Research Article

Factors Influencing the Successful Use of Augmented Reality Marketing in Indonesia

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Abstract: In recent years, augmented reality (AR) has experienced a surge in popularity, particularly in the realm of marketing. This rapidly expanding area offers a wealth of opportunities, and many businesses have started to utilize AR marketing. However, in Indonesia, the rate of AR marketing adoption remains relatively low, though some companies have started to implement it experimentally. This study aims to pinpoint the factors crucial to the success of AR marketing applications and establish a knowledge base for other companies interested in harnessing this cutting-edge strategic concept for their marketing campaigns. To achieve this, the study uses an Analytical Hierarchy Process (AHP), utilizing questionnaires to gather findings from seven experts who have previously implemented AR marketing before. These experts represent a diverse range of industries, offering a comprehensive understanding of the AR marketing landscape in Indonesia. The study seeks to supply valuable information for companies considering the adoption of AR marketing strategic approaches, ultimately promoting growth and insight within the Indonesian market.

Keywords: Augmented Reality Marketing, Analytical Hierarchy Process

INTRODUCTION

Augmented reality (AR) is an emerging domain with diverse applications in fields like entertainment, education, and advertising, among others. AR is a technology that enriches a user's perception of the physical world by overlaying digital data onto it (Chen *et al*, 2019). This allows individuals to engage with digital content in a more natural and immersive manner compared to conventional digital media (Shoaib and Jaffry, 2015). AR is revolutionizing the way businesses interact with their clients and how individuals consume media, making it a highly prospective technology for the future.

AR has begun to be employed as a marketing tool by various organizations and enterprises in recent years. AR enables marketers to design captivating, memorable, and pertinent interactive experiences for their intended audience. AR can be incorporated into various marketing strategies, including product demonstrations, event promotion, and advertisements. Moreover, it can be used to showcase a product in 3D or as a product visualizer, allowing customers to preview how it appears and functions in their own surroundings before making a purchase. This can make customers happier and boost sales (Mitrovic *et al*, 2021).

Studies have shown that augmented reality in marketing can have a big effect on how interested customers are and how likely they are to buy. AR experiences can make people more aware of a brand, make them more loyal to that brand, and drive sales (Rauschnabel *et al*., 2022). AR experiences can also improve how customers feel about the quality of a product and make them more willing to pay more for it (Mitrovic *et al*, 2021).

According to PwC's reports, the use of VR and AR in retail and consumer goods will add USD 224.8 billion to the world's gross domestic product (GDP) by 2030. Retailers will be able to create new customer experiences, like virtual fitting rooms for clothing stores and augmented reality apps that let people see how furniture would look in their home before they buy it. (pwc.com, 2020).

In Indonesia, AR is still in its early stages, but it is showing great potential for growth. The increasing use of smartphones and internet access (statista.com, 2022), combined with the growing demand for innovative and interactive experiences, makes Indonesia a promising market for AR in general (oxfordbusinessgroup.com, 2020). According to Statista's advertising and media market insight, the AR advertising segment in Indonesia is expected to reach $70 million out of $165.6 million by 2027 in terms of revenue (statista.com, 2022).

Augmented Reality Marketing
The definition of AR marketing involves using AR experiences together with other forms of media or

brand-related signals to achieve marketing objectives that benefit the brand, its stakeholders, and society as a whole (Rauschnabel *et al*., 2022). AR marketing enables businesses to create interactive and engaging experiences for their customers, strengthening the brand's image and boosting brand awareness. AR can be used in various types of marketing, such as product demonstrations, event marketing, and ads, providing customers with a unique and memorable experience (Mitrovic *et al*., 2021).

AR marketing can be particularly effective in industries where the customer experience is crucial, such as retail, entertainment, and hospitality. AR can provide customers with personalized and contextual information, enabling them to make informed decisions about products and services. For instance, AR can be used in clothing stores to enable customers to try on clothes virtually or in furniture stores to allow customers to see how furniture will look in their homes before making a purchase (Tan *et al*., 2022).

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Moreover, Rauschnabel *et al*. (2022) emphasize that AR marketing is a strategic concept that demands a well-planned, resource-based, long-term process spanning multiple business functions and involves several factors such as market expertise and the availability of AR best practices that are critical to its success and performance. It requires investing in relevant expertise, understanding the application within the industry, and identifying the target market's online characteristics. These factors came from the three categories that consist of skills, capabilities, and resources.

Issue
Despite the potential benefits of augmented reality, its application in the Indonesian market remains tough (Sugiono, 2021). As a result, Indonesian companies may miss out on the opportunities provided by AR marketing. Given the potential of AR to alter the way businesses connect with their customers and differentiate themselves in a competitive market (Mitrovic *et al*, 2021), identifying how to leverage it properly is crucial. By doing so, businesses in Indonesia may harness the full potential of AR marketing and gain

a competitive advantage in their respective industries. The goal of this research is to look into the factors impacting successful AR marketing in the Indonesian market, with the goal of giving recommendations for businesses to leverage AR marketing to accomplish their marketing objectives.

The context of the business issue is the limited adoption of AR technology in the Indonesian market despite its potential benefits in various areas, including marketing (Sugiono, 2021). The potential benefits of AR in marketing include increased brand awareness, customer loyalty, and sales, as well as improved customer experience and product perception (Rauschnabel *et al*., 2022). However, the adoption of AR in the Indonesian market remains low, and businesses may miss out on the opportunities it presents (Sugiono, 2021).

The exploration and clarification of the root cause of the problem suggest that there are several criteria that influence the adoption of AR marketing, including technological readiness, cost, lack of knowledge and skills, and availability of resources (Rauschnabel *et al*., 2022). Technological readiness refers to the availability and quality of the required technology, including hardware and software, for AR implementation. The cost includes both the upfront investment and ongoing maintenance costs of AR technology. Lack of knowledge and skills refers to the limited understanding and expertise in AR technology among businesses and marketers in the Indonesian market. Availability of resources refers to the level of availability of customers' devices, tools to measure them, and best practices.

The problem at hand is the low usage of AR technology for marketing purposes in Indonesia. This study intends to pinpoint the critical elements that determine the successful use of AR marketing from the viewpoint of companies operating in the Indonesian market. It aims to suggest effective ways of using AR technology to attain marketing goals and overcome the challenges that hinder AR adoption. The ultimate objective is to encourage the utilization of AR for marketing purposes in Indonesia, which will enable businesses to gain a competitive edge.

METHODS
This study gathered information from literature reviews and questionnaires distributed to experts. The collected data is analyzed using the Analytic Hierarchy Process (AHP), a decision-making tool that uses a mathematical technique to prioritize and make decisions. Data collection involves obtaining information from various sources, including literature reviews, which provide insights into problem exploration, criteria, factors, and different aspects of AR marketing. Additionally, questionnaires are used to

gather perspectives from experts and determine the

The study uses a quantitative research methodology, where data collected from questionnaires is analyzed using the AHP. To ensure reliability, the number of AHP participants is limited to between six and twelve

importance of various criteria and factors. experts, as suggested by Melon *et al*. (2006), to balance diverse opinions and prevent bias. The author seeks to gather data from seven experts from companies with experience in AR marketing.

Table 1 List of experts

No	Position	Organization
1	Account Director	ADA Asia
2	Senior Digital Content	IM3
3	Account Manager	Tenstud
4	CEO	Fortuna
5	Head of Brand	OPPO
6	Marketing Coordinator	MAP
7	Business Director	WIR Group

The data analysis is done in stages. After problem exploration and literature review, a hierarchy is created, starting from a broad objective down to specific factors. Pairwise comparison matrices are used to compare and prioritize elements. This process is repeated until final priorities are established. The experts consulted for the study come from various industry fields, such as telecommunications, retail, tech, and creative advertising agencies. The data they provide is processed using the self-adaption of the AHP Priority Calculator from Business Performance Management Singapore (BPMSG)

The AHP method breaks down complex issues into a hierarchy of interrelated elements, as described by Tansakul *et al*. (2013). The significance of each factor is established through pairwise comparisons on a matrix, and the eigenvector value of the matrix is used to quantify these comparisons. The consistency index (CI) is used to assess the reliability of the data, with CI ratios greater than 0.1 indicating unreliable judgments (Saaty, 1987).

Table 2 AHP Intensity of importance scale

Intensity of importance	Definition	Explanation
1	Equal importance	Two elements contribute equally to the objective
3	Moderate importance	Experience and judgment moderately favor one element over another
5	Strong importance	Experience and judgment strongly favor one element over another
7	Very strong importance	One element is favored very strongly over another, its dominance is demonstrated in practice
9	Extreme importance	The evidence favoring one element over another is of the highest possible order of affirmation
2, 4, 6, and 8 can be used to express intermediate values.		

The study adapts factors of importance and performance of AR marketing by Rauschnabel *et al*. (2022) as the criteria and factors related to the AHP. The ultimate goal is to understand the success of leveraging AR marketing, which implies a multi-faceted, well-planned, resource-based, long-term process.

Table 3 Factors of importance and performance of AR marketing

Criteria	Factors
Skills	- Market expertise of AR (e.g., vendors credibility, technologies) - Knowledge of how to present relevant content in AR
Capabilities	- Understanding application in the industry - Top management support - Long-term perspective of the future of AR in marketing
Resources	- Availability of appropriate devices among target groups - Availability of tools to measure AR effectiveness - Sufficient budget for AR marketing - Availability of AR best practices

RESULTS AND DISCUSSION

The mathematical calculation of the AHP in this research uses author calculations based on an Excel workbook developed by Klaus D. Goepel from Business Performance Management Singapore (Goepel, 2013). It calculates the resulting priorities from the pairwise comparisons of each respondent based on the row geometric mean method (RGMM), while the Eigenvalue Method is used for the final calculation.

After all the local and global priorities (importance) had been calculated, the top-importance criteria and factors from the respondents are summarized as follows:

Table 4 Criteria top-importance summary of each respondent

Respondent	Criteria	Factor
Account Director of ADA Asia	Capabilities (0.737)	Understanding application in the industry (0.483)
		Long-term perspective of the future of AR in marketing (0.195)
		Sufficient budget for AR marketing (0.097)
Senior Digital Content of IM3	Resources (0.724)	Availability of tools to measure AR effectiveness (0.396)
		Availability of AR best practices (0.129)
		Understanding application in the industry (0.111)
Account Manager of Tenstud	Capabilities (0.800)	Market expertise of AR (vendors credibility, technologies) (0.062)
		Knowledge of how to present relevant content in AR (0.062)
		Understanding application in the industry (0.392)
CEO of Fortuna	Skills (0.474) Capabilities (0.474)	Understanding application in the industry (0.333)
		Market expertise of AR (vendors credibility, technologies) (0.237)
		Knowledge of how to present relevant content in AR (0.237)
Head of Brand of OPPO	Capabilities (0.633)	Top management support (0.316)
		Understanding application in the industry (0.158)
		Long-term perspective of the future of AR in marketing (0.158)
Marketing Coordinator of MAP	Capabilities (0.589)	Understanding application in the industry (0.309)
		Knowledge of how to present relevant content in AR (0.189)
		Top management support (0.197)
Business Director of WIR	Skills (0.767)	Market expertise of AR (vendors credibility, technologies) (0.671)
		Understanding application in the industry (0.110)
		Knowledge of how to present relevant content in AR (0.096)

Capabilities is considered the main criteria by 5 respondents (Account Director of ADA Asia, Account Manager of Tenstud, CEO of Fortuna, Head of Brand of OPPO, and Marketing Coordinator of MAP), followed by Skills with 2 respondents and Resources with 1 respondent. In the global importance level of the factor, understanding application in the industry is rated as the most important by all 7 respondents, followed by knowledge of how to present relevant content in AR by 2 respondents. The consolidated average calculation from all respondents is shown in the table below.

Table 5 Criteria importance calculation of all respondents

Criteria	Local Importance	Factors	Local Importance	Global Importance	Rank
Skills	0.281	Market expertise of AR (vendors credibility, technologies)	0.520	0.146	2
		Knowledge of how to present relevant content in AR	0.480	0.135	3
Capabilities	0.510	Understanding application in the industry	0.566	0.289	1
		Top management support	0.176	0.090	
		Long-term perspective of the future of AR in marketing	0.257	0.131	

Resources	0.209	Availability of appropriate devices among target groups	0.150	0.031	
		Availability of tools to measure AR effectiveness	0.255	0.053	
		Sufficient budget for AR marketing	0.313	0.065	
		Availability of AR best practices	0.282	0.059	

Based on the calculation of the average value of local importance from each participant, understanding application in the industry is the factor with the highest global importance (0.289), followed by market expertise of AR (vendors credibility, technologies) (0.146), and knowledge of how to present relevant content in AR (0.135). This indicated the respondents' expectation that understanding and knowledge of AR itself are very important, and if respondents are still lacking those factors, they are expected to be helped by vendors with high credibility.

The AHP analysis findings emphasize the importance of focusing on both internal and external factors when incorporating AR into marketing strategies. The successful adoption and implementation of AR in marketing requires a comprehensive approach that takes into account these factors, as well as the unique characteristics of the target market.

Internally, businesses must prioritize the development of capabilities and skills, especially in understanding the application of AR in their industry (Rank 1 with 0.289). This encompasses not only technical knowledge but also the ability to identify and capitalize on potential use cases that will resonate with their target audience. By doing so, businesses can create more engaging and immersive marketing experiences that stand out in a competitive marketplace. Companies should invest in training and development to enhance their understanding of AR applications, enabling employees to better identify potential use cases and opportunities for AR marketing.

Externally, businesses should pay attention to the role of vendors in the AR ecosystem (Rank 2 with 0.146). Choosing the right vendor is crucial, as their market expertise, credibility, and technology offerings can significantly impact the success of a company's AR marketing initiatives. A strong partnership with a reliable and experienced vendor can provide businesses with access to cutting-edge technology, industry best practices, and valuable insights that can help them navigate the complex landscape of AR marketing. Collaborating with reputable AR vendors and technology providers that have proven expertise and credibility is essential to ensuring a high-quality AR experience for the target audience.

Another critical factor for the success of AR marketing is the ability to present relevant content using AR technologies (Rank 3 with 0.135). Businesses must develop strategies to create engaging and relevant content with AR technology, keeping in mind the preferences and expectations of the target audience. This is especially important because understanding cultural nuances and consumer preferences is vital to the success of marketing campaigns.

Here are a set of actionable steps that companies, particularly those operating in Indonesia, can follow to effectively incorporate AR into their marketing strategies. These recommendations are based on the analysis of the key factors influencing the successful use of AR marketing and aim to help businesses harness the full potential of this strategic technology concept.

1. Develop in-house understanding of AR marketing

To fully leverage the potential of AR marketing, companies should nurture the knowledge and understanding of their employees. This can be achieved through cross-functional collaboration between marketing, IT, and product teams to identify and capitalize on potential AR marketing use cases. It is also essential to foster a culture of innovation and continuous learning within the organization. This can be done by emphasizing the importance of staying updated with the latest advancements in AR technology and encouraging employees to experiment with new ideas.

2. Partner with credible AR vendors and technology providers

When planning an AR marketing campaign, it's crucial to conduct thorough market research to identify reputable vendors with proven expertise, credibility, and a strong track record in the industry. Once selected, companies can establish long-term partnerships with vendors to foster better collaboration, technology integration, and ongoing support. Regularly reviewing and assessing vendor performance is also essential to ensure the quality of AR experiences remains high and aligns with the company's marketing objectives.

3. Create engaging and relevant AR content

To create impactful AR content, it's essential to develop a deep understanding of the target audience, including their preferences and cultural nuances. Collaborating with creative agencies or in-house design teams can help develop AR content that resonates with the audience and aligns with the brand's overall marketing strategy. To ensure the effectiveness of the AR content, it's crucial to continuously test, measure, optimize, and adapt it to the evolving preferences and expectations of the audience.

4. Measure the effectiveness of AR marketing initiatives

It's crucial to establish clear key performance indicators such as engagement, conversion rates, and customer satisfaction to measure the success of AR marketing campaigns. Implementing tools and analytics solutions to track and measure the performance of AR marketing initiatives against the set indicators is essential. Leveraging data-driven insights can help optimize and refine AR marketing strategies continuously, ensuring alignment with the company's marketing objectives and driving continuous improvement.

5. Adopt a long-term perspective

To effectively integrate AR into the overall marketing strategy, it's essential to develop a strategic roadmap that outlines both short-term and long-term goals and objectives. Allocating sufficient budgets and resources for the ongoing development and implementation of AR marketing initiatives is also crucial. Additionally, continuously monitoring and evaluating the AR landscape and staying informed about emerging trends, technologies, and best practices that may impact the company's AR marketing strategy is important.

CONCLUSION

In conclusion, the successful integration of AR into marketing strategies necessitates a well-rounded approach that addresses both internal and external factors. Internally, businesses need to focus on cultivating their understanding of AR applications, especially those relevant to their industry. This entails technical knowledge, the ability to discern promising use cases, and the provision of training for employees. Externally, the importance of choosing the right AR vendor cannot be overstated. The vendor's market expertise, credibility, and technological offerings significantly impact the success of AR marketing initiatives. Furthermore, businesses must develop strategies to present engaging and culturally sensitive content that resonates with their target audience. This analysis recommends a series of actionable steps for effective AR implementation, including developing in-house AR expertise, partnering with credible AR vendors, creating relevant AR content, measuring AR marketing effectiveness, and adopting a long-term perspective towards AR integration.

As the field of AR marketing continues to grow and evolve, businesses that can effectively navigate this landscape will be better positioned to thrive in an increasingly digital and connected world. However, it is important to note that the study focused on the perspectives of companies and may not capture the perspectives of other stakeholders, such as consumers.

Additionally, the study is limited to the Indonesian market and may not be generalizable to other markets or countries. Future research from the consumer perspective or in other countries is needed to get a holistic understanding of AR marketing in general. Nevertheless, despite these limitations, the insights provided by the study offer valuable guidance for companies looking to leverage AR technology in their marketing strategies, particularly in the Indonesian market, and serve as a foundation for further research and exploration in this rapidly growing field.

REFERENCES

1. Chen Y., Wang Q., Chen H., Song X., 2019. *An overview of augmented reality technology*. Journal of Physics Conference Series. IOP Publishing. 1-2
2. Shoaib H., Jaffry S., 2015. *A Survey of Augmented Reality*, Conference: International Conference on Virtual and Augmented Reality. University of the Punjab. 99-101
3. Mitrovic K., Novakovic N., Spajić J., Cosic I., 2021. *Augmented Reality in Marketing – State of Art.* Proceedings of the 32nd International DAAAM Symposium 2021. 569-571
4. Rauschnabel P., Babin B., Dieck M., Krey N., 2022. *What is Augmented Reality Marketing? Its definition, complexity, and future,* Journal of Business Research. Elsevier. 1140-1148
5. Sugiono S., 2021. *Challenges and Opportunities for Using Augmented Reality on Mobile Devices in Marketing Communications,* Jurnal Komunikasi, Media dan Informatika. Humas Pusat Penelitian Ilmu Pengetahuan dan Teknologi – Badan Riset dan Inovasi Nasional. 9
6. Tan Y., Chandukala S., Reddy S., 2022. *Augmented reality in retail and its impact on sales*, Journal of Marketing. Research Collection Lee Kong Chian School Of Business. 7-10
7. Tansakul N., Suanmali S., Ammarapala V., 2013. *An Analytic Hierarchy Process (AHP) Approach to Evaluate Factors that Influence Cross Border Trade Facilitation: A Case Study of East-West Economic Corridor Route*. Transportation Research Center, Sirindhorn International Institute of Technology Thammasat University. 4
8. Saaty T., 1987. *The Analytic Hierarchy Process" McGraw Hill International*, McGraw Hill International. 165-166
9. Melon M., Beltran P., Cruz M., 2006. *An AHP-based evaluation procedure for Innovative Educational Projects:A face-to-face vs. computer-mediated case study*, ScienceDirect. Elsevier. 754
10. Goepel K., 2013. *Implementing the Analytic Hierarchy Process as a Standard Method for Multi-Criteria Decision Making in Corporate Enterprises – A New AHP Excel Template with Multiple Inputs*, Proceedings of the International Symposium on the Analytic Hierarchy Process.

11. Statista, 2022. *Number of smartphone users in Indonesia from 2019 to 2021 with forecasts until 2028.* Retrieved February 2, 2023, from https://www.statista.com/statistics/266729/smartphone-users-in-indonesia/

12. Oxford Business Group, 2020. *Covid-19 and augmented reality: is Indonesia poised for a boom?.* Retrieved February 2, 2023, from https://oxfordbusinessgroup.com/articles-interviews/covid-19-and-augmented-reality-is-indonesia-poised-for-a-boom

13. PwC, 2020. *Virtual and augmented reality could deliver a £1.4trillion boost to the global economy.* Retrieved February 2, 2023, from https://www.pwc.com/id/en/media-centre/press-release/2020/english/virtual-and-augmented-reality-could-deliver-a-p1-4trillion-boost.html

14. Statista, 2022. *AR & VR - Indonesia.* RetrievedFebruary 2, 2023, from https://www.statista.com/outlook/amo/ar-vr/indonesia