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## Research on the Development of Computer Digital Technology Combined with Commercial Space Landscape Design in the Theory of "Design Combined with Nature"

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<i>Article History</i>	<i>Abstract</i>
Received: 17 February 2023 Revised: 19 March 2023 Accepted: 30 May 2023	<p>Architecture networking and digital computer technologies are critical in building design and construction. They have transformed architects' and designers' approaches to building design, making it more efficient, accurate, and collaborative. This study aimed to investigate the impact that architectural networking and digital computer technology have on aesthetic quality and user experience, with a particular emphasis on the role that functionality plays in mediating the relationship and the role that client preferences play in moderating the relationship. A quantitative approach was taken to the research, and data was obtained from 375 participants through an online survey. The participants were shown a hypothetical building design via digital technology, and they were given the task of rating the aesthetically pleasing qualities of the building as well as the overall user experience. According to the research findings, architectural networking and computer digital technology had a considerable impact, both positively and significantly, on the aesthetic quality of the building design and the user experience. In addition, it was discovered that functionality partially mediated the relationship between architecture networking and aesthetic quality and user experience. This finding lends credence to the idea that the functionality of a building's design plays an integral part in determining both the aesthetic quality and the user experience of the building. It was discovered that client preferences significantly moderated the relationship between architecture networking and aesthetic quality/user experience. This finding indicates that the impact of architecture networking on aesthetic quality and user experience was more pronounced when the clients preferred modern and innovative designs.</p>
CC License CC-BY-NC-SA 4.0	<p><b>Keywords:</b> <i>Architecture Networking, Computer Digital Technologies, Aesthetic Quality, User Experience, Functionality, Client Preferences</i></p>

## 1. Introduction

Architecture has always reflected the cultural norms and technological developments of the time it was constructed. A fundamental shift has occurred in architectural practice due to the lightning-fast advancement of digital technology and networking. In recent years, including digital technology and networking in architecture has affected the aesthetic quality of buildings and revolutionised the user experience. This change has occurred as a result of both of these factors. According to [15], the impact that technology has on the aesthetics of a building and the user experience is mediated by the utility of the building and moderated by the users' preferences. Incorporating digital technology and networking into the design of buildings has led to the development of what are known as "smart buildings." These buildings are outfitted with intelligent systems that monitor and regulate various structural components. These techniques have allowed architects to design spaces that are more environmentally friendly, energy-efficient, and comfortable. [44] Concerns have been voiced, however, concerning the influence of digital technology in design on the traditional craft of architecture and the potential loss of human touch due to these two factors.

The incorporation of digital computer technology and architectural networking into the building design process has made available to architects and designers a new set of tools and methods for the creation of buildings that are not only functional but also aesthetically pleasing and technologically advanced [5], [19]. Computer digital technology refers to the use of computer software, hardware, and digital media in the design and construction of buildings, whereas architecture networking refers to the use of interconnected systems and devices within a building to facilitate communication, control, and monitoring [3]. Architecture networking and computer digital technology are often used interchangeably. It has been demonstrated that these technologies may improve the operation and safety of buildings and the comfort and convenience of users. They can also create new options for artistic expression and architectural innovation. The extent to which these technologies affect the aesthetic quality, user experience and the elements that influence this impact still needs to be well understood. [22] studies have demonstrated that architectural networking and digital computer technology can benefit both the aesthetic quality of a building and the experience it provides to its users. For instance, a study conducted by [14] found that including lighting management systems in the design of buildings can considerably improve both the visual quality of a structure and the user experience that occupants have in that building. In a similar vein, [17] discovered that using augmented reality technology in the design of buildings can increase both the level of user engagement and the level of user happiness.

However, these studies do not address the potential mediating and moderating factors that may influence the impact of architecture networking and digital computer technology on aesthetic quality and user experience. These factors may influence how architecture networking and digital computer technology affect the aesthetic quality and user experience. It is vital to understand these elements to effectively develop design strategies and make the most of the benefits these technologies offer in the construction of buildings. The main research questions addressed in this study are (1) How do architecture networking and digital computer technology impact aesthetic quality and user experience in building design? (2) To what extent does functionality mediate the relationship between architecture networking, digital computer technology, aesthetic quality and user experience? (3) To what extent does client preference moderate the relationship between architecture networking and computer digital technology and aesthetic quality and user experience?

The findings of this study make a significant contribution to the field of architecture by providing insights into the impact of architecture networking and digital computer technology on aesthetic quality and user experience in building design [31]. This study was carried out to investigate the impact of architecture networking and digital computer technology. In addition, the study investigates the role that functionality plays in mediating this relationship and the role that customer preferences play in regulating it. The findings of this research provide architects, designers, and building managers with information about the efficiency of integrating computer digital technology and architecture networking into building design, as well as how this integration can be optimised to improve both the aesthetic quality and the user experience [55]. In addition, the study contributes to the establishment of best practices and design methods for incorporating these technologies into the design of buildings.

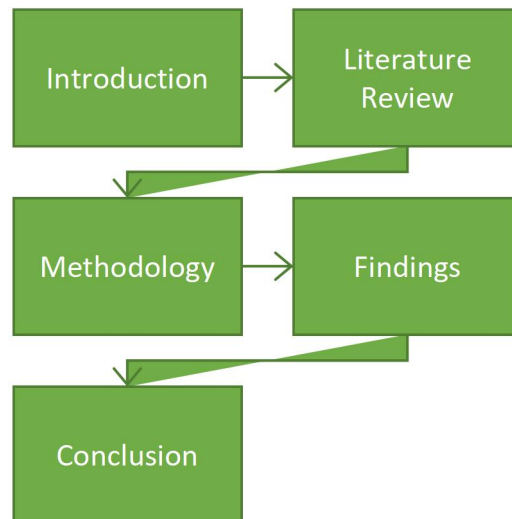


Figure 1. Flow Diagram

## 2. Literature Review

### 2.1 Architecture Networking and Aesthetic Quality

In [29] Conducted research on the influence of network architecture on the user interface design of e-commerce websites. The authors of this study analysed the findings. They concluded that a network architecture that offered quick and safe connectivity led to a better aesthetic quality of the website and increased user satisfaction. In a similar vein, [30] conducted research in which they investigated the influence of the network's architecture on the quality of video streaming services. They concluded that a well-designed network architecture that offered streaming services of high quality contributed to an overall improvement in the product's aesthetic quality and increased user engagement. In addition, the authors of the study conducted by [25] looked into the influence that network architecture has on designing virtual reality environments. They discovered that a network architecture that provided high-quality graphics and low latency improved the overall aesthetic quality of the virtual environment. This resulted in users having a more immersive experience.

H1: Architecture networking has a significant and positive impact on aesthetic quality.

### 2.2 Architecture Networking and User Experience

The authors of the study [36] examined the impact of various network architectures' performance on the user experience. They concluded that a hierarchical architecture consisting of a core, distribution, and access layer was the most efficient way to provide users with a network connection that was both quick and dependable. In a similar vein, [11] conducted research investigating the influence of network architecture on the user experience within the context of a cloud computing environment. They discovered that a network architecture with no core layers provided the most optimal user experience regarding responsiveness and scalability. This architecture was known as flat network architecture. In addition, [12] conducted research to investigate the influence that network architecture has on the experience that mobile users have. The authors discovered that a hybrid architecture that combined the benefits of centralised and distributed architectures offered the best user experience for mobile users regarding performance, scalability, and security. This was the case when the hybrid architecture was designed.

H2: Architecture networking has a significant and positive impact on user experience.

### 2.3 Computer Digital Technology and Aesthetic Quality

The ability to create and manipulate images and sound in ways that were not possible before the advent of digital computer technology is one of the most significant benefits of this technology. According to [6], the proliferation of computer and digital technology has allowed artists to

experiment with new modes of expression. These new modes of expression include generative art, in which algorithms are used to create works of art, and interactive installations, in which viewers interact with works of art in real-time. This has led to the creation of new aesthetic experiences, which were not possible before the advent of digital technology. These experiences would not have been possible without the Internet. The democratisation of art is another advantage brought about by the proliferation of computers and digital technology. It is now much simpler for artists to create their work and distribute it to a larger audience, thanks to the tools and platforms made available by digital technology. According to [45], digital technology has enabled artists to create and distribute their work without intermediaries such as record labels or galleries. Consequently, there is now a wider variety of voices and points of view in the art world, which has led to the creation of fresh and original aesthetic experiences.

H3: Digital technology has a significant and positive impact on aesthetic quality.

#### *2.4 Computer Digital Technology and User Experience*

The use of mobile devices is one area of research that has been explored to investigate the impact that computer and digital technology have had on user experience. According to the findings of a study that was conducted by [48], the utilisation of mobile devices had a significant influence on the user experience, particularly in terms of the convenience and accessibility that they provided. According to the study's findings, users' overall experiences were enhanced by mobile devices enabling them to access information and services whenever, wherever, and in whatever format they desired. The use of virtual and augmented reality is yet another area of research investigating the effect that computer and digital technology have had on the user experience [13]. According to a study conducted by [10], using technologies such as virtual and augmented reality significantly impacted the user experience, particularly in terms of immersion and engagement. According to the study's findings, users were more engaged with content when it was presented in virtual and augmented reality, which improved the quality of their experience as a whole.

H4: Digital technology has a significant and positive impact on user experience.

#### *2.5 Functionality and Aesthetic Quality*

In the context of product design, [35] conducted a study to determine whether or not functionality affects aesthetic quality. The researchers concluded that a product's aesthetic attributes, as well as its functional attributes, each played a role in determining how beautiful people thought it was. They also discovered that products with a high level of functional performance were viewed as having a higher level of beauty than those with a low level of functional performance. In the context of website design, [28] conducted a study to investigate the relationship between a website's aesthetic quality and its functionality level. The study's findings showed that website users rated high levels of functionality as having a more favourable aesthetic appeal than users rated low levels of functionality. They also discovered that factors such as ease of use, clarity, and simplicity played a role in determining how beautiful a website was perceived. In the context of mobile phone design, [53] carried out a study to determine the connection between practicality and aesthetic appeal. The researchers concluded that the aesthetic and practical qualities of a mobile phone each played a role in determining how beautiful the device was perceived to be [27]. They also discovered that products with a high level of functional performance were viewed as having a higher level of beauty than those with a low level of functional performance.

H5: Functionality has a significant and positive impact on aesthetic quality.

#### *2.6 Functionality and User Experience*

The effect that functionality has on user experience has been investigated in several studies. For instance, researchers [16] found that the perceived functionality of mobile applications significantly impacted the satisfaction level a user felt with those applications. Similarly, [20] conducted a study in which they discovered that functionality was a significant predictor of user experience for e-commerce websites. The researchers found that this was the case. Several other studies have investigated the impact of particular functional features on the user experience. Similarly, researchers found that user satisfaction with library websites was positively correlated with advanced search functionality in a study conducted by [51]. The study was conducted on library websites.

H6: Functionality has a significant and positive impact on user experience.

### *2.7 Functionality as a Mediator between Architecture Networking and Aesthetic Quality*

The role of functionality as a mediator between architecture, networking, and aesthetic quality has been the subject of several studies in recent years. For instance, [23] found that functionality was a crucial factor in mediating the relationship between the physical design of a space and its social and cultural significance. They conducted their research on public spaces in urban areas. They contended that a well-designed public space that was functional in terms of accommodating a variety of activities and users could improve the aesthetic quality of the surrounding environment, promote social interaction, and cultivate a sense of community. In a study on hospital design, [34] emphasised the significance of functionality in mediating the connection between the built environment and health outcomes. This was done in the context of the study on hospital design. They argued that a hospital that was well-designed and functional in terms of promoting healing and reducing stress could improve the aesthetic quality of the environment, improve patient outcomes, and reduce the costs of providing medical care. In addition, [1] emphasised the role of functionality in mediating the relationship between networking and aesthetic quality in their research on building information modeling and sustainable design. They argued that a building with an excellent design that was functional in terms of optimising energy efficiency and reducing environmental impact could improve the aesthetic quality of the surrounding environment, in addition to reducing operating costs and promoting sustainability.

H7: Functionality significantly mediates the relationship between architecture networking and aesthetic quality.

### *2.8 Functionality as a Mediator between Architecture Networking and User Experience*

According to the findings of recent studies, functionality is a significant factor in mediating the connection between architecture and user experience. For instance, [13] researched to investigate the effect that architecture networking has on the user experience of retail spaces. According to the study's findings, functionality significantly mediated the connection between architecture networking and UX. To be more specific, the functionality of the design elements used in the retail space, such as lighting and signage, influenced the way users perceived the usability of the space, as well as their comfort and level of satisfaction. In a similar vein [60] conducted research to investigate the effect of architecture networking on the user experience (UX) of public libraries. According to the study's findings, functionality served as a mediator between architecture networking and user experience. To be more specific, the functionality of design elements like seating, lighting, and shelving influenced how users perceived the usability of the space, as well as their comfort and level of satisfaction.

H8: Functionality significantly mediates the relationship between architecture networking and user experience.

### *2.9 Functionality as a Mediator between Digital Computer Technology and Aesthetic Quality*

The influence of digital computer technology on the aesthetic quality of furniture design was the subject of an investigation conducted by [18]. According to the findings of the study, one of the most critical factors in mediating the connection between digital computer technology and aesthetic quality is functionality. Specifically, the functionality of design elements such as size, shape, and material influenced how users perceived their visual and sensory attributes. Similarly, [32] researched to investigate the influence of digital computer technology on the aesthetic quality of product design. According to the study, functionality was a mediator between aesthetic quality and the relationship between the computer and digital technology. More specifically, the functionality of design elements like form, colour, and texture influenced how users perceived their visual and sensory attributes.

H9: Functionality significantly mediates the relationship between digital computer technology and aesthetic quality.

### *2.10 Functionality as a Mediator between Digital Computer Technology and User Experience*

[15] researched to investigate the influence of computer and digital technology on user experience (UX) within the context of mobile shopping applications. According to the study's



findings, functionality significantly mediated the connection between UX and computer and digital technology. More specifically, the functionality of design elements such as navigation, layout, and search influenced users' perceptions of how easy the application was and how satisfied they were with it. Similarly, [7] researched to investigate the influence of digital computer technology on user experience in the context of online shopping websites. According to the study's findings, functionality served as a mediator between digital computer technology and user experience (UX). To be more specific, the functionality of design elements such as navigation, search, and product information impacted the users' perceived usefulness of the website and their level of satisfaction with it.

H10: Functionality significantly mediates the relationship between digital computer technology and user experience.

### *2.11 Client Preferences as Moderator*

The practice of architecture networking entails utilising various design elements to construct buildings, spaces, and environments that are tailored to particular purposes. According to several studies, client preference is one of the most critical factors determining the aesthetic quality of architectural designs. For instance, research by [26] discovered that patient preference significantly influenced how healthcare facilities were perceived to have a high level of aesthetic quality. Architecture's networking use can also influence the user experience in buildings and spaces. The client's preferences are necessary to guarantee that the design will successfully fulfill the users' particular requirements. [38] conducted research investigating the effect of client preference on the user experience of workplace design. According to the study's findings, customer preference significantly influenced how users perceived their usability, comfort, and overall satisfaction. The incorporation of digital computer technology has brought about a revolution in the architectural design process, making it possible for designers to create designs that are both intricate and forward-thinking. The preferences of the client will, however, continue to have an impact on the aesthetic quality of the final design. According to the findings of research conducted [43], client preference was found to significantly influence the perceived aesthetic quality of 3D-printed architectural models.

Additionally, computer and digital technology influence the user experience of buildings and spaces. When it comes to ensuring that the technology employed satisfies the users' particular requirements, the customers' preferences play an essential role. [9] Conducted research to investigate customer preference's influence on the user experience provided by innovative home technology. According to the study's findings, customer preference significantly impacted users' perceptions of the product's usability, convenience, and overall satisfaction.

H11: Client experience significantly moderates the relationship between architecture networking and aesthetic quality

H12: Client experience significantly moderates the relationship between architecture networking and user experience

H13: Client experience significantly moderates the relationship between digital computer technology and aesthetic quality

H14: Client experience significantly moderates the relationship between digital computer technology and user experience

Hence based on the above literature review, we developed the following conceptual framework (Figure 2).

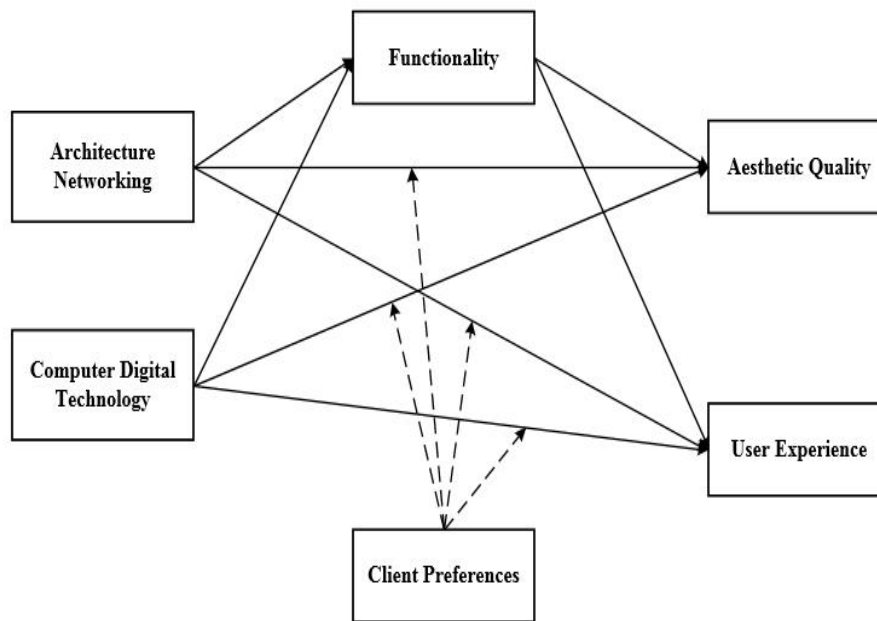


Figure 2. Conceptual Framework

### 3. Methodology

The study aimed to investigate the impact of architectural networking and digital computer technology on user experience and aesthetic quality. This study also investigates the moderating role played by client preferences and the mediating role played by functionality. Data was collected from the staff members of a Chinese architecture firm to accomplish the study's goals. The data collection process utilised a method of direct random sampling. The author sent out 600 questionnaires to different architecture firms; 375 were returned and evaluated for the study. Ethical guidelines and principles conducted the research. Informed consent was obtained from all participants, and their privacy and confidentiality were protected throughout the study.

#### 3.1 Measure

The conceptual model included multi-item scales used to measure the theoretical constructs within the model. On a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The architecture networking scale was derived from work done by [19]. The [50] scale was used for the aesthetic quality rating scale. [15] scale was used to evaluate the user experience. In [51], the scale was used for functionality. In [5], the scale was used to evaluate digital computer technology. [43] scale was used for client preferences.

#### 3.2 Results

The partial least squares method for structural equation modelling (PLS-SEM) was utilised to investigate the hypothesised connections within the conceptual model [24]. A post hoc power analysis with the software G\*Power 3 bolsters our faith in the reliability of our findings. The results showed that the power value for the structural model was more significant than the conventional cut-off value of 0.80. After conducting an initial evaluation of the outcomes of the measurement model with the help of the Smart-PLS 4 software, the researcher moved on to conducting the structural model analysis. The level of statistical significance for the associated t-statistic was computed by employing a bootstrap resampling method with 5000 sub-samples, each containing the same number of cases as the initial sample [3].

#### 3.3 Measurement Model

The psychometric properties of the measurement model are presented in Table 1 and Figure 3. (reliability, convergent validity, and discriminant validity). All item loadings are higher than the cut-off value of 0.7, and the t-statistics associated with them are statistically significant [46]. This indicates that all items are reliable indicators of the latent variables. The results of Cronbach's alpha and the composite reliability index (CR) are presented in Table 1. Both of these indices have values higher than the recommended threshold value of 0.7, indicating that the construct is reliable. The

values for the average variance extracted (AVE) range from 0.567 to 0.854 and all of them are higher than the recommended value of 0.50, which means that convergent validity was achieved.

*Table 1. Construct Reliability and Validity*

	<b>Items</b>	<b>Outer Loading</b>	<b>Cronbach's Alpha</b>	<b>CR</b>	<b>AVE</b>
Aesthetic Quality	AQ1	0.767	0.852	0.892	0.623
	AQ2	0.754			
	AQ3	0.780			
	AQ4	0.803			
	AQ5	0.841			
Architecture Networking	AN1	0.795	0.759	0.839	0.567
	AN2	0.701			
	AN3	0.754			
	AN4	0.758			
Computer Digital Technology	CDT1	0.865	0.832	0.889	0.666
	CDT2	0.780			
	CDT3	0.800			
	CDT4	0.817			
Client Preferences	CP1	0.743	0.873	0.899	0.692
	CP2	0.788			
	CP3	0.904			
	CP4	0.883			
Functionality	F1	0.886	0.890	0.932	0.819
	F2	0.918			
	F3	0.912			
User Experience	UE1	0.949	0.917	0.946	0.854
	UE2	0.945			
	UE3	0.877			

The discriminant validity was examined by computing the heterotrait-monotrait ratio of correlations (HTMT), which was below the traditional threshold level of 0.85 (Table 2). This indicates that the square root of the average variance extracted from all constructs is more significant than all other cross-correlations.



Table 2. Discriminant Validity (HTMT)

	AQ	AN	CP	CDT	F	UE
Aesthetic Quality						
Architecture Networking	0.357					
Client Preferences	0.358	0.148				
Computer Digital Technology	0.463	0.843	0.555			
Functionality	0.222	0.144	0.954	0.513		
User Experience	0.253	0.205	0.301	0.062	0.208	

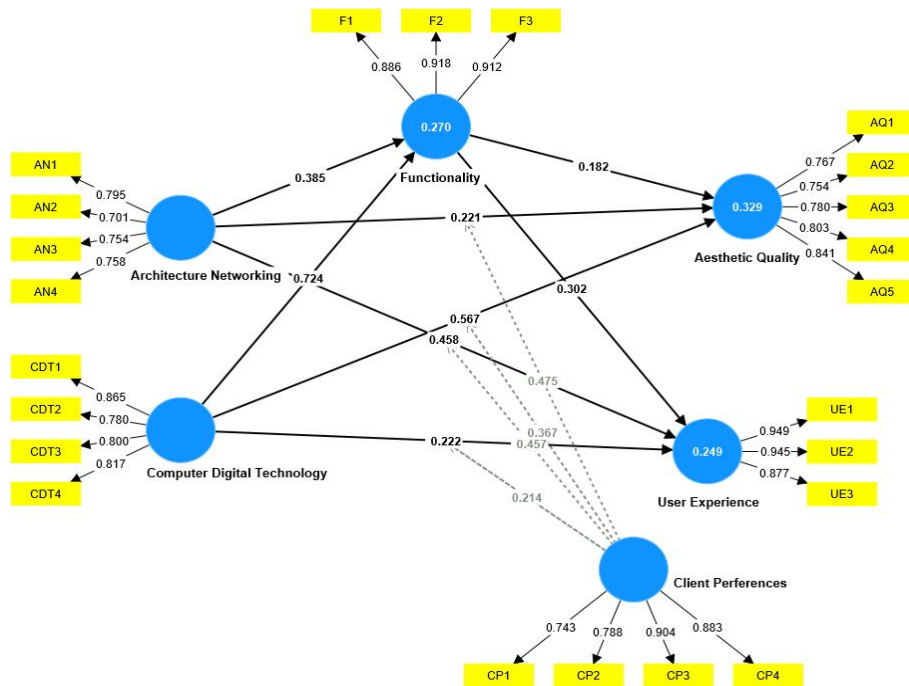


Figure 3. Measurement Model

### 3.4 Structural Model

The coefficient of determination (R<sup>2</sup>) and the Stone–Geisser criterion (Q<sup>2</sup>) were accessed to validate the model's explanatory and predictive relevance capacity, respectively. Each latent dependent variable has an R<sup>2</sup> value greater than 0.10 [40], [49]. The R<sup>2</sup> values for the entire sample fall within a reasonable range, from 0.249 to 0.329, making them acceptable. All of the Q<sup>2</sup> values are greater than 0 and range from 0.157 to 0.265, as shown by the results of the PLS-SEM blindfolding procedure, which is evidence that the model is relevant for predictive purposes [3], [59]. The outcome of R<sup>2</sup> and Q<sup>2</sup> is presented in Table 3.

Table 3. R-Square Values and Q-Square Values for the Variables

	R <sup>2</sup>	Q <sup>2</sup>
Aesthetic Quality	0.329	0.265
Functionality	0.270	0.259
User Experience	0.249	0.157

Assessing path coefficients and the significance values of those coefficients is another part of testing structural models. To calculate t-statistics and standard errors, the author used a bootstrap resampling method (with 5000 samples) [57]. A summary of the findings in Table 4 and Figure 3 displays the standardised coefficients and the significance of the specified paths.

The results show that architecture networking significantly affects the aesthetic quality (H1: path coefficient=0.221; t-statistic=2.737;  $p < 0.05$ ). Similarly, architecture networking significantly affects user experience (H2: path coefficient=0.458;t-statistic= 5.024;  $p < 0.05$ ). Findings show that digital computer technology also has a significant effect on aesthetic quality (H3: path coefficient=0.567; t-statistic=5.947;  $p < 0.05$ ) and user experience (H4: path coefficient=0.222; t-statistic=2.712;  $p < 0.05$ ). The findings of the study also show that functionality has a significant impact on aesthetic quality (H5: path coefficient = 0.182; t-statistic = 2.110;  $p < 0.05$ ) and user experience (H6: path coefficient=0.302; t-statistic= 5.004;  $p < 0.05$ ).

Table 4. Direct Effects

Constructs	Path coefficient	t-statistics	p-values
Architecture Networking -> Aesthetic Quality	0.221	2.737	0.003
Architecture Networking -> User Experience	0.458	5.024	0.000
Computer Digital Technology -> Aesthetic Quality	0.567	5.947	0.000
Computer Digital Technology -> User Experience	0.222	2.712	0.003
Functionality -> Aesthetic Quality	0.182	2.110	0.017
Functionality -> User Experience	0.302	5.004	0.000

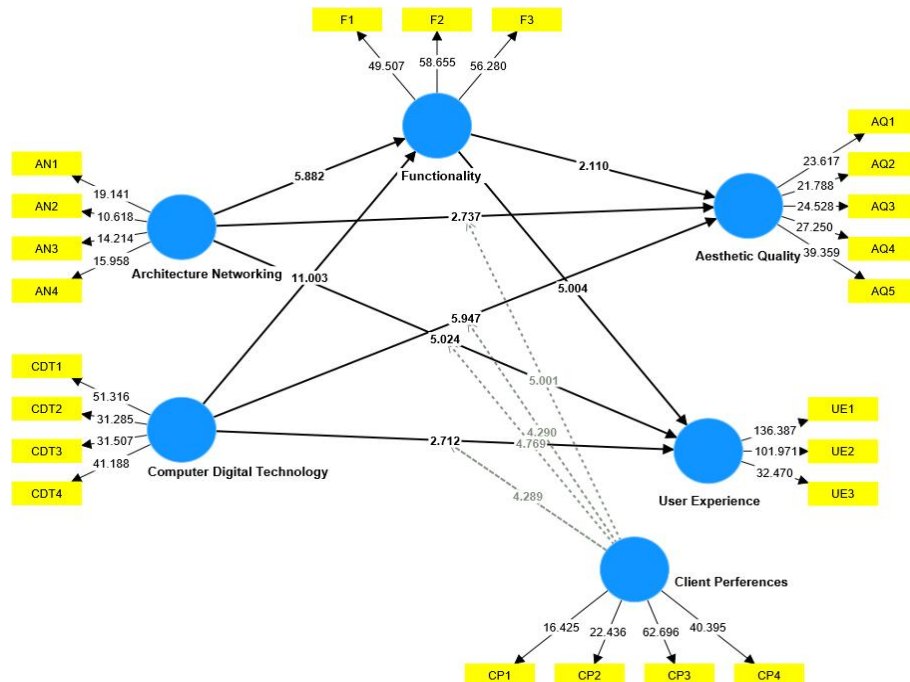


Figure 4. Structural Model

### 3.5 Mediation Analysis

Findings of the study showed that functionality significantly mediates the relationship between architecture networking and aesthetic quality (H7: path coefficient=0.007; t-statistic= 1.959;  $p < 0.05$ ), architecture networking and user experience (H8: path coefficient= 0.116; t-statistic= 3.894;  $p < 0.05$ ), digital computer technology and aesthetic quality (H9: path coefficient=0.132; t-

statistic = 2.031;  $p < 0.05$ ) and digital computer technology and user experience (H10: path coefficient = 0.219 t-statistic = 4.521;  $p < 0.05$ ). Table 4 shows the result of the mediation analysis.

*Table 5. Indirect Effect*

Constructs	Path coefficient	t-statistics	p-values
Architecture networking -> Functionality -> Aesthetic Quality	0.070	1.959	0.025
Architecture networking -> Functionality -> User Experience	0.116	3.894	0.000
Computer Digital Technology -> Functionality -> Aesthetic Quality	0.132	2.031	0.021
Computer Digital Technology -> Functionality -> User Experience	0.219	4.521	0.000

### 3.6 Moderation Analysis

Findings of the study showed that client experience significantly moderates the relationship between architecture networking and aesthetic quality (H11: path coefficient = 0.475; t-statistic = 5.001;  $p < 0.05$ ), architecture networking and user experience (H12: path coefficient = 0.457; t-statistic = 4.769;  $p < 0.05$ ), digital computer technology and aesthetic quality (H13: path coefficient = 0.367; t-statistic = 4.290;  $p < 0.05$ ) and digital computer technology and user experience (H14: path coefficient = 0.214 t-statistic = 4.289;  $p < 0.05$ ). Table 6 and Figure 4 show the result of the moderation analysis.

*Table 6. Moderation Effect*

	Original Sample	T Values	P Values
CP x AN-> Aesthetic Quality	0.475	5.001	0.000
CP x AN-> User Experience	0.457	4.769	0.000
CP x CDT-> Aesthetic Quality	0.367	4.290	0.000
CP x CDT -> User Experience	0.214	4.289	0.000

## 4. Discussion

The study's first hypothesis stated that architecture networking has a significant and positive impact on aesthetic quality. The employment of intelligent lighting systems in architectural networking results in an improvement in aesthetic quality [21]. These systems allow the brightness and colour of the lights in a whole building to be changed based on various criteria, including the time of day, the degree of occupancy, and the amount of natural light present. This makes the environment cosier and more pleasant to the eye and decreases the amount of energy used and the associated costs. Hence H1 is supported.

The study's second hypothesis stated that architecture networking has a significant and positive impact on user quality. Building managers can better monitor and restrict entry to the facility, which helps to guarantee that people are kept secure [56]. This is made possible by integrating security cameras, access control systems, and other security devices. This can give those who use the facility a sense of safety and tranquillity, both of which can positively impact the quality of life they experience as a whole. Hence H2 is supported. The third hypothesis of the study stated that Computer digital technology has a significant and positive impact on aesthetic quality. Digital computer technology can influence aesthetic quality in a variety of ways. Using computer-aided design software, which enables architects and designers to produce intricate and complicated designs with high precision and accuracy, is an effective method [54]. Computer-aided design software enables the production of visually appealing and intricate designs that would have been difficult or impossible to create with conventional design techniques. Hence H3 is supported.

The fourth hypothesis of the study stated that Computer digital technology has a significant and positive impact on user experience. Incorporating technology such as intelligent lighting or

automatic climate control systems can improve user comfort and convenience and contribute to the space's overall visual appeal [35]. This technology may provide visually appealing and dynamic lighting effects, enhancing the ambiance and making the environment more visually engaging. Hence H4 is supported. The fifth hypothesis of the study stated that functionality significantly and positively impacts aesthetic quality. [2] discovered that the usability of a product was positively correlated with its aesthetic appeal, indicating that an easy-to-use product is more likely to be seen as appealing. A well-designed and intuitively usable product would be seen as attractive because it satisfies user demands and enhances their experience. [6] discovered that the perceived attractiveness of a mobile phone was connected to its functional features, such as its usability and camera quality. The phone's design precisely matched its intended uses, contributing to its aesthetic appeal. Hence H5 is supported.

The sixth hypothesis of the study stated that functionality significantly and positively impacts user experience. The site's functionality greatly influenced users' pleasure with the website. According to the study, users' opinions of the website's functionality were favourably connected with their likelihood to revisit the website in the future. Similarly, [8] discovered that functionality strongly affected users' opinions of the usability of a mobile application. The study revealed that the greater the functionality of a mobile application, the greater the user satisfaction with its usability. Hence H6 is supported. The seventh hypothesis of the study stated that functionality significantly mediates the relationship between architecture networking and aesthetic quality. The degree to which a structure satisfies the functional requirements of its occupants is directly related to the degree to which architectural networking is associated with aesthetic excellence[37]. The attention can then shift to improving the interaction between humans and the built environment once the functional needs of the building's users have been met. Hence H7 is supported.

The eighth hypothesis of the study stated that functionality significantly mediates the relationship between architecture networking and user experience. When it comes to e-commerce websites, where customers need to be able to browse the site, look for products, and make purchases, functionality plays a big part in determining the quality of the user experience [51]. How the website's architecture and networking are designed can affect how easy or difficult it is for users to carry out these tasks, which in turn affects the website's overall user experience. Hence H8 is supported. Ninth hypothesis of the study stated that functionality significantly mediates the relationship between digital computer technology and aesthetic quality. When a piece of digital technology has a high degree of functionality, it has the potential to improve the user experience by making it more straightforward for users to achieve their objectives and complete their projects. This pleasant experience for the user can, in turn, add to the product's perceived aesthetic excellence [52]. A piece of digital technology can have a higher perceived worth if it has a high degree of usefulness. This higher perceived value may, in turn, contribute to the aesthetic quality that is thought to be possessed by the product.

The tenth hypothesis of the study stated that functionality significantly mediates the relationship between digital computer technology and user experience. Users typically have a more positive experience using technology that offers increased functionality [47]. Users are more likely to consider a piece of valuable technology if it is functional and effectively completes the tasks for which it was designed; hence there is a strong correlation between perceived usefulness and functionality. Hence H10 is supported. The eleventh hypothesis of the study stated that client experience significantly moderates the relationship between architecture networking and aesthetic quality. A building that needs to be better connected, despite having adequate flow and function, is more likely to have a lower aesthetic quality than a well-connected one. This is because how various components are assembled can impact the overall appearance of the building [9]. In addition, how customers experience and engage with a building can affect the connection between architectural networking and aesthetic quality. For instance, a structure may not have good aesthetic quality even though it may have excellent architecture networking if customers find it challenging to navigate or use. Similarly, a structure with excellent aesthetic quality may only be entertaining for customers if it has good architecture networking. Hence H11 is supported.

The twelfth hypothesis of the study stated that client experience significantly moderates the relationship between architecture networking and user experience. The quality of the customer's interactions with the company can affect how the customer evaluates the quality of the network as

well as the user's experience as a whole [38]. The authors contend that a favourable experience for the client can help to reduce the negative effects that issues with network performance might have on a user's experience. Hence H12 is supported. The thirteenth hypothesis of the study stated that client experience significantly moderates the relationship between digital computer technology and aesthetic quality. When digital computer technology is employed in the design of a product, customers who have a favourable experience with the product may view it as more visually beautiful [33]. When digital computer technology is employed in the design of a product, customers who have had a poor experience with the product may view it as having less of an appealing aesthetic. Hence H13 is supported.

The fourteenth hypothesis of the study stated that client experience significantly moderates the relationship between digital computer technology and user experience. According to research conducted by [58], a customer's level of satisfaction with a company's product or service directly and positively impacts the individual's chance of using the product or service again and recommending it to others. In this regard, a satisfactory experience for the consumer-led to an increase in the utilisation and uptake of digital technology. Hence H14 is supported.

## **5. Implications**

Researchers and practitioners alike have taken an interest in the aesthetic quality and user experience implications of how architecture, networking, and digital technology interact. The combination of these components has resulted in the production of dynamic and interactive places, which in turn have opened up new avenues for design, communication, and the participation of users. This integration has also presented designers with new hurdles, as they must now traverse the complicated interplay between aesthetics, functionality, and the preferences of individual customers. In this context, the mediating role of functionality and the moderating role of client preferences play an important role in shaping the impact of architecture, networking, and digital technology on aesthetic quality and user experience. Both roles are essential in shaping the impact of architecture, networking, and digital technology on aesthetic quality and user experience.

Implementing digital technology and networking in architectural design has resulted in new user involvement and interaction options. This is true from both a theoretical and a practical standpoint. A few examples of how technology can improve the user experience are interactive installations, intelligent buildings, and augmented reality experiences. These are only a few possible technology applications. Technological developments have also made it possible for designers to build more valuable and efficient environments that cater to the users' requirements and maintain an aesthetically pleasing atmosphere. Hence, incorporating digital technology and networking into the design of built environments capable of catering to the requirements of contemporary consumers has significant practical ramifications. From a theoretical perspective, the combination of architecture, networking, and digital technology challenges traditional aesthetics and user experience concepts. For instance, the conventional idea of the "decorative arts" has been superseded by the modern concept of the "media arts," which incorporates digital media and interactive technologies [47]. This shift in aesthetic sensibilities has consequences for the way we think about the link between form and function and the user's role in the design process. These implications have been brought about due to this shift in aesthetic sensibilities. Additionally, the moderating role of client preferences highlights the importance of understanding the user's needs and preferences in the design process, which affects the aesthetic quality and user experience of the built environment [4]. This is because the client's preferences affect how the designer responds to the user's needs and preferences.

### *5.1 Limitations*

A critical limitation of the study is that it did not investigate other potential implications of digital technology on architecture, such as cost-effectiveness, sustainability, or energy efficiency; instead, it only looked at the impact on visual quality and user experience. Another limitation of the study is it used a single survey instrument to collect data, which may have limited the extent and depth of the information gathered. Furthermore, the study did not consider the potential negative consequences of digital technology on architecture, such as greater homogeneity, a loss of originality, or a decrease in human interaction.

### *5.2 Future Directions*



Future research should investigate other potential implications of digital technology. Furthermore, future research can explore other potential moderating factors, such as cultural differences and user characteristics, and examine their impact on the relationship between architecture, networking, digital technology, aesthetic quality, and user experience. Finally, further can enhance the design process and user experience in architecture.

## 6. Conclusion

The aesthetic quality and user experience are impacted by architecture networking, and digital computer technology is a phenomenon that is both complicated and multifaceted. This impact is mediated by the utility of the technology being used, which can either improve or detract from the overall aesthetic quality and the user experience. Also, the client's preferences play a moderating role in determining how the impact of technology is exerted on the outputs of the design process. This is because client preferences can affect which technologies are chosen and how they are implemented. The application of digital technology in the field of architecture has opened the door to new ways of expressing oneself and to new creative avenues, resulting in the production of unique ideas that push the limits of what is considered "conventional" architectural practice. Therefore, careful consideration is required before integrating digital technology to guarantee that the core principles of functioning and usability are not compromised in any way due to this integration. The practical applications of technology should work to improve the quality of the user experience as a whole without putting the aesthetic characteristics of the design in the shade. Customers' preferences are a significant factor that helps shape the effect that technology has on architectural design. Throughout the design phase, it is necessary to consider any particular technological requirements or expectations the client may have. Therefore, architects and designers must maintain close communication with clients to gain an understanding of their requirements and preferences. This is necessary to ensure that technology is incorporated in a manner that is consistent with the client's vision and expectations that the client has.

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