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Mediating Role Of Immersive Technology Acceptance For User Motivation Factors And Interior Design Management Development: Suggested Conceptual framework

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ABSTRACT
The rapid technology development invaded most of the industries. The interior design industry paid less attention in coping up the latest technology. This study provides a suggested conceptual framework that helps interior design industry understanding factors that lead to the acceptance of immersive technology acceptance, which will lead to the development of interior design management. The conceptual framework establishment built base on the technology acceptance model, besides the relevant previous studies to the technology acceptance and adoption by the interior design industry.

Keywords: User acceptance, User experience, User engagement, Perceived ease of use, Perceived usefulness, Immersive Technology acceptance, Interior Design Management Development

1. Introduction

Interior designers plan and detail commercial and residential building interiors for effective use with particular emphasis on space creation, space planning and factors that affect our responses to living and working environments. Technology has created amazing tools and resources, putting useful information at our fingertips. This research focuses on the management of content, data and information for augmented reality (AR) applications in interior design development. It will start with a literature review on theories of the application of technology and their contributions to the interior design industry. A comparative study on AR applications versus standard desktop applications will be carried out to examine and discover the elements that contribute to the user engagement in design development. Further study will be conducted to investigate how the content, data and information are managed to be made available for AR applications. These elements will then be tested in an experiment or case study on the organization of content, data and information to evaluate effectiveness of current system. The results of all these studies will then be used to suggest a conceptual model for the management of content, data and information for AR-application for interior design development (Sharon Mirella et al., 2019).

2. Literature Review

Designing the interior of a room has been at play since the prehistoric cultural age. Since then, it has seen developments in style, functionality and sustainability. Today, designing the interior of a room or building is done with help from several technological advancements. This research explores the state of the technological interior design industry and where it is heading. The industry of interior design seems to have been somewhat of a late bloomer when it comes to incorporating technology into its processes. Despite this, the industry has finally caught up and is fully immersed in using technology to enhance the space in which it exist (Pinho et al., 2020).

Traditional and conventional design methods is today's computer technology. Computers which are becoming a must technology and need of modern age are now turning into commonly used devices at the first and last stage of design. Computer technologies have modified the traditional means of how people exchange ideas; revolutionizing how they work. Technology has played a key role in how people within the design process think, create and act. Abdellatif and Abdellatif (2020) states that technology and creativity are intertwined, with each outpacing each other at one time or another. Abdul Nasir et al. (2020) cautions that within the last 20 years, technology has started to overshadow the creative process causing great concern. Digital technologies have developed every day and provide designer with ease of use. In design, it is aimed that the utilization of computer technology and the whole process from two dimensional drawings to rendering. Transferring the ideas in mind to paper or preparing them digitally is interpreted as a matter of choice (Camilleri and Isaias, 2021).

Draft drawings which gains clarity are concluded with computer aid in the last stage of design. Today's developments in digital technology has improved, changed and brought the production process of design focused jobs to different dimensions. Digital based solutions such as parametric modeling, computational design digital design and fabrication, and Building Information Management (BIM) relation with design creation process (Alkhwaldi and Abdulmuhsin, 2021).

Most designers can envision how the interior environment should look prior to it coming to life and are classified as holistic and visual thinkers, Al-Betawi et al. (2020) support the fact that technology allows the

designer to still be a creative visionary but now utilize artistic and technical means of thinking technology affords. This innate need to visualize the problem dimensionally helps better understand how technology enhances the design process (Pourfakhimi et al., 2019).

According to Alstete and Beutell (2018), history indicates that new technology first becomes an enhancement to tasks and then a significant partner. Because technology is a key predictor of the future, the relationship between technology and creativity in interior design forecasts how interior designers work within design processes. With interior design practitioner's workflow being altered by technology, interior designers creative decision making processes can be allotted more time in turn producing better quality ideas (Alsswey et al., 2019).

3. Conceptual framewok establishement

The Technological Acceptance Model (TAM) is a theory that draws on disciplines such as social psychology and that establishes what is the degree of acceptance of society before the introduction of new technologies. Its direct precedent is in the Theory of Reasoned Action by Martin Fishbein, who developed this question in 1975. As human beings act rationally, analysis had to be carried out to study these behaviors (Taneja and Bharti, 2021). This model starts from the premise that, thorough analysis, it can be inferred whether a society is more predisposed to incorporate novelties or, on the contrary, is conservative. It is, therefore, a tool that serves to know the expectations of society regarding what a technology contributes (Nagdev et al., 2021).

Experience says that the TAM analysis has to be clear about other anthropological issues because, faced with the same investment or offer to implement new technologies, the answer is different. For example, there are societies in which, having the same improvement tools at their disposal as others, it takes longer to adopt them (Sepasgozar et al., 2021). The cultural factor, then, weighs heavily, and quite a lot, although today most analysts already take it into account. This acceptance model was first listed in 1989, and the person who started developing it was Fred Davis. It should be noted that the main criticism that has been made at times is the lack of empirical basis and, for this reason, there are studies that during the 90s sought to give greater consistency to the theory. A systematized paradigm is missing (Ronnby et al., 2018).

There have been several updates, although the most important ones are that of 2000, popularly known as TAM 2 and TAM 3, which dates from 2008, which include new items and aspects to consider. In parallel, alternative theories have been proposed such as the Unified Theory of Acceptance of Technology (Pipitwanichakarn and Wongtada, 2019). It is important to remember that the TAM model has variations depending on the version used, since new elements have been incorporated. One of the most important contributions to the early work of Fred Davis was that of Segars and Grove in 1992, which was later expanded by Workman in 2007. In any case, and regardless of the versions, elements such as perceived usefulness, perceived ease, attitude and intention to use are valued (Fletcher-Brown et al., 2021).

The adoption of new technologies cannot be understood without the conviction of those who incorporate them that they will gain from their use, and this can occur at work or in personal life. If a person does not believe that the incorporation of these elements will be useful, it will be more difficult for them to acquire them. Much has been written about the ability to quantify this magnitude, although the latest updates contemplate possibilities to calculate it (Castillo S and Bigne, 2021). On the other hand, examples of this type can be seen frequently. The adoption of personal computers in business responded to the ability to write faster and save documents, which was impossible with old typewriters. Something similar happened with mobile phones, which provided a previously unknown freedom with respect to landlines (Bastan et al., 2021).

Ease of use refers to the work that will be stopped thanks to the adoption of new technologies and, in this case, it must be said that some factors such as expertise are also going to be fundamental. There are people who have had a hard time joining the digital path and taking on small operations such as browsing the internet, for example. If it look for an older example, it would be the replacement of the Roman plow by mechanical plows to work the land, which was a revolution for the productivity of the field (Moriuchi, 2019). In many cases, then, the difficulty that a person perceives in the use of a new technology can be decisive in deciding whether or not to adopt it definitively. Many technologies that were objectively useful were slow to be incorporated because their potential users did not perceive them that way (Tubaishat, 2018). In order to adopt new technologies, it is essential to know what the population's predisposition towards them is. A person predisposed to use a mobile data connection or WhatsApp messaging will learn to use it faster than a person who is not. Attitude, yes, is a passive issue because a worker sees how a new technology is incorporated into his job, but he is not the one who decides its inclusion (Salam et al., 2021).

Cases such as that of Eastern societies until the second half of the 19th century are paradigmatic of how a negative collective predisposition slowed down technological evolution, despite having the conditions to assume it. Some are surprised that China had similar conditions to adopt the same technologies as Europe at a similar time and that it did not, but this is a historical reality (Buabeng-Andoh, 2018). The technology is now available and at affordable prices. The question is, is the population willing to incorporate it now? This

question is important because it is no longer a question of positive or negative predisposition, but of whether people count on their mobile or tablet as a short-term investment.

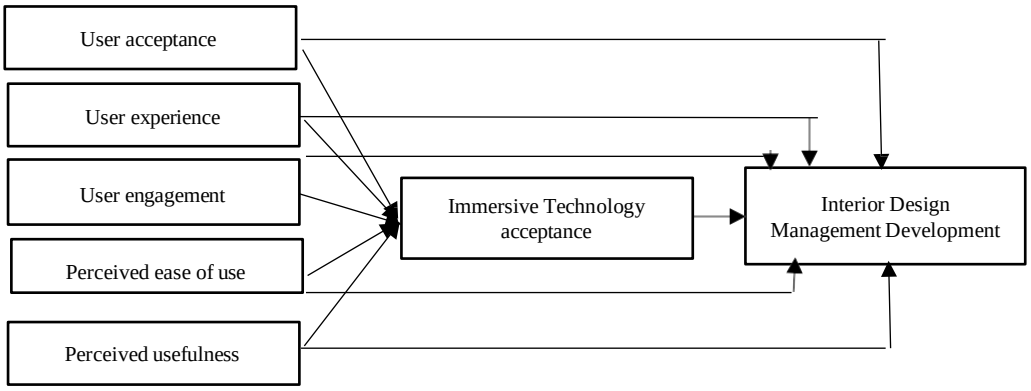
Therefore, if predisposition is a fundamentally passive matter, the intention is proactive and implies the desire to have this technology in daily life (Buabeng-Andoh and Baah, 2020). Normally, companies and governments conduct surveys to find out the predisposition of the population towards new technologies. A paradigmatic case is when it ask yourself if it are willing to buy online, regardless of whether it is done or not and most people are willing, although conditional on guarantees (Ahmad et al., 2017).

Today's global market offers a wide variety of tools and applications available so ideas can be quickly recorded, analyzed, modified then shared. Professional organizations have taken notice of the increased demand for augmented reality applications that support the interior designer's job. American Society of Interior Designers (ASID) ICON publication recently indicated applications for the most widely used augmented reality, Apple's iPad, offering increased working efficiency for the interior designer. Applications ICON recommended streamlined portfolio presentations, allowed users to conduct site surveys, take photographs and measurements of spaces, keep project task lists, record notes and observations while browsing latest design ideas. Other bloggers and organizations have also contributed their recommendations on applications that are best for interior design professionals and students (John and Thakur, 2021). It is important to remember that with the thousands of applications available, careful selection of the right application tool will weigh heavily on the finished product. As Denise Guerin states "the computer is only a tool, it doesn't do the thinking for you". It should not inhibit the interior designer from being creative but should, if used correctly, free the mind (Go et al., 2020).

As the popularity of technological devices is more readily accepted in the design process, users are becoming more dependent on such devices. One of the newest introductions in technology has been the augmented reality (e.g. Apple iPad). This revolutionary device took the world by storm offering a multi-touch display allowing the user to navigate applications via a stylus or finger. With the ability to design on the go, the augmented reality acts as a mental recording device to capture ideas whenever and wherever they strike. Just as a piece of paper allows the designer to record ideas, so does the augmented reality with its lightweight, mobile design (Bender, 2021).

To date, no studies have been published that address the use of augmented realitys in the design process; however, several researchers have provided a foundation for this study. Bers et al. (2018) explored the use of digital sketching in design education while Birgonul (2021) provided insight on how computer technology can improve end-user design. Additionally, Cafiero et al. (2020) examines how technology has revolutionized the design profession by exploring the impact technology has had on how designers' practice. Most recent, Ceylan (2020) explored the use of iPad's in higher education finding that students most benefited from increased information access while Çeliker (2017) presented findings on using the iPad2 to develop students sketching, listening and observation skills. None of these studies directly explores practitioners' use of augmented realities (i.e. iPad) but do provide insight on how augmented realities are used to exchange information. With technology now taking a central role in how interior designers think, create and act, identifying how augmented realities are used in the design process and idea generation is crucial to better understanding on the design process (Wu and Lai, 2021). Figure 1 presents the suggested conceptual framewok, which comporises five independent factors that user acceptance, user experience, user engagement, perceived ease of use, and perceived usefulness, while the immersive technology acceptance factor as a mediator towad the interior design management development.

Figure 1: Suggested Conceptual Framework



4. Conclusion

The rapid technology development invaded most of the industries. The interior design industry paid less attention in coping up the latest technology. This study provides a suggested conceptual framework that helps interior design industry understanding factors that lead to the acceptance of immersive technology acceptance, which will lead to the development

of interior design management. The conceptual framework establishment built base on the technology acceptance model, besides the relevant previous studies to the technology acceptance and adoption by the interior design industry

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