

Digital Innovation and Pop-Up Ad Dilemma: Unraveling How Social Media Drives Gen Z's Decision Shopping

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ABSTRACT. This study aims to determine the effect of pop-up ads and digital innovation on online purchase intention among Generation Z in Indonesia, and the mediating role of social media. This study collected 260 samples using purposive sampling technique. The data collection method used a questionnaire with a Likert scale of 1-5. The data test in this study used SEM PLS on 260 collected responses to examine the proposed hypotheses on the relationships among pop-up ads and digital innovation on online purchase intention Generation Z in Indonesia. The results showed that pop-up ads significantly influenced online purchase intention, but the effect is negative. This suggests that the effect is negative, as people perceive them as intrusive. In contrast, digital development significantly influences online purchase intention by improving user experience and transaction efficiency. Furthermore, social media was identified as a key mediator, which is able to drive from pop-up ads and digital developments to online purchase intentions. Marketers and entrepreneurs should be aware of the importance of implementing suitable methods to utilise pop-ups and leverage digital technologies in order to increase user engagement and purchase intentions. Marketers should be careful with pop-up ads to prevent user annoyance and prioritise digital innovations that improve user experience. A wide variety of studies have contributed to evaluating the direct impact of social media on purchase intent. However, other researchers have ignored the impact of mediating variables. This study investigates how social media marketing is able to mediate the effect of pop-up advertising on consumer purchase intentions, especially among Gen Z consumers. Furthermore, this study incorporates digital innovation as a determinant of influence.

1. Introduction

The development of digital technology has significantly transformed the global business landscape, including in Indonesia. The increasing use of the internet has impacted various aspects of life, including consumer behavior in purchasing decisions. Data from the Indonesian Internet Service Providers Association in 2023 reveals that the number of internet users in Indonesia has

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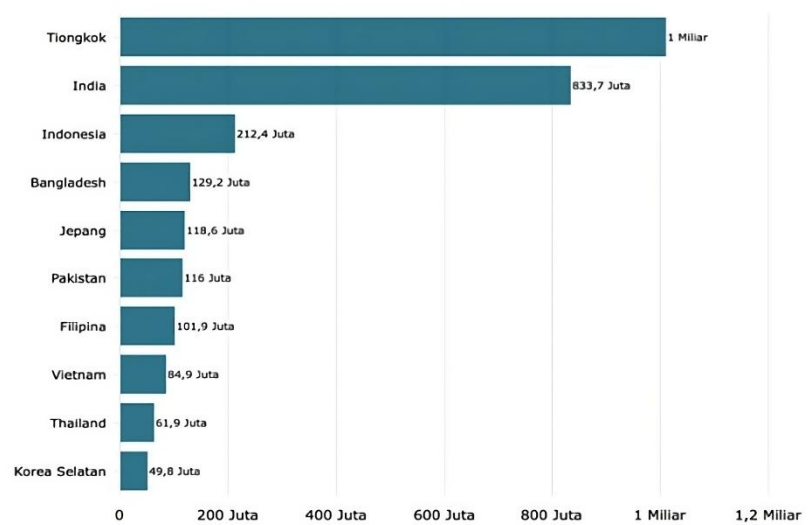
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reached 212,4 million, with a penetration rate of 78.19% of the total population. Based on data from Databoks, Indonesia ranks third in Asia in the number of internet users reaching 212.4 million by November 2024, as shown in Figure 1.

Figure 1. Number of Internet Users in Indonesia in Asia (in million)



E-commerce transactions in Indonesia reached USD 224 billion in the same year, reflecting an 18.7% increase from the previous year [1]. This indicates that online shopping has become an increasingly important part of Indonesian society, especially following the Covid-19 pandemic, which accelerated the shift in consumer behavior toward digital transactions [2, 3]. One crucial element in generating online purchase intentions is the consideration of the digital marketing environment, digital innovation, and the use of pop-up advertisements. Digital innovation encompasses the development and application of new technologies in business contexts, while pop-up advertisements are a form of advertising that automatically appears on users' screens when they access websites or applications. Both have the potential to influence Generation Z's purchase intentions in e-commerce. The issue related to online purchase intentions among Generation Z e-commerce users in Indonesia is the lack of understanding regarding the factors that influence their purchasing decisions [4]. Although e-commerce is becoming increasingly popular in Indonesia, there is still a need to comprehend what factors motivate users to make purchases on these platforms. Additionally, e-commerce users in Indonesia are confronted with various choices, both in terms of products and available e-commerce platforms. Therefore, it is crucial to understand how digital innovation and pop-up advertisements can affect their purchase intentions. In this context, it is also essential to consider the mediating role of social media marketing in influencing the purchase intentions of e-commerce users. This understanding can assist e-commerce companies and marketers or entrepreneurs in designing more effective marketing strategies that align with users' needs.

Social media marketing has emerged as an effective tool for targeting Generation Z in the context of marketplace usage. Generation Z tends to be more responsive to relevant and authentic content on their preferred social media platforms. Consequently, through digital innovation, marketplaces can optimize their marketing campaigns on social media by providing engaging, interactive, and relevant content for Generation Z [5], [6]. In the context of digital marketing, technological innovation and marketing strategies through digital media have become key focuses for companies seeking to gain a competitive advantage in the market. One commonly used digital marketing strategy is pop-up advertising, which, while effective in capturing attention, is often perceived as intrusive and can diminish the user experience [7]. On the other hand, digital innovations in the form of e-commerce platform development, interactive features, and enhanced user experiences are seen as capable of increasing online purchase intentions by providing consumers with greater ease and convenience, particularly through social media marketing [8]. Many companies employ pop-up advertisements and digital innovations as part of their marketing strategies. However, uncertainty remains regarding the effectiveness of these strategies on online purchase intentions, particularly among Generation Z in Indonesia. Generation Z, born between 1997 and 2012, is known as digital natives who exhibit a high level of dependence on the internet and social media [9], [10]. They are often more critical of invasive digital advertising and place greater value on seamless and interactive user experiences [11]. Therefore, understanding the impact of pop-up advertisements and digital innovations on the online purchase intentions of this generation is crucial for marketers and entrepreneurs seeking to develop effective digital marketing strategies. Furthermore, digital innovation enables deeper integration between marketplaces and social media platforms. For instance, marketplaces can leverage new features such as direct purchase options on social media platforms or collaborate with Generation Z influencers to enhance brand visibility and trust among their target audience. These strategies not only increase engagement but also foster a more seamless shopping experience, aligning with the preferences of Generation Z consumers who value convenience and authenticity in their online interactions [12].

Previous research on the impact of pop-up advertisements on brand trust and purchase intention has yielded inconsistent results. Hwang found that pop-up advertisements had a significant positive effect on brand trust and purchase intention among online consumers in China [13], a finding supported by Fachryto & Achyar [14] in Indonesia and Park & Ohm; Sung in South Korea [15]–[17]. Conversely, studies by Guru in India [18] and Huang in Taiwan [19] reported that pop-up advertisements did not significantly affect brand trust and purchase intention. These differing results suggest the presence of contextual or demographic factors that may influence the effectiveness of pop-up advertisements, warranting further research to gain a deeper understanding of these dynamics. Moreover, social media as a mediating variable can

serve as a critical focus for future research. Social media marketing has the potential to bridge the relationship between pop-up advertisements and purchase intention by shaping consumers' perceptions of the advertised brand or product [20]. The use of social media can alter how consumers respond to pop-up ads by providing a more relevant and engaging context, which may strengthen brand trust and encourage purchase intention [21]. Therefore, this study highlights the role of social media as a potential mediator that could explain the inconsistencies in previous findings and offer a novel approach to developing more effective digital marketing strategies.

Based on the aforementioned data and developments, this study focuses on analyzing the influence of pop-up advertisements and digital innovation on online purchase intention, considering the mediating role of social media. This study builds upon last year's findings, which indicated that pop-up advertising negatively affects purchase intention [21]. Certain studies subsequently provide suggestions for assessing the mediating impact by including social media marketing factors, as shown study conducted by Maraule and Manzoor [11], [22], [23]. Additional scholars propose examining the impact of digitalization. The main research questions this study aims to address are: (1) To what extent do pop-up advertisements affect the online purchase intentions of Generation Z in Indonesia? (2) How does digital innovation influence their online purchase intentions? (3) Does social media serve as a mediator in the relationship between pop-up advertisements, digital innovation, and online purchase intention?

2. Literature Review

In consumer behavior studies related to technology, the Technology Acceptance Model (TAM), introduced by Davis has become one of the most widely used theoretical frameworks [24]. TAM is based on two primary constructs: perceived usefulness and perceived ease of use. These constructs influence users' attitudes towards technology and ultimately shape their intention to adopt it. TAM has been extensively developed and applied to understand various technological adoption phenomena across different contexts, including e-commerce and digital marketing. In the context of digital marketing, particularly among Generation Z, who are digital natives, technology and digital innovation play a crucial role in shaping online purchase intentions. This generation tends to be more responsive to technology that is perceived as both useful and easy to use, aligning with the constructs within TAM. Therefore, the application of TAM in this study is relevant to understanding how pop-up advertisements and digital innovations affect online purchase intentions, considering the mediating role of social media. Pop-up advertising is a commonly used form of digital advertising designed to capture consumer attention. Although pop-up ads have the potential to increase brand awareness and drive sales conversions, they are often perceived as intrusive, which can negatively impact the overall user

experience [25]. In the context of TAM, if users do not perceive pop-up advertisements as useful or easy to dismiss, this can negatively affect their attitude toward the brand and ultimately reduce their intention to purchase online. Conversely, digital innovations in e-commerce, such as the development of interactive features, enhanced user experiences, and efficient payment systems, can improve the perceived usefulness and perceived ease of use of the platform. When users feel comfortable and perceive the platform as beneficial in meeting their needs, their intention to purchase online is likely to increase. Therefore, digital innovations are expected to have a positive impact on online purchase intentions.

Pop-up Ads

Pop-up advertising is a form of advertisement that appears suddenly on a user's computer or mobile device screen, aimed at increasing brand awareness of the product or service being offered [26]. This type of advertising enhances a brand's opportunity to build relationships and trust with consumers [27], [28], as it can capture attention and generate greater interest in the product or service being promoted. The ability of pop-up advertising to attract users' attention and increase brand or product awareness has been documented [29]. In line with this, purchase intention refers to the consumer's desire or plan to buy a product or service offered by a specific brand [30]. Therefore, by drawing attention and showcasing the promoted brand or product, pop-up advertising may influence customer purchase intention. Pop-up advertising can also help brands build a positive image in the eyes of consumers, thus increasing trust and interest in purchasing the offered product or service [31]. This is consistent with research conducted by Amalsyah [32], which indicates that pop-up advertising has a significant positive effect on purchase intention.

H1: Pop-up ads has a negative and significant influence on Online Purchase Intention

In building long-term relationships, pop-up advertising can enhance brand awareness, user interaction, and sales conversion. However, excessive use of pop-up ads may disrupt the user experience and reduce consumer trust in the brand. This aligns with research by Reeve, which indicates that pop-up advertising has a significant impact on social media marketing and purchase intention [33]. The explanation above allows for the formulation of the following hypothesis:

H2: Pop-up ads has a positive and significant influence on Social Media Marketing

Digital Innovation

E-commerce has become the primary platform for Generation Z in Indonesia to fulfill their shopping needs [34]. This is unsurprising given its ease of accessibility, diverse product options, and the ability to shop anytime and anywhere. Additionally, e-commerce offers an innovative and engaging shopping experience through the continuous development of digital technologies [35]. A key element in creating an appealing shopping experience for e-commerce users is digital

innovation [8]. Digital innovation refers to the development and application of new technologies within a business context, including the advancement of more sophisticated e-commerce platforms, interactive features, and optimized user experiences. These innovations aim to enhance convenience, practicality, and customer satisfaction in online shopping. Digital innovation in the context of websites is a critical aspect of an effective online marketing strategy. Innovative websites not only provide comprehensive and attractive product information to consumers but also create a captivating and interactive user experience. In the context of social media marketing, innovative websites can serve as strong content sources to be shared and promoted on platforms like Instagram, Facebook, and Twitter [36]. Furthermore, innovative websites increase the likelihood of endorsements by celebrities. A compelling and innovative website has the potential to capture the attention of celebrities or influencers who may wish to engage in product or brand promotions. Websites showcasing creative and memorable content can be an effective tool in persuading celebrities to endorse the brand, as they perceive positive value and reputation associated with it [37]. Social media marketing is also an effective means of targeting Generation Z within the marketplace context. Generation Z tends to be more responsive to relevant and authentic content on their favorite social media platforms. Therefore, through digital innovation, marketplaces can optimize their marketing campaigns on social media by providing engaging, interactive, and relevant content for Generation Z. This aligns with the research of Manzoor and Sarmah, which asserts that marketplace innovations in social media marketing have a significant influence [22], [38]. Based on this, the following hypothesis is proposed:

H3: Digital Innovation has a significant influence on Sosial Media Marketing

Digital innovation influences purchase intention primarily by enhancing accessibility and convenience. Technological advancements such as e-commerce platforms and digital payment systems enable consumers to explore and purchase products without geographical or time constraints, thus increasing purchase intention due to the ease and efficiency of transactions [39]. Furthermore, digital innovation can elevate purchase intention through improved user experiences, such as personalized features, AI-driven recommendations, and multimedia interactions, which make the shopping experience more engaging and captivating [11]. These positive experiences enhance consumers' perceptions of the value of products or services, which in turn drives purchase intention.

H4: Digital Innovation has a significant influence on Online Purchase Intention

Social-Media

Social media marketing (SMM) is a crucial strategy in modern marketing, leveraging social media platforms to promote products or services [40], [41]. Research by Manzoor indicates that SMM has a significant impact on consumer purchase intention [22], with effective marketing

activities on social media increasing consumer interest in purchasing products. Additionally, Schivinski found that positive interactions between brands and consumers on social media can enhance consumer trust in the brand, which in turn drives purchase intention [42]. SMM encompasses activities such as creating engaging content, sharing it across various platforms, interacting through comments and direct messages, and analyzing data to understand consumer behavior [43]. Winarso also discovered that relevant and informative social media content can boost purchase intention [44]. Collectively, these studies demonstrate that SMM plays a significant role in increasing consumer purchase intention. Therefore, the proposed hypothesis is:

H5: Social media marketing has a positive and significant influence on Online Purchase Intention

Study by Khan examines the role of social media marketing (SMM) as a mediator between service quality and consumer purchase intention [45]. SMM can bridge the initial exposure from pop-up ads to the formation of stronger purchase intentions, as consumers exposed to pop-up ads tend to seek additional information through social media before making purchasing decisions [7], [46]. SMM also provides an interactive communication channel that allows consumers to obtain further information about digital innovations and engage with the brand or company [39], [47]. Based on this, the following hypothesis is proposed:

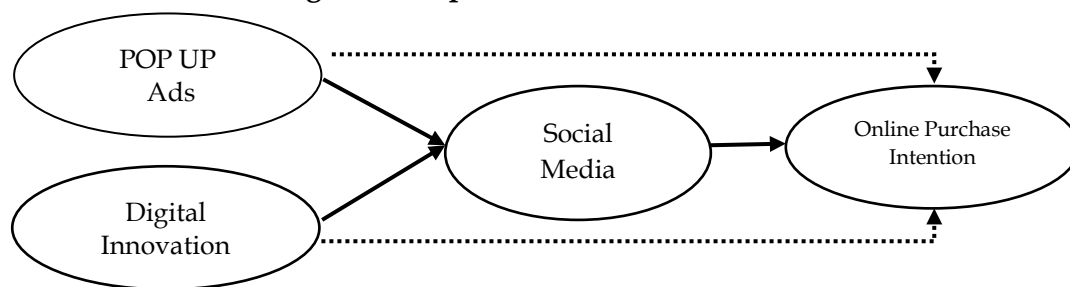
H6: Social media marketing mediates pop-up ads on online purchase intention

H7: Social media marketing mediates digital innovation on online purchase intention

3. Methods

This study uses several variables, namely digital innovation, pop-up advertising and social media marketing as variables to predict purchase intention. These variables are a model or framework in this study, as seen in figure 2.

Figure 2. Proposed Research Framework



Research Design and Measures

This study is a quantitative investigation targeting Generation Z social media and e-commerce users in Indonesia. The sample was selected using purposive sampling, where

participants were chosen based on specific criteria, such as being between the ages of 17 and 27, having used a marketplace application within the past six months, and residing in Indonesia. The sample size was determined by multiplying the number of research indicators (26) by 10, resulting in a total of 260 respondents. Data was collected in May-August 2024 through a survey questionnaire using a Likert scale, which was distributed electronically through Google Forms. This study includes human participants who voluntarily engage in data gathering, as shown by their completion of the distributed Google Form survey. We executed the selection of study respondents ethically, ensuring their consent to contribute data and adherence to the questionnaire protocol. Prior to completing the questionnaire, the researcher secured the respondents' agreement and authorization to handle their submitted replies. The researcher discussed the study's objectives, methodologies, advantages, participants' rights, and findings, allowing respondents the autonomy to voluntarily complete the questionnaire. Respondents have the option to participate, and they receive no additional compensation. This study has received ethical clearance and adheres to university ethical standards. Data analysis was conducted using Partial Least Squares Structural Equation Modelling (PLS-SEM) with bootstrapping, utilizing the SmartPLS software [48], [49]. This approach was selected to test the research model and explore relationships between variables. All responses were deemed valid for analysis, and the research instrument was adapted from previously validated studies. Respondents' confidentiality was ensured, and they were informed about the research objectives and the commitment to protecting their privacy.

This study was approved by ethics committee of The Research and Community Service Agency (BPPM), Faculty of Economics and Business, Universitas Brawijaya, and reg. no. 08882 /UN10.F0201/B/PT/2024.

4. Results

Respondent Profile

Table 1: Respondent Profile

Description of Respondents	Total	Percentage
Gender		
Female	165	63%
Male	95	37%
Age		
20 years old - 24 years old	81	31%
25 years old - 27 years old	3	1%
16 years old - 19 years old	176	68%

Description of Respondents	Total	Percentage
Educational Background		
Junior High School	2	1%
Senior High School	139	53%
Bachelor	115	44%
Masters	4	2%
Respondents Who Have Seen Pop-Up Ads		
Yes	250	96%
No	10	4%
Response to Viewing Pop-Up Ads		
Waiting	50	19%
Skipping	183	71%
Interested and seeking more information	27	10%
Total Respondents	260	100%

Table 1 presents the characteristics of the respondents and their responses to pop-up advertisements. Out of 260 respondents, the majority were female (63%), while males comprised only 37%. Most respondents were from the age group of 16-19 years (68%), followed by the 20-24 years age group (31%), and a small proportion from the 25-27 years group (1%). In terms of education, 53% had a high school/vocational school background, 44% held a bachelor's degree (S1), with only a few respondents having a junior high school (1%) or master's degree (2%). A significant 96% of respondents reported having seen pop-up ads, indicating that this type of advertisement is fairly common among users. However, the response to these ads was largely negative; 71% of respondents skipped the ads, 19% waited until the ads finished, and only 10% sought more information after viewing the ads. This suggests that while pop-up ads are widely viewed, a more effective strategy is needed to capture user interest and capitalize on the available opportunities.

Measurement Model

The outer measurement model includes assessments of convergent validity, composite reliability, and discriminant validity. Outer loadings should exceed 0.60. Table 2 and Figure 3 shows that all 26 questionnaire items meet this threshold, confirming their validity. The use of Smart PLS ensures the appropriateness of the items or outer loadings, and Figure 3 displays the completed study model. The composite reliability (CR) and Cronbach's Alpha for all constructs are above 0.70, indicating high reliability. Additionally, the average variance extracted (AVE) for

all constructs is greater than 0.50, fulfilling the discriminant validity requirement. Therefore, it can be concluded that all items are both valid and reliable.

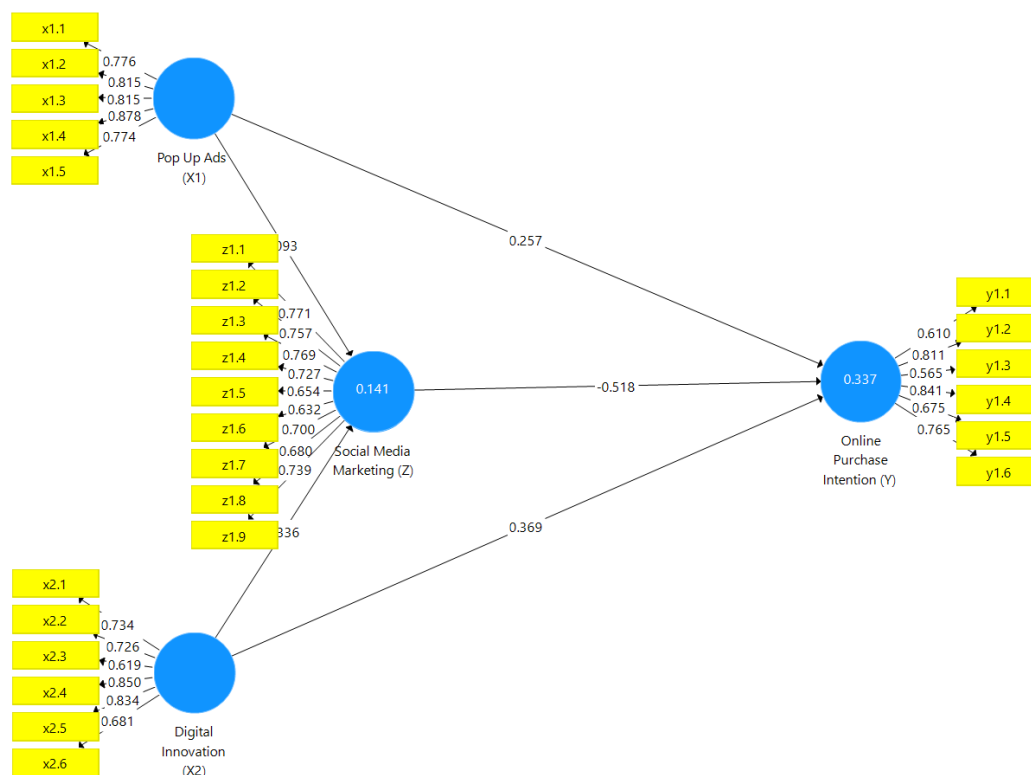
Table 2: Outer Loading, Composite Reliability, Discriminant, and Convergent Validity Analysis

Variabel	Item	Loading	AVE	CA	CR
Pop Up Ads	X1.1	0,939	0,847	0,955	0,965
	X1.2	0,924			
	X1.3	0,876			
	X1.4	0,932			
	X1.5	0,930			
Digital Innovation	X2.1	0,735	0,555	0,837	0,881
	X2.2	0,727			
	X2.3	0,617			
	X2.4	0,850			
	X2.5	0,835			
	X2.6	0,680			
Social Media Marketing	Z1.1	0,772	0,511	0,882	0,903
	Z1.2	0,742			
	Z1.3	0,764			
	Z1.4	0,740			
	Z1.5	0,671			
	Z1.6	0,614			
	Z1.7	0,693			
	Z1.8	0,689			
	Z1.9	0,734			
Online Purchase Intention	Y1.1	0,594	0,515	0,808	0,861
	Y1.2	0,827			
	Y1.3	0,536			
	Y1.4	0,859			
	Y1.5	0,660			
	Y1.6	0,771			

Furthermore, the analysis of the Heterotrait-Monotrait ratio of correlations (HTMT) was conducted to assess the discriminant validity of the constructs, with all correlations falling below the 0.85 threshold, thus confirming discriminant validity as displayed in table 3. Consequently, the survey and dataset can be deemed both reliable and valid.

Table 3. Heterotrait-Monotrait Ratio of Correlations

Construct	Digital Innovation (X2)	Online Purchase Intention (Y)	Pop Up Ads (X1)	Social Media Marketing (Z)
Digital Innovation				
Online Purchase Intention	0,370			
Pop Up Ads	0,280	0,766		
Social Media Marketing	0,406	0,414	0,280	

**Figure 3.** Construct Validity and Reliability

Hypothesis Testing

Hypothesis testing for both direct and indirect effects will be accepted if the p-value is less than the 5% significance level. The results of the hypothesis testing are presented in Table 4:

Table 4. Result of Hypothesis Test

Relationships Between Variables	Original Sample (O)	T Statistics (O/STDEV)	P Values	Decision
Pop Up Ads → Social Media Marketing	-0,383	6,920	0,000	Supported
Digital Innovation → Social Media Marketing	0,452	5,868	0,000	Supported
Pop Up Ads → Online Purchase Intention	0,586	10,923	0,000	Supported
Digital Innovation → Online Purchase Intention	0,215	3,911	0,000	Supported
Social Media Marketing → Online Purchase Intention	-0,250	4,514	0,000	Supported
Pop Up Ads → Social Media Marketing → Online Purchase Intention	0,096	3,699	0,000	Supported
Digital Innovation → Social Media Marketing → Online Purchase Intention	-0,113	3,475	0,001	Supported

Based on Table 4, all hypotheses are accepted with a significance level of p-value $0.000 < 0.05$. The findings reveal that pop-up ads negatively impact social media marketing (H1) with a sample estimate of -0.383 and a T-statistic of 5.868, while digital innovation positively influences social media marketing (H2) with an estimate of 0.452 and a T-statistic of 6.920. Pop-up ads also positively affect online purchase intention (H3) with a sample estimate of 0.586 and a T-statistic of 10.923, as does digital innovation (H4) with an estimate of 0.215 and a T-statistic of 3.911. Interestingly, social media marketing negatively impacts online purchase intention (H5) with a sample estimate of -0.250 and a T-statistic of 4.514. Additionally, partial mediation is observed. Pop-up ads indirectly influence online purchase intention through social media marketing, contributing an additional 0.056 to the direct effect of 0.586, resulting in a cumulative impact of 0.642. Similarly, digital innovation's indirect effect through social media marketing is -0.024, adding to the direct effect of 0.215, giving a cumulative impact of 0.191. This underscores the complex relationships among pop-up ads, digital innovation, social media marketing, and online purchase intention.

5. Discussion

Pop-up ads are advertisements that appear in a separate window over the content being viewed by the user and typically remain open until actively closed by the user. Pop-up ads have become common because users tend to engage with this type of advertisement [31]. Additionally, the study indicates that pop-up ads have the potential to increase purchase intention more effectively than standard banner ads. On the other hand, social media marketing is a marketing strategy that leverages social media platforms to promote products or services to a target audience. While both methods aim to capture consumer attention, their impact on user experience can differ. Effective marketing activities on social media can enhance consumer interest in purchasing the promoted product or service. Therefore, it is essential to understand how pop-up ads, as a form of digital advertising, influence the effectiveness of social media marketing strategies. The results of the direct effect test show that pop-up ads negatively influence social media marketing strategies. This is due to the intrusive nature of pop-up ads, which, although designed to capture the user's attention directly, are often perceived as disruptive and diminish the user experience on social media platforms. This discomfort can lead users to feel disturbed, ultimately having a negative impact on marketing effectiveness. These findings are consistent with the previous research of Suryadi and Yuce, which also state that pop-up ads are often regarded as disruptive and annoying [50], [52]. Nevertheless, pop-up ads can still play a significant role in social media marketing strategies, as they are able to capture users' attention directly, albeit with negative consequences.

Digital innovation encompasses the development and implementation of the latest technologies in the business world, such as the advancement of e-commerce platforms, interactive features, and enhanced user experiences. The objective of these innovations is to improve convenience, practicality, and user satisfaction when shopping online. Innovation plays a crucial role in various aspects of business competition. The presence of social media marketing is undeniably essential and has become a key tool for businesses. Social media platforms and their ability to target a much wider audience than traditional advertising have made social media one of the most powerful marketing tools available today [52]. Technological advancements such as e-commerce platforms and digital payments have made it easier for consumers to explore and purchase products or services without being hindered by geographical or time constraints. This ease enhances purchase intention, as consumers feel more comfortable and efficient when conducting transactions. With the emergence of new technologies such as advanced e-commerce platforms, interactive features, and more sophisticated analytical tools, companies can create more engaging and personalized experiences for users on social media. Digital innovation influences social media marketing, as each innovation brings various advancements that strengthen marketing effectiveness and allow marketers and entrepreneurs to access deeper

insights into consumer behavior and preferences, enabling more precise and effective ad targeting. The results of this study states that most businesses recognize the importance of social media marketing in the current digital era. Innovations made by marketplaces, by providing engaging and interactive content, have made them relevant and favored by Generation Z. Social-media offers businesses a costeffective way to reach potential customers, build brand awareness, and engage with their audience. Businesses that have invested in social media marketing have seen positive impacts on their profits through increased website traffic, sales, and customer engagement.

Pop-up ads are computer windows that open in front of the current window, displaying advertisements or entire web pages. Pop-up ads have become common due to the generally positive user attitude toward them. From the advertisers' perspective, an intrusive ad may not necessarily be a negative thing. Additionally, Online Purchase Intention refers to an individual's desire or intention to purchase a product or service online. Online purchase intention is crucial because actual purchases are often predicted based on this intention. The interest in making a transaction or purchase intention typically arises after receiving a stimulus from a product they see, which then leads to a desire to own it [53]. Findings regarding pop-up ads and online purchase intention indicate a complex relationship within the digital marketing context. Pop-up ads, which appear suddenly on a user's computer or device screen, can influence online purchase intention by increasing visibility and capturing the user's attention. This, in turn, can affect the user's intention to purchase products online. The effectiveness of pop-up ads in influencing purchase intention depends on how the ads are designed and how well they capture attention without causing excessive discomfort. Therefore, marketers and entrepreneurs must carefully manage the use of pop-up ads to ensure they have a positive impact on users' purchase intentions. This research aligns with findings by Balhareth, which demonstrate that pop-up ads significantly affect purchase intentions among target populations, as they capture attention and create a sense of urgency, leading to impulsive purchase decisions [54]. Moreover, repeated exposure to pop-up ads enhances memory of product features, prices, and other parameters, reinforcing their influence on purchase intention. By leveraging the potential of pop-up ads, marketers and entrepreneurs can increase brand recall, improve product visibility, and ultimately drive sales.

Digital innovation refers to innovations powered by digital advancements that lead to the formation of new forms of digitalization [55]. Meanwhile, Online Purchase Intention refers to the elements that predict consumer behavior in completing online transactions over the internet. Despite challenging business climates, e-commerce continues to be a key contributor to economic growth and social progress [56]. The positive influence of digital innovation on online purchase intention reflects how technological advancements can create more satisfying shopping experiences, encouraging consumers to engage in online transactions more frequently. In this

context, digital innovation encompasses various aspects of the latest technologies, such as more advanced e-commerce platforms, interactive features, and efficient digital payment systems. This study is supported by research conducted by Ginting and Liu, which indicate that online innovation positively influences repurchase intentions, demonstrating that online innovation leads to higher repurchase intentions and improved customer experiences [57], [58]. This reinforces the idea that customer experience drives repurchase intentions. The findings of this study suggest that digital technologies enable more targeted marketing, contributing to increased consumer purchase intentions. This is because consumers feel more satisfied and motivated to make online purchases, thanks to improved experiences and smoother transaction processes.

Social media marketing is a crucial approach in the context of modern, evolving marketing strategies. Social media marketing refers to the strategy of using social media platforms to promote products or services to a target market [41]. Social media marketing involves the use of social networks to market company products through Facebook or Instagram ads, utilizing influencers, or building an online presence to engage with customers. Meanwhile, Online Purchase Intention refers to the willingness of customers to purchase products or services from an online vendor's website. The primary focus of this study is to understand how various marketing activities on social media platforms—such as advertising, promotions, and brand interactions—can influence consumer purchasing decisions online. The results of the study indicate that social media marketing has a significant impact on online purchase intention. This is because social media activities, such as posts, comments, and interactions with consumers, can enhance purchase intentions. It suggests that the more actively a brand utilizes social media to engage with consumers, the higher the likelihood that consumers will have the intention to purchase products or services offered by that brand. Evaluating social media marketing strategies can influence consumers' intentions to make online purchases. Through digital marketing, companies gain insights into customer behavior and feedback, which helps them make optimized decisions for their growth. With the advancement of technology, consumers are well informed about available products and can compare them through accessible information.

Pop-Up Ads influence Online Purchase Intention through the mediating effect of Social Media Marketing. The study's findings show that the effectiveness of pop-up ads in affecting Online Purchase Intention depends on their integration into social media advertising, specifically focusing on ad design and how it captures attention without being overly intrusive. Pop-Up Ads can impact online purchase intentions with the support of social media marketing strategies. Online purchase intention is crucial because actual purchases are often predicted based on customers' intentions. Purchase intention is used to forecast actual consumer behavior, and this relationship has been empirically validated in online shopping. Utilizing effective social media strategies can enhance the influence of pop-up ads on Online Purchase Intention by reinforcing

ad messaging and expanding the target market. This allows pop-up ads to become part of a more comprehensive marketing strategy, ultimately increasing the likelihood that consumers will make online purchases. In this context, Pop-Up Ads are a form of advertisement that appears suddenly on a user's screen, designed to capture their attention, while Social Media Marketing involves the use of social media platforms to promote products or services and engage with consumers.

Digital innovation has become a driving force behind the success of entrepreneurship in today's competitive market. Online Purchase Intention can be defined as a consumer's plan to purchase goods online in the future [59]–[61]. Social media marketing provides a significant stimulus to consumer purchase intentions [62]. This highlights the important role of digital innovation in offering new features and tools to enhance user experience and operational efficiency. Digital innovation, such as more advanced e-commerce platforms and interactive features, can enhance the online shopping experience, which in turn can influence online purchase intention. Social media marketing, as an outcome of digital innovation, provides a significant stimulus to consumer purchase intentions [63]. An effective social media strategy can amplify the message derived from digital innovation by highlighting new features of products or services and creating more personalized interactions with consumers. This helps capture consumer attention, which can further enhance their intention to make online purchases. This study is supported by research conducted by Bozkurt and Harrigan, which explain the role of social media marketing in linking consumer perceptions to purchase intentions [64], [65]. The findings provide evidence that social media marketing can act as a crucial mediator between service quality and consumer purchase intentions in the tourism industry. Additionally, a comprehensive overview of the most common challenges faced by both new and established businesses in the digital era was identified. The results indicate that digital innovation has a significant impact on online purchase intention through the mediation of social media marketing. Social media marketing plays a key role in amplifying the influence of digital innovation by increasing awareness and user interaction with new technologies.

Implication

These findings highlight the importance of employing appropriate social media marketing strategies to maximize the positive effects of digital innovation while mitigating the negative impact of pop-up ads. Marketers and entrepreneurs need to exercise caution when using pop-up ads and place greater emphasis on developing digital innovations that can enhance the user experience. Furthermore, the mediating effect of social media through relevant content plays a crucial role. Consistently presented and engaging content can influence how audiences respond to digital innovations and pop-up ads. Social media provides a platform for direct interaction with the audience, enabling marketers and entrepreneurs to better understand users' needs and

preferences. Particularly for Generation Z, a digital native generation with high expectations for seamless online experiences, marketers and entrepreneurs must be more strategic in crafting their approaches. Generation Z is known to value authenticity and tends to be more selective in engaging with content they perceive as relevant and genuine. Therefore, employing the right content strategies, such as authentic storytelling, creative and engaging videos, or interactive campaigns that involve users directly, can have a significant impact. This generation is also more sensitive to disruptive ads, like pop-ups, making it imperative for marketers and entrepreneurs to reduce the use of such tactics and instead focus on methods that organically increase engagement. By effectively leveraging social media to disseminate relevant content and build strong relationships with their audience, marketers and entrepreneurs can not only boost engagement but also foster long term loyalty among Generation Z. A user experience focused approach and content relevance will be key to capturing the attention and loyalty of this generation, ultimately strengthening the brand's position in an increasingly competitive market.

Limitations

The study recognizes various limitations that pave the way for future research. Firstly, the data collection method uses a purposive sampling technique, which may lead to bias in the selection of respondents. Secondly, this study does not take into account other external factors, such as government policies or technological changes, which may influence online purchase intentions. Future research could expand demographic and geographic coverage to increase the generalizability of the findings. In addition, longitudinal research can provide insights into changes in consumer behavior over time. Future research could consider external factors, such as regulations and the latest technology trends, which could potentially influence the effectiveness of pop-up ads and digital innovations on consumers' purchase intentions. The integration of qualitative and quantitative approaches can also provide a more holistic perspective on the role of social media as a mediator in the context of digital marketing.

6. Conclusion

This study aims to examine the influence of pop-up ads and digital innovation on online purchase intention among Generation Z in Indonesia, considering the mediating role of social media. The findings indicate several key points: Pop-up ads have a significant influence on online purchase intention. However, their effect tends to be negative, as these ads are often perceived as intrusive by users. This suggests that while pop-up ads can capture attention, if not used appropriately, they can diminish purchase intention due to the disruption of the user experience. Furthermore, digital innovation has a positive influence on online purchase intention. Innovations such as interactive features and enhanced user experiences improve the convenience and efficiency of online shopping, thereby increasing Generation Z's purchase intention.

Social media acts as a mediator that amplifies the influence of digital innovation on online purchase intention and can mitigate the negative effects of pop-up ads. Through social media, information and promotions related to digital innovation can be easily accessed and shared, enhancing user engagement and trust in the brand

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