing habits and match their personal values (Nguyen et al., 2023; Al-Adwan et al., 2024). In a similar way, the importance of Facilitating Conditions backs up the idea that having the necessary resources and support available makes adoption seem easier and, therefore, more worthwhile (Jadil et al., 2021; Ooi et al., 2023). The result for Perceived Enjoyment is particularly interesting in the context of meta-banking. The immersive, fun aspects of the metaverse environment can offer a unique kind of value that goes beyond just being practical. This is something often seen with technologies designed more for entertainment experience (Jung et al., 2024; Rahim et al., 2022). Personal Innovativeness also showed a positive relationship with perceived value. This confirms that individuals who are generally more open to trying new information technology are likely to see greater potential in meta-banking (Yaseen et al., 2024; Vu et al., 2024).

On the other hand, Technostress was found to negatively impact perceived value. This highlights that feelings of anxiety or being overwhelmed by the technology will reduce its value. This finding aligns with recent concerns about navigating increasingly complex digital environments (Yaseen et al., 2024; Al-Adwan, Jafar, & Sitar-T, 2024).

Crucially, Perceived Value emerged as a powerful predictor of users' Intention to Adopt meta-banking. This reinforces the central importance of value, as suggested by the VAM framework and seen in related studies focusing on financial technology adoption (Yaseen et al., 2024; Kapoor et al., 2022). Perhaps one of the most interesting results, however, relates to the moderating effect of Trust in Technology. While it is widely understood that trust is absolutely vital in the financial sector (Alhanatleh et al., 2024; Iqbal et al., 2024), our results specifically show that trust acts to strengthen the positive relationship between perceived value and the intention to adopt. This points to an important detail: even if users can see the potential value in meta-banking, a lack of trust can significantly reduce their willingness to actually try or use it. On the other hand, high levels of trust make users much more likely to act on the benefits they perceive. This interaction effect clearly underscores the critical need for banks to actively build and maintain user trust as they begin to explore offering services within the metaverse. Overall, the model demonstrated strong explanatory power, indicating these factors collectively provide a good understanding of meta-banking adoption intentions among potential users with AR/VR experience in Jordan.

## Theoretical Implications

This study makes several contributions to our understanding of technology adoption theory, particularly within the new context of meta-banking. We empirically tested and validated a model based on established frameworks like UTAUT2 and VAM, confirming the central role of Perceived Value in driving adoption intentions for immersive financial services. Importantly, our research highlights the specific factors that build this value perception in the meta-banking setting, including not only traditional drivers like usefulness and ease of use, but also compatibility, enjoyment, and personal innovativeness, while accounting for the negative impact of technostress. Furthermore, we provide empirical evidence for the crucial moderating effect of Trust in Technology, showing how it interacts with perceived value to influence intention. This adds a more nuanced understanding of how trust operates in highly sensitive, technology-mediated environments like virtual finance.

## Practical Implications

Our findings offer clear guidance for banks and financial technology developers venturing into the metaverse. To encourage adoption, efforts should focus strongly on maximizing the perceived value of meta-banking services. This means designing platforms that are genuinely useful, intuitive to navigate (easy to use), and compatible with users' existing financial lives. Banks should also leverage the unique nature of the metaverse to create engaging and enjoyable experiences. Providing robust support systems (facilitating conditions) and addressing potential user stress (technostress) are also important. Above all, building and clearly communicating strong security measures and reliability is essential to foster user trust. Without trust, even a valuable service may fail to gain traction. Marketing efforts could initially target individuals with higher personal innovativeness while working to build confidence among broader audiences.

## Limitations and Future Research

Like any study, this research has limitations. First, our data comes from respondents in Jordan who already have experience with AR or VR. This means our findings might not fully represent populations in other countries or individuals completely new to immersive technologies. The specific cultural and technological context of Jordan could influence results. Second, we collected data at one point in time. This cross-sectional approach doesn't show how perceptions or intentions might change as people gain more experience with meta-banking or as the technology itself evolves.

These limitations point towards directions for future research. It would be valuable to conduct similar studies in different countries to see if the factors influencing adoption vary across cultures and levels of technological development. Longitudinal research, tracking users over time, could provide deeper insights into the adoption process and how factors like trust and perceived value change with experience. Furthermore, future studies could benefit from conducting multi-group analyses. Comparing results between different age groups, genders, or levels of digital banking familiarity could reveal important differences in what drives meta-banking adoption for various segments of the population. Investigating additional factors, such as specific security concerns or social influences within the metaverse, could also enrich our understanding.

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