

# Employing Virtual Reality to Simulate the Evolution of Islamic Ornaments and Restore Cultural Identity

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**Abstract** The COVID-19 pandemic has underscored the need to facilitate access to religious sites, prompting researchers to explore digital solutions. Virtual reality (VR) has proven effective in various fields, including architecture, heritage, and education; however, its potential to strengthen cultural and religious identity remains underutilized. This gap highlights a lack of research interest despite the risk of Islamic architectural heritage being lost due to Western influences and implementation challenges. For that, this research explores the potential of VR in addressing the challenges facing mosques, particularly in preserving Islamic ornamentation and fostering a deeper connection to religious identity. To achieve its objectives, the study employs questionnaires, interviews, and a VR experiment. Findings indicate that VR effectively enhances awareness of Islamic decorations, reinforces cultural identity, and serves as a crucial tool for sustaining social and religious interactions. However, it is significantly influenced by age, individuals' willingness to utilize the glasses and their prior experience with them. The elderly typically do not engage with virtual reality. Furthermore, the recall of information was greater among individuals experiencing virtual reality for the first time compared to those with prior experience. The research highlights the need to incorporate virtual reality into mosque design and heritage conservation to maintain engagement with Islamic architectural identity. Simultaneously, there is an ongoing necessity to follow technological advancements for their application in preserving and presenting heritage.

**Keywords** Virtual Reality, Islamic Ornaments, Cultural Identity, Mosques, Jordan

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## 1. Introduction

In response to the global crisis resulting from the COVID-19 pandemic, the government shuttered all national museums, institutions, and sites of cultural heritage and landscape. The shutdown highlighted the necessity to devise and execute digital solutions to augment global cultural heritage since numerous individuals have missed interacting with religious and heritage sites [1]. This crisis has prompted researchers to investigate novel methods for establishing temporary communities until the pandemic ends [2] since the researchers argued that during mass confinement, access to cultural heritage could reduce social isolation and loneliness while supporting the educational and creative requirements of diverse communities [3]. Various initiatives were implemented, including virtual experiential tours, online collections, and tailored social and digital programs, all of which fostered a profound dialogue between individuals and culture [1]. In this context, virtual reality has emerged as a significant solution that allows individuals to engage with heritage and religious sites without physical presence [4].

An investigation by the author for the research published in the Scopus database on virtual reality and heritage from

2000 to 2018 revealed that a total of 1,399 studies involved these two concepts. However, following the beginning of the pandemic of Corona, specifically, from 2019 to January 2025, the number of research studies increased to 2,072 research, meaning that it has almost quadrupled. The ongoing advancement of virtual reality technologies and improved accessibility to its tools have contributed to a rise in research; however, the COVID-19 pandemic served as a significant driver for utilizing this technology to showcase heritage and religious sites to the public [5]. Furthermore, VR technology has already been recognized as crucial for facing the COVID-19 pandemic outbreak [1, 5-7].

However, despite the growing significance of virtual reality in showcasing heritage sites, its utilization in sacred places remains limited and this raises questions regarding how VR content relates to sacred places [8]. Particularly Islamic ornamentation in mosques since when searching the Scopus database with the keywords "virtual reality" and "Islamic Ornament" gave no paper. Upon searching for "virtual reality" and "mosque," only 43 papers were identified, the majority of which did not concentrate specifically on mosques. This deficiency indicates a disinterest in employing virtual reality technologies for the examination of Islamic heritage, even though this heritage is at risk of vanishing and being overlooked. For example, Farran [9] said that when asking about the methods used in the design of mosques at present, we cannot answer because of the lack of a clear style; although Islamic architecture is distinguished by its unique and special style, it no longer represents us, or represents our history, or our cultural roots, except a few cases. This is confirmed by a series of studies, as Kuiper emphasized the emergence of Western art patterns in the MENA region, including Turkey, Lebanon, Syria, Egypt, Tunisia, Iraq, Morocco, Jordan, and Palestine [10]. Nayef [11] says that despite the richness of the Islamic cultural heritage, it is feared that this heritage will be lost under the influence of Western culture. Especially Islamic ornamentation is a crucial component of what makes Islamic architecture unique and serves as a symbol of artistic, cultural, and religious expression. However, because of their high cost and difficulty of implementation, modern designers have a difficult time putting these decorations into practice. As a result, people are no longer aware of certain types of decorations, like animal decorations, as a result of the Western style's widespread adoption [12]. Moreover, epidemics and other occurrences can lead to a temporary disconnection from heritage, potentially exacerbating the distance among individuals [13].

Technology, including virtual reality, offers valuable solutions across multiple fields like education [14, 15] and engineering [16]; however, its application in design studies focused on mosques and mosque challenges remains underexplored.

The COVID-19 pandemic significantly motivated the advancement of virtual reality for heritage presentation; however, its application in Islamic heritage remains

restricted. As Western styles increasingly influence Islamic architecture, it is essential to utilize these technologies to preserve the Islamic architectural identity for future generations. Furthermore, it is essential to grant individuals the right to access religious sites and engage with cultural heritage during epidemics, conflicts, and similar crises. Therefore, this research seeks to explore the potential of virtual reality in Islamic mosques.

The research questions:

1. What is the effect of employing virtual reality to enhance awareness regarding the significance of Islamic decorations in mosques?
2. In what ways can virtual reality facilitate the reconnection of individuals with their cultural and religious identity through the architectural design of mosques?

The research objectives:

1. To examine the efficacy of virtual reality in enhancing awareness of the significance of Islamic decorations and their influence on religious and cultural identity.
2. To examine the utilization of virtual reality in reestablishing individuals' connections to their heritage identity within mosques.

## 2. Literature Review

### 2.1. Identity and Islamic Ornament

Sacred architecture, represented by community-centered mosques, aims to raise individuals from the busy urban environment to a collective search for holy while offering a sense of identity. Complex and monumental structures were seen as tools for inspiring respect and loyalty, to illustrate and facilitate the worshiper's concentration on God, while trying to reconnect humanity with nature and achieve a higher state of existence and identity. Consequently, humanity has consistently tried to find sacredness through structures and architecture, though this effort may differ across various cultures, eras, and religious traditions. This emphasizes the significance of comprehending society's cultural identity [17]. Cultural identity is considered one of the most important aspects that distinguish a civilization from another because it is an extension of the cultural heritage. It must be preserved considering the spread of globalization and spread in the cultural circles in the world. Countries that are concerned with the supremacy of their culture need to be the strongest economically and the most civilized. Therefore, nations and civilizations disappear if people do not preserve their cultural heritage and interact with it and if they don't work to revive it according to the requirements of the current era, in various ways and means [18].

One of the most important things that reflect the Islamic identity is the decorations. Georgy [19] defines ornaments as "a science of the arts that investigates the philosophy of

abstractionism as well as the proportions and proportionality of composition as well as space, mass, color, and line, which are geometrical units or natural units (plant, human, animal) that have been transformed into abstract forms, and left the space for the artist's imagination, sense, and creativity until the rules were set for them".

The conventional definition: it is the inscriptions that decorate the building, whether it is gypsum, stone, wood, marble, or other raw materials. Islamic arts architecture has received special attention and continued to be a great master of diversity due to the efforts of Muslim artists. They dug on wood, engraved on gypsum, and used other various techniques. At a time when gypsum decoration was considered one of the most important early Islamic decorations [20], ornaments is also an art that explores philosophy, abstraction, percentage, proportion, composition, space, mass, color, and calligraphy. It is also one of the most important fine arts and is influential in giving craft products and other industries an attractive aesthetic value. The source of these values is the artist's inspiration and imagination [21]. There are four main types of Islamic decorations, which had particular importance to Muslims from philosophical, cosmic, and symbolic aspects illustrated in Figure 1.

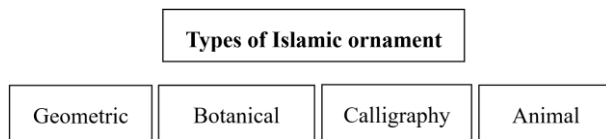


Figure 1. Types of Islamic ornament

## 2.2. The Methods of Reviving Islamic Art in Contemporary Interior Design

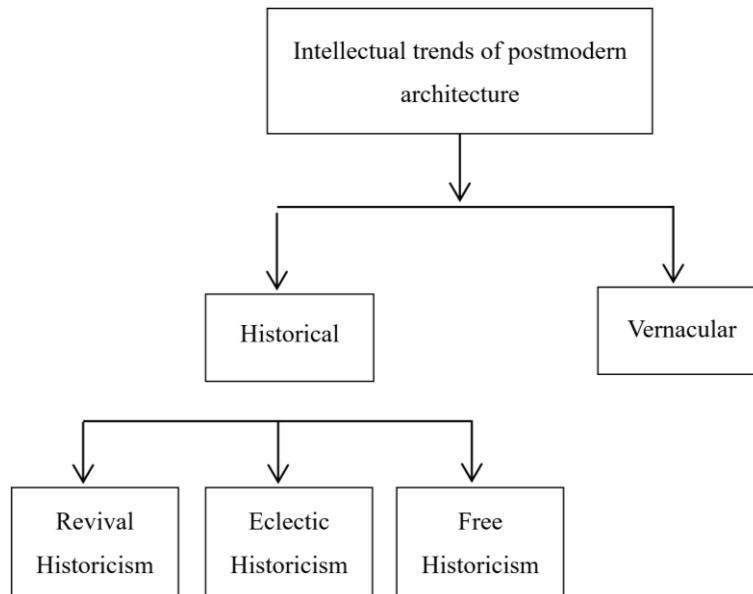
Numerous trends have arisen to sustain identity, seeking to rejuvenate and preserve the utilization of Islamic ornaments as an integral aspect of our contemporary identity. The postmodern trend is one of the most recent trends interacting with heritage. The concept of "postmodernism" began to be used through the articles of the architect (Charles Jencks) entitled "Postmodern Architecture Language" [22]. Figure 2 illustrates these trends.

## 2.3. Heritage and Technology

The integration of heritage and technology has gained significance as technological applications can significantly diminish the gap between cultural spaces and individuals, thereby facilitating and promoting increased interactions and connections among individuals, while sustainably enhancing enjoyment and enabling more effective cultural

learning. Moreover, digital technologies may stimulate favorable emotions in individuals, thereby enhancing their connection with culture [23]. Many instances can be cited regarding the implementation of digital technologies in cultural heritage sites. For example, artificial intelligence (AI) [1], mobile devices, and audio guides have been effectively and widely utilized [24]. In recent years, numerous immersive reality technologies, including immersive reality headsets, have emerged. The use of virtual reality for education has become popular, especially since it provides an unconventional way of learning. The phrase "virtual technologies" denotes three categories of visualization technologies: virtual desktop reality (DVR), augmented reality (AR), and immersive virtual reality (IVR) [25]. Every term employs a unique strategy. Augmented Reality integrates real-world observation with superimposed virtual 3D components that learners can interact with [26]. Desktop VR presents a graphical interface on a computer monitor. It is more economical than immersive VR as it does not require expensive hardware or software and is relatively straightforward to produce. Despite lacking immersion, they consist of computer-generated environments that manifest in three dimensions, even when presented on a two-dimensional display. Immersive virtual reality utilizing head-mounted displays (HMDs) is a pivotal technology of the twenty-first century that has garnered the attention of professionals, consumers, and academics across diverse fields [27]. Research indicates that a heightened sense of presence in virtual reality leads to increased engagement compared to conventional media [28].

It can be noted that the virtualization of architectural heritage elements is gaining popularity, as demonstrated by the current published virtual heritage (VH) projects and applications [29]. Particularly virtual reality has been extensively utilized to present heritage. Sulistiono, et al. [30] employ Virtual Reality to facilitate the dissemination of Lampung's history through interactive and humanistic interaction models for historical artifacts, presented without constraints of space and time. Imran and Masud [31] claim that the 3D visualization of cultural heritage with scientific transparency embodies the core tenets of the London Charter and Sevilla Principle; thus, Imran and Masud [31] have integrated virtual reality into archaeological research to digitally visualize and preserve cultural heritage. Rizvic, et al. [32] illustrate the Museum of Bosnian Traditional Objects, the Digital Catalogue of Stecak, and the Virtual Museum of Sarajevo Assassination, providing an overview of the creation process for virtual environments utilizing diverse data sources and various 3D digitization technologies, including traditional 3D modeling, laser scanning, and photogrammetry techniques.



**Figure 2.** The Methods of Reviving Islamic Art in Contemporary Interior Design

#### 2.4. Islamic Ornament and VR

As previously stated, the researcher found no studies in the Scopus database that combined virtual reality with Islamic ornamentation; however, some studies were addressing virtual reality in relation to mosques. Schmitt, et al. [17] research focused on the creation of religious spaces by students through virtual reality. The application of virtual reality was employed in the concluding phase for students to assess their designs, as it was determined that virtual reality could enhance the design of these spaces by perceiving their spirituality and determining whether the design effectively communicated this feeling. Sawari, et al. [5] examined the psychological effects on Muslims who are distant from mosques while experiencing them through virtual reality. The results demonstrate that almost all of the participants found the 360-degree Virtual Reality Mosque Tour enjoyable and engaging, which has important implications for comprehending cognitive and emotional responses associated with the intention to visit mosques. In De Cesaris and Sadeghi Habibabad [33] research, participants were presented with a 360-degree image of the mosque via virtual reality glasses, and the data collected from brain waves. The initial findings indicated that, among the sound characteristics that effectively contribute to the spiritual ambiance in mosque architecture, sound pressure level received the highest rating, followed by sound concept, sound amplitude, sound quality, sound source, and sound type, in that order. Imran and Masud [31] use VR only to show the Gumbad mosque. Abidin and Razak [34] research examined the application of virtual reality in mosques that have experienced renovations and developments, resulting in changes to their original architectural heritage, particularly the Prophet's Mosque in Medina, which has undergone numerous modifications and expansions from its original design. Consequently, his

research introduces a methodology for preserving the original integrity of this heritage through virtual reality, aimed at sharing archaeological and historical knowledge and fostering awareness of heritage within the global community. In a similar work, Suárez, et al. [35] attempted to reconstruct the old sound of the Mosque of Cordoba using virtual reality. Also, Alsabban and Fatani [36] analyzed and documented the architectural heritage of Al-Masjid Al-Haram to preserve these decorations, and to shed light on the beauty of the currently developed designs using virtual reality technology, allowing interested researchers to study them in the future. Yasin, et al. [37] encourage the implementation of Situated Learning through virtual reality to aid pilgrims in their training, as many hopefuls are unfamiliar with the grand mosque's environment, and traditional training methods rely on a sequence of images that do not offer a holistic representation of the mosque. Virtual reality has proven to be more effective and can save time. Other research focuses on preserving mosques in their current form using virtual reality [38, 39].

Of the 43 studies listed in the Scopus database that incorporate virtual reality and mosques, only 10 relate directly to this topic. Furthermore, none of these studies examine the topic of Islamic ornamentation. This necessitates the examination of virtual reality applications concerning Islamic decorations and how they are presented to the public.

### 3. Materials and Methods

#### 3.1. Research Design

This study employs experimental-qualitative research to

ascertain whether virtual reality can mitigate the limitations of conventional methods to establish an improved framework. The qualitative experiment is a hybrid methodology that integrates experimental design with qualitative research techniques to investigate a subject. The researcher may employ experimental methods to manipulate variables and qualitative methods to gather comprehensive information regarding the experiences and perceptions of the participants.

A hybrid technology design may progress through four distinct phases. During Phase I, participants undergo a pretest to assess their cognitive preferences and attitudes via a survey. In Phase II, participants are exposed to the stimulus, which is a virtual reality environment in this study. Subsequently, their interactions were evaluated through post-test interviews or a survey (Phase III). Their reactions to the complete procedure are documented through open-ended inquiries (Phase IV). The specific analysis technique varies for each phase based on its execution, sample size, and scholarly framework. A pretest survey would probably be utilized in Phase I, while in Phase III, it may be integrated. In Phase IV, qualitative analysis may be conducted on in-depth interviews from the sample. The two data sets can be integrated to provide contextualized responses with explanatory significance. Therefore, to attain the objectives, an experiment will be executed involving the distribution of a questionnaire to mosque attendees to assess their awareness of Islamic decorative elements and their perceptions of the significance of cultural and religious decorations before the experiment's initiation. The experiment will consist of a virtual reality experience. Subsequently, it will be assessed whether virtual reality enhances awareness by re-pasting the questionnaire to the participants.

### 3.2. Participants and Sampling

Participants from the mosque took part in the survey and experiment.

This group will comprise mosque attendees from various age demographics, educational levels, and cultural backgrounds. The sample's diversity aims to represent a broad spectrum of perspectives regarding the significance of Islamic decorations in mosques. The primary responsibility of the participants is to answer the initial survey, subsequently execute an experiment, and finally complete the questionnaire once more.

The sample size comprises 45 individuals, as virtual reality experiences typically involve a limited number of participants due to the experimental nature of the research, which emphasizes participant experience [40, 41].

### 3.3. Methods and Data Collection

Data was collected utilizing the following methods to fulfill the research objectives:

#### 3.3.1. Desk Review

Research was conducted on the ornaments, their evolution, and their influence on enhancing the educational environment in virtual reality.

#### 3.3.2. Virtual Reality Experience

A virtual reality experience was created to allow participants to explore mosques featuring diverse levels of Islamic ornamentation. The experience includes the exploration of traditional Islamic decorative motifs, including geometric patterns, Kufic, and botanical scripts, alongside the exhibition of mosques that integrate Western and Islamic elements to underscore their distinctions and cultural importance. Additionally, it offers educational content elucidating the history of Islamic decorations and their religious and cultural significance. Participants in this group engaged in a virtual reality experience, wherein they were prompted to interact with various decorations, comprehend their cultural and religious significances, and contemplate the connection between the decorations and their faith and identity.

#### 3.3.3. Survey

Questionnaires will be administered to participants before and after the experiment to gather quantitative data on the degree of awareness regarding Islamic decoration before and after the experience, their views on the significance of cultural and religious adornments, and the influence of the experience on their relationship with their cultural and religious identity.

The questionnaire will comprise Likert-scale and open-ended questions concerning the experience's impact to facilitate deeper reflection and personal commentary.

### 3.4. Data Analysis

#### 3.4.1. Quantitative Analysis

The data obtained from the questionnaires will be analyzed employing statistical methods.

#### 3.4.2. Qualitative Analysis

The data will be recorded and analyzed through thematic analysis.

## 4. Analysis and Result

Forty-five participants were randomly chosen from the mosque attendees. Although the survey typically involves a greater number of participants, it is essential for the experiment to be fewer participants. Participants must complete the survey twice, once before and once following the VR experience, which complicates the selection of a substantial number of individuals.

In the beginning, the participants were presented with a series of questions as follows:

- 1- What types of Islamic decorations do you know? (such as geometric decorations, Arabic calligraphy, floral decorations, etc.)
- 2- To what extent are Islamic decorations an important part of mosque design for you?
- 3- Were you aware of the symbolic and cultural history of Islamic decorations before today?
- 4- Is there an impact of Islamic decorations on the religious and cultural environment inside the mosque?
- 5- Do you think that Islamic decorations represent a part of your cultural and religious history?

Regarding the first question, the results showed that the majority of participants mentioned calligraphic decorations, while 85% of them mentioned geometric decorations, 67% mentioned plant decorations and only 18% of participants mentioned animal decorations. In the second question, 83 percent of the participants considered decorations to be an

important part of the design of mosques. For the third question, 66 percent of the participants considered that they were not familiar with the history of decorations. In the fourth question, 73 percent of the participants considered that the decorations had an impact on the environment inside the mosque. For the fifth question, 89 percent answered that it represents their history. The responses indicate a significant interest and pride in Islamic decorations; however, considerable ignorance regarding certain aspects diminishes their perceived importance.

The next step involved the creation of a virtual environment featuring diverse decorations, videos, interactive information, and various mosque models, allowing participants to engage with different types within a virtual reality setting, as illustrated in Figure 3.

After the experiment, the participants were asked the same questions to see the effect of the virtual reality experience on their answers as shown in Table 1.



Figure 3. VR experience

Table 1. Comparison of Survey Responses Pre- and Post-VR Experience

Questions	Survey before experiment	Survey after experiment
1- What types of Islamic decorations do you know? (such as geometric decorations, Arabic calligraphy, floral decorations, etc.)	Calligraphic 100% Geometric 86% Plant 65% Animal 15%	Calligraphic 100% Geometric 100% Plant 100% Animal 100%
2- To what extent are Islamic decorations an important part of mosque design for you?	84% of the participants considered decorations to be an important part.	93% of the participants considered decorations to be an important part.
3- Were you aware of the symbolic and cultural history of Islamic decorations before today?	70% of the participants considered that they were not familiar with the history of decorations.	0 % of the participants considered that they were not familiar with the history of decorations.
4- Is there an impact of Islamic decorations on the religious and cultural environment inside the mosque?	71% of the participants considered that the decorations had an impact on the environment inside the mosque.	91% of the participants considered that the decorations had an impact on the environment inside the mosque.
5- Do you think that Islamic decorations represent a part of your cultural and religious history?	88% answered that it represents their history.	100% answered that it represents their history.

It can be noted from the differences between the participants' answers before and after the virtual reality experience in Table 1 that it had a major role in enhancing the understanding of the decorations and their connection to identity. The experience was not limited to that, as the participants were asked some questions to reach a better understanding as follows:

1. Did you become more interested in learning about Islamic decorations and discovering more about them after this experience?
2. Do you feel that Western designs negatively affect the cultural and religious character of mosques after what you saw in virtual reality?
3. In your opinion, how can virtual reality help preserve cultural and religious identity, and what is its role in epidemics and wars?

Regarding the question of whether the participant has become more interested in learning about Islamic decorations and discovering more about them after this experience, all participants agreed that they have an interest in learning more.

The question: Do you feel that Western designs negatively affect the cultural and religious character of mosques after what you saw in virtual reality? 94% of the participants agreed that they do negatively and that Islamic decorations should be introduced in a better way.

What is your perspective on the role of virtual reality in preserving cultural and religious identity, as well as its significance during epidemics and wars? The responses differed, highlighting significant issues, including the reconstruction of religious sites to safeguard them from obliteration or devastation caused by conflicts or natural calamities. Some suggested that virtual reality can facilitate immersive experiences of visiting sacred sites and showcase customs and practices linked to identity. Several participants noted that during epidemics, such as the COVID-19 pandemic, virtual reality facilitates individuals in preserving their cultural and religious connections, enabling displaced or war-affected communities to virtually engage with their original sites, thereby sustaining their cultural and religious affiliations.

One of the things the researcher noticed during the experiment was that people's attitudes toward virtual reality varied. According to two participants, it was offensive and devaluing to use virtual reality to symbolize religious identity. Elderly people's attitudes toward the technology varied; some thought it was an intriguing experience that brought back memories, while others did not feel at ease. It also demonstrated that people who had never tried virtual reality before were more enthusiastic than people who had more virtual reality experience. It begs the question of how long virtual reality will continue to be an effective teaching and knowledge-transfer tool.

## 5. Discussion

Islamic ornaments represent a lost heritage in contemporary times, characterized by their evident decline and the widespread adoption of Western styles [9, 11]. It was expected that during the Corona pandemic, Islamic ornaments would have better protection and activation. Especially during the COVID-19 pandemic, the necessity emerged to grant individuals the right to access and engage with their heritage and beliefs due to their significant influence on individual psychology [23]. For that, the COVID-19 pandemic marked a crucial period for the widespread adoption of virtual reality technology in the heritage area [5]. Unfortunately, mosques were mostly excluded from the domains where virtual reality was implemented. Research on virtual reality and mosques is limited in contrast to other topics. The limited research on virtual reality and mosques focuses on preserving the historical ambiance of significant mosques [31, 34], simulating the Hajj to aid in pilgrim training [37], or examining the impact of sound on worshippers [33, 35]. However, Islamic ornaments are not given any attention, despite their close connection to mosque identity. Additionally, a lot of Muslims were displaced in recent years by wars and other events, but they did not use virtual reality to further their religious beliefs [5]. In contrast, many war-torn nations have attempted to take advantage of virtual reality [30]. Islamic ornaments and knowledge about them are vanishing, even though events like Corona and wars should have brought attention to the issue of Islamic ornaments disappearing and attempted to preserve them. Thus, this study concentrated on using virtual reality to preserve identity and impart knowledge about Islamic decorations.

The experiment indicates that utilizing virtual reality to engage with historical or religious environments allows individuals to interactively explore Islamic decorations and sacred sites, thereby augmenting awareness of cultural and religious identity, particularly among youth who may have limited exposure to these elements in their daily lives. Furthermore, familiarizing individuals with virtual experiences that showcase the evolution of Islamic ornamentation or highlight the historical significance of mosques may augment their comprehension of their heritage and bolster their sense of pride and belonging. It also alleviates the adverse effects of immigration or cultural isolation experienced by some individuals, thereby reinstating a sense of cultural and religious affiliation, even in environments distinct from their original culture. Virtual reality is anticipated to enhance designers' and decision-makers' comprehension of the significance of incorporating cultural and religious elements into contemporary designs, potentially leading to a resurgence of Islamic decorative motifs in architecture.

The findings also indicated that during the pandemic, social distancing measures impacted religious gatherings and prayers in mosques. Consequently, virtual reality allows individuals to visit mosques remotely and engage in spiritual experiences that replicate the actual environment, thereby augmenting the sense of religious connection despite the limitations. Moreover, during conflicts, virtual reality can be employed to document cultural and religious sites and practices, thereby safeguarding this heritage for posterity.

Many researchers have discussed the importance of using virtual reality in the educational process in several topics such as engineering, heritage, and design [15, 42-44]. This research shows that virtual reality is also important in increasing pride in identity.

## 6. Conclusions

The use of virtual reality has been shown to improve knowledge and understanding of Islamic ornamentation and its meaning. It also lets people see how cultural and religious heritage has changed over time. With these capabilities, virtual reality can serve as a powerful tool for preserving identity, increasing awareness, and fostering community recovery in the face of pandemics and wars. This positions it as more than just a technological medium but as a fundamental factor in building a sustainable and culturally cohesive future. Virtual reality offers immense potential to address challenges arising during crises such as pandemics and wars, alongside its pivotal role in strengthening identity and enhancing knowledge. During pandemics, virtual reality can provide interactive environments that simulate mosques and religious gatherings, fostering spiritual and social connections without the need for physical assemblies and thereby reducing the risk of infection. It also supports mental health by creating virtual experiences that help alleviate stress and feelings of isolation. Furthermore, it can be employed as an innovative educational tool to compensate for interruptions to traditional learning and to promote awareness of cultural and religious identity. In times of war, virtual reality emerges as a means to preserve cultural and religious identity by virtually reconstructing destroyed sites, allowing individuals to maintain a connection with their heritage. Virtual reality also plays a crucial role in documenting tangible and intangible heritage that is at risk of disappearing during conflicts. However, some challenges may arise, such as the difficulty of accessing technology for some groups or the high cost of developing high-quality content. In addition, it may be difficult to achieve a virtual experience that accurately simulates the emotional and spiritual feelings provided by real places.

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