

The Influence of Modern Techno The Influence of M...

The Influence of Modern Technology on Set Design.docx

 My Files My Files Central Luzon State University

Document Details

Submission ID

trn:oid::29324:81116693

Submission Date

Feb 5, 2025, 10:26 AM GMT+5

Download Date

Feb 5, 2025, 10:27 AM GMT+5

File Name

The Influence of Modern Technology on Set Design.docx

File Size

45.1 KB

14 Pages

5,727 Words

34,376 Characters





2% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.




Filtered from the Report

- Bibliography
- Quoted Text
- Cited Text
- Crossref database
- Crossref posted content database

Match Groups

-  **8** Not Cited or Quoted 2%
Matches with neither in-text citation nor quotation marks
-  **0** Missing Quotations 0%
Matches that are still very similar to source material
-  **0** Missing Citation 0%
Matches that have quotation marks, but no in-text citation
-  **0** Cited and Quoted 0%
Matches with in-text citation present, but no quotation marks

Top Sources

- 0%  Internet sources
- 0%  Publications
- 1%  Submitted works (Student Papers)

Integrity Flags

0 Integrity Flags for Review

No suspicious text manipulations found.

Our system's algorithms look deeply at a document for any inconsistencies that would set it apart from a normal submission. If we notice something strange, we flag it for you to review.

A Flag is not necessarily an indicator of a problem. However, we'd recommend you focus your attention there for further review.

Match Groups

- 8** Not Cited or Quoted 2%
Matches with neither in-text citation nor quotation marks
- 0** Missing Quotations 0%
Matches that are still very similar to source material
- 0** Missing Citation 0%
Matches that have quotation marks, but no in-text citation
- 0** Cited and Quoted 0%
Matches with in-text citation present, but no quotation marks

Top Sources

- 0% Internet sources
- 0% Publications
- 1% Submitted works (Student Papers)

Top Sources

The sources with the highest number of matches within the submission. Overlapping sources will not be displayed.

- 1 Submitted works

Sheffield Hallam University on 2023-09-05 <1%
- 2 Submitted works

University of South Africa on 2024-09-20 <1%
- 3 Submitted works

Coventry University on 2024-08-05 <1%
- 4 Submitted works

Thomas More College on 2021-11-02 <1%
- 5 Internet

www.mdpi.com <1%
- 6 Submitted works

Midlands State University on 2024-05-18 <1%
- 7 Submitted works

South Australian Institute of Business and Technology on 2023-12-09 <1%
- 8 Internet

www.e3s-conferences.org <1%

The Influence of Modern Technology on Set Design

Abstract

In this dissertation, the author analyses the role of digital technologies, namely virtual reality, projection mapping, Building Information Modeling, and LED lighting in modern set design in theatre and cinematography. Semi-structured interviews, case studies of successful productions such as "The Lion King," visual analysis, and analysis of focus groups enabled the study to establish significant advantages and disadvantages that come with the integration of technology in production. It has been realized that digital aids improve both the looks and functionality of set design, yet they come with high costs and technical challenges, especially in low-budget production. The study provides theoretical and practical implications for rethinking the effects of digital innovations on the creative and management aspects of set design.

Acknowledgments

I dedicate special thanks solely to my dissertation advisor for supporting and providing guidance to complete this research. I also kindly acknowledge all set designers, production people, and technical specialists who agreed to be interviewed and share their valuable information and reflections on using digital tools and technologies within the realm and industry of set design. The author thanks fellow students and family for their support and patience when completing this research.

Chapter 1: Introduction

Modern facilitation technology in set design for theatre and the film industry has revolutionized concept development. Traditionally, set design was a two-dimensional art that used materials and skills of craftsmanship where the designer had to construct a set using wood, fabric paint, and other related items. However, this field has evolved with several modern technological procedures like the tool of computer-aided design (CAD), virtual reality (VR), projection mapping, Building Information Modeling (BIM), and LED technology.

Digital tools or technological procedures can create complicated designs that were previously unfeasible, thus giving designers a tool to work out an area and change it in real time. CAD software has been incorporated to enable rapid prototyping and redesigning that improves creativity flexibility (Barbour et al., 2020). Also, due to the application of digital media in design, designers have presented their ideas more convincingly to the directors and production crews and created more collaborative environments than possible using conventional methods (Lv et al., 2011). BIM has also become an essential instrument in the building design process that supports the coordinated approach to accuracy and efficiency (Lv et al., 2011; Ma, 2021).

However, this has been enhanced by the utilization of the tool of virtual reality (VR) alongside the augmented reality (AR) support system that has elaborated and advanced the exploration/potential of set designs to assist the creators and designers in experiencing the physical design of the set before the actual construction. As Binsaeed (2023) brought out, knowledge-sharing practices are helpful in these processes to spread technical know-how efficiently across creative personnel (Binsaeed, 2023). Moreover, the dynamic and flexible set designs have been facilitated by projection mapping, where visuals can change at different story stages (Lischer-Katz, 2022; Goud, 2023). Therefore, in addition to changing the looks of set design, modern technology has influenced numerous processes of spectacles and collaborative work of theater and cinema.

Research Questions:

1. In what way have digital technologies such as Virtual Reality, projection mapping, Building Information Modeling, and LED lighting influenced set designs in theatre and film in the present?
2. This paper aims to identify the advantages and disadvantages of applying these technologies.
3. As such, how do these technological advancements affect the audience and the entire production process?

Therefore, the change in set design from more manual processes to using new technology has transformed the look and operation of modern productions. At this level, Eng technologies like VR, projection mapping, BIM, and LED lighting have opened up a vast canvas for designers to work on and tell new stories on stage and screen. These advances have not only related to the aesthetics of production but also the effectiveness of set design to better serve the audience.

Chapter 2: Literature Review

These are virtual reality, projection mapping, building information modeling, and LED lighting, which influence set design in theaters and movies. This literature review focuses on the theoretical underpinnings of this integration, the advantages and disadvantages of specific technologies, and research gaps on the long-term impact of digital set design.

Theoretical Frameworks

The first theory about technology integration in set design includes the media convergence theory, arguing that the integration of different forms of media creates a new batch of creative possibilities and improves the audience experience. Such blending, as exemplified across diverse disciplines, is evidence that the strategic renewal resulting from digital technology can advance creative capabilities and enhance the character and depth of works produced (Bughin et al. 2021). Integrating information technologies, including virtual reality, projection mapping, Building Information Modeling, and traditional artistic skills in set design and construction means there can be exciting synergies that make performances even more engaging to the audience. It creates the possibility for expression and dimensionality that allows designers to include artworks, performances, and interactions.

Furthermore, in aesthetic theory, technology enriches the space of sets. It gives depth to the sensory experiences, much like CAD tools that help transform pattern-making for rapid prototyping and design changes. This underlines the ability of digital technologies to enhance the affective and haptic experience of the audience members (Barbour et al. 2020). These technologies allow for forming multisensory environments that use lighting, sound, and visual images to enhance the story's emotional impact.

Furthermore, the phenomenon of participatory design emphasizes the teamwork approach that is typical for the contemporary set design scenarios: technology is the critical enabler of communication and interaction between designers, directors, and audiences—as it is in architectural heritage visualization—and boosts the interactive and immersive characteristics of the set design digital environments (Albourae, Armenakis, and Kyan 2017). The technological determinism theory asserts that culture bends to technology, meaning that using digital tools in the set design is not a mere fad but a new way of perceiving and doing art. This shift is not unlike changes in organizational arrangements associated with digital technology in corporate architecture, which redesigns practices and interactions (Kretschmer & Khashabi, 2020).

Benefits of Specific Technologies

Virtual reality, or VR, has become one of the critical technologies in the current set design. It enables designers to preview possible space layouts and navigate through them before the actual building process starts. It gives the level of interaction impossible with drawing on a piece of paper. In this way, VR's skill of modeling spatial relationships and scale lets them share complex set designs and their spatial and functional arrangement in actual time (Goud, 2023; Ma, 2021). Thus, in theatre, designers have introduced VR, which lets directors and others navigate through the set, promoting interaction and, thus, better decision-making (Lischer-Katz 2022).

Projection mapping has thus transformed the way and manner sets are created and viewed. It is a method of physically overlaying still images or videos on an object to give an impression of change or dynamism to stage design. In projection mapping, the physical and the digital can be linked so that by changing a set's mood, depth, or dimension, the projection can answer directly to the story being told (Goud, 2023; Lischer-Katz, 2022). The application of projection mapping, as used in productions such as "The Lion King," shows how the technology holds great promise in designing and staging exciting environmental productions.

Another technology that defines contemporary set design is building information modeling (BIM). BIM enables the production of precise digital models of physical environments, improving design team members' organization and minimizing mistakes during the construction phase (Lv et al. 2011; Ma 2021). When applied to BIM, VR, and gaming environments, designers can optimize their processes and increase the reliability of set constructions (Ma 2021).

Challenges of Digital Technology in Set Design

Several concerns come with the use of digital technologies. Among these challenges is the high cost of innovative technologies like VR, projection mapping, BIM, and LED systems. The costs of equipment and software to start with and training people, especially in the initial stages of the venture, may prove very expensive, especially for small-scale productions or drama companies (Ma 2020). This financial constraint can hinder design innovativeness and creativity since some design solutions are costly.

Also, the technologies used are more complex, creating technical issues concerning the use, support, and maintenance. Designers and technicians must be very familiar with these systems, and it may take considerable time and effort to master them (Mauerhoefer et al., 2017). Again, it is important to argue that there is a crucial need for a high level of digital competencies as professionals must deal with multiple digital environments and tools. Reddy et al. (2022) described the need to evaluate and improve digital literacy skills as suggestive of effectively adjusting to technological changes. Also, the skills acquired are vulnerable to obsolescence because of the fast growth of technologies that require constant upgrades in education. This continuous learning need, well demonstrated in scenarios like Industry 4.0 environments, similarly holds for digital set design: designers must continuously update their technical knowledge about instruments (Hanafiah and Soomro, 2021). This can create dependency on such personnel, which is often not possible for every production to accomplish.

Additionally, there are some issues with the lack of traditional craftsmanship and the methods used as companies adopt digital technologies. Similar problems have also been observed in other sectors, including airports that use computational design in their layouts but may ignore the human hand and touch (Khan, 2021). Due to this shift, questions arise over set design as a craft and whether or not one needs to respect traditions and keep them intact while advancing in the future.

Research Gaps and Future Directions

This research thus identifies several gaps left unanswered in the existing literature concerning the influence of technology on set design. One of them is that digital set designs impact the aesthetic and technical values of other set designs except the stage performance. Even as digital technologies have been praised for accustoming organizations to immediate, tangible results, there remains little known on how adopting these technologies might alter the development of set design as an academic field in the long run (Liu, 2020). Researching how digital media are redesigning the core concepts of the set design could help answer questions about this field's future.

The first is the lack of studies on audience views and engagement with digitally augmented set design. However, as Liu (2020) discovered, more research on the implications of these technologies on audiences, their emotions, and their level of satisfaction with performances is still highly advisable in cultural heritage site technology integration. Designers must fully

comprehend the audience's vision to guide their practices and guarantee that the developed technologies support storytelling and artistry.

Also, few large-scale studies compare the effectiveness of different digital technologies in other applications, from theatre performances to movies and immersive installations. According to Nambisan (2013), the effectiveness of these technologies needs to be evaluated in various contexts to enhance innovation design and ensure that the spectators are engaged effectively (Nambisan, 2013). By filling these gaps, the study will help enhance understanding of technology in set design and its impact on the arts.

Chapter 3: Methodology

Considering the impact of modern technology on set design in theatre and film, the chosen research strategy is qualitative because technology integration in various fields is often closely connected with different factors and has multiple aspects. This chapter discusses the qualitative research methods used to solicit and analyze data collection tools such as case studies, visual analysis, interviews, and sampling strategies.

3.1 Qualitative Research Methods

Another reason qualitative methods are highly suitable for exploring set design is that they enable one to explore how technologies, including Virtual Reality (VR), projection mapping, Building Information Modeling (BIM), and LED lighting, affect both the look and feel of set designs and productions. This study utilizes three primary qualitative approaches:

1. **Case Studies:** Specific studies of concrete productions, such as "The Lion King," which predominantly employs projection mapping and virtual reality, offer practical information about the utilization of digital media in setting construction (Goud, 2023). Through these cases, the researchers will gain insights into how the integration process presents several issues, accomplishments, and decisions to adapt to set designs and digital technologies.
2. **Visual Analysis:** They evaluate images, video, and actual performances to analyze how technology contributes to the aesthetic and performance story and how it supports the final product. Visual description enables a thorough exploration of design aspects, including color, composition, and spatial perspective. It offers a framework for identifying the part played by technology in influencing the audience's perception.
3. **Interviews:** Ten participants from the field were interviewed in the form of semi-structured interviews: five set designers, three production managers, and two technical individuals. These interviews provide primary data about their daily practice, including why they make these technological decisions and how technology influences creativity (Goud, 2023). There are two advantages of interviews: they cover the rationale for choosing certain technologies and their experiences implementing them.

3.2 Data Collection Techniques

This study collects data using case studies, visual observation, and semi-structured interviews. The techniques provide perspectives on how the set design is created and how the audience receives it in the digital age.

1. **Case Studies:** A subset of productions was critically analyzed, incorporating digital technologies. The movie The Lion King is used as a main example because it extensively incorporates projection mapping and VR and gives a good insight into how these technologies are being applied in enhancing set design.

2. **Visual Analysis:** 480 high-quality images and 30 recordings of selected productions were examined to assess the aesthetic and functional benefits of digital technologies. Features such as dynamic backgrounds, interactions, and media incorporation were considered.
3. **Interviews:** Ten industry professionals were selected purposively to gather different insights. The participants were five-set designers, three production managers, and two technical specialists who worked on VR, projection mapping, BIM, or LED lighting in productions or related fields. The interviews used the Zoom platform and lasted approximately 45 and 60 minutes. All the interviews were recorded in real time with the interviewee's consent and transcribed for easy analysis.

3.3 Sampling Methods

Purposeful Sampling: This technique was used to recruit industry professionals with practical experience in set design and digital technologies. The criteria for selection included:

- **Role Diversity:** Invitation of set designers, production managers, and other technical experts to obtain a broader view of the issue.
- **Experience Level:** At least 5 years of working experience in productions incorporating Virtual Reality, Projection Mapping, Building Information Modeling, or LED lighting.
- **Production Types:** Choose from big Broadway plays and movies to get a feel for the various effects of technology in different environments.
- **Stratified Sampling:** At the same time, stratified sampling allowed the inclusion of various types of productions, such as installations and more typical theatre performances, thus making the research more comprehensive.

3.4 Data Analysis Techniques

Qualitative data collected from case studies, visual analysis, and structured interviews were analyzed thematically regarding integrating digital technologies into set design.

Thematic Analysis of Interviews:

1. **Familiarization:** This paper was initially utilized for transcribing oral communication; the complete text was given individual attention by reading and re-reading the transcripts.
2. **Coding:** These initial codes were identified from the text manually and provided focus on prominent statements and key concepts concerning the research questions.
3. **Theme Development:** Codes were grouped into main thematic areas that reflect the opportunities and issues identified by the participants regarding digital technology integration.
4. **Review and Refinement:** The themes analyzed were validated by returning to the raw data and comparing them to the study's goals.
5. **Validation:** To increase the reliability and validity of the results, triangulation entailed comparing findings from interviews with results from case studies and visual analysis.
6. **Software Utilization:** While conducting the interviews, the text data collected was analyzed using the NVivo software to ease the coding process since it is systematic.

3.5 Ethical Considerations

Ethical clearance was sought and received from the university's Institutional Review Board in this study. The following ethical guidelines were strictly adhered to throughout the research process:

1. **Informed Consent:** The interviewees were provided verbal and written information about the study, its aims, methods, and their rights. Physically written informed consent was obtained before the interviews were conducted.
2. **Confidentiality:** The participants' names were also changed to pseudonyms during the interviews due to the identification of their identities in their accounts. The data were kept on password-protected devices; only the researcher could access them.
3. **Right to Withdraw:** The participants were told that they were free to withdraw from the study whenever they wished to do so without being punished. This was repeated at the onset of each interview encounter.
4. **Data Protection:** All the recorded data was transcribed and managed per the university data protection policies, whereby any identifiers were removed, or data was disposed of if deemed unethical.

3.6 Reliability and Validity

It is important to maintain the reliability and validity of the qualitative research for set design to make the findings believable. This study employed several strategies to enhance reliability and validity:

- **Triangulation:** To minimize bias and increase the reliability of the conclusions, case studies, visual analysis, and interviews were employed alongside surveys (Goud, 2023).
- **Clear Criteria for Participant Selection:** The case study selection criteria and criteria for choosing interview participants were well spelled out, allowing the research to capture only meaningful data that would adequately reflect the set design more broadly.
- **Member Checking:** Participants assessed the findings and offered comments to confirm them and ensure the research correctly depicted the participants' experiences (Goud, 2023).

Chapter 4: Results

4.1 Use of VR and Projection Mapping in Iconic Productions

Surveys conducted with professionals in the industry show that the best technologies, like VR and projection mapping, are crucial in developing and enhancing the looks and feel of productions like "The Lion King." Another set designer stated, "Projection mapping makes it possible to transform the set mid-show, which is especially useful in productions with many scene changes." Projections were greatly determinant in the representation of the African savanna as identified by Goud (2023) in "The Lion King." Using bright picture and animation screens, designers can obtain various developing backdrops based on the show's plot. It allows easy handling of changes in scenes and location, thus helping the director to move the audience from one scene to another without necessarily changing the stage set.

More precisely, different versions of "The Lion King" have been presented through the possibilities of Virtual Reality technology to offer thrilling means of experiencing the movie. For instance, similar to what has already been done for the VR experience associated with the environment of 'The Lion King' in terms of digital esthetic expertise, it is possible to offer the viewers interactivity from the perspectives of the characters to enhance their sensibility to the plot (Ma, 2021). One production manager said, "It has changed how we work in design because VR lets you see and manipulate set pieces in real-time, which has increased collaboration and productivity." This helps with the production's good look and extends the audience's participation in the performance, making it more interesting to the audience.

4.2 Common Features in Digital Set Designs

One common concept identified from the interviews is that the physical environment is enacted in the digital set designs. Another technical expert said, "LED technology allows for an immediate change of scenes, which is important in productions that need to change moods quickly." This revelation supports Lischer-Katz's (2022) finding that digital set designs adopt projection mapping to transform flat surfaces into lively designs that depict the atmosphere of the narrative. The duality in shifting backgrounds also has the potential to enable designers to develop a changing environment that will create a paradigm shift in the manner in which the audience is influenced emotionally.

Furthermore, the use of interactive elements is another area that is cited by many of the participants as a major advantage of software applications. A set designer noted, "It also becomes more interactive if it reacts to the audience input." This coincides with the study on how audience participation through mobile devices or via an interactive screen helps create an interactive narrative form. Moreover, using the LED lighting technology provides the designers with the highest degree of control over brightness, color, and kinetics, all of which allow for an immediate change of the mood on the set and thus contribute to the general impressiveness of the show (Lischer-Katz, 2022).

In addition, video projections and soundscapes as multimedia components are often integrated into digital scenography to establish a unifying spatial concept. When designers mix up visuals and sounds, they can create experiences that people will likely engage in and further enrich the message. An interviewee said, "When video projections are made alongside an appropriate sound setting, the atmosphere it forms is smooth and engages the audiences deeper into the performance."

4.3 Summary of Findings

This paper establishes that through case studies, visual extracts, and interviews, digital technologies positively impact the aesthetics and practicality of set design. VR and projection mapping are critical components that enable immersive space and scene change. Possible trends already incorporated into today's digital set designs include backdrops, interactivity, and lighting solutions, which make telling a story much more engaging, noisy, and flexible. In addition, besides serving a merely visual purpose, these technologies promote better identification with viewers and are in tune with modern tendencies of introducing the audience to the story.

Chapter 5: Discussion

5.1 Alignment with Current Research

The results of this study can be considered relevant to the current literature on the effects of technology on set design and recognize the role of digital tools in set design. Various works by researchers have described how different technologies, for instance, virtual reality, projection mapping, building information modeling, and LED lighting, have transformed sets designed to provide designers with tools for creating even more mesmerizing and realistic environments (Goud, 2023; Ma, 2021; Lv et al. 2011). This research supports the hypothesis that while technology improves the visual aspect of productions, it also aids in effective advanced collaboration amongst creative departments, resulting in better design options.

A set designer said, "The capacity to pre-visualize sets in virtual reality before the actual build enhances our productivity and the possibility of creativity." The above response thus

supports Goud (2023) and Ma (2021) concerning the benefits of VR's efficiency and creativity. Also, the participants pointed out how various -BIMs led to enhanced efficiency of the set construction process, agreeing with Ma's (2021) findings concerning enhancing the set construction process by eliminating errors due to coordination.

The study and other research have confirmed the focus on the audience in the current approaches to set design practice. Such elements as clickable areas and animated graphics promote better and more profound emotional engagement with the story, as is observed with other trends in modern media, where an audience is more involved in a story (Goud, 2023; Ma, 2021). An interviewee observed, "Interactive elements make the audience feel as if they are part of the story, making that experience even better," which corroborates what Toppan said: the aim of the production crew must be to make the audience become part of the production.

5.2 Implications for Traditional Practices

This means that adopting modern technology in the physical setting, as seen in the setting design, poses some implications to the conventional performing arts theatre and filmmaking as it changes the approach to traditional practices. There is one drawback: the features of technology may sometimes obscure the artistry that goes into set design, which has been a tradition over the years. With the increasing use of technology, there is a possibility of ignoring the need to develop and apply hand skills and the feeling of handling materials through our hands (Barbour et al. 2020; Khan 2021). A set designer noted, "But there is no denying that the technology placed at our fingertips is amazing, but then there is the issue of using these gadgets all along and not compromising on the artistic vision."

However, the replacement of digital solutions exposes the tendentiousness of the discovery. The ability to make quick modifications through technological means may lead to more rapid changes than conventional methods, which may not be ideal for the deliberate planning and reflection that characterize conventional practices (Kretschmer & Khashabi 2020). This shift could worsen set design, and the resulting sets could be overly complex, considering that designers may opt for technology rather than design quality. One of the interviewees described it this way: "We see rapid technological advances that force us to make quick decisions, which can be detrimental to the depth of design."

These observations raise issues of the appropriate relationship between technological advances and the sustainability of the hand-artisanal aesthetic and skill base, thus underlining the importance of formulating solutions that can facilitate the integration of technology and the reinforcement of hand-artisanal practices.

5.3 Limitations of the Study

The present paper and research have a few important restrictions that should not go unnoticed, especially concerning their breadth and depth. A weakness is that we only focus on the effects of general and specific technologies on set design, and there are probably many other variables. Future research work could expand the current culture, social, and economic environment for using technology in set design and thus give a broader picture of the situation (Hanafiah & Soomro 2021).

However, as the study is qualitative, the findings and answers cannot be applied generically to a larger audience or people from different demographics. As this study shows that qualitative research can capture the details of the impact of technology in the depiction of sets,

production, and design, future studies could use quantitative or combination methodologies to assess a more comprehensive picture of the trends of technology adoption in various productions. This way, the work would employ a mixed-methods approach to understand better how technology influences set design and what it means for the field (Nambisan, 2013).

5.4 Future Research Directions

Future research on technology in set design should expand in several directions to help further elucidate the topic and guide practical application. One important area of investigation is how new technologies' elements affect traditional design and craftsmanship. Therefore, by analyzing how these advancements impact the development of set design as a profession, scholars can establish effective predictions of the field's further development (Nambisan, 2013).

Moreover, there is a lack of research work that explores the audience perception and experience of the digitally enhanced set design to guide the design. Theoretical knowledge about the reception of technology among audiences can facilitate the development of profound and worthwhile experiences by designers (Nambisan, 2013). In addition, research that explores the utility of one kind of digital technology versus another in different contexts, for example, theatre, film, and immersive installations, could generate a body of knowledge on best practices that could be used to guide future practice (Nambisan, 2013).

5.5 Integration of Interview Insights

Interviews with experts and professionals from the production and film industry added to this study's data and information base, which was useful in deepening appreciation of the study's conclusions. The interviews' results and findings support the literature review in highlighting the importance of digital technology for set design transformation.

- Enhanced Collaboration and Visualization:** Some professional points were that VR allows for real-time view and modification, proving beneficial in the cooperation of directors, designers, and the production department. One technical expert remarked, "Through VR, we have been able to prototype one's design faster and go straight from concept to realization." This is in line with Goud (2023) and Ma (2021), both of whom talk about the productivity and dynamism that comes with digital technology.
- Financial and Technical Barriers:** Respondents also expressed high implementation costs for highly effective technologies such as building information modeling and LED systems. Some of the responses elicited from the production managers include the following: According to the information gathered from the research, production managers acknowledged that the capital required to launch a production may be expensive, especially for small-scale productions, hence agreeing with the literature that capital constraints impede production (Ma, 2020). Furthermore, the technical features of these tools and the accompanying learning curves were mentioned as barriers, indicating that support and staff development should be continuous (Mauerhoefer et al., 2017). One production manager pointed out, "These issues call for cheaper technologies and easily available training sessions where tiny productions could also avail these tools."
- Artistic Integrity:** One of the main discussion topics was technological advancement and keeping creativity in check. For instance, set designers pointed out that they want to retain hands and haptic gest skills, which is a concern for the growing domination of the technical field (Barbour et al., 2020; Khan, 2021). One of the interviewees said: "One of the biggest

problems is that relying solely on technology may lead to the loss of uniqueness in each production that may be characteristic of a particular company."

- **Continuous Training and Development:** A few participants also called for constant training and staff development. One technical expert commented, "To maintain relevance in the field and to be able to implement Changes in the rapidly evolving field of digital set design, training, and professional development is critical." This insight confirms what Kretschmer and Khashabi (2020) noted regarding the need for continuous learning in the digital change process.

These insights summarize the creative advantages of integrating digital technologies in set design while embracing the challenge of unlocking the technology's broad spectral range.

Chapter 6: Conclusion

In this research, the centrality of technology in shaping set design has been established, emphasizing the prospect of change to improve beauty and utility. The application of advanced technologies like virtual reality, projection mapping, building information modeling, and LED technology has cut a new vista in the creative process, allowing designers to design and create a new and innovative environment that will easily capture the audience's attention. These technologies add aesthetic value to productions and provide better coordination for creative groups, thus producing better design ideas.

Thus, the work's results evidence the audience's presence as an active subject in designing sets in contemporary theater. The application of personalities and movement creates stronger emotional responses in the viewer to the story, which coincides with the gamification trends of the subject matter in video production.

Interview findings underline the study's findings that digital technology is revolutionizing set design with perceived creativity gain and potential challenges. Across the professional spectrum, all stakeholders agree that, for instance, VR and projection mapping can improve the visual and instructiveness of productions, hence increasing audience appeal. Nonetheless, the most frequently mentioned issues remain the concerns with costs and technical complexity, which underlines the most important future research directions. These barriers can be overcome through the improvement of funding facilities, training, and initiation of better understandable technologies that, in turn, could lay the foundation for a wider acceptance of advanced set design tools.

Finally, the interviews reiterate that despite the proliferation of new tools and technologies, the symbiosis between innovation and economically sustainable applicability will remain the key to future development and the maturation of the practices of set design in theatre and film. It becomes crucial to ensure that technology does not overpower the traditional skill required to make every production piece an art piece but is integrated with modern technology to enhance its quality.

Consequently, the interaction with technology impacts set design not only in terms of its aesthetic impact; it redefines how narratives are communicated and received in theatre and films, bringing new creative possibilities and challenges to set design. However, it must be integrated wisely to support the basic tenets of set design.

References

- Albourae, A., C. Armenakis, and M. Kyan. 2017. "Architectural Heritage Visualization Using Interactive Technologies." *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences XLII-2/W5*: 7–13.
<https://doi.org/10.5194/isprs-archives-xlii-2-w5-7-2017>.
- Barbour, Carol, and Li Zhang. (2020). "Introducing Digitizing Technology in CAD Pattern-Making Class for Upcycling Project." In *Proceedings of the International Textile and Apparel Association Annual Conference*. <https://doi.org/10.31274/itaa.11940>.
- Binsaeed, Ruba. 2023. "Knowledge Sharing: Key Issue for Digital Technology and Artificial Intelligence Adoption." *Systems* 11 (7): Article 316.
<https://doi.org/10.3390/systems11070316>.
- Bughin, Jacques, Tobias Kretschmer, and Nicolas Van Zeebroeck. 2021. "Digital Technology Adoption Drives Strategic Renewal for Successful Digital Transformation." *IEEE Engineering Management Review* 49 (3): 103–8.
<https://doi.org/10.1109/EMR.2021.3098663>.
- Goud, K. (2023). "Virtual Vistas: Exploring the Evolution of E-Design and Virtual Design for Sustainable Assessment." *E3S Web of Conferences* 453: Article 01032.
<https://doi.org/10.1051/e3sconf/202345301032>.
- Hanafiah, Muhammad, and Muhammad Shahzad Soomro. 2021. "The Situation of Technology Companies in Industry 4.0 and the Open Innovation." *Journal of Open Innovation: Technology, Market, and Complexity* 7 (1): Article 34.
<https://doi.org/10.3390/joitmc7010034>.
- Khan, N. (2021). "Digitalization of Airport Design and Architecture." <https://doi.org/10.32920/ryerson.14665596>.
- Kretschmer, Tobias, and Payam Khashabi. 2020. "Digital Transformation and Organization Design: An Integrated Approach." *California Management Review* 62 (4): 86–104.
<https://doi.org/10.1177/0008125620940296>.
- Liu, Yu-Chih. (2020). "Evaluating Visitor Experience of Digital Interpretation and Presentation Technologies at Cultural Heritage Sites: A Case Study of the Old Town, Zuoying." *Built Heritage* 4 (1): Article 13. <https://doi.org/10.1186/s43238-020-00016-4>.
- Lischer-Katz, Zach. (2022). "The Emergence of Digital Reformatting in the History of Preservation Knowledge: 1823–2015." *Journal of Documentation* 78 (6): 1249–77.
<https://doi.org/10.1108/JD-04-2021-0080>.
- Lv, Xuequan, Yong Zou, Yi Huang, and Jian Xu. (2011). "The 3D Coordinated Building Design Based on Building Information Modeling." *Advanced Materials Research* 243–249: 6587–91. <https://doi.org/10.4028/www.scientific.net/AMR.243-249.6587>.
- Ma, Li. (2020). "Rethinking Democratizing Potential of Digital Technology." *Journal of Information, Communication and Ethics in Society* 18 (1): 140–56.
<https://doi.org/10.1108/JICES-02-2019-0022>.

- Ma, Yujie. (2021). "Extending 3D-GIS District Models and BIM-Based Building Models into Computer Gaming Environment for Better Workflow of Cultural Heritage Conservation." *Applied Sciences* 11 (5): Article 2101. <https://doi.org/10.3390/app11052101>.
- Mauerhoefer, Thomas, Steffen Strese, and Malte Brettel. 2017. "The Impact of Information Technology on New Product Development Performance." *Journal of Product Innovation Management* 34 (6): 719–38. <https://doi.org/10.1111/jpim.12408>.
- Nambisan, Satish. (2013). "Information Technology and Product/Service Innovation: A Brief Assessment and Some Suggestions for Future Research." *Journal of the Association for Information Systems* 14 (4): 215–26. <https://doi.org/10.17705/1jais.00327>.
- Reddy, Prashant, Kiran Chaudhary, Balbir Sharma, & Shahid Hussein. (2022). "Essaying the Design, Development, and Validation Processes of a New Digital Literacy Scale." *Online Information Review* 47 (2): 371–97. <https://doi.org/10.1108/OIR-10-2021-0532>.
- Zhu, S. (2023). "Development of Visual Culture in Product Design with Application of Digital Mining Technology." *Applied Mathematics and Nonlinear Sciences* 9 (1): Article 01121. <https://doi.org/10.2478/amns.2023.2.01121>.