

Impact of the Dimensions of Augmented Reality on Consumer Decision Making
Process in Real Estate

Hadi Nasrulhaq Bin Abdul Razak

Fakulti Pengurusan Teknologi Dan Teknousahawanan

Universiti Teknikal Malaysia Melaka

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SIGNATURE :.....

NAME OF SUPERVISOR :

DATE :.....

SIGNATURE :.....

NAME OF PANEL :

DATE :.....

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Hadi Nasrulhaq Bin Abdul Razak

The thesis is submitted in partial fulfillment of the requirements for the award of
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DECLARATION OF ORIGINAL WORK

“I hereby declare that...

Signature :

Name :

Date :

DEDICATION

I would like to express my deepest gratitude and thanks to my dearest parents, who is my source of strength to do this, my family members, and my friends that help encourage me and support me in completion of this research paper. I am eternally grateful for giving me the opportunity and new experiences in my life to complete this meaningful research. My sincere appreciation also goes to those who have willingly help me out in completing this research. I am also thankful to my lecturers, and my supervisor that had help guide me and giving me knowledge in completing this research.

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ABSTRACT

The world is moving toward a new era of marketing and advertisement. Augmented reality is one of those new tools that are becoming increasingly important. Firms in the real estate industry, in order to attract and catch customer, must invest in a new way or marketing and consumer transaction. Especially where the market is quite saturated, and there is many competitors, using augmented reality would help them attract more customer. Firm do not know the aspect of augmented reality that will have a positive impact on consumer, whether it is the app interactivity or it offers of virtual (product) experiences or both. Therefore by developing a research about the impact of the dimensions of augmented reality (interactivity and virtual (product) experiences) on consumer decision making process toward real estate they could determine the impact. This research will find out the significant factor that influences consumer decision making processes within real estate industry in Melaka. A survey was conducted to collect the perceptions toward consumer decision making processes. The researcher has distributed 150 questionnaires, via google forms, an online survey platforms, to respondent that consist of different gender, race, age and year of studies. Based on the correlation analysis, it is shown that between Interactivity and Virtual (Product) Experiences, Virtual (Product) Experiences are the most influencing factor that will affect consumer decision making processes. This however does not meant that the interactivity is not important, but just Virtual (Product) Experiences gives slightly higher influences. The findings would act as a references for real estate industry to develop a augmented reality app that can better influence customers.

ABSTRAK

Dunia bergerak menuju era baru pemasaran dan iklan. Realiti diperkaya merupakan salah satu alat baru yang menjadi semakin penting. Firma dalam industri hartanah, untuk menarik dan menangkap pelanggan, mesti melabur dalam cara baru atau transaksi pemasaran dan pengguna. Terutamanya di mana pasaran agak tepu, dan terdapat banyak pesaing, dengan menggunakan realiti tambahan akan membantu mereka menarik lebih banyak pelanggan. Firma tidak mengetahui aspek realiti bertambah yang akan memberikan impak positif kepada pengguna, sama ada interaktiviti aplikasi atau ia menawarkan pengalaman maya (produk) atau kedua-duanya. Oleh itu, dengan membangunkan satu penyelidikan mengenai kesan dimensi realiti bertambah (pengalaman interaktiviti dan maya (produk)) pada proses membuat keputusan pengguna terhadap harta tanah yang dapat menentukan kesannya. Penyelidikan ini akan mengetahui faktor penting yang mempengaruhi proses membuat keputusan pengguna dalam industri hartanah di Melaka. Satu tinjauan telah dijalankan untuk mengumpul persepsi terhadap proses membuat keputusan pengguna. Penyelidik telah mengagihkan 150 soal selidik, melalui borang google, platform tinjauan dalam talian, kepada responden yang terdiri daripada jantina, bangsa, umur dan tahun pengajian yang berlainan. Berdasarkan analisis korelasi, ditunjukkan bahawa antara Pengalaman Interaktivasi dan Pengalaman Maya (Produk), Pengalaman Maya (Produk) adalah faktor yang paling mempengaruhi yang akan mempengaruhi proses membuat keputusan pengguna. Walau bagaimanapun, ini tidak bermakna bahawa interaktiviti tidak penting, tetapi hanya Pengalaman Maya (Produk) memberi pengaruh sedikit lebih tinggi. Penemuan ini akan bertindak sebagai rujukan untuk industri hartanah untuk membangunkan aplikasi realiti bertambah yang dapat mempengaruhi pelanggan dengan lebih baik.

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LIST OF ABBREVIATIONS

AR	Augmented Reality
FPTT	Faculty of Technology Management and Technopreneurship
UTeM	Univerisiti Teknikal Malaysia, Melaka
SPSS	Statistical Package for Social Service
ANOVA	Analysis of Variances

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CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

The objective of this chapter is primarily to introduce the reader to the subject of Augmented Reality (AR), to explore the background to Augmented Reality technology and its uses in real estate marketing and advertising, and then to confer the literature gap's problem discussion.. Finally at the end of this chapter the research question objectives, and the importance of this analysis will be addressed.

1.1 BACKGROUND OF STUDY

Due to the growth of the real estate industry and the rapid advancement of technology, the industry is becoming more competitive and it has become harder for real estate's firms to compete in the industry. The application of augmented reality in real estates, can give firms a competitive advantage over its rivals. The rapid changing technology, and trends in today's market, means that the consumer buying behavior and decision making process are also changing. Consumer buying behavior changes and are different from what they are a decade ago. One of the ways for the industry to adapt to the changing behavior, is to keep up to date with the latest technology and trends, such as applying augmented reality on real estate business.

McGhee, Lacey, Williams stated that the Augmented Reality (AR) finds many smart uses in real estate, where this technology combines the actual world with the imagined in a manner that demonstrates potential customers exactly what a property can do. This has substantially transformed the industry as real estate agents do everything from portraying the possibilities of furnishing and decorating a vacant house to eliminating distance barriers that might otherwise prevent a distant potential buyer from making an offer on a house.

Kryštof Raška, & Tobias Richter (2017) reported that the most significant factors contributing to buying intention are product awareness, hedonic and utilitarian value conveyed by increased experience. According to Abrar, Kashif. (2018) Augmented reality can influence consumer brand engagement and further improve purchasing intention as customers can gain insight into the product offered by the brand with complete reviews, sizes, benefits, uses and disadvantages. This research, however, focuses on the primary effect of augmented reality on the intention of customer buying in real estate, which is the choice of purchase and preferences of services.

1.2 PROBLEM STATEMENT

It is estimated that the AR industry will reach \$56.8 billion by 2020 (Markets and Markets, 2015), while Fortune expects revenue of \$120 billion by 2020 (Gaudiosi, 2015). With its growth it is increasingly important to research how AR affects customer responses and how it can be implemented in the real estate industry. As many real estate's agencies have used various means to attract customer to use their services and buy property through their agents, the application of AR could give them the competitive advantage needed to attract consumer and stay relevant in the industry.

Internationally there were approximately 210,000 residential brokerage and management companies that generated revenue of \$ 200 billion; there were 35,000 commercial brokerage and management companies that generated revenue of \$ 35 billion. Sena, Matt, (2018). According to Said, Rosli, (2018) real estate is one of the major drivers of Malaysian economic growth and the engine of social stability based on evidences, therefore it is an important part of Malaysia economic development. Melaka recorded the highest annual increase with a house price rise of 5.4% (+ 1% inflation-adjusted). Guzman, Maria, De, (March 2018).

Before the rapid advance of technology, firms in real estate used to advertise their services, houses and lands, through traditional marketing channel, and use catalogue to help customer visualizes, the state of the house they want to buy. The advancement of augmented reality technology, and the increase use of its in marketing and business, means that there is a change in consumer buying behavior. According to the Planned Behavior Theory (TPB) of Ajzen (1985), attitudes toward behavior may forecast the intent to act. The more optimistic the mindset towards the company is, the greater the desire to purchase can be inferred.

Furthermore the attitude-behavior theory of Smith and Swinyard (1983) indicates that direct product perception results in behaviors and behavioral stability more beneficial than indirect product experiences. Therefore, since AR can create telepresence comparable to the direct product experience, attitude-behavior consistency can be expected (Schwartz, 2011). Thus, the use of AR in the real estate industry, could revolutionize the industry, however since AR is a relatively new technology, its impact and usefulness is unknown.

(Juan Zheng, Shan Li, and Yunfeng Zheng, 2017) students are now engaged both in and out of school in technology-rich worlds, making them adaptable to different digital technologies.

Adzman Shah Mohd Ariffin, the CEO and chief real estate consultant of ExaStrata Solutions Sdn Bhd, state that “Over the past few years, the student accommodation industry has been successful in Malaysia. Many of them are located around colleges and universities. Locations such as Shah Alam, Subang Jaya, Cyberjaya, Sunway, Setapak and Cheras and areas like Semenyih and Kampar outside the Klang Valley saw a large number of student residences being constructed. As Malaysia aims to become a regional hub for tertiary education, the demand for student accommodation is predicted. Properties on the secondary market are increasingly being converted into student accommodation in areas close to colleges and universities. Also shophouses have been turned into hostels for visitors. There is a sign of a lack of campus lodging that has contributed to a private housing spillover. There are also few spaces available for students as it is. It is therefore certainly a viable product of investment” King Wai, Wong, (2018). These shows that students are a an important potential customer of real estate, and the potential user of augmented reality app, Thus, this research is conducted to clearly define the impact of using augmented reality on consumer decision making processes.

1.3 RESEARCH QUESTIONS

Investigating the major variables that would affect the behavior of consumer is the primary objectives of this research. As such, the researcher comes out with the following research questions to be answered in the research as below:

1. What are the factor influence consumer decision making process?
2. Which variable has significant influence on consumer decision making process?
3. What is the most significant impact of augmented reality among consumer?

1.4 RESEACRH OBJECTIVES

This research objective is to evaluate a theoretical framework for understanding the influence on customer decision-making processes of augmented reality. Consumer preference for augmented reality is the main components that this research would concentrate on.

Therefore, the researcher comes out with several research objectives of this research as below:

1. To explore factors that influence consumer decision making process.
2. To identify the most significant impact of augmented reality in real estate among consumer.
3. To examine whether augmented reality has significant influence on consumer decision making process in real estates.

1.5 SCOPE OF STUDY

The scope of this project was to identify the impact of the dimensions of augmented reality (interactivity and virtual (product) experiences) on consumer decision making process. The real estate industry will be chosen in this research study because it is one of the industry most impacted by augmented reality. The result of the study will show the most significant impact of the dimensions of augmented reality (interactivity and virtual (product) experiences) on consumer decision making process. The targeted respondent will focus on the staff and students of Universiti Teknikal Malaysia Melaka, Faculty of Technopreneurship and Technology Management.

1.6 SIGNIFICANT OF STUDY

Attracting and convincing consumer to use your service or buy your product is very important for business, and in the current world economy and situation, innovation play a vital role in staying competitive and relevant. By understanding the impact of the dimensions of augmented reality (interactivity and virtual (product) experiences) on consumer decision making process, real estate's firms can used and applied augmented reality on their marketing and product advertising effectively. The growing and universal use of wireless communication networks and mobile devices has made it considerably easier to access innovative technologies like Augmented Reality (AR), Jánosky/Schildhauer (2010) describe the AR search of property regarding the app of the real estate search engine Immonet4. Kryštof Raška, Tobias Richter, (May 2017) claimed that engaging AR application does not automatically have to be just a fun trick but can affect the purchasing purpose of the users and potentially turn them into paying customers.

They also claimed that the improved functional and hedonic importance of the interface directly influences users ' buying intentions. Therefore, this research is significant to business that want to know the impact of AR on consumer, and its possible application, specifically those in the real estate industry, but not also, to those in the marketing, advertising and any business that want to stay relevant and competitive in the fast paced business environment.

1.7 SUMMARY

Each chapter of this study begins with a brief introduction to the chapter and the research subject history. The research objectives and research questions are the main content in this segment. In fact, this chapter also clarified the difficulties encountered in performing the study. This chapter ends with the significance of the study that explicitly explains this research's relation to the real estate industry and, in general, the augmented reality sector.