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THE MODERATING ROLE OF INTERNET ACCESSIBILITY ON CONSUMER ONLINE SHOPPING INTENTION IN INDONESIA

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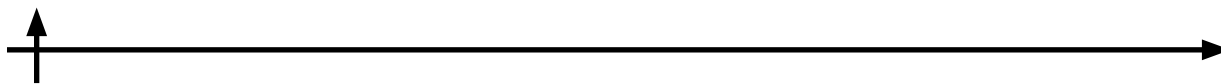
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Abstract. The rapid advancement of digital technology has significantly shifted consumer behavior, leading to massive growth in Indonesia's e-commerce landscape. This study aims to develop and test a model that explains the formation of consumer Attitude and Online Shopping Intention by examining the influence of key antecedents: Convenience and Startup Credibility, while integrating the unique role of Internet Accessibility. The research is crucial in the context of developing nations like Indonesia, where varying internet infrastructure necessitates a deeper understanding of its impact. Using quantitative research methods, the data collected from internet users in major Indonesian economic regions (Jabodetabek, Joglosemar, and Gerbang Kertosusila) was analyzed using Partial Least Square (PLS). The findings confirmed that Convenience and Startup Credibility have a positive and significant influence on both Attitude and Online Shopping Intention. Furthermore, a positive Attitude is a significant predictor of Online Shopping Intention. Critically, the study found that Internet Accessibility acts as a significant moderator, strengthening the relationship between Convenience and Online Shopping Intention, Startup Credibility and Attitude, and Attitude and Online Shopping Intention. However, the moderating effect was not supported for the Convenience → Attitude and Credibility → Intention paths, suggesting that in certain high-penetration urban areas, accessibility may function more as a direct antecedent or is already perceived as adequate. This research provides a modified model, highlighting the critical importance of internet infrastructure (accessibility) as an uncontrollable but essential variable that fundamentally determines the success of e-commerce adoption in Indonesia.

Keywords: online shopping, intention, convenience, startup credibility, attitude, internet accessibility, ecommerce

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ПОСРЕДНИЧЕСКАЯ РОЛЬ ДОСТУПНОСТИ ИНТЕРНЕТА В ФОРМИРОВАНИИ НАМЕРЕНИЙ ПОТРЕБИТЕЛЕЙ СОВЕРШАТЬ ОНЛАЙН-ПОКУПКИ В ИНДОНЕЗИИ

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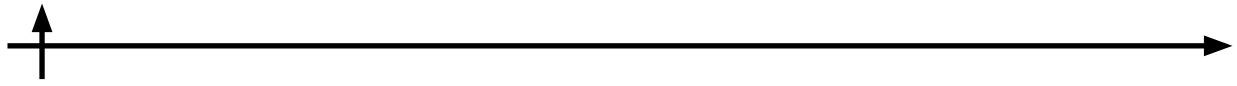
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Аннотация. Быстрое развитие цифровых технологий значительно изменило поведение потребителей, что привело к масштабному росту электронной коммерции в Индонезии. Цель данного исследования — разработать и протестировать модель, объясняющую формирование отношения потребителей к интернету и намерения совершать онлайн-покупки, изучив влияние ключевых факторов: удобства и доверия к стартапу, а также интегрировав уникальную роль доступности интернета. Исследование имеет решающее значение в контексте развивающихся стран, таких как Индонезия, где различная интернет-инфраструктура требует более глубокого понимания ее влияния. С помощью количественных методов исследования были проанализированы данные, собранные у интернет-пользователей в основных экономических регионах Индонезии (Джабодетабек, Джоглосемар и Гербанг Кертосусила), с использованием метода частичных наименьших квадратов (PLS). Результаты подтвердили, что удобство и доверие к стартапу оказывают положительное и значимое влияние как на отношение к интернету, так и на намерение совершать онлайн-покупки. Кроме того, положительное отношение является значимым предиктором намерения совершать онлайн-покупки. Важно отметить, что исследование показало, что доступность интернета выступает в качестве значимого посредника, усиливая взаимосвязь между удобством и намерением совершать онлайн-покупки, репутацией стартапа и его отношением, а также отношением и намерением совершать онлайн-покупки. Однако посреднический эффект не подтвердился для путей «Удобство → Отношение» и «Репутация → Намерение», что предполагает, что в некоторых городских районах с высокой степенью проникновения интернета доступность может выступать скорее в качестве прямого предшественника или уже восприниматься как достаточная. Данное исследование предлагает модифицированную модель, подчеркивающую критическую важность интернет-инфраструктуры (доступности) как неконтролируемой, но важной переменной, которая коренным образом определяет успех внедрения электронной коммерции в Индонезии.

Ключевые слова: онлайн-шопинг, намерение, удобство, авторитет стартапа, отношение, доступность интернета, электронная коммерция

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Introduction

Background and Research Phenomenon

The rapid advancement of Information Technology (IT) has catalyzed a profound digital transformation across global civilization, fundamentally altering consumer behavior and spurring the growth of online shopping (eCommerce). In Indonesia, this phenomenon is particularly pronounced, supported by high rates of internet and smartphone penetration (APJII, 2019; Kemp, 2019). Online shopping is defined as the transaction process between two parties involving the exchange of goods or information, mediated primarily by the internet (Indrajit, 2001; Lee, 2001).

This rapid growth, often driven by disruptive innovation, creates vast opportunities for Micro, Small, and Medium Enterprises (MSMEs), which constitute 99% of businesses in Indonesia and are major contributors to the digital economy (Singapore Post, 2014; As'ad & Ahmad, 2012). Conversely, this digital shift presents a significant challenge to traditional retail, forcing conventional stores to re-evaluate or close (Detik Finance, 2017). Theoretical literature consistently identifies several core psychological and platform-based antecedents that shape consumer purchasing decisions and drive Online Shopping Intention (OSI). These core determinants include: Convenience: Defined as flexibility, ease of product selection, and transaction security (Meuter et al., 2000; Berry et al., 2002). Startup Credibility: The consumer's trust in the e-commerce website, which is vital for reducing concerns such as the misuse of personal data (Turban, 2001; Koufaris & Hampton-Sosa, 2004). These factors underpin the formation of a positive Attitude toward online shopping, which ultimately precedes the consumer's intention to purchase (Yang et al., 2007).

Problem Statement and Theoretical Gap

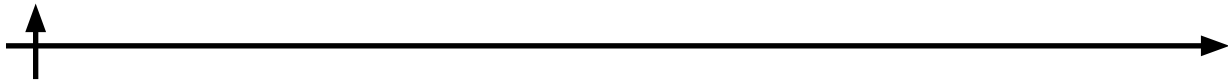
Despite the robust growth of eCommerce and the established reliance on these core determinants (Convenience, Credibility, and Attitude), the success of online retail in developing, archipelagic economies like Indonesia remains fundamentally subject to significant infrastructural constraints. While studies in developed nations often treat robust internet Accessibility as a non-issue (Evers, 2002; Jongen, 2017), research confirms that emerging markets face formidable challenges due to unreliable internet connections, poor availability, and low network penetration rates (Molla & Licker, 2005).

This dependency suggests that the perceived efficiency benefits of Convenience and the assurance provided by Credibility are fundamentally contingent upon the underlying network quality. The relationship between these psychological and platform-based factors and consumer intention is therefore unlikely to be uniform across all markets.

The critical theoretical gap lies in the failure of existing behavioral models to explicitly conceptualize and test the role of Internet Accessibility as a moderating mechanism within the process of attitude and intention formation. This omission constitutes an empirical void, particularly in regions where accessibility is an uncontrollable, determining factor for the consumer experience.

Research Objectives and Novelty

This study addresses the theoretical and empirical void by developing and testing a comprehensive model focused on the Indonesian market. The primary objective is to investigate the direct influence of Convenience and Startup Credibility on Attitude and Online Shopping Intention, and, critically, to examine how Internet Accessibility moderates all links between these



antecedents and the formation process of both attitude and intention.

The study seeks to answer the following core research questions:

1. Does Convenience influence Attitude and Online Shopping Intention?
2. Does Startup Credibility influence Attitude and Online Shopping Intention?
3. Does Attitude influence Online Shopping Intention?
4. How does Internet Accessibility moderate the influence of Convenience, Startup Credibility, and Attitude on Online Shopping Intention?

The novelty of this research is the introduction and empirical validation of Internet Accessibility as a vital, context-specific moderator, providing a more accurate theoretical framework for e-commerce adoption in emerging markets.

Research Contribution

The findings of this research offer significant contributions to both theory and practice. Theoretically, this study contributes to resolving the model heterogeneity often observed in online shopping behavior research by incorporating a crucial, yet neglected, moderating variable. Practically, this research provides strategic guidance to MSME policymakers and digital platforms regarding the critical role of network infrastructure and suggests quality-driven strategies necessary to enhance the appeal and performance of online business in a challenging digital landscape.

Literature Review

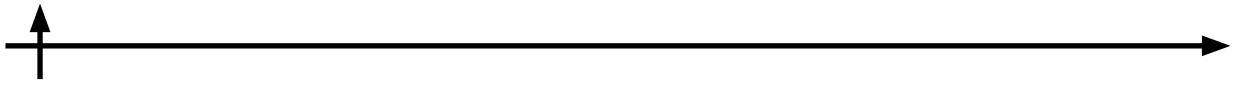
Theoretical Foundation

The theoretical framework for modeling consumer intention to engage in online shopping is fundamentally anchored in the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). This grand theory represents a synthesis and modification of several foundational behavioral models, including the Technology Acceptance Model (TAM) (Davis, 1989), the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980), and the Theory of Planned Behavior (TPB) (Ajzen, 1991). TAM contributes key constructs such as Perceived Usefulness (POU) and Perceived Ease of Use (PEOU) as direct antecedents of usage intention (Venkatesh & Davis, 1996). The TRA asserts that belief is the primary factor determining an individual's intention to perform a specific action (Chen & Hsu, 2009). Furthermore, the TPB extends the TRA by incorporating Perceived Behavioral Control (PBC) as an additional predictor of intention, specifically addressing criticism that the TRA neglects control factors in real-life settings (Ajzen, 1991). Consequently, UTAUT provides a robust, comprehensive foundation for analyzing online transaction intention from the perspective of technology acceptance.

Research Variables

Online Shopping Convenience (e-Convenience)

Online Shopping Convenience, often termed e-Convenience, is a primary catalyst for the widespread adoption of online purchasing, fundamentally addressing the inherent "gap in time and location" between consumer and retailer (Degeratu et al., 2000; Colwell et al., 2008; Tan et al., 2007). The rapid expansion of eCommerce is largely predicated on the customer's perception of convenience, a context-based concept where advancements in information technology play a crucial role in altering customer perceptions of speed, price, and access to product information (Kotler & Armstrong, 2013). In the digital sphere, traditional service convenience (SERVCON) transforms, and e-Convenience is precisely defined as "the extent to which the customer perceives that the Web site is simple, intuitive, and user-friendly" (Srinivasan et al., 2002). Its strategic importance means e-Convenience is a dominant factor influencing the tendency to access retailer websites (Jayawardhena et al., 2007) and has been systematically



investigated for its multi-dimensional nature.

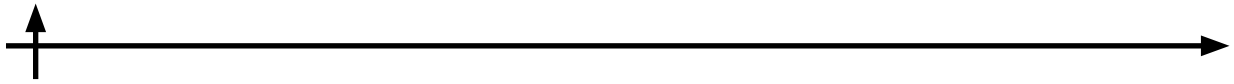
Building on foundational work, researchers have developed comprehensive scales to measure this multi-dimensional construct. Jiang et al. (2013), referencing Berry et al. (2002) and Seiders et al. (2007), provided a validated, five-dimensional scale for online shopping convenience. These dimensions include Access Convenience, which covers flexibility in time, space, web capability, and product availability; Search Convenience, concerning download speed, web design, search capacity, and product classification; Evaluation Convenience, which relates to the clarity of product information, standardization, and price presentation; Transaction Convenience, which encompasses the ease of checkout, payment methods, and price consistency; and Post-Purchase Convenience, addressing product returns, customer protection, and data security. The strategic importance of e-Convenience is further underscored by studies that emphasize features like rich information content (Cyr, 2008), seamless web/app design (Wolfenbarger & Gilly, 2003; Koo et al., 2008), and essential service elements such as interactivity and security (Parasuraman et al., 2005; Yang et al., 2007). Empirical evidence consistently demonstrates that perceived service convenience significantly and positively impacts consumer attitudes and subsequent online shopping intention (Shergill & Chen, 2005; Colwell et al., 2008), with convenience types examined often including access, search, transaction, and cost-saving elements (To et al., 2007; Lakshmi, 2016).

Despite the strong pull of perceived convenience, consumer concerns related to risk and security can significantly deter purchase intention (Brown et al., 2023). A particularly critical issue is security risk, as consumers harbor anxieties about the misuse of personal and financial information during transactions (Federal Trade Commission, 2010; Comegys et al., 2009). This negative perception can be amplified by external factors, such as inadequate regulation or low consumer literacy, particularly in emerging markets (Almousa, 2011). Furthermore, psychological risk, such as the disappointment resulting from poor product quality, can lead to negative consumer attitudes (Huang et al., 2014). Therefore, enhancing platform security and privacy is critical for reinforcing a consumer's perception of convenience, as e-Convenience is only fully realized when the platform provides sufficient security and ease of use (Shukla, 2014). Ultimately, e-Convenience is a dominant antecedent to positive consumer attitude and subsequent Online Shopping Intention, driven by the consumer's desire to save time, cost, and effort (Lakshmi, 2018; To et al., 2007). This study adopts a multi-item instrument for convenience based on the core qualities of the online shopping experience, measured by items such as: (1) easy, (2) flexible, (3) reliable, (4) practical, (5) immediate, and (6) accurate.

Startup Credibility and Trust

The concepts of Credibility and Trust are fundamentally interdisciplinary and function as key determinants in the digital commerce landscape (Liu, 2004; Rieh, 2002). Credibility is operationalized as a characteristic that consumers attribute to the seller, the product, and the entire marketplace within an eCommerce setting (Marsh & Dibben, 2003). Defined as the "belief in the source of information" (Fritch & Cromwell, 2002; Metzger, 2007; Sundar, 2008), for emerging startups, credibility represents a value derived from the diligent efforts of its founders and is practically reflected in the customer's perceived ease of searching for desired products (Sheth & Sisodia, 2012).

Trust occupies a pivotal mediating role in online transactions, serving to transform a consumer's positive attitude into a tangible online shopping intention (Gefen & Straub, 2004; Yousafzai et al., 2010). This construct is established during interactions between unfamiliar parties (Pavlou, 2003) and represents the customer's willingness to accept the inherent transactional risk based on favorable expectations regarding future exchange behavior. Subjectively, trust is often conceptualized either as an "opinion or mental image" (Blackwell et al., 2001)



or as the accumulated knowledge and inferences a consumer makes about an object (Mowen & Minor, 2002; Kotler & Keller, 2012). It is foundational for developing consumer intention (Chaudhuri & Holbrook, 2001) and must often be built even before the parties directly interact (Bachmann & Zaheer, 2006).

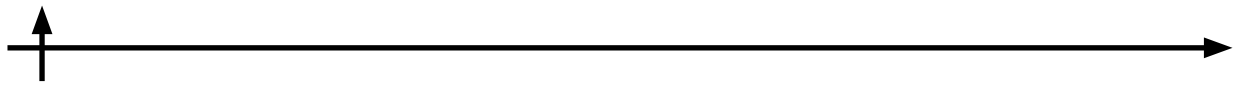
The formation of consumer trust is structured around two critical components: Trusting Belief and Trusting Intention (McKnight et al., 2001). Trusting Belief, which is the conviction that the trusted party possesses characteristics beneficial to the consumer, is built upon three core elements (McKnight et al., 2001): Goodwill, reflecting the seller's proactive willingness to serve consumer interests; Integrity, concerning the conviction of the seller's honesty and consistent adherence to stated agreements; and Competence, relating to the belief in the seller's ability to effectively fulfill consumer needs.

The digital environment poses unique challenges because consumers rarely engage in the full processing of all available information. Consequently, credibility judgments are often formed rapidly, based on easily accessible visual and experiential cues, such as website aesthetics, visual design elements, and the perceived ease of navigation (Fogg et al., 2003; Sundar, 2008; Metzger et al., 2003; Rieh & Danielson, 2007). This emphasis highlights the critical role of website functional design (Hilligoss & Rieh, 2008). This design-based credibility has a direct correlation with consumer loyalty, as elements like an appealing display and quick response times enhance customer retention (Wang & Shaojing, 2010).

Submitting sensitive personal and financial data online necessitates that consumer trust be structured around specific Digital Reputation and Trust Dimensions. Key dimensions that critically influence online purchase intention include Security, which is the consumer's belief in the internet's capacity to securely transmit sensitive information (Chen & Barnes, 2007; Lee & Turban, 2001); Privacy, which is the consumer's confidence regarding the proper handling of their personal data (Chen & Barnes, 2007; Lee & Turban, 2001), where high security and privacy levels are known to positively affect trust; and Reliability, which refers to the firm's dependability, often enhanced by a positive corporate reputation and accumulated past experience (Balasubramanian et al., 2003; Figueiredo, 2000). Furthermore, a positive overall shopping experience acts as a significant determinant of future purchase intention (Bughin, 2011), driven by both emotional and rational factors (Lwin et al., 2007). In the context of online marketing, source credibility is often transferred to recommendation sources, such as product and service reviews from trusted sources (Cheung et al., 2009; Senecal & Nantel, 2004; Fan et al., 2013). Due to the current lack of standardized metrics specifically integrating the startup credibility and trust contexts, a focused study has adopted a set of integrated credibility dimensions encompassing: (1) Trust; (2) Assured; (3) Convincing; (4) Consistency; (5) Transparent; (6) Integrity; and (7) Competent.

Internet Accessibility in Emerging Digital Markets

Internet Accessibility is scientifically defined as the degree of ease with which users can successfully utilize internet services (Evans, 2008; Belson, 2015). In emerging markets, such as Indonesia, a notable disparity exists between the high volume of mobile user traffic and the corresponding efficacy of eCommerce marketing and website functionality (iPrice, 2017). This ease of access and the consumer's inherent technological familiarity are crucial factors that directly influence transaction intention (Doolin et al., 2002). Specifically, the speed of access is particularly important for consumers engaging in the planning phase of online purchases (Jeong & Lambert, 2001; Perdue, 2001). Empirical evidence indicates that enhanced accessibility can generate a positive effect on both consumer attitude and subsequent purchase intention (Keller & Lehmann, 2006) because the final purchase decision is constructed from interactions with the comprehensive and trustworthy features of an eCommerce platform (Kotler, 2000; Zendehdel



et al., 2015).

Technological and Infrastructural Challenges

From a technological standpoint, successful eCommerce hinges on accessibility, which encompasses user-friendly technology (Mason & Rennie, 2009) and high-quality website features, including security, privacy, and design (Bjälanger et al., 2002). Despite a significant increase in mobile visits to eCommerce platforms in Southeast Asia (iPrice, 2017), the Indonesian context reveals a considerable gap: high mobile traffic—with peak visits occurring on Saturdays and Sundays—does not correlate with peak transaction times (iPrice, 2017). This suggests an infrastructural and access challenge. The core assertion within this domain is that stable internet accessibility functions as a necessary infrastructural condition that actively moderates the effectiveness of platform-based and psychological constructs, such as Convenience, Credibility, and Attitude, on ultimate consumer intention. Furthermore, prior literature consistently suggests that many popular websites suffer from accessibility issues, often concerning content compliance (Sullivan & Matson, 2000). Website content—which integrates audio, visuals, and video—is critical as it influences the perceived product image, creates a virtual experience (Kaplanidou & Vogt, 2006), and, when functional and interactive, encourages user engagement (Doolin et al., 2002).

Psychological and Contextual Determinants

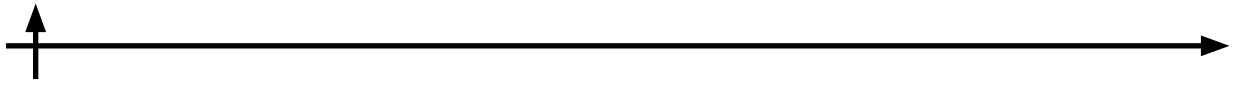
From a psychological perspective, the ability to access a product is an initial consumer action (Kahneman, 2003) that directly influences consumer attitudes, particularly during the critical pre-choice evaluation process (Kotler, 2000). Accessibility enables consumers to swiftly and efficiently identify desired goods and services (Keller & Lehmann, 2006), and it has been empirically validated to have a significant positive relationship with final purchase intention (Zendehdel et al., 2015). Relevant psychological determinants of this process include stimulus salience, selective attention, and associative activation (Kahneman, 2003). While studies in developed nations sometimes suggest that smartphone access primarily supplements in-store shopping (Wang et al., 2015), the opposite is true for developing countries, where reliable internet access is absolutely crucial for enabling eCommerce (Molla & Licker, 2005; Marthn et al., 2010). Given this context, which focuses on smartphone users with stable and fast 3G and 4G subscriptions, the key dimensions of accessibility developed for rigorous study include: (1) Affordability; (2) Availability; (3) Speed; (4) Smoothness; and (5) Stability.

Attitude Toward Online Shopping in the Digital Economy

Attitude is conceptualized as a form of preference that fundamentally dictates product choice (Arnould et al., 2002), representing a relatively stable organizational structure of beliefs, feelings, and behavioral tendencies directed toward a specific object (Hogg & Vaughan, 2011). Within consumer psychology, attitude is an evaluative judgment derived from the attributes inherent in a product (Arnould et al., 2002; Brooks et al., 2013; Huitt & Cain, 2005). The formation of a positive attitude is intrinsically linked to the consumer's perception of superior product attributes (Lafferty & Glodsmith, 2005; Oskamp & Schultz, 2005), and it is ultimately determined by underlying beliefs (Agarwal & Sambamurthy, 2002; Kotler & Keller, 2012; Malhotra, 2010), particularly the conviction regarding the product's excellence (Fishbein, 1997). Attitude toward online shopping is specifically defined as the consumer's positive or negative affective evaluation associated with concluding a purchase on the internet (Chiu et al., 2005), and it is a core affective component of behavior, encompassing the emotional interpretation of an object (Brown et al., 2006).

Modeling and Determinants of Consumer Attitude

The consumer purchase decision process is cognitively influenced by perception, motivation, attitude, and belief (Kotler & Armstrong, 2013). Early modeling of attitude and intention suc-



cessfully incorporated indicators across four classifications: product value, the overall shopping experience, e-Retail service quality, and perceived risk (Jarvenpaa & Todd, 1997). Fundamentally, consumer attitude is a composite structure comprising (1) beliefs, (2) feelings (emotions), and (3) behavioral intentions regarding a marketplace object (Perner, 2010; Fishbein & Ajzen, 1975). Factors that precede and drive attitude formation include personality traits, perceptions, and, crucially, perceived benefits (Cheung & Lee, 2000; Wolfinbarger & Gilly, 2003). Perceived benefit represents the consumer's subjective assessment of the advantages gained from the online shopping experience, such as increased convenience and overall satisfaction (Forsythe et al., 2006; Shobeiri et al., 2014). This understanding is vital, as a positive attitude consistently demonstrates a significant direct impact on online shopping behavior and subsequent purchase decisions (Chai & Pavlou, 2004; George, 2004; Yang et al., 2007). Furthermore, the speed of transaction confirmation in the online context can swiftly generate positive attitudes and boost purchase intention (Shiau & Luo, 2012).

Measurement Framework and Strategic Implications

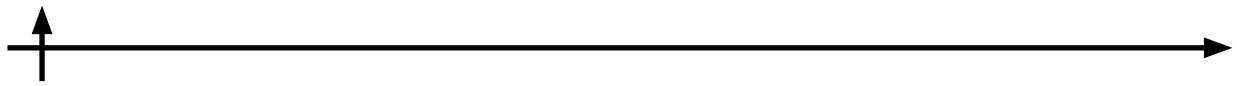
Attitude is a powerful construct, often functioning as a critical mediator between consumer intention and final behavior (Shwu-Ing, 2003). Given its multi-faceted nature and occasional lack of conceptual consistency across studies (Li & Petrick, 2008; Solomon et al., 2009), the Multi-Attribute Model is adopted for comprehensive measurement (Smith et al., 2008). This model effectively explains the degree of consumer perception toward their online shopping attitude (Hartel et al., 2010) by integrating three key elements: the specific attributes of the attitude object that serve as purchase standards (Alsamydai et al., 2013, 2015), the consumer's beliefs regarding the presence of those attributes (Mandy & Esther, 2008), and the weights that indicate the priority assigned to each attribute (Smith et al., 2008; Loudon & Bitu, 2010). In the digital economy, this shift in customer attitude to adopt new, often lower-priced, standardized offerings—often driven by startup innovation—can lead to market disruption (Christensen et al., 2015). Reflecting the prominence of emotional components in consumer behavior (Malhorta, 2007; Mowen & Minor, 2002), the current research emphasizes the affective dimension with measures encompassing: (1) Like; (2) Passionate; (3) Enthusiastic; (4) Addicted; and (5) Happy.

Online Shopping Intention: Conceptual Frameworks and Determinants

Online Shopping Intention (OSI) is conventionally defined as the consumer's "willingness and intention to conduct transactions online" (Pavlou, 2003), encompassing the desire to search, select, and ultimately purchase products via the internet (George, 2004). This construct represents the consumer's readiness to visit an eCommerce site with the explicit goal of making a purchase. Consistent with the foundational Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980), intention is often a more effective measure than actual behavior for accurately gauging consumer perceptions (Sheth & Mittal, 2004). Fundamentally, intention is constructed upon the consumer's subjective perception regarding the attributes and perceived benefits of the product on offer (Mowen & Minor, 2002). Furthermore, consumers value not only the instrumental function of the technology but also the hedonic pleasure, or enjoyment, derived from navigating the eCommerce environment (Heijden & Creemers, 2003).

Theoretical Perspectives on Intention

OSI is rigorously investigated through two primary, yet complementary, theoretical perspectives: the technology-oriented and the trust-oriented view. The Technology Perspective assesses the consumer's cognitive evaluation of the technological interface, such as the website or application, used for online shopping. The primary value of information technology, in this view, is its potential to "lower search costs, evaluate alternatives, and enhance decision quality" (Heijden & Creemers, 2003). Research in this domain frequently leverages the Technology



Acceptance Model (TAM), which posits that Perceived Usefulness (POU) and Perceived Ease of Use (PEOU) are the key drivers of Intention to Use (IU) (Venkatesh & Davis, 1996). The subsequent adoption of the Unified Theory of Acceptance and Use of Technology (UTAUT) confirms the continued salience of POU and PEOU in the modern digital context (Venkatesh et al., 2003).

The Critical Role of Trust and Risk Mitigation

Conversely, the Trust Perspective emphasizes the pivotal role of trust as a "key success factor" in effectively mitigating the inherent risks associated with online transactions (Koufaris & Hampton-Sosa, 2004; Elbeltagi & Agag, 2016). Trust is exceptionally salient in the online context because it directly reduces the "feeling of uncertainty" that arises when products are intangible and the marketplace's credibility is physically unknown (Tan & Thoen, 2001). As the core element determining a person's intention to perform a specific action (Chen & Hsu, 2009), trust is essential for growing consumer confidence (Gefen et al., 2003). Empirical evidence consistently demonstrates that trust, perceived ease of use, usefulness, and enjoyment are all significant predictors of a customer's purchase intention (Chiu et al., 2009).

Holistic Determinants of Online Shopping Intention

Ultimately, OSI is influenced by a complex blend of monetary factors (such as price incentives for existing customers) and non-monetary factors (such as perceived risk for potential customers) (Kim & Gupta, 2009). Features that strategically enhance purchase intent include swift information processing (Seock & Norton, 2007), convenient options like cash on delivery (COD), and secure return policies (Ashwini & Manjula, 2016). Consequently, both trust and perceived risk are consistently confirmed as critical determinants of online shopping intention (Mohammed, 2014). The measurement scale for Online Shopping Intention in this study is based on seven indicators: (1) Will shop online; (2) Want to shop online; (3) Tend to choose online shopping; (4) Willingness to shop online; (5) Interested in shopping online; (6) Flexible interacting with the website/app; and (7) Website/app is useful for buying products.

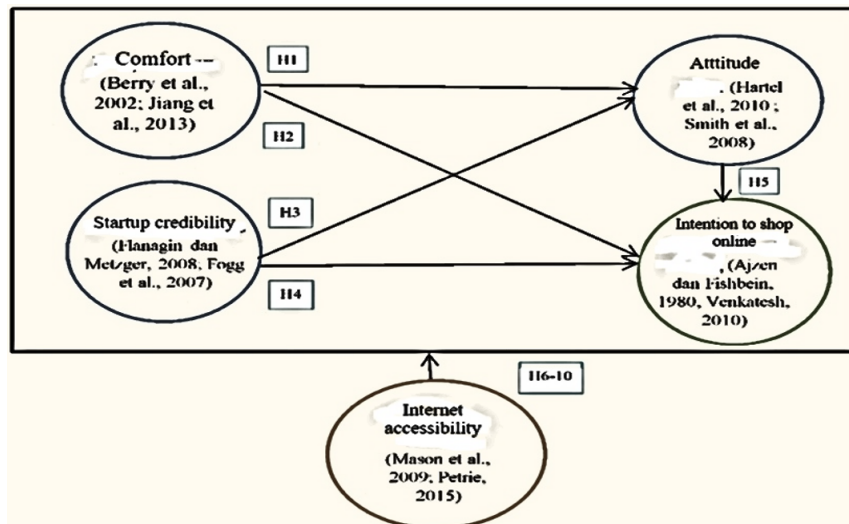
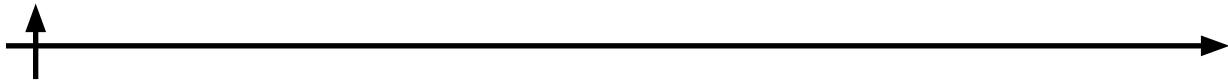


Fig. 1. A proposed model to examine how the relationship between convenience, startup credibility, internet accessibility and positive attitudes and intentions to shop online.



Hypothesis Development

H1: Convenience Positively Affects Attitude Toward Online Shopping

Convenience is a critical service consideration (Seiders et al., 2007) and has a major influence on consumer attitude toward online shopping (As'ad & Ahmad, 2012; Bughin, 2015). The underlying mechanism relies on the consumer's reaction to perceived reality (Drezner, 2002) rather than objective reality. Website factors such as user-friendly design (Srinivasan et al., 2002), ease of navigation, information search, and product selection (Wolfinbarger & Gilly, 2003; Lakshmi, 2016) are central to value creation (Vargo & Lusch, 2004) and lead to positive attitudes (Szymanski & Hise, 2000; Liu et al., 2012). This positive perception of convenience is a strong indicator of a favorable attitude in online transactions (Shah Alam et al., 2008; Lorek, 2010).

H2: Convenience Positively Affects Online Shopping Intention

Convenience, as a form of value exchange in e-business (Vargo & Lusch, 2004, 2008), is consistently identified as a determinant factor for online shopping intention. Previous research highlights several key indicators influencing intention, including website attributes such as ease of navigation (Smith, 2000; Wolfinbarger & Gilly, 2001; Bagdoniene & Zemblyte, 2009), web design (Ranganathan & Ganapathy, 2002), and ease of use (Chen & Hsu, 2009). Other significant convenience factors proven to influence intention include time savings (Karayanni, 2003; Upadhyay & Kaur, 2013), low product price (Ehrt et al., 2007), payment security, privacy protection (Comegys et al., 2009; Smith et al., 2011), and low shipping costs (Teo & Yeong, 2003). These determinant attributes of convenience are consistently and positively linked to online purchase intention (Shah Alam et al., 2008; Lorek, 2010).

H3: Startup Credibility Positively Affects Attitude Toward Online Shopping

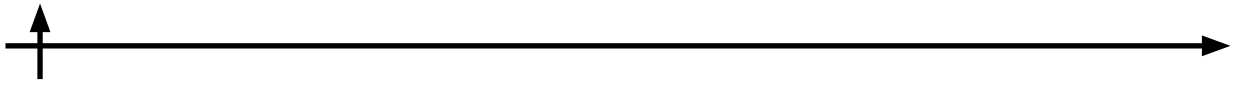
Startup credibility is strongly and significantly related to positive consumer attitude and retention (Wang & Shaojing, 2010; Okazaki et al., 2012). Credibility is defined as "trust in the source of information" (Fritch & Cromwell, 2002; Sundar, 2008) and is formed by a cognitive evaluation of visual design elements (Fogg et al., 2003; Metzger et al., 2003) which play a key persuasive role (Petty et al., 2002). Trust is an integral component of credibility (Hardin, 2002; Bachmann & Zaheer, 2006) and is built on the conviction that the purchased product will be beneficial (Mowen & Minor, 2002). In the digital context, key trust dimensions that enhance credibility and shape attitude include security (Kim & Shim, 2002), privacy (Chen & Barnes, 2007), and application reliability (Balasubramanian et al., 2003; Koufaris & Hampton-Sosa, 2004). Collectively, these credibility factors demonstrate a significant capacity to generate a positive attitude toward online shopping.

H4: Startup Credibility Positively Affects Online Shopping Intention

The credibility of a startup and its products helps consumers simplify choices, promises a certain quality, reduces risk, and fosters a sense of security (Mudambi, 2000; Kotler, 2002; Keller, 2003; Keller & Lehmann, 2006). Credibility is essentially "trust in the source" based on perceptions of trustworthiness and expertise, and this positive perception directly influences the intention to purchase (Alhaddad, 2015). When consumers perceive a startup and its offerings as credible, they are more likely to share their experiences and recommend the service to others (Babin et al., 2005; Trusov et al., 2009). This reliance on credible sources and reference groups is critical for online purchase intention (Bansal & Voyer, 2000; Phelps et al., 2004; Bughin et al., 2010). Credibility reflects the consumer's total experience with the product, both before and after purchase (Peres et al., 2010).

H5: Attitude Positively Affects Online Shopping Intention

Attitude, conceptualized as an evaluation of inherent product attributes (Arnould et al., 2002; Brooks et al., 2013), serves to reduce barriers (Schiffman & Kanuk, 2004; Brown &



Venkatesh, 2005; Loudon & Della Bitta, 2010) to a consumer's intention to buy (Fazio, 1990; Fishbein & Ajzen, 1997). A positive attitude is demonstrated by the consumer's belief in the product's superior attributes (Brooks et al., 2013). Since belief is the primary determinant of attitude (Mandy & Esther, 2008; Berkowitz et al., 2003), a strong belief in the product's value and low perceived risk (Overby & Lee, 2006; Yousafzai, 2010) are key factors in translating attitude into online purchase intention (Wu, 2003; Park et al., 2012). The Multi-Attribute Model, which uses attributes, beliefs, and weights, is applied to measure this attitude and its influence on intention (Smith et al., 2008).

H6: The Effect of Convenience on Attitude Toward Online Shopping is Positively Moderated by Internet Accessibility

Customer perception of attributes determines the choice of product and shopping site (Arnould et al., 2005). Favorable perceptions—driven by unique, superior, and reputable attributes (Aaker, 2001; Kotler & Keller, 2012)—contribute to efficiency and convenience (Kotler, 2002) and build consumer loyalty (Kandampully & Suhartanto, 2000). While convenience generates a positive attitude (Keller, 2009; Solomon et al., 2010), Internet Accessibility plays a crucial moderating role. Accessibility represents the consumer's initial action (As'ad & Ahmad, 2012; Bughin, 2015) and involves the cognitive mechanism of intuitive judgment (Kahneman, 2003). Therefore, high accessibility is necessary for the inherent advantages of convenience to be effectively perceived and translated into a positive attitude toward online shopping.

H7: The Effect of Convenience on Online Shopping Intention is Positively Moderated by Internet Accessibility

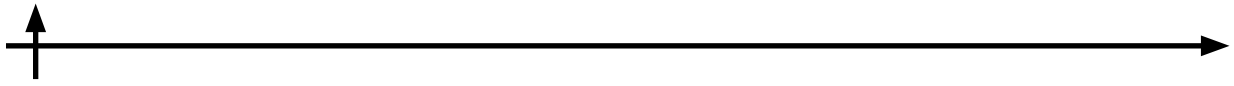
Convenience allows consumers to search and compare numerous alternatives with low search costs (Childers et al., 2001; Kaufman-Scarborough & Lindquist, 2002), and ease of access has a positive effect on sales (Bagdoniene & Zembyte, 2009). The strong, positive attitude developed from convenience attributes (Schiffman & Kanuk, 2004; Loudon & Della Bitta, 2010) subsequently influences purchase intention (Fazio, 1990; Fishbein & Ajzen, 1997). Superior product attributes, which offer benefits and security (Kotler, 2002; Aaker, 2004), strengthen this intention (Alhaddad, 2015; Vahid & Aidin, 2012). Internet Accessibility significantly influences this relationship (Zendehdel et al., 2015). High accessibility acts as an enabler, intensifying the link between convenience factors (like efficient searching and low cost) and the ultimate decision to transact (Pavlou, 2003; Morgan & Hunt, 1994), which is fundamentally based on trust and reliability.

H8: The Effect of Startup Credibility on Attitude Toward Online Shopping is Positively Moderated by Internet Accessibility

Consumer attitude is contingent upon the perceived superior attributes of a product, with persuasive and emotional brand aspects helping consumers learn the cognitive and affective elements of a brand (Oskamp & Schultz, 2005; Keller, 2009). Digital marketing and website characteristics—such as being global, open, transparent, and interactive (Dutta, 2009; Stephen & Galak, 2010)—are effective channels for building startup credibility through intensive information sharing and reliable testimonials. However, the initial consumer action is driven by Internet Accessibility (Kahneman, 2003). This accessibility facilitates the intuitive assessment and cognitive response mechanism (Hogg & Banister, 2001) that is essential for leveraging the perceived credibility of the startup and translating it into a positive consumer attitude toward online shopping.

H9: The Effect of Startup Credibility on Online Shopping Intention is Positively Moderated by Internet Accessibility

Startup credibility, which is based on trust and expertise, positively influences product purchase intention (Alhaddad, 2015). When a digital venture and its products are perceived as



credible, consumers are more likely to share positive experiences and recommend them (Babin et al., 2005; Trusov et al., 2009). Internet Accessibility—the degree of ease with which users access internet services—is proven to be related to consumer purchase intention (Zendehdel et al., 2015). High accessibility simplifies the process of identifying sellers and products quickly (Keller & Lehmann, 2006). This ease of access encompasses the aggregate features of security, privacy, and usability, which are key to transaction intention. Therefore, a high degree of internet accessibility strengthens the impact of perceived startup credibility on the consumer's intention to transact online.

H10: The Effect of Attitude on Online Shopping Intention is Positively Moderated by Internet Accessibility

Online purchase intention is viewed as a consequence of attitude (Koufaris, 2002), where trust is a salient factor due to the human-computer interaction domain (O'Keefe & Cole, 2000). Consumers are influenced not only by the instrumental value of the technology but also by the hedonic value of visiting an eCommerce site (Heijden & Creemers, 2003). Positive attitude, built from a perceived strong site reputation (Gefen et al., 2003) and attractive virtual experience (Kaplanidou & Vogt, 2006; Doolin et al., 2002), is fundamental to intention. Studies emphasize that speed of access (Jeong & Lambert, 2001; Perdue, 2001) and secure, stable connectivity (Mason & Rennie, 2009) are critical infrastructural factors. High Internet Accessibility is a key determinant (Evans, 2008; Belson, 2015) that enables the smooth, intended engagement with the eCommerce environment, thereby positively moderating the influence of a favorable consumer attitude on the actual intention to shop online.



Fig. 2. Research Location Map.

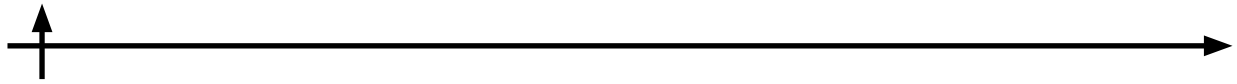
Research Methodology

The research methodology is designed to provide a clear and structured framework for the instruments used to scientifically test the proposed hypotheses. This chapter details the research scope, sampling technique, operational definitions and variable measurement, and the statistical methods employed.

Research Scope and Context

This study is theoretically anchored in Cognitive Theory, which addresses the individual's ability to acquire and process information, encompassing the stages of perception, attention selection, and memory. The research adopts a consumer behavioral approach, focusing on understanding consumption decisions for the consumer's self-interest.

The study is contextualized within the online shopping landscape of Indonesia, specifically on Java Island. This setting is chosen due to the significant growth in digital adoption: a 2017 survey by the Indonesian Internet Service Providers Association (APJII) reported internet access reached 143.26 million users, with 66% (94,551,600 people) accessing the internet via smartphones. Furthermore, the rapid growth of the eCommerce sector, with 185 companies recorded by 2015 (Mars Research, 2017), and a significant 20% increase in consumer online



shopping behavior (Mars Research, 2018) solidify this location's relevance.

The research was conducted in 14 selected metropolitan and secondary cities on Java Island (clustered as Jabodetabek, Joglosemar, and Gerbang Kertosusila), which collectively represent 39% of Java's smartphone users (APJII, 2022). The study uses a cross-sectional survey design to analyze the correlation dynamics between variables.

Sampling Technique

The target population comprises individuals intending to shop online on Java Island. Given the unknown exact distribution of the population, a non-probability sampling technique was utilized. The sample was taken from the selected city clusters (Jabodetabek, Joglosemar, and Gerbang Kertosusila) which are known to have dropship facilities.

The sample was selected based on specific criteria established by the researchers (Baran, 2016):

1. Must be a smartphone user with access to the internet.
2. Must have prior internet usage experience.
3. Must include respondents across four generational categories (McCrindle, 2017): Baby Boomer (aged 53+), Generation X (aged 42–52), Generation Y/Millennial (aged 24–41), and Generation Z (aged 13–23).

The final sample size was determined to be $N=720$ respondents, satisfying the minimum requirements for correlation and regression analysis (Sekaran, 2006). The calculation was derived using the Ssize formula (Lemeshow et al., 2019) as follows:

Step 1: Initial calculation:

$$n = 3,816 * (0,5 * (1 - 0,5)) = 96,04$$
$$0,1 * 0,1$$

Step 2: Check if the Finite Population Correction (FPC) is applicable. If the initial n calculated above is 10% or more of the size of the majority of the age group, then the FPC can be applied. If the FPC can be applied, then continue with the sample size calculation. If the FPC cannot be applied, then proceed to Step 3 below.

Step 3: Multiplying by the design effect and the estimated age number:

$$n = 96,04 * 1,5 * 4 = 576,24$$

Step 4: Adjusting for expected non-response to obtain the final sample size:

$$n = 576,24 / 0,8 = 720$$

The final sample size of $N=720$ was distributed proportionally across the survey locations.

Table 1. Population distributed proportionally.

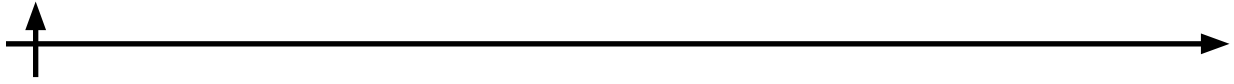
No.	City Cluster	Sample Size (N)
1	Jabodetabek	328
2	Joglosemar	190
3	Gerbang Kertosusila	202
Total		720

Data Collection and Timing

Data was collected using a digital-based questionnaire survey. The research fieldwork was conducted between September and October 2023.

Statistical Data Analysis Technique

The inferential data analysis technique utilized in this study is Partial Least Squares Structural Equation Modeling (PLS-SEM), implemented using the SmartPLS 3 software.



Rationale for Using Partial Least Squares (PLS-SEM)

PLS is a powerful estimation method for structural models that operates with a distribution-free approach, meaning it does not rely on the assumption of data normality. It is particularly effective for handling complex relationships between variables and accommodating smaller sample sizes (Hair et al., 2010).

The key advantages for using PLS in this research include:

1. **Robustness to Distribution:** It is not limited by the assumption of multivariate normal data distribution, allowing the use of various indicator scales (nominal, ordinal, interval, ratio) within the same model.
2. **Model Complexity and Estimation:** PLS can estimate models with a large number of latent and manifest variables without encountering data estimation problems.
3. **Model Specification:** Because the method is focused on maximizing predictive power and uses limited estimation procedures, the influence of model misspecification on parameter estimates is minimized.
4. **Indicator Flexibility:** It can simultaneously analyze constructs formed by reflective and formative indicators.
5. **Data Refinement:** PLS-SEM allows for the elimination of inconsistent instrument items using the bootstrapping procedure, which is not feasible in Covariance-Based SEM (CB-SEM) without prior pilot testing and refinement (Ghozali, 2012).
6. **Moderator Analysis:** PLS-SEM can directly compute and test moderator variables.

PLS-SEM Analysis Steps

The PLS analysis process involves evaluating two sub-models and testing hypotheses using the resampling (Bootstrapping) method to determine statistical significance.

1) Designing the Structural Model (Inner Model)

The Inner Model specifies the relationships between the latent constructs, based on the research hypotheses. The model is evaluated by examining the R² value for the endogenous variables, which indicates the explanatory power of the model. Path coefficients are estimated using the bootstrapping procedure, where a relationship is deemed significant if the t-statistic is greater than 1.96 (at a 5% significance level) or greater than 1.65 (at a 10% significance level).

2) Designing the Measurement Model (Outer Model)

The Outer Model defines how each block of indicators relates to its corresponding latent variable. This step determines the nature of the indicators (reflective or formative) based on the operational definition of the variable.

3) Conversion of Path Diagram to System of Equations

- a. The basic equation model of the Inner Model can be written as follows:

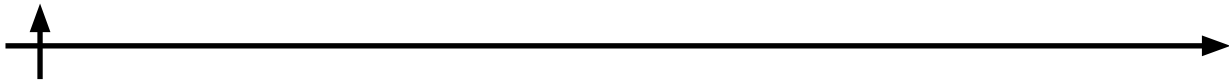
$$\eta = \beta_0 + \beta\eta + \Gamma\xi + \zeta\eta_j + \sum i\beta_{ji}\eta_i + \sum i\gamma_{jb}\xi_b + \zeta_j$$

Information:

- η — endogenous latent construct matrix
- β — coefficient matrix of endogenous variables
- ξ — exogenous latent construct matrix
- Γ — exogenous variable matrix coefficients
- ζ — inner model residual matrix

- b. The basic equation model of the Outer Model can be written as follows:

$$\begin{aligned} X &= \Pi_X \xi + \varepsilon_X \\ Y &= \Pi_Y \eta + \varepsilon_Y \end{aligned}$$



Information:

x dan y — matriks variabel manifest independen dan dependen

ξ dan η — matrix of independent latent constructs and dependent

Π — coefficient matrix (loading matrix)

ε — outer model residual matrix

Estimation of Weights, Path Coefficients, and Loadings

The parameter estimation method in PLS is the Least Squares method. The iterative calculation process estimates three parameters:

1. Weight estimates used to calculate the latent variable scores.
2. Path estimates linking the latent variables and loading estimates linking latent variables to their indicators.
3. Mean and location parameters (regression constant/intercept) for the indicators and latent variables.

Goodness-of-Fit Evaluation

The overall model fit is evaluated using the R^2 of the dependent latent variables and the Q^2 Predictive Relevance. The Q^2 value measures how well the observed values are reconstructed by the model and its parameters. The formula is:

$$Q^2 = 1 - (1 - R^2_1)(1 - R^2_2) \dots (1 - R^2_p)$$

where $R^2_1, R^2_2, \dots, R^2_p$ are the R^2 values of the endogenous variables. Q^2 ranges from 0 to 1, with values closer to 1 indicating better predictive relevance, which is equivalent to the total coefficient of determination in path analysis.

Hypothesis Testing

Hypotheses (paths β, γ) are tested using the Bootstrapping resampling method, which allows for a distribution-free approach and is not dependent on large sample size assumptions. The t-test statistic is used, and hypotheses are supported if the p -value ≤ 0.05 (or t -statistic > 1.96).

Result

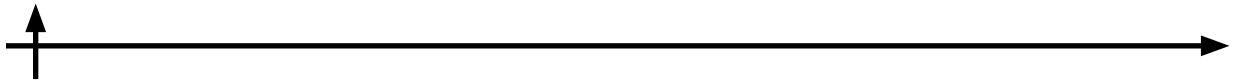
Profile of Online Shopping Consumers in Key Urban Areas

The demographic profile of the $N=720$ respondents highlights an online consumer segment characterized by youth, a female skew, moderate to high education levels, and concentration within major metropolitan areas. The sample exhibited a gender distribution with 57.6% female and 42.4% male participants. Age distribution was overwhelmingly dominated by younger generations, with Generation Z (13–23 years) at 68.8% and Millennials (24–41 years) at 20.1%, collectively accounting for 88.9% of the total sample.

This supports the observation that the Millennial generation "tends to have better education and is keen on online shopping". Conversely, the older demographic (Baby Boomers, 53–69 years) comprised only 4.2% of the sample. In terms of education, the largest segment reported high school graduation (Tamat SMA Sederajat) at 39.3%, followed by Diploma holders at 24.6%, and a significant proportion holding Postgraduate degrees (Tamat Pasca Sarjana) at 21.6%. Regionally, the majority of respondents were domiciled in Jabodetabek (45.6%), with Joglosemar and Gerbang Kertosusila comprising 26.4% and 28.1%, respectively, underscoring the study's focus on these key urban centers.

Mobile Connectivity and Information Sourcing

Analysis of mobile network usage indicates that Telkomsel holds the largest market share among respondents at 45.1%, followed by XL (28.1%) and Indosat Ooredoo (15.5%). This distribution aligns with Telkomsel's established status as a "market leader" with the "widest coverage" and a base of "high-value customers". Given the robust growth of data communication services and the Internet of Things (IoT), the priority for telecommunication operators is



undergoing a strategic shift from merely expanding the Total Addressable Market to enhancing service quality. The primary sources for online shopping information distinctly reflect the young demographic's social media usage, with Instagram (50.0%) and Facebook (28.5%) dominating. This pattern confirms the dominant influence exerted by companies owned by Mark Zuckerberg in shaping online consumer information pathways. Furthermore, this high reliance on social media for information is consistent with 2017 APJII research reporting that the majority of internet users are concentrated in the Java region.

Online Purchase Behavior and Platform Preference

The respondents' online shopping behavior is characterized by a distinct set of preferred product categories. These are led by Fashion (32.0%), followed by Cosmetics (22.5%) and Gadgets (22.1%). This finding partially contrasts with a 2016 MARS research report which, while agreeing on the popularity of fashion/clothing (45.8%), listed cosmetics at a much lower 3.5%. In terms of platform preference, the study found that Tokopedia is the most preferred online shopping site, selected by a majority of respondents at 64.9%, followed by Shopee (19.4%) and Lazada (8.1%). This platform ranking generally correlates with findings from the iPrice Indonesia (October 2018) study on the Indonesian eCommerce Map.

Descriptive Statistics of Study Variables

The analysis of descriptive statistics was performed using data obtained from respondent answers to each measuring indicator for the variables under study. It is noted that certain indicators were excluded from the descriptive presentation as they were not utilized in the formal hypothesis testing. The resulting mean scores, which range from 10 to 25, collectively indicate that all variables received high scores, suggesting a generally positive perception across the constructs investigated.

The Accessibility variable, with a theoretical range of 8 to 20, yielded a mean value of 15.61 and a standard deviation of 3.16. The mean score closely approximates the median value of 16, suggesting that respondents perceive ease in accessing the internet. However, the standard deviation of 3.16 indicates a dispersed variability in these perceptions.

The Convenience variable had a theoretical range of 8 to 15, resulting in a mean of 12.91 and a standard deviation of 1.80. With the mean score closely approaching the median of 13, it can be concluded that respondents generally feel comfortable with online shopping. The relatively low standard deviation suggests a homogeneous variability in these responses compared to other variables.

For the Credibility variable, the theoretical range spanned 12 to 25, showing a mean of 18.22 and a standard deviation of 3.07. The mean of 18.22, which is near the median of 19, suggests that respondents agree that the accessed startups are credible.

The Attitude variable's theoretical range was 10 to 25, with a mean score of 19.58 and a standard deviation of 3.37. The mean is close to the median of 20, indicating that respondents possess a positive attitude toward online shopping. Similar to Accessibility, the standard deviation suggests a dispersed variability in these attitudinal responses.

The table below summarizes the descriptive statistics for the five key variables investigated in the study, based on a sample size of N=720.

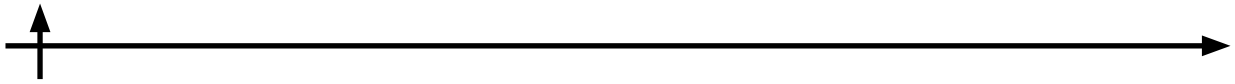


Table 2. The descriptive statistics.

Variable	N	Minimum	Maximum	Mean	Median	Standard Deviation
Accessibility	720	8	20	15.61	16	3.16
Convenience	720	8	15	12.91	13	1.80
Credibility	720	12	25	18.22	19	3.07
Attitude	720	10	25	19.58	20	3.37
Intention	720	10	30	22.67	23	4.05

Finally, the Intention to shop online variable had the broadest theoretical range of 10 to 30, resulting in the highest mean score of 22.67 and the largest standard deviation of 4.05. The mean value aligns closely with the median of 23, indicating that respondent intention for online shopping is high. However, the substantial standard deviation reveals that the variability in these intentions is highly dispersed. In conclusion, the collective descriptive data demonstrates that respondents hold diverse and varying perceptions regarding the variables examined in this study.

Hypothesis Testing

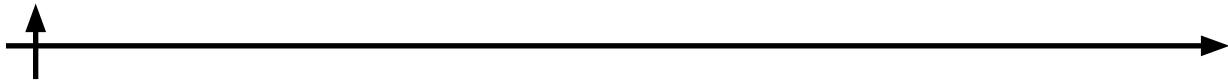
The significance test in the SEM PLS model aims to determine the influence of exogenous variables on endogenous variables. Hypothesis testing using the SEM PLS method is performed by conducting a bootstrapping process with the aid of the SmartPLS 3.0 computer program, which yields the influence of the exogenous variables on the endogenous variables.

Hypothesis testing is conducted after the structural model evaluation stage. This is done to ascertain whether the proposed hypothesis is accepted or rejected.

- A path coefficient value ranging from -0.1 to 0.1 is considered not significant.
- A coefficient value > 0.1 is considered significant and directly proportional (positive relationship).
- A coefficient value < -0.1 is considered significant and inversely proportional (negative relationship) (Hass and Lehner, 2009).

Table 3. Bootstrapping Calculation Results Mean, STDEV, T-Values, P-Values.

	Sampel Asli (O)	Rata-rata Sampel (M)	Standar Deviasi (STDEV)	T Statistik (O/STDEV)	P Values
Accessibility → Convenience	0,549	0,548	0,034	16,172	0,000
Accessibility → Credibility	0,353	0,351	0,037	9,478	0,000
Accessibility → Attitude	0,126	0,128	0,037	3,405	0,001
Accessibility → Intention	0,128	0,129	0,030	4,301	0,000
Convenience → Attitude	0,432	0,431	0,038	11,467	0,000
Convenience → Intention	0,076	0,074	0,031	2,420	0,016
Credibility → Attitude	0,302	0,303	0,031	9,822	0,000
Credibility → Intention	0,258	0,257	0,024	10,642	0,000
Attitude → Intention	0,515	0,516	0,026	19,825	0,000
Moderating Effect of Convenience → Attitude	0,005	0,007	0,031	0,158	0,874
Moderating Effect of Credibility → Attitude	0,107	0,105	0,029	3,664	0,000



End of Table 3.

	Sampel Asli (O)	Rata-rata Sampel (M)	Standar Deviasi (STDEV)	T Statistik (O/STDEV)	P Values
Moderating Effect of Attitude → Intention	-0,166	-0,165	0,024	6,831	0,000
Moderating Effect of Credibility → Intention	-0,008	-0,009	0,024	0,328	0,743
Moderating Effect of Attitude → Intention	0,111	0,111	0,025	4,433	0,000

In addition, to see whether the proposed hypothesis can be accepted or rejected, one can look at the t-statistic value generated from the Path Coefficients output (Mean, STDEV, T-Values).

Using a two-tailed test and an alpha (α) level of 5%, the critical value for rejecting and accepting the proposed hypothesis (the t-table value) is 1.96. If the t-statistic value >1.96 , the proposed hypothesis is supported (accepted). Conversely, if the t-statistic value <1.96 , the proposed hypothesis is not supported (rejected) (see Table 3).

Results of Direct and Moderating Effects in Online Shopping Behavior

The analysis tested ten hypotheses concerning the direct and moderating effects on consumer attitude and intention toward online shopping, using a significance threshold where hypotheses were supported if the t-statistic exceeded the critical value of 1.96 and the p-value was below 0.05.

Direct Effects on Attitude and Intention

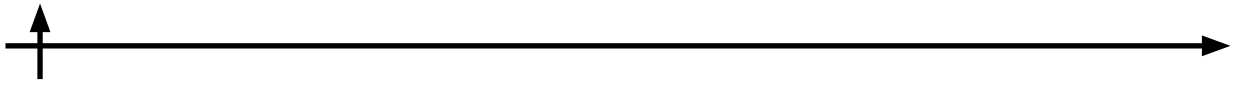
All five direct influence hypotheses (H1 to H5) were statistically supported. Convenience demonstrated a positive and significant influence on both Attitude ($t=11.467$, $p=0.000$) and Intention ($t=2.420$, $p=0.016$). Quantitatively, the influence of Convenience on Attitude was substantial at 43% (Original Sample Estimate =0.432), with this positive Attitude being driven by consumer perceptions of ease, flexibility, and practicality. Its influence on Intention, however, was smaller, estimated at 8% (Original Sample Estimate =0.076).

Similarly, Startup Credibility positively and significantly influenced both Attitude ($t=9.822$, $p=0.000$) and Intention ($t=11.467$, $p=0.000$), contributing 30% of the influence on Attitude and 26% on Intention. The key indicators of this positive influence are trustworthiness, assurance, consistency, transparency, and integrity. The relationship between Attitude → Intention was the strongest observed, proving highly significant ($t=19.825$, $p=0.000$) and accounting for 52% of the total influence on online shopping intention. This powerful effect is fostered by positive affective indicators such as liking, enthusiasm, and excitement toward shopping.

Moderating Role of Internet Accessibility

The moderating role of Internet Accessibility was evaluated following confirmation that all relevant main effects were significant. The results for the moderating hypotheses were mixed. Internet Accessibility did not statistically moderate the relationship between Convenience → Attitude (H6: $t=0.158$, $p=0.874$) or the relationship between Startup Credibility → Intention (H9: $t=0.328$, $p=0.743$). This lack of moderation suggests that once consumers achieve a sense of comfort or perceive a startup as credible, the issue of accessibility ceases to be a constraint, aligning with findings from prior studies conducted in the Netherlands and the United States.

In contrast, Internet Accessibility emerged as a significant moderator in three instances. It significantly moderated the relationship between Convenience → Intention (H7: $t=6.831$, $p=0.000$), although the empirical moderating influence was observed to be negative at -17%.



Furthermore, it positively moderated the paths from Startup Credibility → Attitude (H8: $t=3.664$, $p=0.000$) and Attitude → Intention (H10: $t=4.433$, $p=0.000$), contributing 10% and 11% of the influence, respectively. Notably, for both supported positive moderation effects, the indirect influence of Internet Accessibility through the mediating variable (Startup Credibility → Attitude: 0.344; Attitude → Intention: 0.374) was found to be more effective than its direct influence on the respective endogenous variables (Attitude: 0.126; Intention: 0.128).

Discussion

Consumer Psychographics

This research reveals a unique consumer psychographic dominated by females (57.6%) over males (42.4%). Crucially, the sample is overwhelmingly young, with the majority belonging to Generation Z (68.8%) and Millennials (20.1%) based on McCrindle's (2017) age categories. This composition signifies a notable deviation from prior mainstream reports that were typically dominated by Millennials. The dominance of young female consumers from Generation Z directly aligns with their most common online purchases: fashion/clothing and other products (48.3%), followed distantly by games and other product options (8.8%), and cosmetics and other product options (2.7%). This trend is corroborated by MARS, Incorporated (2017) research, which identified the most frequently purchased online products in Indonesia as clothing (45.8%), accessories (10.9%), shoes (6.7%), and cosmetic products (3.5%).

Online Behavior

Internet Access and Online Shopping Behavior

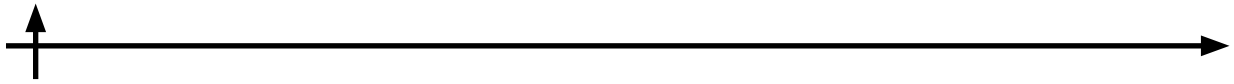
In terms of Internet access and online shopping behavior, a vast majority of respondents access the internet via smartphones, a finding consistent with the APJII (2019) report that 93.9% of Indonesian internet users utilize smartphones. The most used mobile operator is Telkomsel (41.9%), followed by XL (25.4%) and Indosat Ooredoo (10.4%). Telkomsel's position as the market leader with the widest coverage is significant, as its "high value customers" often act as "influencers that actually trigger a growth in the business customer base." Given the recent surge in data communication services and the Internet of Things (IoT), operators are now shifting their focus from Total Addressable Market to prioritizing service quality.

Online shopping via smartphones is heavily concentrated on Java Island, accounting for 58.08% of users (54,915,570 people). Although Mars Research (2017) indicated a significant 20% increase in online shopping behavior across 30 major Indonesian cities compared to the previous period, current growth remains low. In summary, online shopping is concentrated on Java, albeit with low growth, and is dominated by Generation Z consumers who are generally still dependents of their families.

Online Information Sources and Shopping Platforms

The predominance of Gen Z and Millennials also shapes their use of online information sources and shopping platforms. The key platforms for searching for online shopping information via smartphone are social media, with a staggering 96.9% utilizing these channels, in sharp contrast to interpersonal communication (3.1%). Traditional media (radio, newspapers, television) are no longer primary sources. The top platforms are Instagram (50%), Facebook (28.5%), Twitter (5.7%), and Line (4.4%), which suggests a dominance by companies under Mark Zuckerberg, followed by the South Korean-made platform, Line.

Regarding preferred e-commerce platforms for physical goods, Tokopedia (64.9%) overwhelmingly leads the market, followed by Shopee (19.4%), Lazada (8.1%), and Bukalapak (5.8%). The researchers specifically excluded service platforms like Traveloka, Grab, and GoJek to focus on physical goods. It is noteworthy that Shopee ranked second, aligning with the fact that it was the most aggressive advertiser on television and social media during the study period.



This suggests a direct correlation between its advertising strategy and its ability to draw consumers to the platform. This observation is consistent with the iPrice Indonesia (October, 2018) "Map of E-commerce Indonesia" report, which ranked the major players by average quarterly website visitors, placing Tokopedia first.

The Driving Factors of Online Shopping: Convenience, Credibility, and Attitude

The hypothesis testing results reveal a robust set of relationships among convenience, startup credibility, attitude toward online shopping, and ultimately, online shopping intention. These findings provide a structured understanding of the core factors that influence consumer behavior in the digital marketplace, highlighting both the direct effects of these variables and the crucial moderating role of Internet accessibility.

The Positive Influence of Convenience

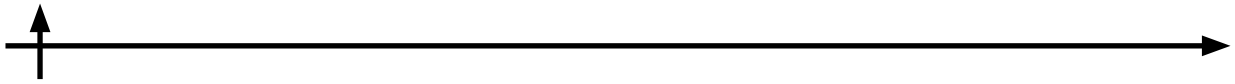
The research strongly confirms a significant and positive influence of convenience on attitude toward online shopping. This high positive estimate suggests that the primary constituents of convenience—specifically the ease and practicality of the online purchasing procedure—are instrumental. Enhanced ease facilitates a favorable shift in attitude, which subsequently predicts a change in purchasing behavior. Fundamentally, consumers value convenience for "freedom from temporal and spatial constraints". This benefit is particularly realized in Indonesian regions like Jabodetabek, Joglosemar, and Gerbang Kertosusila, where robust internet infrastructure meets diverse product needs. This aligns with Tan et al. (2007), who proposed that the "gap between needs fulfillment and the availability of internet connection has a direct effect on whether online shopping is adopted or not", and Seiders et al. (2005), who noted that "convenience influences customer evaluation and purchase behavior," underscoring its essential role in customer retention.

The convenience construct, defined by ease, flexibility, and practicality, exerts a positive effect on online shopping attitude. This is corroborated by Srinivasan et al. (2002), who found convenience is realized when customers perceive the "website is simple, intuitive, and user-friendly". In the e-retail domain, convenience-oriented customers have limited time and seek to save time and effort in online purchasing, suggesting a perceptual shift away from the necessity of physical product interaction. However, a cautionary note from Lakshmi (2016) and To et al. (2007) suggests that while online shopping is highly convenient for access, search, and cost efficiency, it is often reported as "less convenient in terms of transactions".

Moving from attitude to action, the analysis revealed that convenience also exerts a positive and significant, yet quantitatively low, influence on online shopping intention. This intention is structurally driven by the convenience construct, encompassing its ease, flexibility, and practicality components. This result supports numerous studies—including those by Shah Alam et al. (2008) and Chen and Hsu (2009)—that collectively found "convenience has a positive influence on consumer intention for online shopping". Specifically, facets such as navigation ease are identified as determinant factors for online shopping intention. Cumulatively, these findings establish that greater convenience is linked to a higher online shopping intention, suggesting that this "individual's action" is materially influenced by convenience. Conversely, a lack of convenience effectively diminishes consumer inclination toward online purchasing.

The Critical Role of Startup Credibility

The testing demonstrated that startup credibility positively influences attitude toward online shopping with a moderate effect size. This favorable attitude is fundamentally shaped by core credibility attributes of the digital startup's services, including transparency, trust, integrity, security, and consistency. This finding supports the academic consensus that "credibility expressed in the form of trust has a positive impact on the attitude and intention to shop in the online market". Conversely, factors indicative of low credibility, such as "misuse of personal



data or fraud in online payments," were found to negatively impact both attitude and transaction intention.

The analysis further confirmed a positive and significant direct effect of startup credibility on online shopping intention. This influence is the strongest among the external variables (exceeding accessibility and convenience), serving to reinforce the relationship pattern leading from a positive attitude to an intention to purchase. This outcome harmonizes with previous studies that identified a direct relationship between credibility factors and the intention to purchase. Within the scope of this study, intention is influenced by startup credibility indicators encompassing transparency, trust, integrity, security, and consistency. The concept of trust in the digital world is a stable attribute that encourages the dynamics of interactivity between buyers and sellers. Furthermore, transparency is recognized as a key determinant of consumer online shopping intention. Dimensions of virtual credibility, such as "trust and integrity," have a "key role in online transactions to change attitudes and online shopping intentions". Ultimately, a higher level of startup credibility directly correlates with a higher consumer online shopping intention.

The Power of Attitude on Intention

The final test revealed that attitude has a strong, positive, and significant direct effect on online shopping intention. This effect is further magnified by the reinforcing relationships between accessibility, convenience, and credibility with the core attitude construct. The attitudinal dimensions—including enthusiasm, excitement, liking, addiction, and joy—directly predispose consumer online shopping intention. This supports research stating that "a consumer's positive attitude is not shaken by negative information about the attributes of retail goods offered online". The heightened consumer intention is a product of a combined set of dimensions: buyer-seller interaction, desire to purchase, willingness, and general interest in online retail shopping. Empirical data, such as that from the Indonesian E-commerce Association (2015), highlighted high purchase rates for fashion products, mobile phones, and electronics. The findings also affirm that a digital consumer's positive attitude influences online shopping intentions, with hedonic motivation serving as the most influential factor. Consistently, numerous antecedent studies assert that "consumer attitude has a direct influence on online shopping intention".

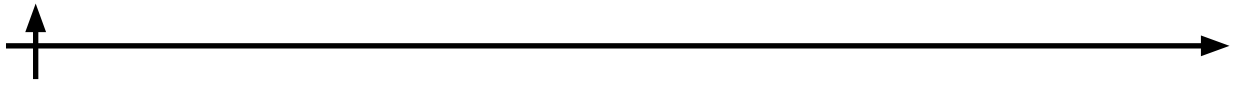
The Moderating Role of Internet Accessibility

The research provides nuanced insights into the role of Internet accessibility as a moderator, distinguishing between its effects on attitude and intention.

Moderation on Convenience

The test for the moderating effect of Internet accessibility on the relationship between convenience and attitude toward online shopping indicated that the moderation hypothesis was not supported. The statistical metrics suggested that Internet accessibility does not statistically moderate the effect of convenience on attitude. This implies that for consumers who are already comfortable and positive about online shopping, their Internet accessibility needs are presumed to be met, leading convenience to empirically impact attitude directly. This aligns with studies in developed countries, suggesting that accessibility is no longer a substantial barrier in e-commerce and thus is not a primary consideration.

However, testing the moderating influence of Internet accessibility on the relationship between convenience and online shopping intention yielded a supported hypothesis. The moderation effect was significant, signifying that Internet accessibility effectively moderates the positive relationship between convenience and online shopping intention. This is consistent with Kotler and Armstrong (2013), who stated that the interaction between convenience and intention is influenced by factors facilitated by Internet accessibility, suggesting that information technology is key. In the digital age, accessible internet has shifted the customer's perception away from the need for physical product touch during online transactions, a transformation supported by



Thaler (2015). The merging of convenience and accessibility is key in influencing this intention.

Moderation on Startup Credibility

The moderation test for the influence of Internet accessibility on the relationship between startup credibility and online shopping attitude was significant. This indicates that Internet accessibility statistically and empirically moderates, and specifically strengthens, the effect of startup credibility on online shopping attitude. The indirect effect of Internet accessibility on attitude via startup credibility was notably stronger than its direct effect, suggesting that it is more effective as an indirect influence through this channel. Internet accessibility is thus appropriately classified as a moderator variable in this relationship, consistent with research asserting that credibility can shift based on consumer perception of website access and content.

Conversely, the moderation test for the relationship between startup credibility and online shopping intention was not supported. The statistical metrics indicated that Internet accessibility does not statistically moderate the influence of startup credibility on online shopping intention. This result suggests that the effect of startup credibility on intention is direct; once a segment of consumers perceives a startup as credible, they are less likely to consider other variables, leading to a direct influence on their intention. This is similar to findings in developed countries where satisfactory Internet access is assumed for consumers who deem a startup credible.

Moderation on Attitude

Finally, the test confirmed that the moderation effect of Internet accessibility on the relationship between attitude and online shopping intention was significant. This implies that the inclusion of Internet accessibility as a moderator variable strengthens the effect of consumer attitude on shopping intention. A positive consumer attitude is only effective in driving online shopping intention when smartphone users have easy, smooth, fast, and stable internet connectivity. This finding reflects the reality in the tested regions, where users receive relatively good data communication and IoT services. The link between attitude and intention in online shopping is not always direct, as it is modulated by Internet accessibility. Ease of internet access and technological familiarity are key factors for customer transaction intention.

Despite these positive findings, a paradoxical situation exists in Indonesia: iPrice (2019) reported that high mobile traffic does not proportionally equate to e-commerce marketing activity and site effectiveness, largely due to issues with platform or site accessibility. A gap exists between the time spent accessing shopping sites and the actual online purchases. This gap is evident in the studied regions. This leads to the online-to-offline (O2O) model, where consumers use internet accessibility for searching and paying for goods and services but may still pick up items at a physical store or nearest agent.

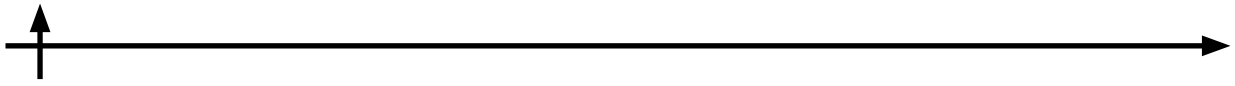
Novelty and Limitations

Novelty Values

The core novelty of this study revolves around the strategic role of Internet accessibility. Consumer data derived from accessibility can be leveraged to understand consumer behavior regarding product needs and domicile. For Startups, this accessibility data allows for collaborations with SMEs to provide segment-appropriate goods and optimize inventory to be closer to consumers. Fundamentally, the novelty lies in Internet accessibility serving as a mechanism for the synchronization and synergy of consumer data, ultimately making the buying and selling process more efficient for Indonesian consumers. Unlike the Netherlands, where accessibility guides the online-to-offline (O2O) model, or the US, where it functions primarily as an information tool, in Indonesia, Internet accessibility acts as a determinant for online shopping.

Limitations

This research is subject to several limitations. First, it exclusively reviewed the positive influence of convenience, startup credibility, and attitude on online shopping intention. Previ-



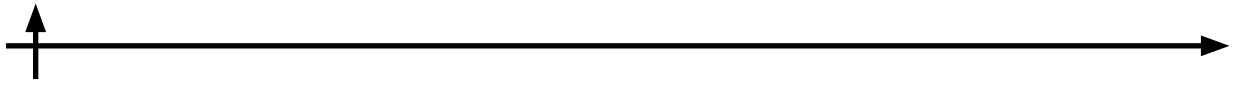
ous studies (Chevalier and Mayzlin, 2006; Dellarocas and Narayan, 2006) have indicated that all online consumer reviews are positive, yet consumer perception of products differs across e-commerce sites (Bei et al., 2004), depending on the information developed by marketers (Bailey, 2005). Future research should incorporate the effect of negative reviews and should also focus on the selection of latent variable indicators beyond the moderator. Second, the study focused only on external factors (consumers).

Further research should test a combination of external and internal e-commerce factors, as both influence competitive advantage and industry performance. Third, the non-significant findings—where accessibility did not moderate the relationship between convenience and attitude, or credibility and intention—were likely due to the concentration of respondents in major metropolitan areas (e.g., Jakarta, Semarang, Surabaya), where off-peak accessibility is not a major constraint. These findings may not fully represent sub-urban or rural Indonesian areas. Furthermore, the study treated Internet accessibility as a single variable, not distinguishing between its technological aspects (signal strength, speed, reliability) and its psychological aspects (quality of website information, ease of product identification and transaction). Finally, the respondents were limited to internet users in regions (Jabodetabek, Joglosemar, and Gerbang Kertosusila) with relatively good data and IoT services. While mobile visits to e-commerce sites have increased in Indonesia, a gap remains in network infrastructure and traffic, with peak visits occurring on weekends but transactions remaining low (iPrice, 2017). This suggests that accessibility in Indonesia still presents a gap between site access time and actual online purchase, making the high smartphone user-to-transaction ratio in the studied regions disproportionate. Expanding the scope beyond these well-served areas could enhance the generalizability of the results.

Conclusion

The study identifies Internet accessibility as a key variable acting as a moderator in the online shopping process in Indonesia, although not all moderation hypotheses were supported. In cases where the moderation hypothesis was not supported, it suggests that Internet accessibility is not a constraint on online shopping, indicating adequate accessibility in those specific areas. Conversely, in cases where the hypothesis was supported, accessibility appears to be a constraint, signaling that network coverage and traffic still require attention. Both sets of findings collectively demonstrate that Internet accessibility is a determinant factor in the online shopping process in Indonesia.

Specifically, the online shopping intention—which is influenced by convenience, startup credibility, and attitude, and is moderated by Internet accessibility—within the Jabodetabek, Joglosemar, and Gerbang Kertosusila regions is summarized by the following ten points: Convenience has a significant positive influence on both attitude and intention toward online shopping. Similarly, startup credibility also shows a significant positive influence on both attitude and intention. Finally, a positive shopping attitude significantly and positively affects intention to shop online. Regarding the moderating effects, Internet accessibility does not moderate the relationship between convenience and attitude, suggesting accessibility is more effective as a direct influence on attitude. However, accessibility does moderate the relationship between convenience and intention, and the relationship between startup credibility and positive attitude. Conversely, accessibility does not moderate the relationship between startup credibility and intention, as the startup's credibility directly influences intention. Lastly, accessibility strongly moderates the relationship between positive attitude and online shopping intention, a relationship that is further strengthened by the combined effects of accessibility, convenience,



and credibility on attitude toward intention.

Implications

Based on the findings above, the research implications that can be put forward are as follows:

Theoretical and Practical Insights

The research provides a crucial theoretical implication by offering an alternative model that specifically highlights the moderating role of Internet accessibility in consumer behavioral processes during online shopping. This finding underscores that building a positive online shopping attitude and enhancing consumer intention is fundamentally tied to a careful consideration of Internet accessibility, addressing both the consumer psychology aspect and the technological infrastructure that supports the experience.

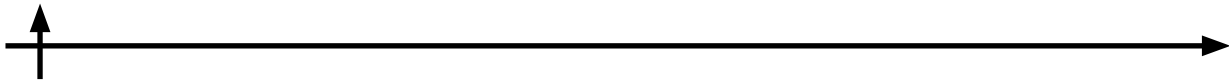
The theoretical insights translate into clear practical implications for online marketers. Strategies should pivot toward emphasizing startup credibility and convenience to positively influence individual attitude and intention. Given that the main contributions to convenience are ease and practicality, startups must focus on improving specialized services and launching promotional initiatives to build consumer awareness regarding the impact of online transactions. Crucially, marketing activities cannot be one-size-fits-all; they must take into account the level of Internet accessibility in each target region. Furthermore, startups need to make significant investments in mobile risk management. This involves securing the mobile infrastructure, enhancing connectivity to websites, providing simple and engaging applications, and implementing sophisticated data protection schemes to mitigate consumer concerns.

Methodological Contribution

On a methodological level, the study contributes a distinct set of measurement constructs. These constructs are specifically tailored to the Indonesian setting, having been developed and validated within the distinct geographic and socio-economic contexts of the Jabodetabek, Joglosemar, and Gerbang Kertosusila regions. This region-specific tailoring ensures the tools are highly relevant and accurate for future research conducted in similar emerging markets.

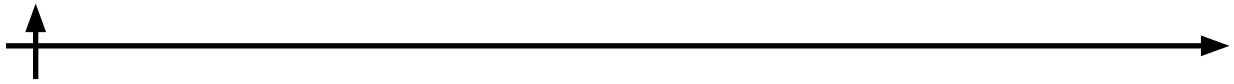
Recommendations

Based on the research findings, the following recommendations are provided for future study and practical application: First, given the study's rigorous testing, the concepts established should be developed and re-tested in different contexts to enhance their generalizability. Literature on online consumer behavior should continue to incorporate a third phenomenon in the form of a moderator variable (e.g., Internet accessibility), as its inclusion can provide more comprehensive findings and make the practical application of marketing strategies more beneficial. Internet accessibility, as an extra-systemic variable, is a crucial moderator whose exclusion could lead to biased research findings. For future research, it is highly recommended to separate Internet accessibility into its distinct psychological (consumer perception) and technological (infrastructure) aspects for more specific analysis. Second, the practical application of the Internet accessibility variable in marketing will be highly beneficial for e-commerce, helping to select the correct market segments and tailor promotional content to those consumers. Third, to improve generalizability, the sample should be expanded beyond Jabodetabek, Joglosemar, and Gerbang Kertosusila using either offline or online survey methods.



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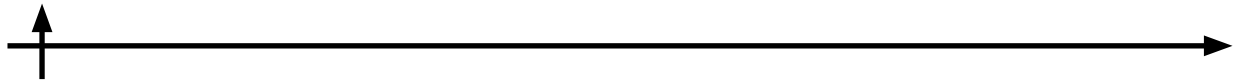
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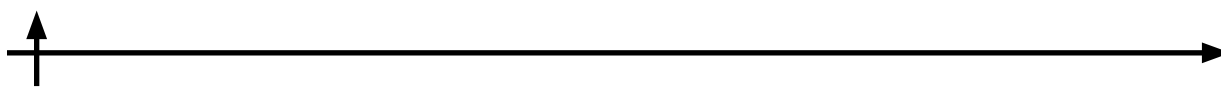
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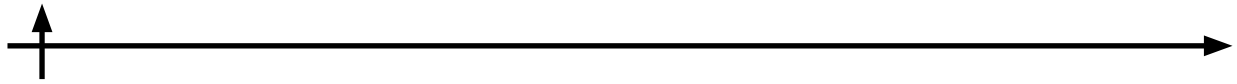
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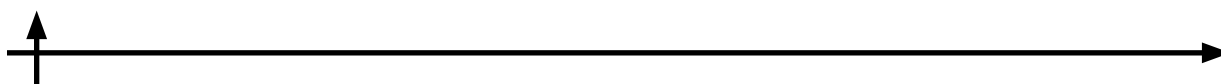
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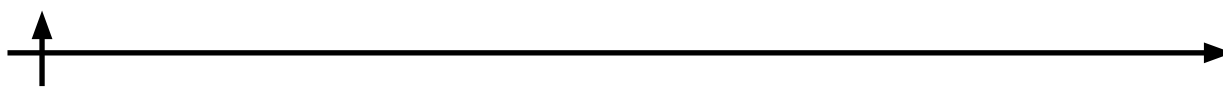
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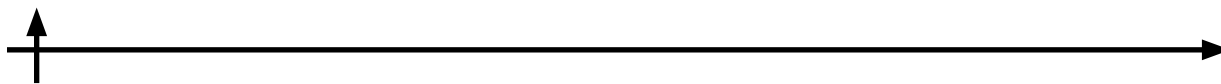
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