A Perspective of Virtual Exhibition during the COVID-19 pandemic

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ABSTRACT

Virtual exhibitions are growing driven by physical restrictions during the COVID-19 pandemic. The exhibition of works that were previously more physical and can be visited physically is slowly becoming an exhibition that is visited virtually. This change is uncomfortable for the community. For this reason, a study is needed on the impact of virtual exhibition visits on the community during the COVID-19 restrictions. This study aims to answer these problems and, at the same time, evaluate the progress of virtual exhibitions in the early days of the pandemic. Collecting data using an online questionnaire on 49 architecture students. The questionnaire results were analyzed using distribution and content analysis for open-ended questions. Exhibition content is the main focus of a virtual exhibition. Other aspects to consider are virtual quality, exhibition perception, and execution. Restrictions cause boredom and stress. Virtual exhibitions can help overcome these feelings. Virtual exhibitions are not a substitute for physical exhibitions because people do not feel the need to refrain from visiting virtual exhibitions. Professionals feel motivated to visit any exhibition, whether physical or virtual. So virtual exhibitions function like physical exhibitions. The only difference is the impression and experience that visitors get.

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1. Introduction

Architectural design is a product of designing and planning an environment's physical and spatial characteristics. The process involves social aspects and user behavior. The design of public areas, especially exhibitions, needs to consider user space preferences and experiences. The opportunity to experience space firsthand is very limited in the pandemic era. The exhibition can be carried out virtually by considering the space experience. The space experience at a virtual exhibition event is different from an offline exhibition event. In the COVID-19 pandemic situation, humans are required to adapt from real experiences to more virtual experiences.

Martin et al. [1] suggested that the COVID-19 pandemic demands changing learning methods to virtual or online methods. This method encourages lecturers or teachers to be more proactive in conveying information. However, the evaluation results showed dissatisfaction among both students and teachers. For method improvement, Martin et al. [1] recommend several solutions, namely the use of visual and audiovisual media, increasing the database search function, tutoring with virtual media, and active methodologies.

Several studies have used virtual space as a medium for delivering information, interactions, or experiments [1][2][3]. Several studies have assessed the association of virtual reality with psychological health [4][5][6]. Williams & Howarth [7] examined the impact of the virtual environment on physical education. The results show that communication between students or students
and teachers has improved, and the discussion sessions for each session can be better. It can be concluded that the COVID-19 pandemic has had an impact on physical, social, and psychological aspects. The impact of the physical aspect can be avoided with a healthy and orderly lifestyle, keeping a distance, and washing hands. The social and psychological impacts of the COVID-19 pandemic require more efforts to be overcome.

Research related to social aspects is primarily done in education [1][2]. Other fields such as art have also experienced difficulties during the COVID-19 pandemic, especially in organizing exhibitions. Virtual media is used to organize exhibitions. Virtual media has advantages and disadvantages that need to be evaluated. The results of the evaluation can reveal aspects that can be improved. Key points in the exhibition space: This study aims to assess the virtual exhibition space and its impact during the restrictions caused by the covid-19 pandemic.

Technological advances remove the boundaries of space. Architectural science that focuses on the design of physical space needs to adapt quickly to remain relevant today. The COVID-19 pandemic is forcing architectural practitioners to experiment. The Theory of Change emphasizes that change is not an organic result. Changes can be planned for long-term effects [11]. The relationship between humans and space needs to be studied further for architecture to adapt to technological advances. This research is the first step to identifying these issues and providing insight into virtual space's significance in the user experience.

2. Material and Methods

2.1. Virtual Exhibition Design Aspects

Virtual space is a space that includes space users to interact virtually [2]. The design aspects of virtual design that have been discussed are sound and photorealistic. Rudi [3] in his research on virtual exhibition spaces. Sound is one of the main elements that define the virtual experience of the exhibition space. In designing a virtual exhibition space, the type and variety of sound in the room have an effect on the user's room experience. Less significant factors include exhibition design, quality, and sound delivery methods. Serafin [8] formulated six things related to sound in virtual spaces that support the user room experience, namely:

1. Voice Delivery Methods
2. Sound Movement
3. Interactivity
4. Diversity
5. Emphasis
6. Quantity

Dobricky et al. [2] researched virtual space as a learning medium for agricultural vocational schools. Teachers were asked to create a virtual garden. The teacher prefers a space that includes the user (interactive) than the user only as an observer (viewer). Therefore, interactive virtual spaces are more attractive as learning media than non-interactive ones. Proper placement of sound with appropriate variations is also important to support interactive users in virtual spaces [3][8].

2.2. The Psychic Aspects of Virtual Exhibition

The pandemic condition requires people to reduce socialization and stay at home. This condition gives rise to psychological stress [4]. Yang et al. [4]'s research comprehensively discusses virtual space as a solution to stress caused by a pandemic situation. Avoiding stress encourages affective responses of joy (enjoyment) and involvement (involvement). In contrast, the triggers for the affective response are telepresence and a sense of the present. Telepresence is an impression from time to time that is generated by a virtual space [4]. Telepresence focuses more on the user's impression, while the sense of presence relates to the virtual space experience [4]. Sense of
presence compares virtual space with real space, so the physical attributes of the space are essential. In terms of architecture, the sense of presence is more related to telepresence. For this reason, this study will evaluate the virtual exhibition space. One way is by comparing the actual exhibition space. Sense of presence influences virtual space engagement, excitement, and satisfaction [4]. However, stress reduction is more influenced by telepresence than a sense of presence.

The natural atmosphere can reduce stress [5][6]. However, during a pandemic, access to natural elements is minimal. A virtual room with a nature theme can be a solution to reduce stress. Reese, Stahlberg, and Menzel [6] compared the effects of stress reduction in real and virtual environments. Post-activity measurements showed no significant difference between the stress level of visitors to the virtual and real natural environments. But over time, the stress-reducing effect was more influential on visitors to real natural environments. Reese, Kohler, and Menzel [5] conducted more detailed research on virtual spaces. They compared the ability of consoled and non-console themed virtual spaces to reduce stress. Parameters measured were stress, mood, and vitality before and after activities. The result is that stress levels decrease after activities, but the results only apply to non-console virtual spaces. There are indications that nature-themed virtual spaces are not suitable for user control.

3. Real sensation. Virtual exhibitions need to give users a sensation as real as possible. This is difficult to achieve because the real sensation is only obtained if the user sees and touches directly smells the goods or exhibition space.

4. Walk around. Circulation in the exhibition area is usually made comprehensive so that there are no exhibits that users do not have time to feel. This walking experience can support the virtual exhibition hall design.

5. Haptic vision. Haptic is still related to sensors, namely how visitors do not just see but also feel, touch, and hold.

6. Sense of Being Here. This factor may be like the notion of telepresence that has been described previously. So, it's natural that telepresence plays a more important role in reducing stress than a sense of presence.

2.4. Methods

An appropriate research instrument is needed to answer the research objectives, namely the evaluation and impact of virtual exhibitions. The data collection method used an online questionnaire consisting of open and closed questions. Similar research that discusses media or virtual space using similar methods [1][2][7] Open-ended questions aim to explore the results of the evaluation. Respondents' answers will be categorized into the strengths and weaknesses of virtual exhibitions and their impact during the COVID-19 pandemic. In addition, it is necessary to know the comparison with physical exhibitions to answer whether virtual exhibitions can replace physical exhibitions. The following are the details of the questions asked in the online questionnaire.

2.3. Virtual Exhibitions Space

Höfler [9] philosophically formulates the critical success factors of virtual exhibition space design. These factors are:

1. Sensory quality. An excellent sensory experience can give rise to unexpected, precise, appropriate, and rich impressions.

2. Dialogue space. The ability of a space to communicate with users is the determinant of an excellent virtual exhibition space.
Table 1: List of Question

| List of Questions | Description | Type of Questions/Answer |
|-------------------|-------------|--------------------------|
| socio-demography  | 1. Email    | short answer |
|                   | 2. Name     | short answer |
|                   | 3. Age      | short answer |
|                   | 4. Gender   | short answer |
|                   | 5. Background profession | short answer |
|                   | 6. How much do you follow architectural updates? | Likert scale |
| Strengths and weaknesses of virtual exhibitions | What are the strengths/weaknesses of EPILOGUE? | open-ended question |
|                   | How did you feel during the restrictions implementation? | open-ended question |
| Preference to visit physical exhibitions or virtual exhibitions | What impact did you feel from visiting the EPILOGUE website on your experience during pandemic restrictions? | open-ended question |
|                   | I am more comfortable with attending physical exhibitions than virtual ones | Likert scale (strongly disagree/strongly agree) |
|                   | If I didn't have to then I would never attend the virtual exhibition | Likert scale (strongly disagree/strongly agree) |
|                   | I prefer to wait until the end of pandemic restrictions to attend physical exhibitions rather than visiting virtual exhibitions during the restrictions period | Likert scale (strongly disagree/strongly agree) |

Source: (Author, 2021)

According to Cresswell [10], the number of respondents is five times the number of questions. So, the minimum number of respondents is planned to be 25 people. Answers to open-ended questions will be categorized and the distribution calculated to see which factor is dominant. The number of responses per scale will analyze Likert scale questions to see the most answers. The results of these analyzes are then compared with each other so that conclusions emerge from the evaluation of virtual exhibitions and their impact during the covid-19 pandemic.

The exhibition that became the case study was an exhibition of the final work of Architecture students at the Bandung Institute of Technology. The exhibition takes place from 8 -30 June 2020. The theme of the exhibition is Phases/Cycles. This virtual exhibition can be accessed at www.epilogueitb.com.

This exhibition uses the metaphor of a plant from seed to bloom. The metaphor divides the exhibition material from the concept stage, drafting, to the result in the form of working drawings, mockups, and posters.

3. Results and Discussions

3.1. Sociodemography

The number of respondents is 49 people. Sociodemographic data in this study include: email, name, telephone number, age, gender, scientific background, and how much respondents follow developments in the world of architecture. The results of these data are as follows.

Source: (Author, 2021)

The respondents aged 19 and 20 are the same, each with 19 people. Respondents aged 19 years amounted to 39%, as well as respondents aged 20 years. 10% of respondents are 21 years old, and 8% of respondents are 18 years old.
Respondents aged at least 25 years amounted to 4%.

There are more male respondents than female respondents. Male respondents totaled 30 people and represented 61% of respondents. Female respondents were 19 people and represented 39% of respondents.

The answers to the questions about the strengths and weaknesses of EPILOGUE are divided into two categories, namely Strengths and Weaknesses. The resulting content analysis details can be seen in Table 2: Responses on Strengths and Table 3: Response on Weakness.

3.2. Strength and Weakness EPILOGUE Virtual Exhibitions

Most of the answers regarding the strengths of EPILOGUE lie in the content, exhibition execution, and the exhibition's perception in the visitors' eyes. Another strength of EPILOGUE worth considering is the virtual quality, website, insight, and exhibition quality. The content, execution of the exhibition, and the perception of the exhibition are closely related to the theme or concept of the exhibition and may be related to the background of the respondent from the architectural field so that they understand the content presented by EPILOGUE.

Table 2: Responses on Strengths

| Labels            | Count of responses |
|-------------------|--------------------|
| content           | 49                 |
| execution         | 18                 |
| exhibition perception | 17               |
| virtual quality   | 16                 |
| website           | 13                 |
| insight           | 11                 |
| exhibition quality| 10                 |
| impact            | 8                  |
| experience        | 8                  |
| practical         | 5                  |
| technology        | 2                  |
| design            | 1                  |
| exhibition flow   | 1                  |
| **Grand Total**   | **159**            |

Source: (Author, 2021)

Figure 2: Distribution of Respondent's Gender

Figure 3: Respondent's Update on Architecture
In contrast to EPILOGUE's strengths, EPILOGUE's biggest drawback is content. The content is part of the EPILOGUE virtual exhibition and needs to be described in more detail. The description of the labels can be seen in the Details of Content (Label) chart. The lack of content comes from the quality of the video and the quality of the work. Virtual exhibitions are not yet joint, so the visual quality of virtual exhibitions has not developed rapidly. The quality of the work has been criticized because the work on display is Final Projects. Visitors with an architectural background who were updated in the world of architecture will focus more on exhibition works. The result of the Final Project may not be comparable to that of a great Architect.

3.3. Impacts of Virtual Exhibitions during the Pandemic

Virtual exhibitions have become more existent since the COVID-19 pandemic. The imposition of access restrictions and physical distancing encourage the emergence of many virtual exhibitions. After two years, the pandemic is still ongoing. The virtual exhibition is growing in quality and quantity. Respondents need to answer what they feel during the pandemic to find out the benefits of virtual exhibitions during the pandemic. After the answers are concluded, it can be analyzed the impact of virtual exhibitions on respondents during access restrictions and physical distancing.

Most of the answers regarding experiences during a pandemic are related to online studies.
This experience is closely related to the respondent's status as a student.

Table 4: Responses on experience during the Pandemic

| Labels             | Count of responses |
|--------------------|--------------------|
| online study       | 52                 |
| restricted         | 29                 |
| boring             | 29                 |
| interaction        | 14                 |
| meaning            | 9                  |
| adaptation         | 8                  |
| economy            | 5                  |
| negative change    | 4                  |
| experience         | 3                  |
| health protocol    | 3                  |
| anxiety            | 2                  |
| covid              | 2                  |
| grief              | 1                  |
| positive           | 1                  |
| **Grand Total**    | **162**            |

Source: (Author, 2021)

The following most experienced are labeled restrictions. Respondents felt that everything was limited in mobility, activities, interactions, routines, and even leaving the house. The most common emotion is boredom. At the beginning of 2020, there were strict restrictions in Indonesia, so no one was allowed to leave the house unless it was urgent. Offices were closed, no one was allowed in, and employees were required to work from home (WFH). The education sector is also limited. There should be no activities in schools at all. In June 2020, the restrictions lasted for approximately three months. The other experiences that came up the most were labeled interactions. Humans as social beings have a basic need for interaction. Restrictions have a significant impact on meeting these needs.

The virtual exhibition as one of the products of the pandemic period is expected to help reduce the personal impact felt by the community. The actual impact of virtual exhibitions during the pandemic can be analyzed based on the following table.

Table 4: Impacts of virtual exhibitions during the pandemic

| Labels                                                | Count of responses |
|-------------------------------------------------------|--------------------|
| motivated                                             | 25                 |
| entertained                                           | 23                 |
| insightful                                            | 21                 |
| helping to come to terms with the pressure of restrictions | 19                 |
| experiences                                           | 17                 |
| health protocol                                       | 4                  |
| hopes                                                 | 2                  |
| doubtful                                              | 6                  |
| **Grand Total**                                       | **117**            |

Source: (Author, 2021)

The virtual method does not reduce or replace the function of physical exhibitions, namely to inspire visitors, provide entertainment, and add insight. The virtual exhibition motivates the respondents to create. The motivation may be closely related to the respondent's background following the exhibition material, which is architectural design. Virtual exhibitions help overcome the stress or boredom caused by restrictions during the pandemic. This impact is not as significant as other impacts, which are the same as the impacts caused by physical exhibitions. It can be concluded that the virtual exhibition helps to overcome the pressure of the pandemic restrictions but does not eliminate the main expected impact of any exhibition.
The restrictions imposed around June 2020 can be seen in the low opportunity for people to leave their homes. From the chart of answers to the question of how often respondents leave the house during the restrictions, the values that appear are shallow. Restrictions and boredom are experiences that are highly relevant to the lack of opportunities to leave the house. Those experiences are felt by respondents or the community in general.

Questions regarding the virtual exhibition experience are broken down into three questions. Respondents were asked to give a scale of 1-5 for each of the following statements:

1. I am more comfortable with attending physical exhibitions than virtual ones
2. If I don’t have to, then I will never attend the virtual exhibition
3. I prefer to wait until the end of restrictions to attend physical exhibitions rather than visiting virtual exhibitions during the restrictions period

Virtual exhibitions are not considered a substitute for physical exhibitions. This is evident from the low number of respondents who feel compelled to attend virtual exhibitions. The rapid development of technology has supported the various design possibilities of virtual exhibitions. The live virtual exhibition improves the quality according to the key points that have been generated in the previous analysis.
The third question confirms the results of the second question. WFH is not an excuse for people to visit virtual fairs. These results are consistent with the analysis of the impact of virtual exhibitions on the restrictions during the pandemic. Most respondents did not feel the need to wait for the restrictions to end to visit physical exhibitions. This means that the existence of virtual exhibitions does not depend on the existence of physical exhibitions.

4. Conclusion

The EPILOGUE virtual exhibition has many strengths, including content, execution, exhibition perception, virtual quality, website, insight, and exhibition quality. The biggest drawback of the EPILOGUE virtual exhibition is the content. Content is the main focus of the success of virtual exhibitions, especially if visitors come from the same background, namely architecture. Moreover, most of the respondents admitted to following the development of architecture.

Restrictions during the pandemic created new problems. Problems closely related to students are online learning methods, restrictions, boredom, and lack of interaction. Visiting virtual exhibitions, especially those that match interests or professional fields, will create motivation to work. Other impacts of visiting virtual exhibitions during pandemic restrictions are entertaining, insightful, helping deal with stress during restrictions, and providing a unique experience.

Virtual exhibitions cannot be seen as a substitute for physical exhibitions. Both have different characters. Most people still feel more comfortable attending physical exhibitions than virtual ones. In contrast, this does not mean that visiting virtual exhibitions is a must. People also prefer to visit virtual exhibitions at any time rather than wait for restrictions to end so they can visit physical exhibitions.

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