

## Research Article

# Analysis of Implementation of Marker-Based Augmented Reality (AR) Business Cards as a Media Company Profile - Study Case of Marker-based Augmented Reality (AR) in Business Cards as a Media for Company Profile

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## Abstract.

The rapid development of Augmented Reality technology has inspired a new way of introducing oneself to the audience using while using the traditional business cards. In today's business tradition, even an old precept of 'first impression matters' still intact. Business cards still being used in formal meetings between two interested business parties. This new way of employing AR technology in the reformed business cards thus creates more engagement between the two parties involved in the short time and space of self-branding and business promotion. Augmented Reality manifests elements of the virtual world, namely avatar, in the physical realm and has been applied and used for various schemes in game-making, medical facility, education and learning, and promotional aspect of marketing to name a few instances. This research aims to carve a space for applied technology of AR for creative corporate promotional media, where we designed an immersive way of presenting the company profile by displaying a persona/avatar and video profile that stores the information of the company's line of business and the forwarding representative so partners could recognize the company's profile and be impressed in the event of introduction exchange. While implementing the principle of service design, specifically the design thinking for User Interface and User Experience to enhance the experience of exchanging the 'first impression' by business cards, this research hopes to weave a collaboration between UX designers and business parties in sustaining the creative industries.

**Keywords:** augmented reality, company profile, user interface, user experience

## 1. Introduction

The progress of new media technology has changed the way people introduce their identity. Today, technology is being developed to assist people in designing and producing their self-brand or company profile to enhance the attractiveness and interactivity during crucial moment of self-introduction, product promotion and/or introducing own's

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company. The process of promoting and marketing has now entered a new phase that utilizes new media technology to build the engagement. Nowadays, business makers and creativepreneurs alike collaborate with visual communication designers to co-design and create their interactive persona through AR-assisted business cards as opposed to conventional self-promotion or marketing strategies such as flyers, brochures, conventional business cards, media advertisement, among others.(1) As an innovative technology, Augmented reality (AR) adds virtual objects to a medium in real-time in order to create livelier experiences.(2) Hence, whenever a product is advertised, AR adds value in terms of product knowledge, and the entity who creates it. A well-designed product, content and advertisement is known to create a better image in mind of the user so it opens more opportunities for the product or a brand to create attachment with the user will. Additionally, this need-driven rapid technological advancement has made it possible to create more efficient ways of designing systems, goods and services as well as its production, distribution, and management.

Technologically advanced tools such as smartphone with AI operating systems such as Android and iOS plays an important role in giving motivation, engagement, and inspiration to the people (3). Marketing strategy that utilizes new media does not always performed for the sake of selling and buying, but it is performed to give additional value for the product (i.e. service and/or goods) that is being sold by an entity. This entity refers to the brand that delivers such product and this modern marketing strategy is aimed towards creating a collective awareness towards the brand so the public is likely to choose a product sold by the brand after trust and attachment is gained by the conscious public (4)

Rachmat Kriyantono in “ Public Relations Writing: Media Public Relations Building a Corporate Image “ state that a company profile is a product written by Public Relations practitioners that contains an overview of the company and the company can choose what information they want to convey in detail and open to the public. Company profiles are made specifically for consumers (users, customers or target audience), banks, governments, suppliers, investors and others. Usually, this is done by large companies with broad business fields and different publics ,6). Company profile serves multiple purposes as an information system to introduce and promote the business’ history, visions, missions and goals. It also contains a tailored narrative about the founding history and the brand it produced. Since a company profile would differentiate the brand among other existing and similar businesses, also to justify the bargaining position, and build the entire business team’s reputation, it is usually distributed through several

promotional media that enable high accessibility to familiarize the audience related to every information regarding the company, its team members, or its brand and product(7). Additionally, making a company profile can also be catered towards what interests and attracts the target audience.(8)

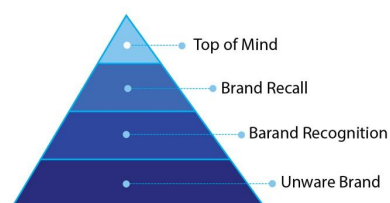
Augmented Reality, an interface design rooted in the field of computer science, has developed exponentially within the praxis of industrial and interaction design. Design thinking, which is understood as a generic innovation process, grounded in the models of how people learn (9) is a transdisciplinary making process (designing) that creates a plan and strategy (design) to yield an output (design) orientated towards fulfilling specific needs (10) where value is created individually, and often collaboratively, to gain collective awareness by those impacted by the system, service and/or goods. With diverse technological innovations and its advancement, the need to develop design praxeology that embed those advanced technology has carved a space to study and created a deeper understanding of interaction between a product (system/service/goods) with a user that involves elements such as aesthetics, motion, space, words, sensorial representations, among others. In interaction design, the goal is to create a sets of system to produce seamless and aesthetic experiences to enable the user to achieve their objective(s). Hence, the technology of Augmented Reality that creates such seamless integration between the virtual world and the real-world scenes in which users could achieve their tasks and objectives, had gained popularity and with its own research in the field of interaction design, has its potentials to be explored by interaction and UX/UI designers. Augmented Reality prioritizes the system whereby the elements of the virtual world are projected in the physical environment of the user in elaborately tailored visual representations to blur the boundary between the two worlds. The sense of borderless that is perceived by the user of Augmented Reality (AR) is generated by steady stream of graphical and live video display and create an interdependency of both worlds in a form of interaction initiated by the user who gets immersed in both worlds.(11)

The experimentation of designing and attaching Augmented Reality involves multiple collaboration between the designers, the business stakeholder as direct users, the public representatives as business users as well as enhancing participatory aspect between sales and marketing divisions with the designers and researchers (12). Their need to acquire a more interactive tools to introduce and represent the tech company identity is the focal point to be addressed in this research.

## 2. Research Method

This research uses mainly descriptive qualitative method. This study involved the participation of a business stakeholder ZiCare whose business runs in the field of hospital information system.(13) Qualitative data was obtained by observing the design of Augmented Reality that shall be attached to a business card designed for ZiCare business. Later, together with the stakeholder, researcher and designer shall test the efficacy of the design by involving several randomized participants in which feedback can be provided using the Likert scale to assess the visual and interactive quality of the designed AR interaction attached to the business card (ZiCare). The measurement scale is determined according to 5 levels of worst-best, like-dislike, satisfied-dissatisfied scale.

The quantitative data derived from the Likert scale will then be analyzed using the pyramidal principles of brand awareness, brand recognition, brand recall, and top of mind [15] (Durianto, Sugiarto, and Budiman, 2004).



**Figure 1:** Brand Awareness Pyramid, Durianto, Sugiarto, & Budiman (2004).

The user interaction offered by the implementation of augmented Reality on ZiCare business cards provides an interactive experience with the brand itself, but the level of influence needs to be assessed based on brand awareness [2].

### 2.1. Methods of Data Collecting

Data processing and analysis of the design quality in this study are based on the theory put forward by Miles and Huberman; as for process flow that occurs by simultaneously covering data reduction, in this study, data reduction is focused on research results on things considered essential and relevant by a researcher.

On the design of the AR, data was collected in the form of a target image on the card. The name on the card is the marker for detecting virtual objects and a demonstration of an application for operating the name card based on augmented reality. Researchers

then review interactions that have arisen when users use the ZiCare card name to study the impact and influence to what can cause brand awareness. To analyze the interaction and the user-centeredness of the design, Likert scale is used to collect feedback from as many as 15 user-stakeholders at the company.

Brand Pyramid Awareness [1], consists of four levels of brand awareness. Results from AR design analysis and Likert scale will then be analyzed using brand awareness pyramid. Researchers used the Brand Awareness Pyramid which explain the parameters of a brand influence on the users. The pyramid consists of four levels of parameter of brand influence; unaware of the brand, brand recognition, brand recall, and top of mind and correlating these parameters to how the brand can be designed in order to raise its awareness upon target users. For the AR design, several plot stages were conducted to obtain a more comprehensive data about the structure of Augmented Reality that gave virtual information via users interaction.

### 3. Result and Discussion

Augmented Reality (AR) is an environment that combines the real world and the virtual world created by computers so that the boundary between the two worlds becomes very thin. In Augmented Reality, it requires a camera on a smartphone as an input medium to read markers (unique markers), where from the markers, it will display information in the form of text and 3-dimensional images on the smartphone screen. The needs analysis is composed of the requirements needed by the application in the manufacturing process. Namely, the software (software) and hardware (hardware) needed to make this application. In addition to the operating system, which is the primary software of other software, program design for Android operating system developers requires supporting software, including JDK, ADT Plugin, Android SDK, Vuforia Qualcomm, and Unity 3D.

Implementing the Augmented Reality technology on the company's business card might increase the users' engagement. In AR technology, it is possible that the information is not isolated on the medium as perceived in conventional media, therefore the users could gain new experience on the process of searching for, transmitting and receiving information concerning the company's product or selling points. The idea of collaboration in the application of AR technology can be viewed from the role of designers who could fill the needs of information for the users and the company from their interaction such as designing the way of searching, transmitting and receiving the information as well as tinkering on the construction of information container. Creating



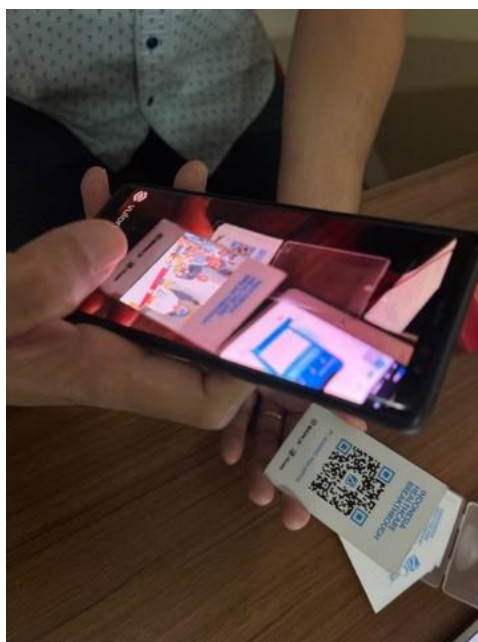
Figure 2: AR Image Target.

the information container by collaborating with the users and applying new media such as AR technology is one idea, the challenge is whether the application of new media can help making the company's business sustainable.

In this research, the company in collaboration is Zi.Care. Zi Care is a national company that runs on providing technology-based health information service. The service is structured as B-to-B for hospital information system (HIS), from the company to other company or other public facility such as hospital. The user/customer of this service is identified as the hospital administration, where there is a need to easily accessing health information specifically hospital administration, clinical support system and claim management system. With the dawn of AR technology, there is a potential for Zi.Care to market its service and product to users who need to access health information through smartphone.



**Figure 3:** User-Test AR.



**Figure 4:** Result AR.

When using a Zi.Care business card, User Interaction begins when the user operates the business card with an augmented reality application. A business card with a marker will display an interactive visual containing the company profile content of the Zi.Care company.

The design process began with designing the Zi.Care AR with the participation of Zi.Care marketing team (Image 1). After the AR design completed, we conducted several



operational testing and user testing to see if the design works and application met their preference and needs (Image 2). We then conducted the Brand Awareness Pyramid analysis to as many as 15 company users while exposing them with the card, the application and the AR interface. The analysis was based on the levelling of brand awareness in which there are four levels, from the highest to the lowest. Level 1 (Top of mind) is the condition in which a brand is first mentioned by consumers and appears in the minds of consumers. Level 2 (Brand recall) is a condition where users can recall a brand without any media such as television advertisements, print media, and online media. Level 3 (Brand recognition) is a condition where consumers or users can recall the brand with the help of the media. In contrast, the lowest Level 4 (Unaware of Brand) is when consumers or users are being unaware of the brand. Even with the help of stimulating media such as advertisement, they are completely unaware of the existence of a brand.

During this research, as many as 15 users at the stakeholder company were exposed to the design process and were subjected to Likert questionnaire to give feedback concerning the idea of applying the AR technology to communicate the company profile of Zi.Care, below are the result.

TABLE 1:

		VB	B	GE	W	VW
1	How well is the innovation of New Media AR for communicating product knowledge?					✓
2	How well is the AR application in communicating company profiles on business cards?					✓
3	How well is the media variations to strengthen the Awareness brand of a product?					✓
4	How well do you know the Zicare Products?			✓		
5	How well is the user interface design in the AR application?				✓	

Total Respondents : 15

Information:

VW : Very Well

W : Well

GE : Neutral

B : Bad

VB : Very Bad

Respondents who chose very well (5) : 10 x 5 = 50



Respondents who chose well (4) : 3 x4 =12

Respondents who choose good enough (3) : 1 x3 = 3

Respondents who chose bad (2) : 1 x2 = 2

Respondents who chose very bad (1) : 0 x1 = 0

Score : 67

- (15 x 5 = 75) 67:75 x100 = 89%
- (15 x 4 = 60) 67:60 x100 = 1.11%
- (15 x 3 = 45) 67:45 x100 = 1.48%
- (15 x 2 = 30) 67:30 x100 = 2.23%
- (15 x 1 = 15) 67:15 x100 = 4.46%

Respondents were taken from the Marketing and Communication Department as many as 10 people, as well as 5 users from the user side given by sales to potential users of the hospital information system. From this questionnaire, it can be concluded that innovations in new media for the delivery of their products are stated to be very good and the application of AR in the application of profiles to strengthen brand awareness of a product is very good.

$I = 10 / \text{number of score}$

Then =  $10/5 = 2$

Result (I) = 2

TABLE 2:

		TD	D	QA	A	SA
1	Can all Zi.Care products be delivered with AR media?		✓			
2	Does Zi.Care profile visualized on card with AR easy to use?					
3	Is AR's presentation of the Zi.Care profile easy to understand?			✓	✓	
4	Can AR users get a new experience in product delivery from Zi.Care?					✓
5	Can users easily get information from the AR presentation to increase Zi.Care brand awareness?			✓		

Total Respondents : 15

Information:

SA : Strongly Agree

A : Agree

QA : Quite Agree

D : Disagree

TD : Totally Disagree

Respondents who chose Strongly Agree (5) :  $2 \times 5 = 10$

Respondents who chose Agree (4) :  $7 \times 4 = 28$

Respondents who chose Quite Agree (3) :  $5 \times 3 = 15$

Respondents who chose Disagree (2) :  $1 \times 2 = 2$

Respondents who chose Strongly Disagree (1) :  $0 \times 1 = 0$

Score : 55

- $(15 \times 5 = 75) 55:75 \times 100 = 73 \%$
- $(15 \times 4 = 60) 55:60 \times 100 = 91 \%$
- $(15 \times 3 = 45) 55:45 \times 100 = 1.2 \%$
- $(15 \times 2 = 30) 55:30 \times 100 = 1.8 \%$
- $(15 \times 1 = 15) 55:15 \times 100 = 3.6 \%$

Respondents were taken from the Marketing and Communication Department as many as 10 people, as well as 5 users given by sales to prospective users of the hospital information system. from this questionnaire it can be concluded that not all products that Zi.Care releases are mediated through the use of AR media in delivering product knowledge. As many as 7 respondents agreed that submitting profiles on AR media provides new experiences to remember products better so that the application of AR media to communicate product knowledge can increase brand awareness.

Based on Bauman (14), the intensity of brand exposure to consumers can affect certain feelings and attitudes towards a brand so that consumers feel compelled to choose that brand. That way, user interaction through augmented reality as a medium for introducing a brand can increase the intensity of consumer relations with the brand. The interactions generated in Image 2 provide a unique experience that can enhance the user or consumer experience of the Zi.Care brand. Augmented reality media assistance can trigger brand recognition (15) The intensity of the experience resulting from a pleasant interaction can trigger and influence consumers so that the brand will be embedded in the minds of consumers or top of mind.

## 4. Conclusion

The analysis results in this study show positive results that can be reviewed based on the exposure of Bauman, Hamin, and Chong (14). The intensity of brand exposure to consumers can determine consumer feelings and actions. The primary purpose of using augmented reality will be more interesting if it can be implemented not only limited to business cards but can also be implemented on other supporting media. Referring to the brand awareness pyramid, the application of augmented as a new medium in introducing a brand provides a high level because Augmented Reality provides a long and enjoyable experience intensity so that the top of mind level can be achieved.

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