Adequate legal rules in settling metaverse disputes: Hybrid legal framework for metaverse dispute resolution (HLFMDR)

Adel Salem AlLouzi[a] and Khaled Mohammad Alomari[b*]

[a]*Faculty of Law, Abu Dhabi University, United Arab Emirates*
[b]*Faculty of IT, Abu Dhabi University, United Arab Emirates*

C H R O N I C L E	**A B S T R A C T**
	The term "metaverse" refers to a virtual reality setting where users may engage in sustained and immersive interactions with other users and digital information. The metaverse offers new potential for entertainment, education, commerce, sociability, and creativity; therefore, it is anticipated to play a significant role in the future of the digital economy. However, the metaverse presents additional difficulties in resolving conflicts that can develop between its users, producers, and providers. Intellectual property rights, privacy, contract enforcement, fraud, harassment, and cybercrime are some of the concerns that may be raised in these conflicts. The existing legal system for settling these conflicts is disjointed and insufficient since it does not consider the metaverse's unique qualities and complexity. This study investigates the present legal framework to provide fair and effective conflict resolution in the metaverse. It then establishes tenable fundamentals within the context of scientific and legal foundations. and propose a theoretical model named Hybrid Legal Framework for Metaverse Dispute Resolution (HLFMDR).

1. Introduction

The phrase "metaverse" describes a shared virtual reality setting where users may engage with each other and digital information in various ways. The metaverse is a network of interconnected virtual worlds that may be accessible through multiple platforms and user interfaces instead of being a single platform or application (Mystakidis, 2022; van der Merwe, 2021). In the metaverse, users may explore immersive 3D places and design their own experiences rather than simply perusing web pages (Basil, 2021; Zallio & Clarkson, 2022). The metaverse differs from other types of digital media in the sense of several features. The metaverse is persistent because it continues without users (Choi et al., 2022). Second, because the metaverse is synchronous, users may communicate with one another and their surroundings in real-time (Weinberger, 2022).

Third, users may move about the metaverse utilizing a variety of locomotion options since it has a sense of place and distance. Fourth, the content and laws of the virtual worlds may be created and altered by users since the metaverse is user-generated (Turdialiev, 2023). Fifth, the metaverse is immersive, offering users high sensory feedback and emotional involvement (Dincelli & Yayla, 2022; Lee et al., 2022).

Although the metaverse is still in its infancy, it has garnered considerable interest from several fields and companies. The metaverse provides new chances for amusement, learning, sociability, business, art, and invention. However, it also presents fresh difficulties and dangers for governance, ethics, security, and privacy. The metaverse's expansion and evolution will significantly impact society and culture.

* Corresponding author.
E-mail address: Khaled.AlOmari@adu.ac.ae (K. M. Alomari)

2. Explanation of the types of disputes that may arise in the metaverse

Virtual reality (VR), augmented reality (AR), blockchain (blockchain technology), artificial intelligence (AI), and other associated technologies have created a "metaverse" in which users may interact with one another and digital media. Because it offers new opportunities for amusement, education, trade, socializing, and creative expression, the metaverse is expected to play a significant role in the digital economy and society in the future years. Recent studies by Bojic; Feng et al.; GEORGE et al.; Kaddoura and Al Husseiny (2022; 2022; 2021; 2023) all lend credence to this claim. The emergence of the metaverse presents novel challenges and potential hazards for its users and platforms. These may manifest in the form of diverse disputes, necessitating the implementation of equitable and efficient mechanisms for their resolution.

The metaverse is susceptible to various forms of disputes that can be classified into four main categories: intellectual property, real estate, marketplace, and non-monetary. In disputes involving ownership, use, and protection of intellectual property rights (such as trademarks, copyrights (Grinvald & Tur-Sinai, 2019), patents, and trade secrets), they refer to digital assets and content in the metaverse. An instance of conflict may emerge within the metaverse when a user produces an authentic piece of art and another user replicates or alters it without obtaining consent. Alternatively, users with a non-fungible token (NFT) symbolizing a digital asset in the metaverse may encounter a platform that violates their rights by removing or modifying the asset (P. Lee et al., 2023). Real estate disputes pertain to conflicts that concern the possession, utilization, and worth of digital real estate and assets within the metaverse. An instance of conflict may emerge between a user who procures a parcel of land in the metaverse and a platform that modifies the characteristics or regulations of the virtual milieu that impact its appeal or functionality. Alternatively, it may arise between two users who assert proprietorship over an identical plot of land owing to contradictory transactions or records on the blockchain.

Marketplace disputes per the exchange of goods and services within the metaverse, as per Hutson et al. (2023) research. An instance of conflict may emerge between a user who purchases or sells a digital asset or service within the metaverse and another user who neglects to fulfill their obligations of payment or delivery as previously agreed upon. Alternatively, a disagreement may arise between a user who offers or receives a service within the metaverse and another who expresses dissatisfaction with the caliber or result of said service. Non-monetary disputes refer to conflicts on various facets of interaction and conduct within the metaverse, which lacks a direct financial worth but may impact users' reputation, privacy, safety, or welfare. An instance of conflict may emerge in the metaverse when a user publishes or obtains defamatory, hateful, or harassing messages, and another user is adversely affected or offended by them. Alternatively, a disagreement may arise between a user who discloses or retrieves personal information in the metaverse and another who breaches their consent or preferences.
These disputes are not exhaustive or mutually exclusive, as they have the potential to overlap or combine in various contexts. Furthermore, these phenomena will probably change as novel technologies and applications materialize within the metaverse. Consequently, observing and scrutinizing the trends and patterns of conflicts arising in the metaverse holds significant importance and establishing relevant regulations and mechanisms for efficient and equitable resolution.

3. The Current Legal Framework for Resolving Metaverse Disputes

According to Ning et al. (2021), the metaverse is a multifaceted and ever-evolving digital realm that surpasses geographical and legal limitations. Hence, resolving conflicts that emerge within the metaverse presents noteworthy legal complexities. The legal frameworks on metaverse disputes exhibit significant variation across different countries and are frequently characterized by ambiguity and inconsistency, as noted by Turdialiev (2023). Some countries may adopt a territorial approach, where the laws of the country where the metaverse server is located or where the parties are physically present apply. In certain instances, foreign nations may opt for a contractual methodology, whereby the dispute resolution process is dictated by the terms and conditions set forth by the metaverse service provider or platform. Some nations may opt for a hybrid methodology, wherein the relevant law is determined by a blend of territorial and contractual considerations.
Nevertheless, it can be argued that these approaches are insufficient in providing a satisfactory and impartial resolution to conflicts arising within the metaverse. The implementation of a territorial approach in the metaverse may give rise to legal disputes, jurisdictional challenges, and enforcement complexities due to the existence of varying and potentially incompatible laws and regulations across different countries. Using a contractual approach may lead to inequitable or impractical consequences, given that the metaverse service provider or platform may possess excessive power and sway over the process of resolving disputes and may enforce conditions that prioritize their interests or restrict the entitlements and solutions of the users. Utilizing a hybrid approach may lead to perplexity and indeterminacy, given that the standards for ascertaining the relevant law may lack clarity or precision and may fluctuate contingent on the character and circumstances of the conflict.

4. The United Arab Emirates (UAE) as a Case Study

4.1 Brief Overview of the UAE Legal System

The United Arab Emirates (UAE) is a federal state comprising seven emirates founded in 1971 (Al Oraimi, 2020). According to Raafat (2022), the United Arab Emirates possesses a codified constitution that outlines the respective authorities and obligations of the federal and regional governing bodies. The legal system of the United Arab Emirates is founded on the civil

law system, which has been influenced by a combination of Islamic, French, Roman, and Egyptian laws (Ercanbrack, 2019). Islam is the UAE's official religion, and Islamic Sharia law is a primary basis of legislation within the country, as Winter and Guzansky (2020) stated. The UAE operates a bifurcated legal system comprising federal and local courts (Nurmohamed, 2020). According to Yates (2021), the federal courts possess jurisdiction over subject matters that fall within the purview of the federal government, including but not limited to constitutional issues, federal offenses, conflicts between emirates, conflicts between an emirate and the federal government, and disputes that involve foreign parties or foreign laws. The jurisdiction of local courts encompasses matters that fall under the purview of local governments, including but not limited to civil, commercial, personal status, and labor disputes. The judicial system of each emirate exhibits variations in structure and procedure. According to Kisswani and Farah (2022), the emirates of Dubai, Abu Dhabi, and Ras Al-Khaimah each possess their courts of cassation, which serve as the supreme judicial bodies within their respective domains.

The United Arab Emirates' judicial system employs diverse legal sources contingent upon the type and theme of the conflict. The primary legal basis for civil affairs is Federal Law No. (5) of 1985 Concerning the Civil Code (UAE Civil Code), which incorporates both civil law principles and Sharia law (Javeed, 2021). The primary legal framework governing criminal matters in the United Arab Emirates is Federal Law No. (3) of 1987 Concerning the Penal Code encompasses certain aspects of Sharia law (Mohamed & Rosman, 2021). This aspect includes imposing penalties for offenses such as adultery, alcohol consumption by Muslims, and apostasy. In matters of personal statuses, such as marriage, divorce, inheritance, and custody, the primary legal framework utilized is Sharia law (Möller, 2023), which is implemented per the specific school of jurisprudence to which the involved parties adhere. The primary legal authorities that govern commercial affairs, including contracts, corporations, banking, and intellectual property, are the federal laws and regulations.

4.2 Analysis of the UAE's legal framework for resolving metaverse disputes

One nation that has taken the initiative to establish and oversee the metaverse is the United Arab Emirates (UAE) (Kostenko et al., 2022). Islamic law and customary law influence the UAE's civil law system (Wardhani et al., 2022). The United Arab Emirates has implemented various free zones with distinctive legal frameworks and dispute-resolution mechanisms. The legal framework of the UAE on the resolution of disputes in the metaverse can be examined through two different lenses: the general framework that pertains to all disputes that may arise from the utilization of the metaverse and the specific framework that applies to conflicts that emerge within the Dubai International Arbitration Centre (DIAC) metaverse. The established legal framework that regulates cyberspace in the United Arab Emirates serves as a reference for the settlement of metaverse disputes. The Federal Law No. 5 of 2012 on Combating Cybercrimes (Al-Tamimi et al., 2022), the Federal Law No. 1 of 2006 on Electronic Commerce and Transactions, and the Federal Law No. 3 of 2003 on Telecommunications are just a few examples of the laws and regulations that make up this framework.

The relevant legislation explains the United Arab Emirates' courts' legal power with regard to any disputes that may result from the use of information technology, electronic transactions, or telecommunications within the nation's boundaries or that may have an influence on its interests. They also make it easier to protect consumer rights, personal information, privacy, and intellectual property rights online. Due to the specific features and complexity of the metaverse, the current legal framework might not be adequate to address issues that arise there. These concerns range from the recognition of metaverse identities and citizenships to the identification and ownership of virtual assets, the accountability of metaverse service providers, and the execution of contracts and legal judgments in the metaverse.

According to a Middle East Briefing article (Briefing, 2023), the DIAC effort serves as the foundation for the UAE's framework for metaverse conflict resolution. A leading arbitral institution in the region is the DIAC. A framework for resolving disputes in the metaverse has been introduced by the DIAC. This platform offers a virtual reality environment where parties can engage in arbitration proceedings from any location globally. This innovation eliminates the necessity for physical transportation, promoting arbitration's sustainability and environmental friendliness. DIAC's metaverse is governed by its own rules and regulations based on its existing arbitration rules and best practices in international arbitration. The metaverse dispute resolution services provided by DIAC present a range of benefits, including but not limited to adaptability, privacy, impartiality, expediency, and economic feasibility. The metaverse offered by DIAC enables the involved parties to exercise their discretion in selecting arbitrators, experts, witnesses, and counsel from a group of proficient professionals who comprehensively understand the metaverse and its legal ramifications.

4.3 Evaluation of the adequacy of the UAE's legal framework for resolving metaverse disputes

Regarding adopting the metaverse and its potential uses, the UAE ranks among the top nations in the Middle East (ZAWYA, 2023). Recent events in the UAE include holding weddings, concerts, and exhibits in virtual reality platforms, showing the country's interest in and involvement in the metaverse. But the metaverse also presents several hazards and problems for the UAE legal system, particularly in addressing disputes resulting from metaverse activity. One of the critical problems is the absence of a comprehensive legal framework that explicitly governs the metaverse and its varied features. The UAE lacks specific legislation or regulation outlining the metaverse's extent, rights, duties, jurisdiction, and conflict resolution procedures. Instead, the UAE depends on its current legal framework, including civil law, criminal law, cybercrime law, intellectual

property law, consumer protection legislation, and arbitration law, all of which may apply to various metaverse components. However, these rules and regulations could not be adequate given the distinctive and intricate nature of the metaverse and its conflicts. For instance, determining jurisdiction and the appropriate legislation may be critical difficulties in metaverse conflicts. The metaverse unites users from many nations and legal systems in a universal, borderless setting that transcends actual borders. Determining whether a country's courts or laws have jurisdiction over a case that includes parties or activity from various countries may thus be challenging. Additionally, enforcing judgments or awards made by one jurisdiction in another could be difficult, mainly if there are incompatible or contradictory laws or regulations.

The identifying and authenticating of parties and evidence may become a problem in metaverse conflicts. Users can build and utilize avatars or digital identities in the metaverse that might not accurately represent their true identities or traits. As a result, it could be challenging to establish a party's or a witness's legitimacy, legal standing, or identity in a dispute. In addition, it could be problematic to gather and keep track of metaverse evidence like digital assets, transactions, communications, or interactions or to confirm their veracity or integrity.

Defending the rights and interests of those active in the metaverse is a third problem that can arise in disagreements. The metaverse gives rise to new rights and interests that may not be recognized or protected by preexisting legal frameworks. Users can create and own a variety of digital assets and properties in the metaverse, including virtual land, buildings, items, currency, and ideas. These assets or property may not have the same legal status or value on the platform as they do in the real world, or they may be subject to other restrictions or limits imposed by the platform's ownership or management. In the event of a legal issue, users might have trouble demonstrating or defending their ownership of digital assets.

The UAE's legal framework for resolving metaverse disputes is now in the development stage due to these issues and obstacles. The United Arab Emirates legal system might not provide the parties to metaverse conflicts with appropriate precision, certainty, and consistency. As a result, in order to resolve metaverse issues in the UAE, a more suitable and concentrated legal framework must be developed and put in place.

5. Proposed Rules for Resolving Metaverse Disputes

5.1 A description of the guiding concepts for metaverse dispute resolution

One of the main challenges to resolving disputes in the metaverse is the lack of a strong legal framework that considers the complexity and dynamic nature of the metaverse. To ensure fairness, effectiveness, and legitimacy of the conflict resolution procedure, the proposed rules for resolving metaverse disputes should be based on a few fundamental ideas. These ideas include:

1. Jurisdiction: The rules should identify which legal system can resolve a metaverse issue based on the parties' locations, the nature of the disagreement, and the metaverse platform's terms of service.
2. Choice of law: The rules should determine which law is applicable to a metaverse dispute based on factors such as the parties' preferences, the public policy of the applicable jurisdiction, and the characteristics of the metaverse environment.
3. Enforcement: To ensure that the resolution of a metaverse dispute is enforceable in both the metaverse and the real world, the rules should outline procedures for the recognition and implementation of judgments or awards as well as consequences for non-compliance.
4. Participation: By allowing for appropriate representation, communication, and information, the rules should ensure that the parties to a metaverse dispute have equal and effective access to the dispute resolution procedure.
5. Neutrality: The rules shall guarantee that the dispute resolution procedure is impartial and independent in order to prevent conflicts of interest, prejudice, or undue influence from any party or organization.
6. Transparency: By establishing the important specifics, practices, and criteria for judging and allowing for public review and debate, the rules should ensure that the conflict resolution process is transparent and accountable.
7. Flexibility: By considering the distinct requirements and preferences of the parties as well as the altering conditions and characteristics of the metaverse, the rules should permit adaptability and creativity in the conflict resolution process.

5.2 Discussion of specific rules that should be implemented to resolve metaverse disputes

The absence of clearly defined jurisdiction and relevant legislation is one of the biggest obstacles to settling metaverse conflicts. The metaverse may be governed by various laws and rules from many nations, some of which may clash or overlap. Furthermore, the metaverse could follow its laws and standards not sanctioned by any established legal framework. A hybrid strategy that contains components of both territorial and contractual jurisdiction is thus a potential remedy.

A state's ability to control and decide on matters on its territory is known as territorial jurisdiction (Medvedieva, 2022). The ability of a party to select the law and venue that will oversee their contractual connection is known as contractual jurisdiction (Donnelly, 2020). Under a hybrid strategy, subject to some restrictions, the parties would be free to select the law and venue

that would be used to resolve their metaverse issues. For instance, the parties could decide to employ an online dispute resolution (ODR) system headquartered in a neutral nation or a particular body for the metaverse. The parties' mutually agreed-upon laws and regulations would be applied through the ODR platform, or default rules explicitly created for metaverse conflicts would be used. The ODR platform would also include tools for gathering, verifying, and enforcing evidence.

5.3   Analysis of how these rules would be implemented in practice

The collaboration and coordination of several parties, including metaverse developers, users, regulators, and ODR providers, would be necessary for the execution of these regulations. Developers of the metaverse would be required to include these guidelines in their user agreements and terms of service and make their users aware of their rights and responsibilities. When engaging in metaverse activities, users must accept and abide by these rules. Regulators must accept and support these rules as a legal and effective way to resolve metaverse disputes and refrain from interfering with them unless there is a compelling public interest to do otherwise. ODR service providers must make sure that their platforms are open, transparent, unbiased, and secure and that they follow the set or default norms.
These rules would have the benefit of providing a more efficient, flexible, and equitable means of addressing metaverse disputes than traditional litigation. They would also safeguard the rights and interests of states while promoting the autonomy and self-governance of the metaverse community. These policies would face challenges since they would depend on the faith and goodwill of the parties involved and occasionally encounter technological or legal obstacles. As an illustration, some jurisdictions might not recognize or uphold ODR rulings, and some users might try to manipulate the system.

6. Proposed a Hybrid Legal Framework for Metaverse Dispute Resolution (HLFMDR)

A theoretical concept called the Hybrid Legal Framework for Metaverse Dispute Resolution (HLFMDR) seeks to offer sufficient legal guidelines for resolving conflicts within the metaverse. To provide a comprehensive and flexible framework, it incorporates components of conventional legal systems, international law, and digital governance concepts. There are four essential parts to the HLFMDR model:

- Jurisdiction and Applicable Law (JAL): The issue of determining the appropriate legal jurisdiction and pertinent laws in metaverse conflicts is addressed in this section. It considers factors such as the residences of the parties, the nature of the dispute, and the principles of international law.
- Dispute Resolution Mechanisms (DRM): This section discusses various methods of resolving disputes that may be applied in the metaverse, such as arbitration, mediation, and online dispute forums. It also emphasizes the need for specialized dispute resolution institutions that are familiar with issues specific to the metaverse.
- Enforcement of Decisions (ED): This section discusses the challenges of upholding decisions within the metaverse. It advocates merging traditional methods of enforcement, including judicial rulings and international treaties, with electronic enforcement tools, like smart contracts and decentralized autonomous organizations (DAOs).
- User Rights and Responsibilities (URR): This section outlines users' responsibilities and rights, including the requirement to abide by metaverse norms and rules as well as the preservation of private information and intellectual property rights.

The goal of this model is to assess how well the HLFMDR model works for settling conflicts in the metaverse.

6.1 Effectiveness of HLFMDR (EMD)

Any framework for resolving disputes, including the Hybrid Legal Framework for Metaverse Dispute Resolution (HLFMDR), must be functional in order to be appropriate and useful. It generally refers to the framework's capacity to offer the disputing parties fair, quick, and satisfactory resolutions. The clarity of jurisdiction and applicable law, the availability and accessibility of dispute resolution mechanisms, the enforceability of judgments, and the protection of user rights and obligations are some of the factors that can affect how effective a dispute resolution framework is in the metaverse (N R DOSHI & PARTNERS, 2023). The complexity of dispute resolution in this setting, however, may not be adequately captured by the standard measurements of efficacy due to the peculiarities of the metaverse. As a result, it could be necessary to create new metrics and assessment techniques.

6.2 Jurisdiction and Applicable Law (JAL)

Any legal system's jurisdiction and applicable legislation are essential elements that greatly affect how cases turn out. In the context of digital environments, such as the metaverse, jurisdiction and applicable law are complex issues due to the global and borderless nature of these spaces (Amlegals, 2022). The question of jurisdiction in the metaverse is multi-faceted, as it must consider where the parties are based, where the servers hosting the virtual environment are located, and where the actions giving rise to the dispute took place (Reich & Zawil, 2022). The difficulty in establishing the applicable law for a disagreement in the metaverse is in figuring out whether national or international laws do so. Some academics support the use of current international law, while others advocate for the development of particular rules for the metaverse that take into account its

distinctive features and the rights and obligations of its users (Cheong, 2022). Based on the literature, we can develop the following hypotheses:

H₁: *The applicability of law in the HLFMDR model significantly impacts the resolution of metaverse disputes.*

6.3 Dispute Resolution Mechanisms (DRM)

Mechanisms for resolving disputes are essential to preserving order and justice in any system. Litigation, arbitration, and mediation are the conventional conflict resolution methods; each has benefits and drawbacks (Katsh & Rabinovich-Einy, 2017). Due to concerns including jurisdiction, confidentiality, and the necessity for a quick resolution, dispute resolution procedures might be difficult to implement (Laidlaw, 2018). Because of this, academics have suggested alternate conflict resolution processes, such as online dispute resolution (ODR), which employs technology to speed up the resolution of disputes between parties (Katsh & Rabinovich-Einy, 2017). Online mediation, arbitration, and automated bargaining are only a few examples of ODR. It has benefits like speed, cost-effectiveness, and convenience. However, it also has drawbacks, such as problems with justice, openness, and decision-making that cannot be enforced (Rule, 2018). The following hypotheses can be developed in light of the literature:

H₂: *The dispute resolution mechanisms in the HLFMDR model significantly impact the resolution of metaverse disputes.*

6.4 Enforcement of Decisions (ED)

The Any legal system must have enforcement mechanisms in place to guarantee that the results of conflict resolution procedures are respected and adhered to. In the real world, institutions like courts and police who are supported by the might of the state frequently carry out enforcement (Tyler, 2006). In digital environments like the metaverse, enforcement of decisions presents unique challenges. Due to the global and decentralized nature of these environments, traditional enforcement mechanisms may be difficult to apply (Dwivedi et al., 2022). This has led to proposals for new enforcement mechanisms that leverage the capabilities of digital technology, such as smart contracts and decentralized autonomous organizations (DAOs) (Filippi & Wright, 2019).

Smart contracts are agreements that automatically carry out their obligations because they are encoded in code. Without the need for centralized authority, they can automatically enforce the terms of an agreement once certain criteria are met (Vitalik Buterin, 2015). DAOs, on the other hand, are businesses that are governed by smart contracts, which are rules that have been encoded as computer programs. They may offer a transparent, decentralized method of enforcing judgments (Filippi & Wright, 2019). The following hypotheses can be developed in light of the literature:

H₃: *The enforcement of decisions in the HLFMDR model significantly impacts the resolution of metaverse disputes.*

6.5 User Rights and Responsibilities (URR)

User rights and responsibilities play a critical role in the governance of any community, including digital environments such as the metaverse. These rights and responsibilities can include freedom of expression, privacy, and the obligation to respect other users' rights, among others (Mystakidis, 2022). The conflict between freedom and regulation is one of the key difficulties in establishing user rights and obligations in the metaverse. On the one hand, many users appreciate the liberties the metaverse provides, such as the capacity to create and explore outside of the bounds of the real world (Carter, 2023). On the other hand, some laws are essential to uphold order and avoid harm (Reidenberg, 1997). Another issue is that a range of circumstances, such as metaverse platform policies, local laws where users are based, and international laws and conventions, can have an impact on user rights and obligations (Murphy et al., 2021). The following hypotheses can be developed considering the literature:

H₄: *The user rights and responsibilities in the HLFMDR model significantly impact the resolution of metaverse disputes.*
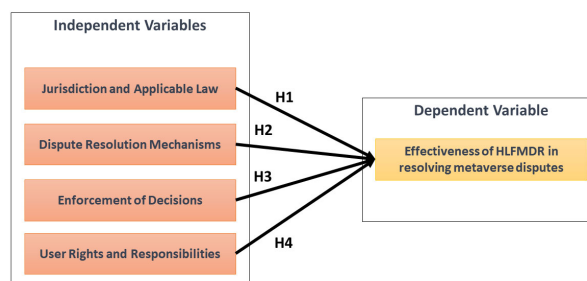
Fig. 1. 6 Proposed Model for The Study

7. Research Methodology

The study techniques utilized to examine the efficacy of the Hybrid Legal Framework for Metaverse Dispute Resolution (HLFMDR) in settling disputes within the metaverse are described in this section.

7.1 Research Design

To investigate the relationships between the independent variables (Jurisdiction and Applicable Law, Dispute Resolution Mechanisms, Enforcement of Decisions, User Rights and Responsibilities) and the dependent variable (Efficacy of HLFMDR in resolving metaverse disputes), this study will adopt a quantitative research design. The quantitative design enables statistical analysis of the collected data and systematic investigation of these linkages.

7.2 Data Collection

A structured online survey is given to users of a law background and may have used the metaverse to gather data. The survey will include both closed-ended and Likert scale questions to get a sense of how respondents feel about the different parts of the HLFMDR model and how well it works to settle conflicts. authors Pre-test the questionnaire with a small sample of respondents before distributing it to the larger population. This will enable any necessary modifications to be made so that the questions are understandable and straightforward. The questionnaire was distributed from the period 1/April /2023 to 1/Jun /2023. In total, 233 respondents got the survey. Of these, 198 were able to be analyzed by authors, which is the sample size for the study.

7.3 Sampling Strategy

Users with a background in law who may access the metaverse will be the study's target audience. The technique for participant recruitment will be convenient sampling. This kind of non-probability sampling is suitable for exploratory studies since it can present crucial fresh views about the study. The non-randomness of the sample, however, might limit how broadly the conclusions can be applied (Neuman, 2014).

7.4 Ethical Considerations

All participants will be made aware of the study's objectives, the fact that participation is entirely voluntary, and the confidentiality of their answers. The information will only be used for research purposes and kept safely to preserve the participants' privacy. Please be aware that this is merely an overview of the research process. Some alterations might be required depending on the resources and setting of our investigation.

8. Data Analysis

Seminr package "library(seminr) V-2.3.2" in R-.4.3.0 tool was used to perform the SEM method of data analysis for this study (Hair et al., 2021). A two-step assessment process that included the structural model and measurement model was used to analyze the acquired data. In this study, PLS-SEM was employed for a variety of reasons. The PLS-SEM can easily handle introspective study with complex models (Hair et al., 2017). Also, instead of disassembling the model, PLS-SEM analyzes the full model and PLS-SEM allows contemporaneous analysis for both measurement and structural models and sequentially generates exact computations (A. Q. AlHamad et al., 2022). Also other questions in the survey were analyzed by the R R-.4.3.0 tool.
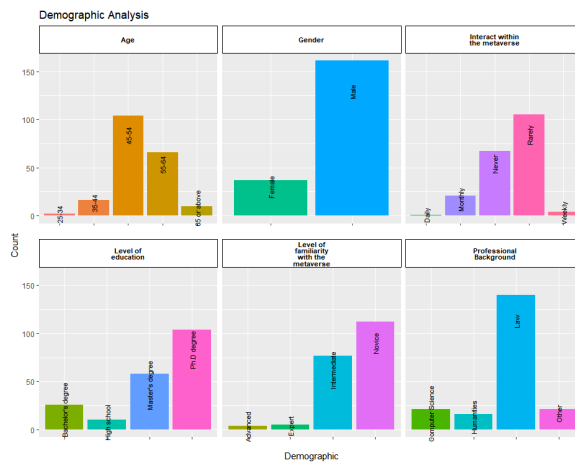
8.1 Demographic analysis

Fig. 2. Demographic analysis

The survey's participants were of a wide range of ages, with the majority being between the ages of 35 and 54. There were 52.53% responders in the 35-44 age range and 33.33% in the 45-54 age range, specifically. The 25 to 34 age range received the most responses (8.08%), followed by the 18 to 24 and 55 to 64 age ranges, which received only 1.01% and 8.08% respondents, respectively. Men participated in the study at a larger rate than women, with 81.31% men responding compared to 18.69% women. This might reflect the demographics of the industry or sector where the survey sample was gathered. A sizable portion of respondents had advanced degrees in terms of education. Among them, 52.53% respondents had doctorates, 29.29% had master's degrees, and 18.18% had bachelor's degrees. This shows that the respondents were well-educated. 70.71% of respondents identified as having legal backgrounds, which made up most of the respondents' professional backgrounds. There were 8.08% respondents from the humanities, and 10.61% from computer science and 10.61% from other fields. Most respondents (56.57% respondents) described themselves as being unfamiliar with the metaverse. Those who regarded themselves as intermediate (38.89% respondents) came in second. Only a few respondents (2.02% and 2.53%, respectively) categorized themselves as experts or advanced users. Finally, the respondents' levels of interaction in the metaverse varied quite a little. Most respondents (53.03% respondents) said they rarely interact in the metaverse, while 33.84% respondents said they never do. There were 10.61% respondents that communicated monthly, and only a few (2.02% respondents) or one person interacted weekly or daily. This implies that although the notion of the metaverse may be familiar to the respondents, their actual usage and interaction within it vary substantially.
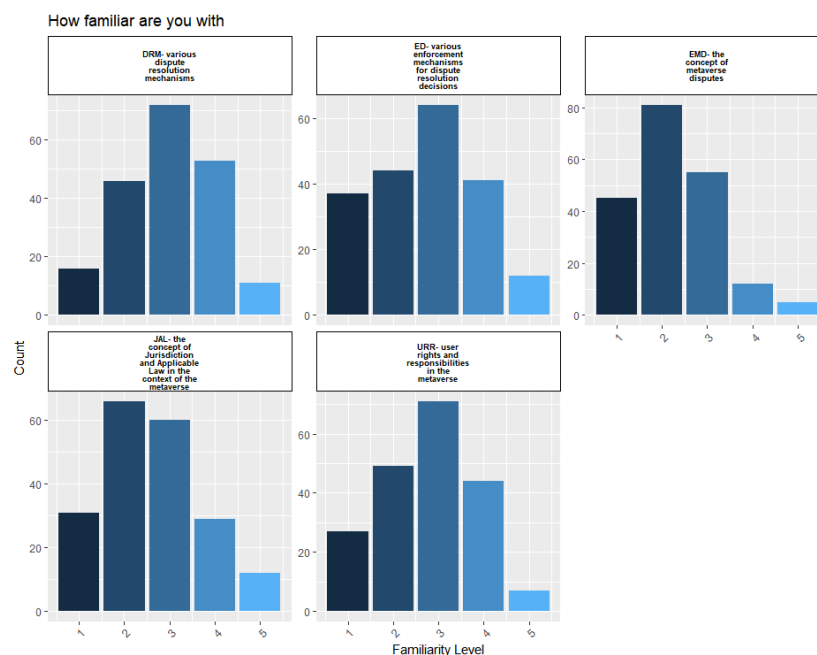
8.2   Familiarity analysis

Fig. 3. Familiarity analysis

The findings show that the participants' acquaintance with various facets of the metaverse varied. Where data was measured on a scale: (1:Not at all familiar - 5:Extremely familiar). And the participants had varying degrees of acquaintance with the idea of jurisdiction and applicable law in the metaverse. The majority showed some comprehension, while a sizeable percentage showed poorer familiarity, indicating a need for more education, and understanding in this area. Participants usually displayed a moderate degree of awareness when questioned about their knowledge of various dispute resolution procedures, such as arbitration, mediation, and online dispute resolution platforms. Few people reported being very knowledgeable, which may indicate that there is a need for more awareness or growth in knowledge in this area. With regards to various enforcement mechanisms for dispute resolution decisions, such as court orders, international treaties, smart contracts, and decentralized autonomous organizations, the respondents displayed a similar pattern. The majority showed a moderate level of comprehension, but very few also demonstrated a high degree of familiarity. The respondents had a decent amount of understanding of user rights and obligations in the metaverse, such as protecting personal information, upholding intellectual property rights, and adhering to metaverse laws and norms. There were still a significant number of individuals who had less familiarity, indicating that there may be a need for more effective information and instruction on these topics. Finally, when asked about their familiarity with the concept of metaverse disputes, a big percentage showed a lower degree of familiarity, which might be a sign of insufficient exposure to or education about the subject.

8.3   PLS-SEM model analysis

By linking the latent variables (JAL, DRM, ED, URR, and EMD) to the questionnaire items JAL, DRM, ED, URR, and EMD that correspond to those variables' associated indicators to Assess the reliability and validity of each construct. For reliability assessment, authors test reliability estimates for each of the constructs or latent variables in SEM through Cronbach's Alpha (alpha), composite reliability (rhoC), and construct reliability (rhoA). Internal consistency is measured by Cronbach's Alpha. It has a range of 0 to 1. The greater the internal consistency of the scale's components (variables), the closer Cronbach's Alpha is to 1. Table 1 shows all of the constructs in the study scenario have alpha values above 0.78, which often denotes strong internal consistency. In the context of SEM, composite reliability is thought to be a more reliable indicator of internal consistency than Cronbach's alpha. Additionally, it has a range of 0 to 1, with readings above 0.7 often being regarded as satisfactory. Indicating satisfactory composite reliability, all research constructs have rhoC values above 0.86 (Hair et al., 2017). also, an alternative to Cronbach's alpha (rhoA) that is less dependent on the quantity of items in the construct. Similar to the other measures, it has a range from 0 to 1, with higher values indicating greater reliability. It is thought to be more precise than Cronbach's alpha when used to reflect models in SEM. Once more, the fact that all of the study constructs have rhoA values above 0.78 shows that they are dependable.
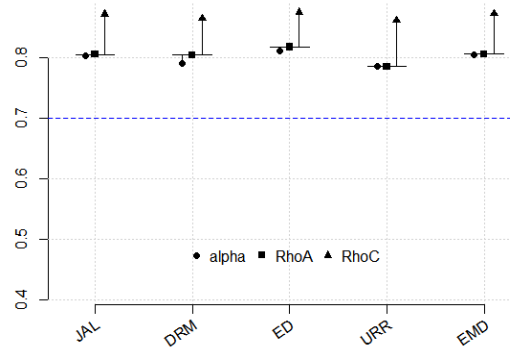

Fig. 4. Reliability and Validity values

Average Variance Extracted, or AVE, is the abbreviation. It is a measurement of the proportion of variance between that captured by the construct and that caused by measurement error. Values greater than 0.5 signify acceptable convergent validity (Kleijnen et al., 2007). AVE values for each study concept are greater than 0.61, which is encouraging. Factor loadings observed variable is strongly correlated with its corresponding construct, as indicated by loadings close to 1. This implies that the constructs are well-measured by their respective items which should be ≥ 0.70 (Hair, 2014). And a factor loading values for each study concept are greater than 0.7, that means the JAL, DRM, ED, URR, and EMD constructs have strong loadings on their respective items.

Table 1
Convergent Validity

Constructs	Items	Factor Loading	VIF	alpha	rhoC	AVE	rhoA
JAL	JAL1	0.818	1.684	0.804	0.872	0.631	0.806
	JAL2	0.824	1.956				
	JAL3	0.726	1.379				
	JAL4	0.806	1.839				
DRM	DRM1	0.709	1.378	0.792	0.865	0.619	0.805
	DRM2	0.708	1.454				
	DRM3	0.849	2.69				
	DRM4	0.866	2.843				
ED	ED1	0.803	1.716	0.812	0.876	0.638	0.818
	ED2	0.801	1.842				
	ED3	0.795	1.526				
	ED4	0.795	1.848				
URR	URR1	0.828	1.873	0.786	0.862	0.611	0.786
	URR2	0.814	1.599				
	URR3	0.745	1.678				
	URR4	0.734	1.528				
EMD	EMD1	0.836		0.805	0.873	0.632	0.807
	EMD2	0.769					
	EMD3	0.802					
	EMD4	0.771					

Table 2 shows the results of the path coefficients and explained variance (R-squared and Adjusted R-squared) for your endogenous (dependent) variable in the structural model. Effectiveness of HLFMDR (EMD): This is the dependent (or endogenous) variable in our model. The statistics below are related to how well your model explains variation in this variable.

Table 2
R-squared and Adjusted R-squared

|	EMD		EMD
R^2	0.818	DRM	0.104
Adjusted R-Square	0.814	ED	0.355
JAL	0.197	URR	0.357

R^2 is the coefficient of determination. It explains the percentage of the dependent variable's volatility that can be predicted based on the independent variable(s). In our situation, EMD is the dependent variable, and the independent variables (JAL, DRM, and ED) can account for 77.8% of the variation in EMD, according to the R^2 value of 0.818. Adjusted-R-Square is the adjusted r-square. Depending on how many predictors are included in the model, the R-squared value is adjusted. It is especially helpful when contrasting models with various predictor counts. It penalizes the model's expansion with useless predictions. The Adjusted-R-Square value in our case is 0.814, which is quite close to the R2 value and indicates that all our predictors are useful.

JAL, DRM, ED, URR: These are the path coefficients for your independent variables in the structural model. These coefficients represent the strength and direction of the relationship between each independent variable and the dependent variable EMD. So, a one unit increase in JAL would result in a 0.197 unit increase in EMD, holding all other variables constant. Similarly, a one unit increase in DRM would result in a 0.104 unit increase in EMD. Regression analysis uses the Variance Inflation Factor (VIF) to assess the degree of multicollinearity. When two or more explanatory variables in a multiple regression model are strongly linearly connected, this is referred to as multicollinearity. A general rule is that multicollinearity is high if the VIF is more than 5 (Hair et al., 2018). Table 1 shows that a None of the items surpass the VIF threshold of 5, which shows that multicollinearity is not a problem at the individual item level when looking at the individual item VIF values. This indicates that rather than simply repeating the information present in other items, each of these elements is contributing new information to the model. Table 3 shows the results of the bootstrapping technique for the total routes from the exogenous latent variables to the endogenous latent variable EMD displayed in the bootstrapped total paths. The t-statistic, the 2.5% confidence interval, the 97.5% confidence interval, the bootstrapped mean, and the bootstrapped standard deviation are all included in the table along with the initial estimate of the path coefficient. Then calculate the P values through R functions: *round(2*pt(tvalues, degrees of freedom ,lower.tail=FALSE), 3)*

Table 3
HLFMDR model Bootstrapping

	Original Est.	Bootstrap Mean	Bootstrap SD	T Stat.	2.5% CI	97.5% CI	P Values	Result
JAL→ EMD	0.197	0.197	0.053	3.695	0.094	0.3	0.000	Accepted
DRM→EMD	0.104	0.105	0.054	1.942	-0.003	0.211	0.054	Not Accepted
ED→EMD	0.355	0.355	0.059	6.014	0.242	0.472	0.000	Accepted
URR→EMD	0.357	0.357	0.069	5.187	0.218	0.49	0.000	Accepted

The results of the bootstrap study offer useful statistical information on the efficacy of the HLFMDR model in the metaverse. The findings show that, with p-values less than 0.05, three of the four areas—Jurisdiction and Applicable Law (JAL), Enforcement Mechanisms for Dispute Resolution Decisions (ED), and User Rights and Responsibilities (URR)—have a statistically significant impact on resolving metaverse disputes, providing strong evidence against the null hypothesis. With values of 0.355 and 0.357, respectively, ED and URR seem to have the most influence on the idea of metaverse disputes (EMD). However, the effectiveness of Dispute Resolution Mechanisms (DRM) in resolving metaverse disagreements did not reach statistical significance (p = 0.054), indicating that although there may be a relationship, the evidence is insufficient to definitively confirm this effect. This is consistent with the overall poll findings, which showed that there were a variety of opinions about DRM's effectiveness, with little concentration at the middle of the scale.
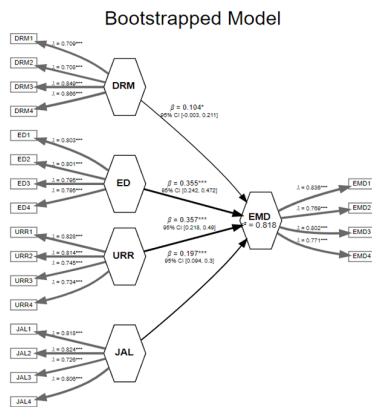
Fig. 5. Structural Model Results

8.4 Importantly analysis

The results highlight the perceived importance of different factors in determining jurisdiction and applicable law in metaverse disputes, the importance of different dispute resolution mechanisms, enforcement mechanisms, aspects of user rights and responsibilities, and contributing factors to the effectiveness of the HLFMDR model in resolving metaverse disputes. Where data was measured on a scale: (1: Not at all important- 5: Extremely important).
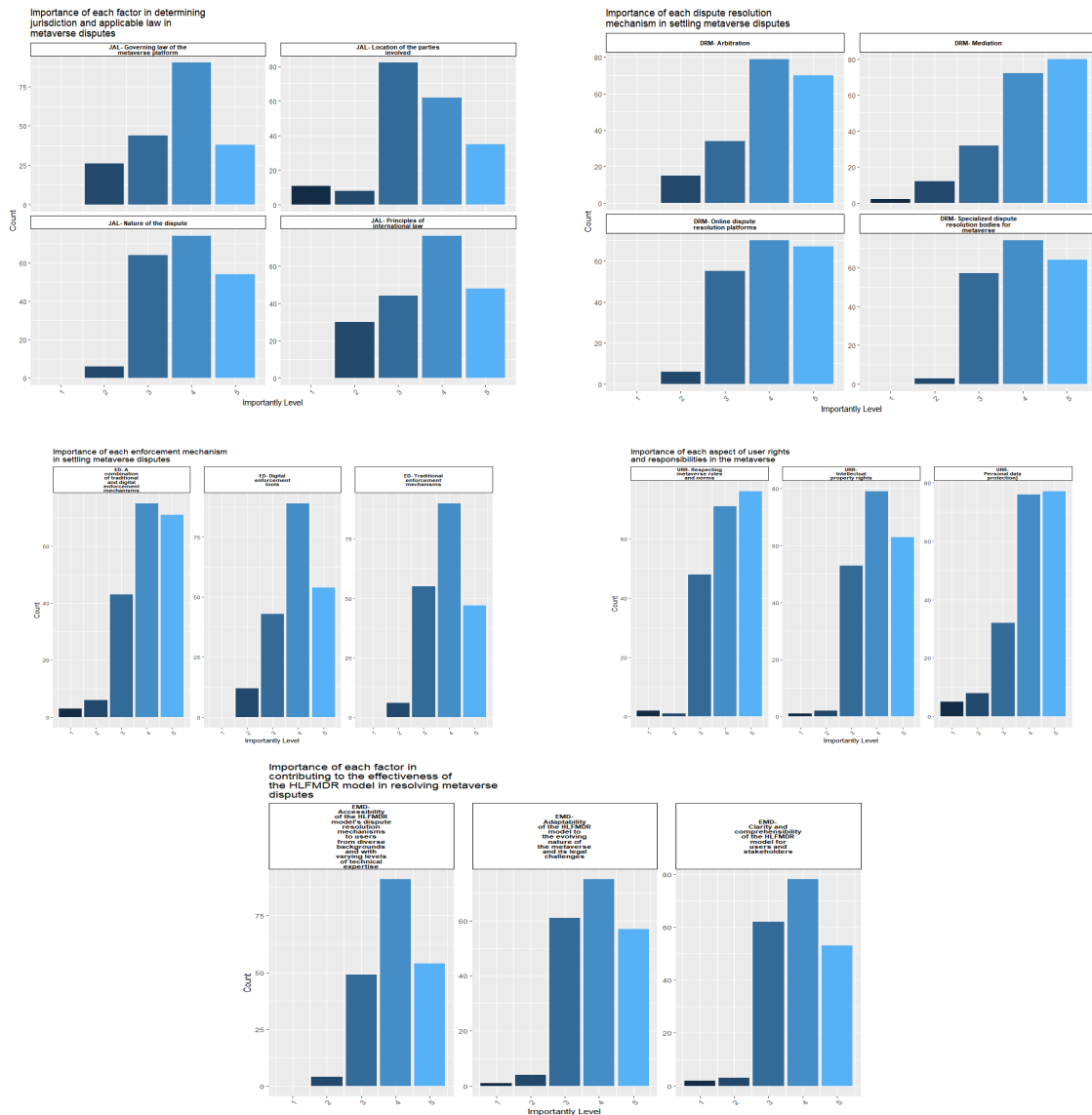

Fig. 6. Importantly analysis

The governing law of the metaverse platform and the nature of the issue are seen as the most significant elements for deciding jurisdiction and applicable law in metaverse disputes, closely followed by the rules of international law. Although considered to be of considerable importance, the location of the parties involved received less attention than other aspects. Mediation, ODR platforms, and specialist dispute resolution bodies for the metaverse all received high marks on the significance scale for dispute resolution mechanisms. Arbitration was also thought to be quite important, indicating that users value a variety of conflict resolution methods. Both a combination of traditional and digital enforcement mechanisms and only digital enforcement tools were seen to be of high importance when it came to enforcement mechanisms. Traditional enforcement tactics by themselves were given a little lower significance grade. In terms of user rights and responsibilities in the metaverse, respecting metaverse rules and norms, protecting intellectual property rights, and personal data protection were all rated as being of high importance, with little variation between them. This shows a balanced understanding of these components in the metaverse context. Finally, the accessibility, adaptability, clarity, and comprehensibility of the model all scored highly when considering factors influencing the HLFMDR model's effectiveness, highlighting the significance of an adaptable, and transparent model for resolving disputes in the metaverse. The findings imply that stakeholders view a complicated mix of legal, procedural, and

user-centric variables as essential for efficient dispute resolution in the metaverse. Mechanisms like the HLFMDR model should be designed and put into use in a way that takes this complexity into account.

8.5   Analyze the effectiveness of the HLFMDR model

It is evident from an analysis of the responses to the efficacy questions that respondents believe the HLFMDR model to be fairly effective in resolving different metaverse disagreement situations. However, there is space for improvement across the board. Where data was measured on a scale: (1: Not at all effective- 5: Extremely effective).
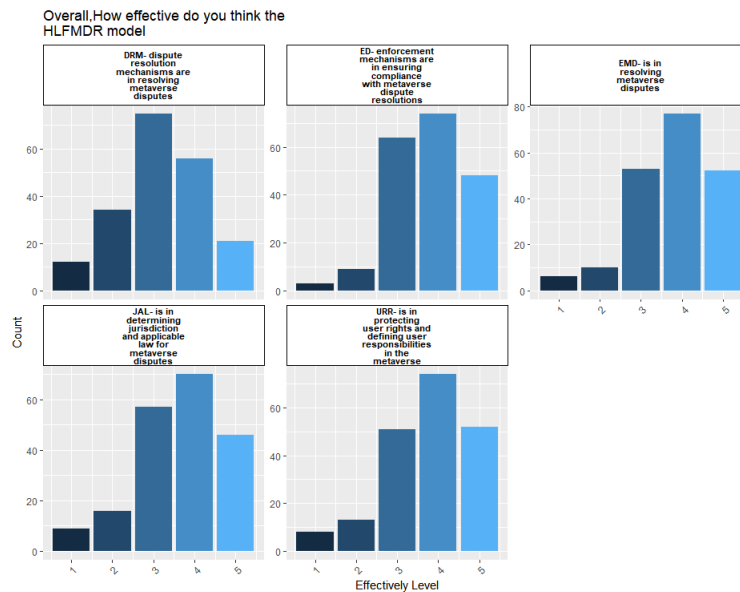

Fig. 7. Effectiveness of the HLFMDR model

The effectiveness ratings for determining jurisdiction and applicable law were slightly more evenly distributed, although the majority of respondents (34% and 31%, respectively) still evaluated them as being only slightly to moderately effective. The difficulty and complexity of applying jurisdiction and law in the metaverse, a factor that was deemed crucial in the previous bootstrap study, may be the cause of this view. According to about 29% of respondents, the HLFMDR model's dispute resolution mechanisms are only somewhat effective in resolving disagreements in the metaverse. This outcome is consistent with the earlier research when respondents showed a fair amount of familiarity with these systems. As a result, the requirement to improve the model's dispute resolution procedures' efficiency seems to echo the weight the bootstrap analysis gave to these processes. Similar opinions were expressed about the effectiveness of enforcement measures, with roughly 32% of respondents considering them to be moderately effective. This implies that in order to increase their efficacy in guaranteeing adherence to dispute settlements in the metaverse, these enforcement Mechanisms may need to be improved or better explained to users. Regarding the HLFMDR model's ability to protect user rights and define obligations, roughly 36% of respondents rated it as being only moderately effective. This is consistent with the earlier determination of the significance of this issue and the respondents' moderate awareness with user rights and duties in the metaverse. And The evaluations for the HLFMDR model's efficiency in settling metaverse disputes were a little lower. According to 41% of survey participants, the model is merely marginally effective in this regard. This lower ranking might be due to people's overall lack of acquaintance with metaverse disagreements, which was revealed by the familiarity analysis. The possibility for improvement in the HLFMDR model's design and implementation is demonstrated by the general sense of modest efficacy across the many parts of the model. Additionally, user education along with model improvement is required because users' views of effectiveness appear to be influenced by their familiarity with these concepts.

9. Discussion and Conclusion

The "metaverse" includes many digital experiences and platforms. It is significant as a rising social, economic, and cultural phenomenon. The metaverse, however, also presents difficulties in resolving disagreements that can develop between its users, authors, and regulators. This study examined the legal system for settling conflicts in the metaverse, and workable regulations with legal and scientific foundations were suggested. The research has examined the many legal systems that may apply to metaverse issues, including contract law, intellectual property law, consumer protection legislation, and criminal law. These frameworks fall short of addressing the complexity and distinctive qualities of the metaverse, such as its cross-border nature, immersive and interactive environment, dynamic and evolving content, and various and heterogeneous stakeholders, which make it an ineffective forum for dispute resolution.

The United Arab Emirates (UAE) has been used as a case study in the paper to show the areas that still need improvement in the current legal framework for resolving disputes in the metaverse. It has examined the legal system of the UAE as well as relevant legislation and regulations, such as the Cybercrime Law, the E-Commerce Law, the Consumer Protection Law, and the Arbitration Law, that may be relevant to metaverse disputes. The article provides recommendations for resolving disputes in the metaverse based on justice, efficiency, flexibility, and cooperation. A specialized metaverse court or tribunal, a uniform code of conduct for metaverse users and creators, the creation of alternative dispute resolution mechanisms for metaverse disputes and encouraging international cooperation and coordination among metaverse regulators are just a few of the specific regulations that have been discussed as being necessary to resolve disputes in the metaverse. It looked at how these rules would be use and how they would deal with the challenges and opportunities that the metaverse presents. A unique and complete legal structure that considers the needs of the metaverse is necessary for resolving disputes in the metaverse. Such a framework is intended to be provided by the proposed rules for resolving metaverse conflicts, which also seek to raise the standard and validity of dispute resolution. Overall, the study offers encouraging proof that using the HLFMDR model to settle disputes in the metaverse can be successful. There is still room for development, though. The HLFMDR model can be made a more useful and well-liked instrument for settling conflicts in the metaverse by addressing the issues raised in this study.

References

A. Q. AlHamad, K. M. Alomari, M. Alshurideh, B. Al Kurdi, S. Salloum, & A. Q. Al-Hamad (2022). The Adoption of Metaverse Systems: A hybrid SEM - ML Method. In *2022 International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME)*.

Al Oraimi, S. Z. (2020). Diversity and social cohesion in the United Arab Emirates. *RUDN Journal of Sociology*, *20*(4), 837–846. https://doi.org/10.22363/2313-2272-2020-20-4-837-846

Al-Tamimi, K. H. S. S., Marni, N. B., & Shehab, A. (2022). Legal regulation of evidence in cybercrimes in UAE legislations. *International Journal of Health Sciences*, *6*(S1), 765–776. https://doi.org/10.53730/ijhs.v6nS1.4827

Amlegals, D. O. (2022, August 29). Legal Impediments of Intellectual Property Rights in Metaverse. https://amlegals.com/legal-impediments-of-intellectual-property-rights-in-metaverse/#

Basil, W. N. (2021). The "metaverse." The arrival of the future of 3D research, learning, life & commerce. In *The International Scientific Conference.* Symposium conducted at the meeting of The Academy of Economic Studies of Moldova, Chisinau, Moldova. https://irek.ase.md/xmlui/handle/123456789/1983?show=full

Bojic, L. (2022). Metaverse through the prism of power and addiction: What will happen when the virtual world becomes more attractive than reality? *European Journal of Futures Research*, *10*(1), 1–24. https://doi.org/10.1186/s40309-022-00208-4

Briefing, M. E. (2023). Dubai Introduces A Metaverse Dispute Arbitration Platform. *Middle East Briefing*. https://www.middleeastbriefing.com/news/dubai-introduces-a-metaverse-dispute-arbitration-platform/

Carter, R. (2023). What are your Digital Rights on the Metaverse? *XR Today*. https://www.xrtoday.com/virtual-reality/what-are-your-digital-rights-on-the-metaverse/

Cheong, B. C. (2022). Avatars in the metaverse: potential legal issues and remedies. *International Cybersecurity Law Review*, *3*(2), 467–494. https://doi.org/10.1365/s43439-022-00056-9

Choi, S., Yoon, K., Kim, M., Yoo, J., Lee, B., Song, I., & Woo, J. (2022). Building Korean DMZ Metaverse Using a Web-Based Metaverse Platform. *Applied Sciences*, *12*(15), 7908. https://doi.org/10.3390/app12157908

Dincelli, E., & Yayla, A. (2022). Immersive virtual reality in the age of the Metaverse: A hybrid-narrative review based on the technology affordance perspective. *The Journal of Strategic Information Systems*, *31*(2), 101717. https://doi.org/10.1016/j.jsis.2022.101717

Donnelly, S. (2020). Conflicting forum-selection agreements in treaty and contract. *International & Comparative Law Quarterly*, *69*(4), 759–787. https://doi.org/10.1017/S0020589320000330

Dwivedi, Y. K., Hughes, L., Baabdullah, A. M., Ribeiro-Navarrete, S., Giannakis, M., Al-Debei, M. M., Dennehy, D., Metri, B., Buhalis, D., Cheung, C. M., Conboy, K., Doyle, R., Dubey, R., Dutot, V., Felix, R., Goyal, D. P., Gustafsson, A., Hinsch, C., Jebabli, I., . . . Wamba, S. F. (2022). Metaverse beyond the hype: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*, *66*, 102542. https://doi.org/10.1016/j.ijinfomgt.2022.102542

Ercanbrack, J. G. (2019). Islamic Financial Law and the Law of the United Arab Emirates: Disjuncture and the Necessity for Reform. *Arab Law Quarterly*, *33*(2), 152–178. https://doi.org/10.1163/15730255-12332011

Feng, X., Wang, X., & Su, Y. (2022). An analysis of the current status of metaverse research based on bibliometrics. *Library Hi Tech*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/LHT-10-2022-0467

Filippi, P. de, & Wright, A. (2019). *Blockchain and the law: The rule of code* (First printing). Harvard University Press. http://www.jstor.org/stable/j.ctv2867sp https://doi.org/10.2307/j.ctv2867sp

GEORGE, A [A.S.HOVAN], FERNANDO, M., GEORGE, A [A.SHAJI], BASKAR, T., & PANDEY, D. (2021). Metaverse: The Next Stage of Human Culture and the Internet. *International Journal of Advanced Research Trends in Engineering and Technology (IJARTET)*, *8*(12). https://doi.org/10.5281/ZENODO.6548172

Grinvald, L., & Tur-Sinai, O. (2019). Intellectual Property Law and the Right to Repair. *Fordham Law Review*, *88*(1), 63. https://ir.lawnet.fordham.edu/flr/vol88/iss1/3

Hair, J. F. (2014). *Multivariate data analysis* (Seventh edition). *Pearson custom library*. Prentice Hall. https://ebookcentral.proquest.com/lib/kxp/detail.action?docID=5831794

Hair, J. F., Babin, B. J., Anderson, R. E., & Black, W. C. (2018). *Multivariate data analysis* (Eighth edition). Cengage Learning.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equations modeling (PLS-SEM)* (2nd ed.). SAGE.

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial least squares structural equation modeling (PLS-SEM) using R: A workbook. Classroom companion: business*. Springer. https://library.oapen.org/handle/20.500.12657/51463 https://doi.org/10.1007/978-3-030-80519-7

Hutson, J., Banerjee, G., Kshetri, N [Naresh], Odenwald, K., & Ratican, J. (2023). Architecting the Metaverse: Blockchain and the Financial and Legal Regulatory Challenges of Virtual Real Estate. *Journal of Intelligent Learning Systems and Applications*, *15*(01), 1–23. https://doi.org/10.4236/jilsa.2023.151001

Javeed, A. (2021). *Arbitration Law in the UAE: An Overview on Jurisdiction*. https://doi.org/10.2139/ssrn.3991916

Kaddoura, S., & Al Husseiny, F. (2023). The rising trend of Metaverse in education: Challenges, opportunities, and ethical considerations. *PeerJ Computer Science*, *9*, e1252. https://doi.org/10.7717/peerj-cs.1252

Katsh, E., & Rabinovich-Einy, O. (2017). *Digital Justice*. Oxford University Press. https://academic.oup.com/book/27240 https://doi.org/10.1093/acprof:oso/9780190464585.001.0001

Kisswani, N., & Farah, A. (2022). Personal and joint liability of partner in limited liability company in UAE federal corporate law No. 32 of 2021. *Heliyon*, *8*(8), e10322. https://doi.org/10.1016/j.heliyon.2022.e10322

Kleijnen, M., Ruyter, K. de, & Wetzels, M. (2007). An assessment of value creation in mobile service delivery and the moderating role of time consciousness. *Journal of Retailing*, *83*(1), 33–46. https://doi.org/10.1016/j.jretai.2006.10.004

Kostenko, O., Furashev, V., Zhuravlov, D., & Dniprov, O. (2022). Genesis of Legal Regulation Web and the Model of the Electronic Jurisdiction of the Metaverse. *Bratislava Law Review*, *6*(2), 21–36. https://doi.org/10.46282/blr.2022.6.2.316

Laidlaw, E. B. (2018). Re-Imagining Resolution of Online Defamation Disputes. *Osgoode Hall Law Journal*, *56*, 112. https://heinonline.org/HOL/Page?handle=hein.journals/ohlj56&id=119&div=&collection=

Lee, L.-H., Zhou, P., Braud, T., & Hui, P. (2022). *What is the Metaverse? An Immersive Cyberspace and Open Challenges*. https://arxiv.org/pdf/2206.03018

Lee, P., Abubakar, M., Lo, O., Pitropakis, N., & Buchanan, W. J. (2023). Non-Fungible Token Fraud: Studying security issues and improvements for NFTmarketplaces using hashing techniques. Advance online publication. https://doi.org/10.21203/rs.3.rs-2573810/v1

Medvedieva, M. O. (2022). The CONCEPT OF JURISDICTION IN INTERNATIONAL LAW. *Actual Problems of International Relations*, *1*(152), 26–34. https://doi.org/10.17721/apmv.2022.152.1.26-34

Mohamed, M. S., & Rosman, A. S. B. (2021). Criminal protection of public employees in the united Arab emirates law compared with Islamic law. *Linguistics and Culture Review*, *5*(S3), 154–160. https://doi.org/10.21744/lingcure.v5nS3.1380

Möller, L.-M. (2023). One Year of Civil Family Law in the United Arab Emirates: A Preliminary Assessment. *Arab Law Quarterly*, *37*, 1–16.

Murphy, S., White, L., Modrall, J., Knapper, M., Ross, S. L., Sinclair, M., & Way, T. L. (2021). *The Metaverse: The evolution of a universal digital platform*. Norton Rose Fulbright. https://www.nortonrosefulbright.com/en-fr/knowledge/publications/5cd471a1/the-metaverse-the-evolution-of-a-universal-digital-platform

Mystakidis, S. (2022). Metaverse. *Encyclopedia*, *2*(1), 486–497. https://doi.org/10.3390/encyclopedia2010031

N R DOSHI & PARTNERS. (2023). *ADGM Launches New Mediation in the Metaverse Service*. https://www.nrdoshi.ae/adgm-launches-new-mediation-in-the-metaverse-service/

Neuman, W. L. (2014). *Social research methods: Qualitative and quantitative approaches* (Seventh edition, Pearson new international edition). Pearson. https://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=1418029

Ning, H., Wang, H., Lin, Y., Wang, W., Dhelim, S., Farha, F., Ding, J., & Daneshmand, M. (2021). *A Survey on Metaverse: the State-of-the-art, Technologies, Applications, and Challenges*. https://arxiv.org/pdf/2111.09673

Nurmohamed, R. (2020). Shari'a Law and Its Impact on the Development of Muslim and Non-Muslim Business Relations in the United Arab Emirates. *Law and Development Review*, *13*(2), 443–472. https://doi.org/10.1515/ldr-2020-0052

Raafat, R. (2022). Manifestations OF THE FEDERAL SYSTEM IN THE UNITED ARAB EMIRATES. *Journal of Positive School Psychology*, *6*(7), 1470–1490. https://journalppw.com/index.php/jpsp/article/view/11542

Reich, A. C., & Zawil, H. (2022). *The Metaverse for the Risk-Averse: Law Firms and Legal Advertising, Part 2*. Fox Rothschild. https://www.foxrothschild.com/publications/the-metaverse-for-the-risk-averse-law-firms-and-legal-advertising-part-2

Reidenberg, J. (1997). Lex Informatica: The Formulation of Information Policy Rules through Technology. *Tex. L. Rev.*, *76*, 553. https://ir.lawnet.fordham.edu/faculty_scholarship/42

Rule, C. (2018). Designing a Global Online Dispute Resolution System: Lessons Learned from eBay. *University of St. Thomas Law Journal*, *13*(2), 354. https://ir.stthomas.edu/ustlj/vol13/iss2/10

Turdialiev, M. (2023). Legal Discussion of Metaverse Law. *International Journal of Cyber Law*, *1*(3). https://doi.org/10.59022/ijcl.36

Tyler, T. R. (2006). *Why People Obey the Law*. Princeton University Press. https://ebookcentral.proquest.com/lib/kxp/detail.action?docID=6554465

van der Merwe, D. F. (2021). The metaverse as virtual heterotopia. In *Proceedings of The 3rd World Conference on Research in Social Sciences*. ACAVENT. https://doi.org/10.33422/3rd.socialsciencesconf.2021.10.61

Vitalik Buterin (2015). A NEXT GENERATION SMART CONTRACT & DECENTRALIZED APPLICATION PLAT-FORM. https://www.semanticscholar.org/paper/A-NEXT-GENERATION-SMART-CONTRACT-%26-DECENTRAL-IZED-Buterin/0dbb8a54ca5066b82fa086bbf5db4c54b947719a

Wardhani,, L. T. A. L., Noho, M. D. H., & Natalis, A. (2022). The adoption of various legal systems in Indonesia: an effort to initiate the prismatic Mixed Legal Systems. *Cogent Social Sciences*, *8*(1), Article 2104710, 2104710. https://doi.org/10.1080/23311886.2022.2104710

Weinberger, M. (2022). What Is Metaverse?—A Definition Based on Qualitative Meta-Synthesis. *Future Internet*, *14*(11), 1–16. https://ideas.repec.org/a/gam/jftint/v14y2022i11p310-d956926.html

Winter, O., & Guzansky, Y. (2020). Islam in the Service of Peace: Religious Aspects of the Abraham Accord. *INSS*. https://www.inss.org.il/publication/israel-uae-deal-and-islam/

Yates, A. (2021). Challenging the accepted understanding of the executive branch of the UAE's Federal Government. *Middle Eastern Studies*, *57*(1), 119–133. https://doi.org/10.1080/00263206.2020.1824908

Zallio, M., & Clarkson, P. J. (2022). Designing the metaverse: A study on inclusion, diversity, equity, accessibility and safety for digital immersive environments. *Telematics and Informatics*, *75*, 101909. https://doi.org/10.1016/j.tele.2022.101909

ZAWYA. (2023). *Metaverse adoption in the UAE shows potential across various use cases* [Press release]. https://www.zawya.com/en/press-release/research-and-studies/metaverse-adoption-in-the-uae-shows-potential-across-various-use-cases-ftjiyen7

1642