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AR Marketing in E-Commerce Website for Animation Product: Product Brochure

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Abstract

The use of Augmented Reality (AR) marketing techniques in an online store selling items related to animation product is demonstrated in this product brochure. It highlights the role AR plays in raising customer engagement with products. Customers may benefit from immersive experiences like virtual try-ons, interactive 3D models, and AR-based product demos by using AR technology. Through the use of these methods, buyers can virtually see and interact with Animation items, providing them with individualised and compelling purchasing experiences. The work emphasises how AR marketing has a favourable effect on important performance factors including consumer engagement, website dwell time, and conversion rates. Through user feedback and data analysis, it also highlights how AR experiences affect consumer happiness and purchase intent. In conclusion, this work acts as a thorough manual for e-commerce businesses looking to use AR to sell Animation goods efficiently, set themselves out from the competition, and foster customer pleasure.

Keywords: Augmentation Reality; Product Brochure; E-Commerce

1. Introduction

The rapid advancement of technology has transformed the way businesses interact with their customers in the e-commerce landscape. One notable innovation that has gained significant attention is Augmentation Reality (AR) (Du et al., 2022; Zeng et al., 2023). AR offers promising opportunities to enhance customer experiences and drive sales conversion by providing interactive and immersive interactions with products. In the context of Animation products marketed on an e-commerce website, the integration of AR technology holds the potential to create a user-friendly and engaging platform for customers and sellers alike (Azim Zadegan et al., 2022; Wickramaratne et al., 2023). This work focus on Doraemon Animation (Fujiko-Pro et al., 1979) product since Doraemon's selection as an animation product for marketing initiatives can be attributed to its global recognition,

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broad appeal, positive character traits, collaboration opportunities, and cultural significance (Cheema, 2019; Wahab, 2012).

Research by Sagandira & Berg, 2020 emphasizes the importance of effective website design in e-commerce, highlighting the need for user-friendly interfaces that facilitate seamless navigation and encourage customer engagement (Yang, 2016). This work attempts to optimise the design of the e-commerce website for Doraemon items, guaranteeing a seamless and gratifying user experience. It does this by looking into website design concepts that are both efficient and user-friendly. The study also seeks to use AR to create a product brochure on the internet. Customers may visually engage with Doraemon items by using AR, which enables them to explore product features, visualise usage, and make wise buying decisions. This strategy is in line with the discoveries made by Kazmi et al. in 2021, who noted that using AR technology in product brochures considerably increases client engagement and raises conversion rates (Yang, 2016).

The project also attempts to create an interactive internet environment that facilitates simpler communication between customers and sellers. The website aims to provide an interactive platform that improves user happiness by including features like live chat help and tailored suggestions (Kazmi et al., 2021). By developing an AR product brochure, this project intends to examine effective and user-friendly website design and promote an engaging online shopping experience. By achieving these goals, the research seeks to improve customer engagement (Ye et al., 2023), increase sales conversion, and foster a positive online shopping experience for Doraemon product fans.

2. Product Comparison

To assess the possible effects of incorporating AR into an e-commerce website for Doraemon products, it is important to evaluate it against other Doraemon websites. Here, four renowned Doraemon websites' most recent tactics are examined:

2.1. Doraemon Official Store by Luk Internacional

The Doraemon Official Store by Luk Internacional (Internacional, 2023) provides admirers with an extensive selection of Doraemon merchandise. The website offers comprehensive product descriptions, images, and pricing details. It lacks interactive features such as AR-based product visualisation and virtual try-ons. Customers would be able to interact with virtual 3D representations of Doraemon products before making a purchase decision if the proposed e-commerce website incorporated AR technology.

2.2. Mirai Dora World Online

Mirai Dora World Online (BENELIC CO., 2023) is a Doraemon-centric e-commerce platform. The website provides a variety of product categories, including apparel, accessories, and toys. However, essentially static product images and descriptions are utilised. By integrating AR technology into the proposed e-commerce website, consumers would be able to experience virtual product visualisations and interactive features, which would increase their engagement and provide a unique and immersive shopping experience.

2.3. Blippo Doraemon Collection

Blippo (Blippo Kawaii Shop, 2023) is an online shop with a dedicated Doraemon merchandise section. The website sells a variety of items, including stationery, apparel, and accessories. Although it provides straightforward product descriptions and images, it lacks interactive elements at this time. The proposed e-

commerce website, with its AR integration, would enable customers to virtually try on products or visualise them in their own environment, thereby enhancing the purchasing experience beyond the traditional static images.

2.4. New Chitose Airport Doraemon Shop

The New Chitose Airport Doraemon Shop (Park, 2023) is a tangible store specialising in Doraemon merchandise located in Japan. Although it provides guests with a one-of-a-kind purchase experience, its online presence is limited. Consumers globally would have access to an immersive and interactive shopping experience by embedding AR capabilities into the planned e-commerce website, allowing them to virtually engage with Doraemon products and make informed purchasing decisions from anywhere.

The potential benefits and distinctive selling features that AR integration provide can be determined by comparing the proposed AR-based e-commerce website to the existing Doraemon websites. AR technology's dynamic and immersive capabilities, such as virtual product visualization and virtual try-ons, would improve the shopping experience, increase consumer engagement, and potentially boost conversion rates. It is vital to highlight that a thorough examination of these existing websites, including aspects such as customer happiness, user experience, and conversion rates, will provide more insight into the usefulness of AR integration in the proposed Doraemon e-commerce website

3. Methodology

Agile development was used to create the AR marketing e-commerce website (Zhang et al., 2000) for Doraemon items. Due to its adaptability, teamwork, and iterative nature, agile methodologies are extensively used in software development projects, notably in website development (Alsharari et al., 2023; Matharu et al., 2015; Sharma et al., 2012). The objective was to create an entertaining, user-friendly website that uses AR technology to improve the purchasing experience for Doraemon lovers. The methodology included the following essential steps:

3.1. Project Planning and Vision

The project objectives have been defined, with an emphasis on implementing augmented reality technology, interactive features, and designing a website that is user-friendly. The target audience, which consists of Doraemon fans and potential consumers, has been identified to ensure that their preferences are considered during the development process. It has been determined that the development process will be guided by a project vision and milestones that are attainable.

3.2. User Stories and Requirements Gathering

Initiated stakeholder collaboration involving Doraemon fans, prospective customers, and product owners to collect requirements and define user stories. The user stories have been prioritised according to their importance and impact on the website's functionality and user experience. As a result, an exhaustive product backlog outlining the to-be-developed features, functionalities, and website components has been compiled.

In this section, a rating scale from 1 to 5 is used to gauge user adoption of augmented reality marketing. 1 represents low acceptance and 5 symbolises high acceptance on a scale from 1 to 5. The inquiry is as follows:

1. AR enhances the overall appeal and attractiveness of Doraemon products.
2. AR allows for a more interactive and engaging shopping experience with Doraemon products.
3. AR helps customers make more informed purchase decision when considering Doraemon products.

This query seeks to elicit responses regarding the suitability of using AR in Doraemon product brochures. By asking participants to rate their agreement or disagreement with the statements, the survey can reveal how AR aligns with the distinctive qualities and allure of Doraemon, enhances the shopping experience, and influences customer decision-making. The responses will provide valuable feedback on why an AR product brochure is deemed appropriate for Doraemon products, helping to comprehend its perceived benefits and effectiveness from the perspective of the customer.

3.3. Iterative Development and Sprints

The project was divided into iterative cycles that typically lasted between two and four weeks. For each iteration, user stories were selected from the product backlog based on their priority and feasibility. The development team held regular sprint planning meetings to define the scope of each sprint and assign duties. Components and features of the website were developed incrementally and iteratively, with an emphasis on delivering demonstrable value within each sprint.

3.4. Continuous Feedback and Collaboration

Throughout the duration of the project, communication and collaboration were maintained between the development team, stakeholders, and end consumers. Regular sprint evaluations and demonstrations were conducted to collect feedback and validate the website's components and features. The feedback received from stakeholders and end-users was incorporated into the development process, and the product backlog and sprint schedule were modified as required.

In this section, it is necessary to conduct pilot testing based on user and consumer feedback in order to emphasise the significance of augmented reality in enhancing product engagement. The query regarding AR product brochure pilot testing is presented below:

1. On a scale of 1 to 5, please rate your overall satisfaction with the AR product brochure for Doraemon products.
2. How would you rate the level of engagement and interactivity provided by AR features in the product brochure?
3. Did the AR product brochure enhance your understanding of the features and functionalities of Doraemon products?
4. To what extent do you agree with the statement: "The AR product brochure improved my shopping experience for Doraemon products?"
5. How likely are you to recommend the E-commerce website with the AR product brochure to others?
6. Do you believe the AR product brochure positively influenced your purchase decisions for Doraemon products?
7. Please provide any additional comments or feedback about your experience with the AR product brochure for Doraemon products.

Collecting and analysing the responses to these questions will enable the project team to evaluate user acceptance, identify areas for development, and make informed decisions regarding future enhancements and iterations of the AR product brochure and the website as a whole.

3.5. Testing and Quality Assurance

A thorough testing strategy was implemented to ensure the website's functionality, performance, and usability. Regular testing, consisting of functional testing, usability testing, and cross-browser compatibility testing, was performed to identify and fix any flaws. Continuous monitoring and optimization of the website's efficacy, user experience, and integration of AR was performed.

3.6. Deployment and Iterative Improvement

The website was deployed in a controlled environment or limited release in order to collect feedback from actual users. We analysed user behaviour, engagement metrics, and conversion rates to identify areas for enhancement. Based on user feedback and emerging technologies, iterative improvements such as optimising website performance, improving the user interface, and refining AR features were prioritized and implemented.

The development team effectively created an AR marketing e-commerce website for Doraemon products that provided an engaging and user-friendly shopping experience by adopting an agile methodology. The methodology's iterative structure permitted continual improvement and ensured that the website fulfilled evolving user requirements and represented the most recent industry trends.

4. Result and Discussion

In this section, the findings of the pilot testing of the AR product brochure that was incorporated into the Doraemon e-commerce website are presented and discussed. The acceptance and pleasure of users with the AR experience were assessed, with a particular emphasis on the impact it had on user knowledge of product features and functions. The website was designed using CSS and HTML, with MySQL serving as the underlying database. The AR feature was developed with the help of Blippar technology (Blippar, 2022). The website testing was tested by giving the participants specific questions to measure their acceptability of the AR experience.

4.1. Result and Analysis

For result and analysis the Google Form-based user acceptability survey indicated that the AR product brochure was distributed to analyze the user acceptance and satisfaction. Respondent 30, one of the respondents, rated the questionnaire elements on a scale from 1 to 5. This result demonstrates the effectiveness of using AR, to market Doraemon products, as it not only attracted users' attention but also provided them with an enjoyable experience.

4.1.1. Users Need Assessment

During the user needs assessment phase, respondents were asked a series of questions to determine their particular AR marketing preferences and needs for the Doraemon e-commerce website. Table 1 presents the evaluation's key findings, rated on a scale from 1 (strongly disagree) to 5 (strongly agree):

Table 1. Results for User Needs Assessment AR Marketing in Doraemon E-commerce Website

Question	1	2	3	4	5
AR enhances the overall appeal and attractiveness of Doraemon products	0%	3.3%	3.3%	53.3%	40%
AR allows for a more interactive and engaging shopping experience with Doraemon products.	0%	3.3%	6.7%	46.7%	43.3%
AR helps customers make more informed purchase decision when considering Doraemon products.	0%	3.3%	13.3%	50%	33.3%

According to the user requirements analysis, the usage of AR marketing for Doraemon items was effective in raising consumer interest in the products, delivering an engaging shopping experience, and helping customers make smarter purchasing decisions. These results show that AR is efficient in luring and holding users' attention, improving their perception of the items, and fostering a more engaging and enjoyable shopping experience. There is consensus, according to analysis of participant evaluations, about the efficiency of AR marketing in raising the general appeal and desirability of Doraemon items. The majority of participants (53.3% strongly agree, and another 40% agree) believe AR makes these items more appealing.

The usage of AR elements has shown to be successful in offering an interactive and immersive experience, increasing the attraction and engagement of the products. The main goal of AR marketing is to employ technical improvements to showcase Doraemon items in an engaging and appealing way. These favourable responses are in line with this goal. However, it is significant to note that a tiny percentage of respondents (6.6%) indicated a neutral or marginally negative opinion, underscoring the need for more study to gain a more thorough knowledge of their viewpoints.

It's noteworthy that the majority of respondents think augmented reality makes buying Doraemon merchandise more participatory and fun. The majority of respondents (46.7% strongly concur, 43.3% agree) share this perspective. Users' interest and attention have been successfully captured by the introduction of AR elements, enabling them to engage with the items in a way that is both entertaining and immersive. This result is in line with the main goal of augmented reality marketing, which is to provide customers a more entertaining and participatory purchasing experience. There are a range of preferences and expectations about the amount of involvement provided by AR, as seen by the tiny proportion of respondents (10%) who showed a neutral or somewhat disapproving posture.

A majority of participants (50%) agree with the statement that AR enables consumers to make better informed purchasing decisions, with 33.3% strongly agreeing. Utilising AR elements gives customers access to more information, visuals, and interactive experiences that help them better understand the items before making a purchase. This result is in line with the main goal of augmented reality (AR) marketing, which is to provide customers a thorough and immersive product experience. 16.6% of participants had a neutral or somewhat divergent opinion, which emphasizes the need for more investigation and clarification of the role of AR in the decision-making process.

The use of AR marketing for Doraemon items has benefited their attractiveness, provided an engaging shopping experience, and allowed customers to make better informed purchasing decisions, according to the user requirements assessment. These findings show that AR is successful in luring and enticing consumers, enhancing their perception of the items, and eventually enhancing the immersiveness and pleasure of the shopping process.

4.1.2. Product Design

The creation of a comprehensive and interesting product brochure is the foundation of the AR marketing of Doraemon items on the e-commerce website. The brochure makes use of AR technology to provide consumers an immersive and interactive look at Doraemon products.

To make sure that visitors can easily explore and engage with the AR content, simplicity and efficiency are prioritised in the design of the Doraemon goods e-commerce website. Each Doraemon product has a QR code added to it to do this, as seen in Fig 1. With the help of their mobile devices, users may quickly access and engage with the related product brochure by scanning the QR code. The style and visual components of the brochure have been carefully planned to draw consumers in and hold their interest throughout the browsing process.

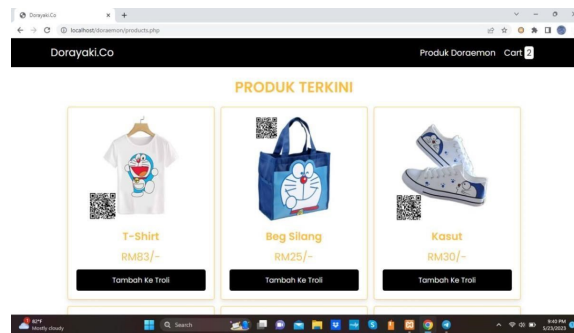


Fig. 1. Website Design for Doraemon E-Commerce Website

In addition, the design of the product brochure includes clear and concise product descriptions as well as availability information to facilitate well-informed purchase decisions. Visual cues and interactive elements are strategically set throughout the brochure to guide users through the content and ensure a fluid and intuitive user experience. Fig 2 demonstrates a sample of the product brochure.



Fig. 2. Product Brochure

4.1.3. User Acceptance and Product Testing

The phase of product testing is crucial to the development of the AR marketing implementation for the Doraemon product e-commerce website. This section focuses on the procedure and results of the product testing, including the methods used, the feedback received, and the improvements made to ensure a high-quality, user-friendly product. 20 participants were given specified tasks to complete while interacting with the e-commerce website and the AR product brochure during user testing sessions. Through surveys, interviews, and direct observation of their interactions, their responses and observations were gathered. Participants were encouraged to provide candid feedback that included any problems encountered, positive aspects, and suggestions for enhancements.

The respondents' overall satisfaction with the AR product brochure or Doraemon products was evaluated as shown in Fig 3. 55% of respondents expressed gratification, indicating that the marketing strategy was effective and that it had a positive impact on their experience. A minor portion of 10% of respondents were dissatisfied, while 5% were neutral. None of the respondents reported being extremely dissatisfied or extremely content. The high level of satisfaction suggests that the AR product brochure or Doraemon products met expectations and provided an informative and engaging experience. To address the concerns of the dissatisfied respondents, there is however place for improvement. Overall, the positive response demonstrates the marketing strategy's success and provides valuable information for future enhancements.

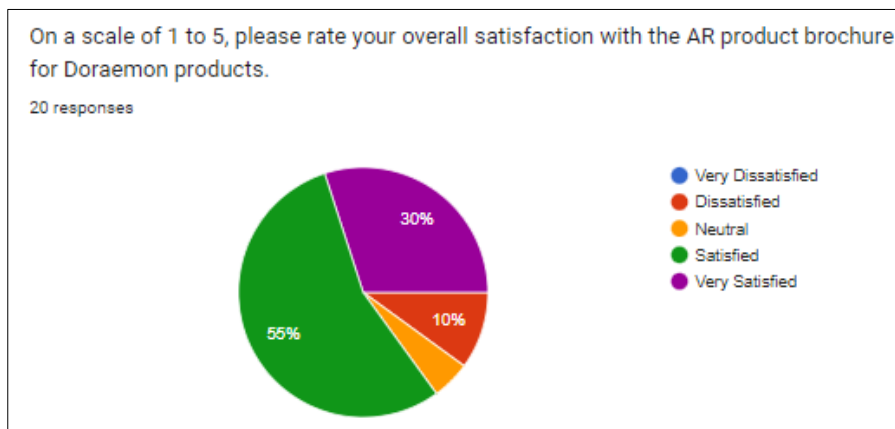


Fig. 3. User Satisfaction with AR product brochure for Doraemon Product

The responses indicate that the level of engagement and interactivity afforded by the AR features in the product brochure was well received as visualize in Fig 4. Significantly more than half (45%) rated it "Very Good," and an additional 20% rated it "Excellent." This demonstrates that the augmented reality features effectively captivated and immersed users, increasing their engagement with Doraemon products. Fewer respondents rated it "Good" (20%) or "Fair" (15%), indicating that there is room for improvement. Overall, the positive ratings reflect the successful implementation of AR technology in providing an immersive and interactive experience, while the feedback from other categories presents an opportunity to further improve the level of engagement and interactivity in future versions of the product brochure.

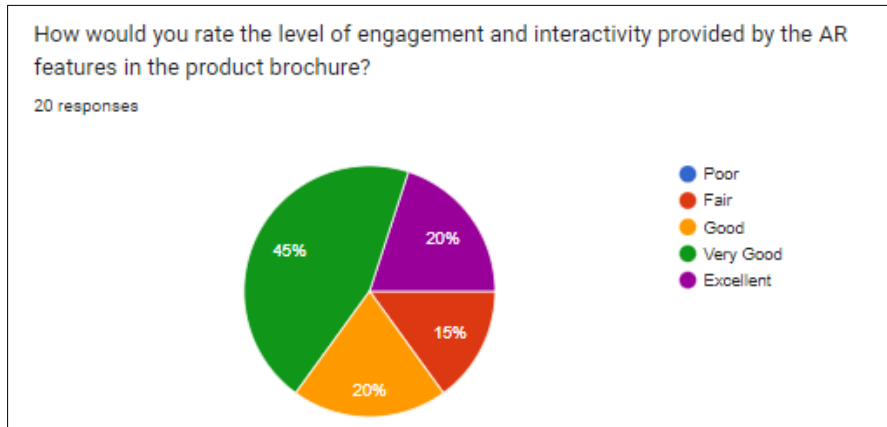


Fig. 4. User Engagement and Interactivity with AR Features in Product Brochure

Participants' responses indicate that the AR product brochure enhanced their understanding of Doraemon products' features and functions as shown in Fig 5. Significantly more than 85% of respondents responded "Yes, to some extent," indicating that the AR features enhanced their comprehension of the products. In addition, 10% of respondents responded "Yes, significantly," indicating a substantial increase in comprehension. Only 5% of respondents responded "No, not really," and none were unsure. These findings demonstrate the value of the AR product brochure as a marketing tool by demonstrating the effectiveness of the AR product brochure in enhancing users' comprehension of the features and functions of Doraemon products.

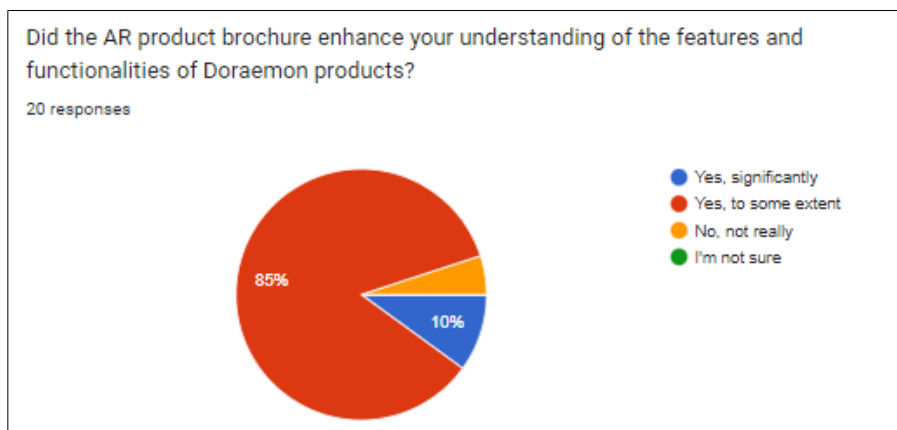


Fig. 5. User Understanding of Features and Functionalities of Doraemon Product

The majority of respondents agreed with the statement that "The AR product brochure enhanced my shopping experience for Doraemon products." 65% of respondents concurred, indicating that the AR product brochure positively impacted their shopping experience. In addition, 15% of respondents firmly agreed with the statement, emphasising the significant enhancement to their overall experience. 5% of the population disagreed with the statement, while 15% remained neutral. The majority of respondents expressing agreement or strong

agreement demonstrates the efficacy of the AR product brochure in enhancing the shopping experience for Doraemon products, as demonstrated by these results. The result is visualize in Fig 6.

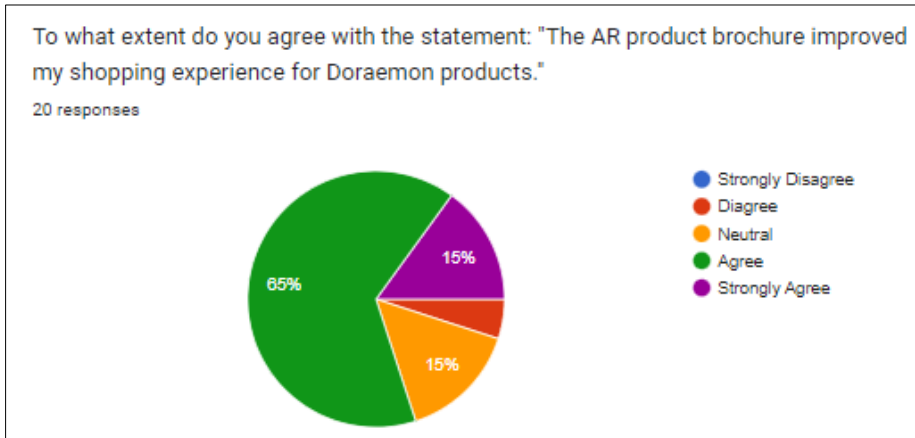


Fig. 6. Improve User Shopping Experience

Respondents are likely to recommend the e-commerce website with the AR product brochure to others. 55% of respondents selected "Likely," indicating a strong propensity to recommend the website. Furthermore, 35% responded "Very Likely". The pie chart in Fig 7 visualize the percentage of respondent recommend AR product brochure to others.



Fig. 7. User Recommendation on AR Product Brochure Usage in E-Commerce

The majority of respondents indicate that the AR product brochure positively influenced their purchase decisions for Doraemon products. 15% of respondents indicated that it had a considerable influence, while 60% of respondents indicated that it had some influence. However, 20% of respondents indicated that it had no impact on their purchasing decisions, and 5% were dubious of the impact. The majority of respondents acknowledged that the AR product brochure positively impacted their purchasing decisions, indicating that the

immersive and interactive features provided useful information and increased their interest in Doraemon products. The result is visualized in Fig 8.

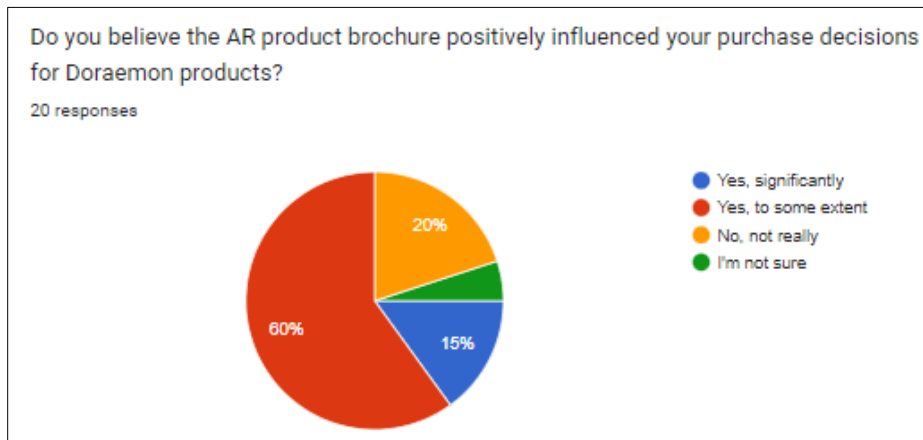


Fig. 8. AR Influence User in Purchase Decision of Product Doraemon

Based on feedback from multiple respondents, the AR product brochure for Doraemon products was extremely successful. Respondents found it to be engaging, effective, and admired its plain yet captivating design. They characterised it as remarkable, decent overall, and appealing. The AR product brochure was praised for its capacity to increase comprehension of Doraemon merchandise. Nonetheless, some respondents suggested reorganising the product details. Overall, the feedback indicated a high level of satisfaction with the AR product brochure, demonstrating its ability to pique users' interest and enhance their understanding of Doraemon products.

During the pilot testing portion of the Doraemon e-commerce website's AR product brochure, valuable user feedback was collected, resulting in significant improvements and iterations. The prompt resolution of bugs and technical issues enhanced the overall user experience. Based on user input, navigation, layout, and interface elements were optimised to improve usability. The implementation of performance optimisation measures ensured a seamless and responsive experience. Product information was more accurate and relevant after content refinement. In addition, accessibility concerns were considered, making the website and brochure more inclusive. These enhancements resulted in a more user-friendly, efficient, and engaging AR marketing experience for Doraemon products, thereby increasing user satisfaction overall.

4.2. Discussion

The implementation of AR marketing on the Doraemon e-commerce website yielded positive results. The overall level of contentment was high, with 55% of respondents expressing satisfaction and no extreme levels of satisfaction or dissatisfaction being reported. Significant majorities rated the engagement and interactivity of the AR features as "Very Good" or "Excellent." Users reported that the AR product brochure enhanced their comprehension of Doraemon merchandise, thereby enhancing their shopping experience. The majority of respondents concurred that the brochure positively impacted their purchasing decisions and indicated a high likelihood of recommending the website to others. These results demonstrate the success of the AR marketing strategy and offer valuable insights for future enhancements.

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