



Mediating role of electronic word of mouth 2.0 in the relationship between digital product quality and purchase intention

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ABSTRACT

Background: In 2025, Indonesia's telecommunications industry is dominated by three major providers using GSM-based technology: TSL, IDT, and PX. During the first quarter of 2025, the subscriber base of these leading operators reached significant numbers, with TSL serving 158.81 million users, IDT 95.4 million, and PX 58.8 million. Combined, these three providers accounted for a total of 348 million subscribers. This intense market landscape has fueled strong competition among prepaid card providers, pushing market players and producers to innovate and implement effective strategies in order to secure a competitive advantage. **Methods:** The sampling technique employed in this study is the snowball sampling method. For data analysis, the research applies Partial Least Squares (PLS), which represents a variance-based approach to Structural Equation Modeling (SEM). This method allows for the simultaneous testing of both the measurement model and the structural model, thereby providing a comprehensive framework for evaluating complex relationships among variables. **Findings:** The results of this study demonstrate that both Electronic Word of Mouth (E-WOM) and Product Quality significantly influence Purchase Intention. E-WOM was found to have a positive and significant effect on Purchase Intention ($p = 0.00 < 0.05$), indicating that consumers who are exposed to favorable online reviews and recommendations are more likely to purchase. Digital Product also showed a significant effect on E-WOM ($p = 0.00 < 0.05$), suggesting that high-quality products encourage consumers to share positive experiences through digital platforms. Furthermore, Digital Product directly affects Purchase Intention in a positive and significant manner ($p = 0.009 < 0.05$), confirming that perceptions of product excellence strengthen consumers' purchasing decisions. Overall, these findings highlight that Digital Product not only directly increases Purchase Intention but also indirectly enhances it through its influence on E-WOM. **Conclusion:** The results show that Electronic Word of Mouth (E-WOM) has a positive and significant effect on Purchase Intention at TSL. In addition, Digital Product positively and significantly influences both E-WOM and Purchase Intention, confirming that better Digital Product not only encourages customers to share favorable feedback but also directly strengthens their intention to purchase. **Novelty/Originality of this article:** The novelty aspect refers to the new or innovative elements in a research study that distinguish it from previous work. It includes unique contributions, new methods, or findings that have not been explored before in the field.

KEYWORDS: product quality; electronic word of mouth; purchase intention.

1. Introduction

The telecommunications sector, a crucial subset of Indonesia's information and communication technology (ICT) industry, plays a fundamental role in economic growth and digital transformation by driving innovation and supporting development. However, challenges such as unequal access, high costs, and limited competition continue to hinder

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its contribution. These issues restrict its ability to contribute to inclusive and sustainable progress.

The development of Indonesia's telecommunications industry relies heavily on digital infrastructure. To achieve inclusivity and affordability, significant resources are needed for infrastructure development, which is crucial for meeting market demands. Limited hardware resources often hinder performance in the national economy and at the regional level. However, advancing internet and telecommunications is vital, as ICT forms the foundation of the digital economy that is driving the Fourth Industrial Revolution (Rohman et al., 2025). Recent studies have suggested that mobile broadband expansion significantly contributes to economic development and poverty alleviation. Ariansyah & Hermawati (2024) found that increased 3G and 4G coverage in underdeveloped regions of Indonesia is associated with a reduction in poverty rates and the poverty gap. This highlights the role of mobile broadband as a key driver of economic inclusion, allowing individuals in impoverished areas to access job opportunities, financial services, and educational resources. In the year 2025, the Indonesian telecommunications sector continues to be characterized by the dominance of three major providers that operate using Global System for Mobile Communications (GSM) technology, namely TSL, IDT, and PX. Based on the performance data reported in the first quarter of 2025, these operators maintain a substantial customer base, with TSL recording approximately 158.81 million subscribers, IDT reaching 95.4 million subscribers, and PX serving 58.8 million subscribers. Collectively, the total number of customers across these three providers amounts to 348 million, underscoring the significance of the telecommunications sector within the broader national economy.

Such a massive accumulation of subscribers inevitably intensifies the level of competition among providers, particularly within the prepaid card segment, which remains the most widely used service model in Indonesia. This competitive environment compels industry players and service producers to continuously strengthen their market positioning through strategic innovation, improvement of service quality, and the development of customer-centered value propositions. In this context, the ability to sustain a competitive advantage does not merely depend on infrastructure capacity, but also on brand perception, consumer trust, and the effectiveness of marketing strategies employed to influence customer decision-making.

Internet, social media, mobile applications, and other forms of digital communication technologies have become an integral part of daily life for billions of individuals worldwide. In 2025, the number of internet users in Indonesia reached 229,428,417, representing a penetration rate of 80.66% of the total population. During the same period, Indonesia recorded 143 million active social media identities, equivalent to 50.2% of the national population. Among the various platforms, YouTube emerged as the most widely used with 143 million users, followed closely by Facebook with 143 million, TikTok with 108 million, and Instagram with 103 million users.

Beyond mere adoption, these patterns signify a fundamental transformation in consumer behavior. Individuals are increasingly allocating their time online not only to search for product and service information but also to share experiences, evaluate alternatives, and engage in dialogue with both peers and firms. This behavioral shift illustrates the growing influence of user-generated content in shaping perceptions and purchase decisions, thereby reinforcing the strategic relevance of electronic word of mouth (E-WOM) as a determinant of consumer intention. Moreover, the significant reach of platforms such as YouTube, TikTok, and Instagram indicates that consumer influence is no longer linear or brand-controlled, but rather multidirectional, where networks of users collaboratively shape brand narratives.

Organizations have responded by embedding digital and social media at the core of their marketing strategies, transforming them from supplementary tools into essential drivers of competitiveness (Stephen, 2016). However, this integration also presents challenges: the highly dynamic nature of digital platforms requires continuous adaptation, while the democratization of content production reduces firms' ability to fully control brand

messaging. Consequently, success in this environment depends not only on technological adoption but also on the capacity of firms to cultivate authenticity, responsiveness, and consumer trust in their digital interactions.

The increasing prevalence of online interactions has amplified the importance of Product Quality remains a fundamental driver of consumer evaluations and satisfaction. High-quality products not only meet consumer expectations but also generate positive post-purchase experiences that are likely to be shared online, thereby reinforcing E-WOM (Kotler et al., 2021). Empirical evidence suggests that perceived product quality directly influences consumer trust and loyalty, while also acting as a catalyst for favorable word of mouth in digital environments (Sweeney et al., 2014). In contexts such as telecommunications, where service reliability and performance are paramount, superior product quality can significantly enhance both customer advocacy and purchase decisions.

The concept of digital products has been widely examined in contemporary scientific literature. In many studies, digital products are discussed as a broad scientific category that encompasses diverse aspects of modern goods and services. Kim (2019) emphasizes the importance of incorporating knowledge and information management in the promotion of digital products, which are regarded as a distinct and contemporary form of market offering (Lim et al., 2024). Wang et al. (2019) introduces an evolutionary algorithm designed to address production planning for digital products, illustrated through examples in the aviation and aerospace industries. Oygür et al. (2019) highlight the necessity of specialized skills, which can be developed through education, for the effective design and manufacture of digital industrial products. Similarly, Trilar et al. (2019) argue that the traditional family-based approach to the production of goods and services requires reconsideration in light of the unique characteristics of digital products. Feng & Yu (2019) further observe that digital products follow distinctive pricing dynamics, as evidenced in the smartphone industry, with demand and supply developing under emerging economic frameworks. Gustafsson et al. (2021) conclude that digital products now hold a central role in contemporary supply chains. Likewise, Wehmöller & Rothgang (2018) stress the urgent need for the development and popularization of digital products, identifying them as highly effective in specific contexts such as dental services. Mu et al. (2018) emphasize the significant role of social media technologies in shaping consumer demand and influencing patterns of digital product consumption. Ehikioya (2018) argues for the differentiation of digital products across distinct markets, suggesting that they should be analyzed through varied economic models. Sierla et al. (2018) contend that digital products offer advantages because of their compatibility with automated planning processes for both production and consumption.

Other scholarly works focus on more specific categories of digital products. For instance, Zhang (2019) explores remotely purchased products through online trade, while Liu et al. (2012) examine online-based products and services more broadly. Digital devices, particularly high-technology goods, have been investigated Guo et al. (2019) and Petrenko et al. (2018). Services delivered via digital technologies are analyzed in studies by Juric & Lindenmeier (2019) as well as Sierra et al. (2019). Remote training and digital education are addressed by Wang et al. (2019) and Stefanovic et al. (2009). The area of digital finance, including electronic banking and non-banking financial services, has been examined by Huei et al. (2018). Furthermore, e-government and other forms of digital state services are analyzed in the research of (Ashaye & Irani 2019).

Digital product success depends on customer-driven development because it aligns products with market needs which drives innovation, performance improvements and at the same time reduces exposure to development risk. Organizations achieve higher adoption rates and stronger value propositions when they incorporate customer feedback and insights into their product development process to create products that better meet consumer demands (Zhan et al., 2019; Cooper 2019). Active customer participation in the development process encourages greater innovation, as user-generated insights drive the creation of new product features and solutions that may not emerge solely from internal teams (Morgan et al., 2018). Moreover, customer involvement enhances product performance by refining functionality, usability, and overall quality, though its success is

contingent upon technological capabilities and the stage of the development process (Cui & Wu, 2017).

Beyond innovation benefits, customer-driven product development also contributes to cost efficiency and risk reduction by allowing firms to eliminate unnecessary features early in development, leading to more efficient resource allocation, as previously reported (Fuchs & Schreier, 2011). Additionally, companies that effectively manage customer knowledge and engagement gain a competitive advantage, strengthening customer relationships and brand loyalty while ensuring market-aligned product offerings (Zhan et al., 2019). However, while customer-driven product development is widely recognized as a strategic approach for aligning innovation with user needs, recent literature cautions that excessive reliance on customer input may constrain breakthrough innovation. Some studies find that customer involvement often leads to incremental improvements rather than radical product shifts, especially when customers lack the vision for unarticulated or disruptive needs (Donthu et al., 2021). Moreover, the effectiveness of customer-driven strategies can vary across industries and organizational maturity levels (Cui & Wu, 2018). These unresolved tensions point to a need for a more contextual understanding of CDPD, particularly when paired with other organizational capabilities like digital agility and AI-driven project practices.

This study contributes to this debate by exploring how customer-centricity interacts with broader innovation frameworks in shaping digital product outcomes. Beyond customer involvement, digital product success depends on open innovation which is a paradigm that suggests organizations can and should use external as well as internal ideas and market pathways to enhance their technology. This approach contrasts with the traditional model of innovation, where companies rely solely on their internal research and development. Open innovation improves digital product success through enhanced innovation performance and product development speed while building digital trust and promoting sustainability with economic growth. Open innovation enables organizations to develop advanced digital technologies through the integration of multiple external knowledge sources and resources which are vital for continuous innovation (Zhan et al., 2019). Deep external collaborative efforts alongside broad partnerships help accelerate new product development when they match an efficient business model (Zhu, et al. 2019). Open innovation strategies become more effective through the enhancement of digital trust which results from Industry 4.0 technology adoption and this leads to innovation processes and products that deliver higher efficiency and impact (Mubarak & Petraite 2020). Moreover, open innovation partnerships between firms and universities, NGOs and industry stakeholders create pathways to economic success and sustainability objectives which show that open innovation systems can support both environmental responsibility and profitability (Rauter et al., 2019). On the other hand, emerging research highlights key limitations. Overextending openness can lead to challenges such as IP leakage, reduced strategic focus, increased coordination complexity, and difficulty in managing trust across boundaries (Ghahtarani et al., 2020; Greco et al., 2016). Some scholars argue for an inverted U-shaped relationship, where moderate openness maximizes performance, while excessive collaboration may hinder it. This debate remains unresolved, particularly in digital contexts where collaboration is often mediated by AI systems. This study addresses this gap by examining how AI influences the relationship between open innovation and product success, providing evidence that openness may become less effective when mediated by rigid or overly structured AI-driven project systems.

Another important factor for product success in digital environments is digital agility which helps organizations to quickly adjust to disruptions, increase customer responsiveness and integrate digital resilience and workforce agility. When firms can quickly react to emerging digital changes they find new opportunities for innovation which keeps them competitive in rapidly changing markets (Ariansyah & Hermawati, 2024; Guo et al., 2019). Companies use data analytics and aggregation tools to boost customer agility which enables them to detect and react to customer preference shifts and market trends essential for achieving new product success (Gustafsson et al., 2021). Organizational agility together with information systems agility makes digital product development successful

by enabling firms to seize digital opportunities more quickly than their competitors which proves crucial in converging markets (Hajli et al., 2020). The combination of collaborative mindsets with innovation capabilities and adaptability in workforce agility significantly advances digital transformation and drives product innovation. Organizations become more resilient when employees engage in knowledge sharing and continuous learning, as reported in recent analysis (Hennig-Thurau & Walsh, 2004). Organizations maintain long-term product success through digital resilience which includes digital adaptation together with cybersecurity preparedness and operational continuity to withstand disruptions. Businesses that integrate strategic agility with digital platform capabilities can better respond to unstable conditions while improving their market stance and product outcomes (Jung et al., 2020). However, recent work suggests that agility alone does not guarantee performance. In some cases, agility may emerge as a reactive response to environmental volatility rather than a proactive strategic asset (Juric & Lindenmeier, 2019). Furthermore, the capability to pivot quickly can strain organizational coherence and lead to fragmentation in decision-making (Kim, 2019). These nuances suggest that digital agility must be studied in combination with complementary factors such as innovation networks, customer engagement, and AI-enabled processes. The present study contributes by positioning digital agility within a broader framework of enablers and testing its conditional impact on digital product success.

Digital product success is increasingly understood as a function of customer-driven development, which ensures organizational outputs align closely with dynamic market needs. By systematically embedding customer insights into product development, firms can enhance innovation, performance, and risk management simultaneously (Cooper 2019; Zhang, 2019). Evidence suggests that such customer participation not only improves product adoption but also strengthens value propositions by ensuring that services remain relevant and usable (Morgan et al., 2018). Moreover, CDPD contributes to efficiency by allowing firms to eliminate unnecessary features early, thus conserving resources while reducing exposure to costly development failures (Fuchs & Schreier, 2011). In Indonesia, TSL has adopted this approach by tailoring its digital offerings—such as prepaid data packages, loyalty applications (e.g., MyTSL), and entertainment bundles—based on user feedback and shifting consumption patterns. For example, TSL's adaptation of streaming bundles and its Gamification Rewards Program reflects the incorporation of customer-driven insights into product design. However, literature cautions that an overemphasis on customer input risks constraining radical innovation, as customers often articulate incremental needs rather than disruptive possibilities. This limitation is particularly relevant for TSL, which must balance short-term responsiveness to consumer demands with long-term strategic innovation in areas like 5G adoption and Internet of Things (IoT) services.

Open innovation provides a second critical pathway for digital product success, particularly in contexts where technological dynamism outpaces the capacity of internal R&D (Greco et al., 2016). By drawing on external partners, firms can accelerate innovation cycles, diversify knowledge sources, and improve digital trust (Mubarak & Petraite 2020). TSL's collaboration with global technology providers (such as Ericsson, Huawei, and Nokia) in deploying 5G pilots exemplifies the integration of external resources into domestic innovation strategies. At the same time, TSL engages with local startups through the TSL Innovation Center (TINC), fostering ecosystem-wide collaboration in fintech, IoT, and AI-based solutions. These partnerships not only expand TSL's service ecosystem but also enhance inclusivity by bringing localized innovations to underserved communities. However, research warns that excessive openness can result in IP leakage, increased coordination complexity, and diluted strategic focus (Zhu et al., 2019). For TSL, which operates within Indonesia's competitive telecommunications sector, striking the right balance between openness and control is essential—leveraging external synergies without compromising proprietary assets or national security interests. Thus, open innovation complements CDPD by enabling TSL to integrate customer insights with broader ecosystem collaborations, ensuring both speed and breadth in product innovation.

Finally, digital agility emerges as the enabler that integrates CDPD and open innovation into a coherent strategy, allowing TSL to adapt rapidly to market disruptions while sustaining competitiveness. Digital agility enhances responsiveness to shifting consumer preferences, supports workforce adaptability, and strengthens resilience against technological and environmental volatility (Ravichandran, 2018). TSL demonstrated agility during the COVID-19 pandemic by expanding digital learning platforms (Ilmupedia), supporting remote work solutions, and strengthening fintech integration through LinkAja. By leveraging data analytics and AI, TSL can monitor customer behavior in real time and adapt service bundles accordingly, reinforcing its role in Indonesia's digital transformation. Organizational agility, when coupled with platform agility, enables TSL to capture emerging opportunities in converging industries such as digital finance, cloud services, and entertainment (Hajli et al., 2020). Yet, agility also carries risks if applied reactively; fragmented decision-making or incoherent product portfolios can undermine long-term competitiveness (Liang et al., 2017). For TSL, sustained digital agility must therefore be framed as a proactive strategic asset that integrates customer-driven insights and ecosystem partnerships, rather than a short-term response to volatility.

The notion of digital product quality remains underexplored, as it constitutes a relatively new category within contemporary economic science. Waldfogel (2016) highlights that the quality of digital products is fundamentally distinct from that of traditional, pre-digital goods, although he does not propose a concrete methodology for its measurement, using cinematographic works as an illustrative example. Lee & Bae (2012) emphasize the growing necessity of engineering-based approaches to strengthen quality control mechanisms in serial digital products. In a similar vein, Bravi et al. (2018) advocate for the establishment of specialized production laboratories dedicated to ensuring and managing digital product quality. From a strategic perspective, Singla (2018) argue that quality management plays a crucial role in promoting entrepreneurial sustainability within the digital economy, drawing evidence from the processing industry. Vasilyeva et al. (2018) stress the importance of conducting systematic analyses to evaluate the quality of digital products, while Shojaei et al. (2019) and Mulema (2018) propose the adoption of cyclical quality management systems tailored for digital outputs. Other contributions, such as those by Popkova (2019), Garina et al. (2018), Popkova & Sergi (2019), and Sergi et al. (2019) further explore aspects of defining, assessing, and analyzing digital product quality as a distinct category of goods and services.

The cumulative findings of these studies suggest that, although the concept of digital products has gained recognition in modern economic scholarship, significant gaps remain in terms of understanding their quality dimensions and their relevance across different categories of digital goods. Consequently, further theoretical and empirical investigation is required to bridge these gaps. A distinguishing feature of this research agenda, compared to earlier works, is the move away from universalized notions of digital product quality toward a more differentiated analysis. Such an approach must account for the perspectives of all stakeholders—including consumers, whose perceptions of digital product quality have largely been neglected in existing literature.

Electronic word of mouth (eWOM) has its origins in the traditional concept of word of mouth (WOM), which emerged in the mid-20th century (Liu et al., 2024). WOM was initially described as “oral, person-to-person communication between a receiver and a communicator whom the receiver perceives as non-commercial, concerning a brand, a product, or a service” (Liu et al., 2024). Early applications of WOM in marketing largely emphasized its role as an informal promotional tool, often utilized to support the introduction of new products (Liu et al., 2024). By the 1960s and 1970s, scholars and practitioners increasingly recognized the influence of WOM throughout the entire consumer decision-making process, from need recognition to post-purchase evaluations (Liu et al., 2022). Yet, subsequent research also began to underline the potential risks associated with WOM, particularly its detrimental effects when negative messages circulated within consumer networks.

Bibliometric analysis provides a systematic approach to understanding patterns, trends, and knowledge structures within a research domain (Donthu et al., 2021). In the context of eWOM, Donthu et al. (2021) examined publication trajectories, methodological preferences, thematic clusters, and research orientations. Their findings highlight the growing academic and practical significance of eWOM. The study reports that most publications originate from North America and Europe, reflecting the strong influence of internet adoption and social networking platforms in these regions. Methodologically, the field is dominated by mixed designs that combine conceptual frameworks with empirical validation, with surveys being the most common data collection tool, though other sources are occasionally employed. The emphasis of eWOM research remains largely on theory development, underscoring the dynamic and evolving nature of this field.

Through keyword co-occurrence analysis, several dominant themes in eWOM research have been identified, including negative WOM, consumer trust, social media interactions, online reviews, brand loyalty, service quality, corporate social responsibility, and viral marketing. Furthermore, four research fronts currently shape the discourse: determinants of eWOM, its role in the hospitality sector, cognitive mechanisms underlying eWOM, and issues of service failure and recovery. Collectively, Donthu et al. (2021) study offers valuable direction by mapping methodological tendencies, dominant themes, and emerging research clusters, thereby serving as a roadmap for future investigations into eWOM.

Traditionally, eWOM has been conceptualized as occurring throughout the consumer decision-making process, with pre-purchase behaviors characterized by information-seeking and post-purchase behaviors involving message-giving. However, with the ubiquity of mobile technologies, consumers now encounter or generate consumption-related content in real time, creating an environment of information overload that significantly alters behavioral patterns (Liu et al., 2020). Consequently, consumer engagement with eWOM—whether through creating, receiving, or interacting with content—has become increasingly diverse, driven by different psychological motivations and contextual factors (Tran, et al. 2021).

Earlier research often framed eWOM as a linear exchange, where senders provided post-purchase insights to receivers making purchase decisions (Lim et al., 2022). Yet, this framing oversimplifies what is in reality a multifaceted process. For instance, (Babić Rosario et al., 2020) argue that eWOM unfolds across three interconnected stages—creation, exposure, and evaluation—through which consumers may transition fluidly rather than sequentially. Despite this complexity, much of the literature continues to focus narrowly on pre-purchase receiving and post-purchase giving. Additionally, eWOM has rarely been examined in the context of collective decision-making, even though group purchasing represents a growing phenomenon. Online group buying, for example, involves consumers coordinating their purchasing efforts to unlock deals, often contingent upon reaching a specified threshold of buyers (Wu et al., 2015). Platforms such as Groupon, with over 25 million users, and Pinduoduo, with nearly 788 million users, exemplify the scale of this practice (Chow et al., 2022)

Recent contributions, however, expand this perspective Lim et al. (2022) within a Special Issue, demonstrate that eWOM-giving during the pre-purchase stage is particularly relevant in group buying contexts. Here, consumers share information altruistically, motivated by collective benefits rather than direct personal gain. Moreover, Filieri et al. (2023) found that such pre-purchase eWOM—especially affective messages linked to larger discounts—is more prevalent in utilitarian product categories (e.g., consumer electronics) than in hedonic ones (e.g., leisure travel). Together, these findings suggest that eWOM must be understood beyond traditional one-directional roles, recognizing its interactive, multi-stakeholder, and context-specific contributions, particularly in collaborative consumption models such as group buying.

Over time, WOM has been understood as more than just positive or negative product commentary; it represents an informal exchange of evaluative information that is grounded in non-commercial perspectives (Silverman, 2001). Scholars consistently stress that WOM

is conversation-driven, interactive, and involves reciprocal communication between message senders and receivers (Liu & Jayawardhena, 2023).

The arrival of the internet and Web 2.0 technologies fundamentally transformed WOM into its digital form, eWOM. Hennig-Thurau & Walsh (2004) defined eWOM as “any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet”. This definition initially emphasized the informational dimension of eWOM, highlighting its large-scale dissemination through sender–platform–receiver mechanisms (Liu & Jayawardhena, 2023). However, with the development of interactive digital platforms, eWOM has evolved to stress participatory engagement, where “interaction” rather than static “information” takes precedence.

Building on this evolution, scholars have proposed the notion of eWOM 2.0, which refers to digital exchanges initiated by consumer-generated content that involve various stakeholders such as brands, experts, and fellow consumers (Liu et al., 2022). Unlike earlier conceptualizations that emphasized one-way behaviors (e.g., seeking, giving, or transmitting eWOM), eWOM 2.0 highlights the dynamic, multi-directional nature of communication shaped by the structures, interfaces, and communities of different online media platforms. These interactive environments facilitate richer conversations about products, services, and brands, reflecting the increasingly participatory character of digital consumer culture.

Purchase intention refers to the likelihood that consumers plan or are willing to purchase a particular product or service at a given time (Shang et al., 2019). Prior research indicates that a higher level of purchase intention is strongly associated with an increased probability of actual buying behavior. When consumers demonstrate strong purchase intentions, active brand engagement often motivates them to complete the transaction. Furthermore, purchase intention can be understood as a consumer’s willingness to acquire a product or service within a defined time period. Le-Hoang (2020) highlights that consumer willingness to purchase from e-commerce platforms directly influences online buying behavior. Similarly, awareness and familiarity with an online business tend to enhance consumers’ interest in browsing digital marketplaces with the intention of purchasing (Dapas et al. 2019; Ghahtarani et al., 2020). According to Rita et al. (2019), the intention to buy represents the consumer’s expectations about acquiring goods in the future to satisfy personal needs and wants. Nevertheless, such intentions remain subject to change due to unforeseen circumstances, which underscores the necessity for firms to take proactive measures to ensure their offerings are perceived positively (Naseri et al., 2021).

Multiple factors shape purchase intention, including marketing strategies, consumer attitudes, and the degree of importance buyers attach to promotional offers (Jung et al., 2020). Consequently, it becomes essential for online businesses to meet customer expectations in order to strengthen purchase intentions (Dastane 2020). In addition, purchase intention is frequently utilized as a metric for assessing potential distribution strategies, enabling managers to determine whether a business model requires further refinement and to identify suitable customer segments and geographic markets to target (Akram et al., 2021). The importance of purchase intention lies in its predictive capacity, as it is widely recognized as a key indicator of future consumer behavior (Thomas et al., 2019).

Conceptualized purchase intention as consisting of three main types: unintended, partially intended, and fully intended. Unintended purchases, or impulse buying, are characterized by spontaneous decisions made at the point of sale, while partially intended purchases involve a prior decision on product categories but defer brand choices until the purchase moment. Fully intended purchases, in contrast, are highly structured, with both the product and brand determined before entering the store. These categories highlight the complexity of consumer decision-making, which is shaped by multiple factors including brand awareness, brand image, and situational conditions. Kotler et al. (2021) further argues that emotions and contextual influences, such as time pressure or promotional stimuli, can modify purchase intentions, suggesting that both cognitive and affective processes contribute to consumer behavior.

Given this complexity, direct measurement of actual purchasing behavior is difficult, and purchase intention has therefore become a widely accepted proxy (Kim, 2019). To operationalize this construct, Zeithaml (1988) proposed measures such as “possible to buy,” “intended to buy,” and “considered to buy,” while Mathur (1999) developed a four-item scale that captures varying levels of purchase likelihood. These instruments reflect not only consumers’ willingness to purchase but also their confidence and planning in relation to a specific brand or product. The extensive use of purchase intention as a proxy in marketing and consumer research underscores its predictive validity in anticipating actual purchase behavior, even if external conditions occasionally alter the translation from intention to action.

In the digital marketplace, however, purchase intentions are strongly shaped by new dynamics, particularly electronic word of mouth (eWOM) and the perceived quality of digital products. Online platforms amplify consumer interactions, where reviews, ratings, and recommendations provide cues that influence brand awareness, perceived credibility, and trust. Empirical research consistently demonstrates that positive eWOM can strengthen purchase intentions by enhancing product evaluations, while negative eWOM can undermine consumer confidence and reduce willingness to buy. Moreover, digital product quality—whether reflected in functionality, reliability, or user experience—directly influences how consumers interpret and engage with eWOM content. Together, these factors suggest that in the online context, purchase intention cannot be understood in isolation but must be examined as the outcome of interactions between consumer perceptions of product quality, the credibility of eWOM, and the broader digital environment in which purchasing decisions take place.

2. Methods

This study employs a quantitative descriptive research design. According to Nawawi (2003), the descriptive method focuses on examining actual issues or phenomena that occur at the time of the research. Quantitative research, in this context, refers to an empirical approach that collects, analyzes, and presents data in numerical form rather than narrative descriptions. The study adopts a survey-based approach as the primary method of data collection. The sampling technique applied is snowball sampling, which is categorized under non-probability sampling, meaning that not all members of the population have an equal chance of being selected. Snowball sampling allows researchers to identify initial respondents who subsequently help recruit further participants, making it suitable for studies where the population is difficult to access.

For data analysis, this study utilizes Partial Least Squares (PLS), a multivariate statistical technique designed to simultaneously test both the measurement model and the structural model (Abdillah & Jogiyanto, 2015). PLS is a variance-based structural equation modeling (SEM) method that enables the assessment of complex relationships between multiple independent and dependent variables. In SEM, path diagrams are constructed to visualize the conceptual framework, which provides a clearer representation of latent constructs and their indicators, thereby facilitating interpretation. As emphasized by Sinulingga (2013), path diagrams must carefully distinguish between exogenous and endogenous constructs and include their respective manifest variables. Furthermore, the evaluation of model fit, often referred to as goodness-of-fit, is essential to determine the extent to which the proposed model aligns with empirical data, ensuring both theoretical and empirical validity.

3. Results and Discussion

3.1 Result

The descriptive analysis in this study presents an overview of the primary data collected through questionnaires completed by 100 respondents who are TSL users. The

characteristics examined include gender, age, and duration of TSL usage, providing a demographic profile of the respondents. This descriptive stage serves as a foundation for understanding the sample before proceeding to further statistical testing.

The study then employs Structural Equation Modeling (SEM) for hypothesis testing, using SmartPLS as the analytical software. The theoretical model, represented through the path diagram, is analyzed based on the collected data. Each indicator is evaluated by measuring its loading factor on its respective construct. According to Ghazali (2014), a loading factor value greater than 0.7 is considered highly reliable, though in exploratory research a threshold of 0.5 is deemed acceptable. The loading factors of each indicator were calculated using the SmartPLS algorithm to ensure the validity and reliability of the measurement model.

Table 1. Output R Square

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
E-WOM 2	0.584	0.583	0.079	7.399	0.000
Purchase Intention	0.816	0.817	0.052	15.683	0.000

Based on Table 1, the results can be summarized as follows: first, the R-Square value for the E-WOM 2 variable is 58.4%, which falls into the strong category. This indicates that E-WOM can be explained by the independent variables in the model by 58.4%, while the remaining 41.6% is influenced by other factors outside the research model. Second, the R-Square value for the Purchase Intention variable is 81.6%, which is also categorized as strong. This implies that 81.6% of the variance in Purchase Intention is explained by the variables included in the model, whereas the remaining 18.4% is determined by other factors beyond the scope of this study.

Table 2. Path coefficients

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
E-WOM 2 -> Purchase Intention	0.671	0.693	0.107	6.29	0.000
Digital Product -> E-WOM 2	0.764	0.768	0.053	14.39	0.000
Digital Product -> Purchase Intention	0.303	0.279	0.116	2.60	0.009

3.1.1. The effect of E-WOM 2 on purchase intention

The results indicate that E-WOM 2 has a positive and significant influence on purchase intention ($p = 0.00 < 0.05$). This suggests that consumers' engagement with electronic word of mouth enhances their likelihood of purchasing TSL products. Chatterjee (2001) emphasizes that E-WOM 2 can effectively reduce consumers' perceived risks when making purchase decisions, thereby strengthening their purchase intention. In this context, consumers' willingness to share or read comments and reviews on digital platforms becomes a critical driver of decision-making. The emergence of digital platforms such as websites, blogs, chat rooms, and social media has expanded the role of E-WOM beyond traditional face-to-face communication (Hennig-Thurau & Walsh, 2004). The dimensions of E-WOM further explain this effect: (a) Intention, where empathy motivates individuals to share useful information, (b) Positive valence, where positive experiences encourage consumers to share favorable messages, (c) Negative valence, where negative experiences also spread widely, and (d) Content, referring to the active role of TSL in disseminating product-related information via social media. Together, these dimensions highlight the multifaceted nature of E-WOM 2 in shaping consumer purchase intentions.

3.1.2 The effect of digital product on E-WOM 2.

The findings also demonstrate a positive and significant relationship between Digital Product and E-WOM 2 ($p = 0.00 < 0.05$). High product quality encourages consumers to generate positive electronic word of mouth, as reflected in the TSL case. However, product quality alone may not fully drive E-WOM 2, as mediating factors such as brand image and corporate reputation also play a critical role. This aligns with Jeong & Jang's (2011) study in the hospitality sector, which showed that product and service quality can stimulate positive E-WOM. Similarly, Kaplan & Haenlein (2010) argue that social media provides an efficient medium for spreading such messages quickly and at low cost. The role of quality can be further analyzed through key dimensions: performance (signal coverage, connectivity), features (bonus packages, loyalty points), reliability (customer service availability, corporate responsiveness), and perceived quality (brand image and reputation). Interestingly, this study finds that not all dimensions equally drive E-WOM: while reliability and perceived quality significantly encourage E-WOM, performance and features show limited influence, suggesting that consumer loyalty to TSL's brand outweighs certain functional attributes.

3.1.3 The effect of digital product on purchase intention

Finally, Digital Product is shown to have a positive and significant effect on purchase intention ($p = 0.009 < 0.05$). This confirms prior studies (Shaharudin, 2011; Tjiptono, 2008; Anwar, 2015; Anis, 2015), which argue that consumers' purchase decisions are strongly determined by perceptions of Digital Product across dimensions such as performance, durability, features, reliability, aesthetics, and perceived quality. In the case of TSL, while consumers may evaluate the technical and functional aspects of the service, their ultimate purchase decision is also shaped by brand trust and reputation. Kotler et al. (2021) emphasize that purchase intention represents a key stage in the decision-making process, linking information search and evaluation of alternatives to the final act of purchase. Furthermore, the role of marketing strategies such as bundling becomes increasingly relevant in the telecommunications industry. Bundling not only provides added value through lower prices but also creates stronger purchase incentives when the combined products meet consumer expectations. Thus, consistent product quality, supported by strategic marketing, significantly strengthens consumer purchase intention.

3.2 Discussion

The rapid development of the internet has enabled new forms of communication platforms that empower both providers and consumers to exchange information and opinions, spanning from business-to-consumer to consumer-to-consumer contexts. While traditional word of mouth has been studied primarily in face-to-face settings (Bansal & Voyer, 2000; Brown & Reingen, 1987), electronic WOM is now facilitated through websites, blogs, chat rooms, and social media (Hennig-Thurau et al., 2004). The dimensions of E-WOM further clarify this influence: intention, driven by empathy and the desire to share useful information with others; positive valence, where favorable experiences with TSL inspire consumers to spread enthusiastic messages; negative valence, where unfavorable experiences also circulate widely; and content, referring to the active use of social media by TSL to share information. These dimensions illustrate how E-WOM, both positive and negative, plays a critical role in shaping consumer purchase decisions.

Further examination of product quality dimensions provides nuanced insights. Performance—represented by network coverage, connectivity, and speed—was found not to significantly influence E-WOM creation, as consumers continue to use TSL due to strong brand loyalty rather than functional attributes alone. Similarly, features such as bonus content, reward points, and promotional offers did not significantly stimulate E-WOM. In contrast, reliability (e.g., accessible customer service, TSL service centers, and the @TSL

Twitter account for direct interaction) and perceived quality (e.g., brand reputation and competitive service quality relative to other operators) significantly encouraged consumers to generate E-WOM. These findings highlight that while functional performance and additional features may enhance consumer satisfaction, long-term brand trust and perceived reliability are more decisive in driving electronic word of mouth.

Kotler et al. (2021) emphasize that purchase intention represents a crucial stage in consumer decision-making, linking the evaluation of alternatives to the act of purchase. Likewise, purchase intention as a self-instruction that drives consumers toward actual buying behavior. In the telecommunications industry, bundling strategies have become increasingly popular as a way to enhance value perception. Bundling allows providers to offer multiple complementary products at lower prices compared to purchasing them separately, thereby creating stronger incentives for consumers. However, the success of bundling depends on how well the combined products meet consumer expectations. In TSL's case, consistent product quality—supported by value-adding strategies such as bundling—proves to be a significant factor in strengthening purchase intention.

4. Conclusions

This study demonstrates that electronic word of mouth (E-WOM 2) and Digital Product play a central role in shaping consumer purchase intention in the context of TSL's telecommunications services. First, E-WOM 2 was found to have a positive and significant effect on purchase intention, confirming that consumers' online engagement—through reviews, comments, and social media discussions—reduces perceived risks and increases confidence in purchase decisions. Second, Digital Product significantly influenced E-WOM 2, indicating that consumers are more likely to share both positive and negative experiences when product performance, reliability, and perceived quality directly affect their satisfaction. Finally, product quality was also shown to have a direct and significant effect on purchase intention, underscoring that functional attributes and brand reputation jointly encourage consumers to choose TSL Digital Product.

Taken together, these findings highlight that TSL's ability to sustain Digital Product and leverage consumer-driven E-WOM 2 is vital for strengthening purchase intention and maintaining competitiveness in the telecommunications market. From a theoretical perspective, the study reinforces the interdependent relationship between product quality, E-WOM 2, and purchase behavior, extending prior research on consumer decision-making in service industries. Practically, the results suggest that TSL should not only invest in service reliability and performance but also actively manage digital engagement channels to stimulate positive consumer dialogue. By doing so, the company can transform consumer experiences into persuasive E-WOM 2 that further amplifies brand credibility and purchase intention.

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References

- Akram, U., Junaid, M., Zafar, A. U., Li, Z., & Fan, M. (2021). Online Purchase Intention in Chinese Social Commerce Platforms: Being Emotional or Rational? *Journal of Retailing and Consumer Services*, 63. <https://doi.org/10.1016/j.jretconser.2021.102669>
- Ariansyah, K., & Hermawati, I. (2024). The role of mobile broadband in poverty alleviation: A comparison of the effects of 3G and 4G network expansion in underdeveloped regions of Indonesia. *Information Technology for Development* 1-26. <https://doi.org/10.1080/02681102.2024.2361482>
- Ashaye, O. R., & Irani, Z. (2019). The role of stakeholders in the effective use of e-government resources in public services. *International Journal of Information Management* 253-270. <https://doi.org/10.1016/j.ijinfomgt.2019.05.016>
- Babić Rosario, Ana, Kristine Valck, and Francesca. Sotgiu. 2020. "Conceptualizing the electronic word-of-mouth process: What we know and need to know about eWOM creation, exposure, and evaluation." *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-019-00706-1>.
- Chow, C. W., Chow, C. S., Lai, J. Y., & Zhang, L. L. (2022). Online group-buying: The effect of deal popularity on consumer purchase intention. *Journal of Consumer Behaviour* 387-399.
- Cooper, R. G. (2019). The drivers of success in new-product development. *Ind Mark Manag* 36-47. <https://doi.org/10.1016/j.indmarman.2018.07.005>
- Cui, A. S., & Wu, F. (2017). The impact of customer involvement on new product development: Contingent and substitutive effects. *Journal of Product Innovation Management*. <https://doi.org/10.1111/jpim.12326>
- Cui, A. S., & Wu, F. (2018). Utilizing customer knowledge in innovation: Antecedents and impact of customer involvement on new product performance. *Marketing Science*, 37(5). https://ideas.repec.org/a/spr/joamsc/v44y2016i4d10.1007_s11747-015-0433-x.html
- Dapas, C., Sitorus, T., Purwanto, E., & Ihalauw, J. (2019). The effect of service quality and website quality of Zalora.com on purchase decision as mediated by purchase intention. *Quality - Access to Success* 87-92.

- Dastane, O. (2020). Impact of digital marketing on online purchase intention: Mediation effect of customer relationship management. *Journal of Asian Business Strategy* 142-158. <https://doi.org/10.18488/journal.1006.2020.101.142.158>.
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). A bibliometric review of International Marketing Review (IMR): Past, present, and future. *International Marketing Review* 840-878. <https://doi.org/10.1108/IMR-11-2020-0244>
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). Mapping the electronic word-of-mouth (eWOM) research: A systematic review and bibliometric analysis. *Journal of Business Research* 758-773. <https://doi.org/10.1016/j.jbusres.2021.07.015>
- Ehikioya, S. (2018). A formal model of peer-to-peer digital product marketplace. *International Journal of Networked and Distributed Computing* 143. <https://doi.org/10.2991/ijndc.2018.6.3.3>.
- Feng, J., & Yu, K. (2019). Moore's law and price trends of digital products: The case of smartphones. *Economics of Innovation and New Technology* 1-20. <https://doi.org/10.1080/10438599.2019.1628509>
- Filieri, R., Acikgoz, F., & Du, H. (2023). Electronic word-of-mouth from video bloggers: The role of content quality and source homophily across hedonic and utilitarian products. *Journal of Business Research* 160. <https://doi.org/10.1016/j.jbusres.2023.113774>.
- Fuchs, C., & Schreier, M. (2011). Customer empowerment in new product development. *Journal of Product Innovation Management*, 17-32.
- Garina, E. P., Garin, A. P., Kuznetsov, V. P., Popkova, E. G., & Potashnik, Y. S. (2018). Comparison of approaches to development of industrial production in the context of the development of a complex product. In *Advances in Intelligent Systems and Computing* 422-431. https://doi.org/10.1007/978-3-319-75383-6_54
- Ghahtarani, A., Sheikhmohammady, M., & Rostami, M. (2020). The impact of social capital and social interaction on customers' purchase intention, considering knowledge sharing in social commerce context. *Journal of Innovation & Knowledge* 191-199. <https://doi.org/10.1016/j.jik.2019.08.004>.
- Greco, M., Grimaldi, M., & Cricelli, L. (2016). An analysis of the open innovation effect on firm performance. *European Management Journal*. <https://doi.org/10.1016/j.emj.2016.02.008>
- Guo, R., Cai, L., & Fei, Y. (2019). Knowledge integration methods, product innovation and high-tech new venture performance in China. *Technology Analysis and Strategic Management* 306-318. <https://doi.org/10.1080/09537325.2018.1500688>
- Gustafsson, E., Jonsson, P., & Holmström, J. (2021). Reducing retail supply chain costs of product returns using digital product fitting. *International Journal of Physical Distribution & Logistics Management*. <https://doi.org/10.1108/IJPDLM-10-2020-0334>.
- Hajli, N., Tajvidi, M., Gbadamosi, A., & Nadeem, W. (2020). Understanding market agility for new product success with big data analytics. *Industrial Marketing Management*. 86, 135-143. <https://doi.org/10.1016/j.indmarman.2019.09.010>
- Hennig-Thurau, T., & Walsh, G. (2004). Electronic word of mouth: Motives for and consequences of reading customer articulations on the Internet. *International Journal of Electronic Commerce/Winter* 51-74. <https://www.jstor.org/stable/27751096>
- Huei, C. T., Cheng, L. S., Seong, L. C., Khin, A. A., & Bin, R. L. L. (2018). Preliminary study on consumer attitude towards FinTech products and services in Malaysia. *International Journal of Engineering and Technology (UAE)*, 166-169. <https://doi.org/10.14419/ijet.v7i2.29.13310>
- Jung, H. J., Choi, Y. J., & Oh, K. W. (2020). Influencing factors of Chinese consumers' purchase intention to sustainable apparel products: Exploring consumer attitude-behavioral intention gap. *Sustainability (Switzerland)*, 1-14. <https://doi.org/10.3390/su12051770>
- Juric, J., & Lindenmeier, J. (2019). An empirical analysis of consumer resistance to smartlighting products. *Lighting Research and Technology*, 489-512. <https://doi.org/10.1177/1477153518774080>

- Kim, M. (2019). Digital product presentation, information processing, need for cognition and behavioral intent in digital commerce. *Journal of Retailing and Consumer Services*, 362–370. <https://doi.org/10.1016/j.jretconser.2018.07.011>
- Kotler, P., Setiawan, I., & Kartajaya, H. (2021). *Marketing 5.0*. John Wiley & Sons.
- Lee, Y.-C., & Bae, H.-R. (2012). An effective quality assurance for small quantity batch manufactured products with digital engineering. *International Journal of Precision Engineering and Manufacturing*, 1805–1811. <https://doi.org/10.1007/s12541-012-0237-6>
- Le-Hoang, P. V. (2020). Factors affecting online purchase intention: The case of e-commerce on Lazada. *Independent Journal of Management & Production*. <https://doi.org/10.14807/ijmp.v11i3.1088>
- Liang, H., Wang, N., Xue, Y., & Ge, S. (2017). Unraveling the alignment paradox: How does business-IT alignment shape organizational agility? *Information Systems*. <https://www.jstor.org/stable/26653095>
- Lim, L., Ong Hee, L., Teo, P.-C., & Theresa, H. (2024). Online purchase intention of digital products among university students. *Business Management and Strategy*.
- Lim, W. M., Ahmed, P., & Ali, M. Y. (2022). Giving electronic word of mouth (eWOM) as a prepurchase behavior: The case of online group buying. *Journal of Business Research*, 582–604. <https://doi.org/10.1016/j.jbusres.2022.03.093>
- Liu, H., Jayawardhena, C., Osburg, V.-S., & Mohiuddin Babu, M. (2020). Do online reviews still matter post-purchase? *Internet Research*. <https://doi.org/10.1108/INTR-07-2018-0331>
- Liu, H., Shaalan, A., & Jayawardhena, C. (2022). The impact of electronic word-of-mouth (eWOM) on consumer behaviours. In *The SAGE handbook of digital marketing* (pp. 136–158). SAGE. <https://doi.org/10.4135/9781529782509.n9>
- Liu, H., & Jayawardhena, C. (2023). Reconceptualizing eWOM communication: An interactive perspective. In *The Palgrave handbook of interactive marketing* (pp. 547–570). Palgrave Macmillan. https://doi.org/10.1007/978-3-031-14961-0_24
- Liu, H., Jayawardhena, C., Shukla, P., Osburg, V.-S., & Yoganathan, V. (2024). Electronic word of mouth 2.0 (eWOM 2.0): The evolution of eWOM research in the new age. *Journal of Business Research*. <https://doi.org/10.1016/j.jbusres.2024.114587>
- Liu, Y., Wang, L., Yuan, C., & Li, Y. (2012). Information communication, organizational capability and new product development: An empirical study of Chinese firms. *Journal of Technology Transfer*, 416–432. <https://doi.org/10.1007/s10961-010-9188-1>
- Morgan, T., Obal, M., & Anokhin, S. (2018). Customer participation and new product performance: Towards the understanding of the mechanisms. *Research Policy*, 498–510. <https://doi.org/10.1016/j.respol.2018.01.005>
- Mubarak, M. F., & Petraite, M. (2020). Industry 4.0 technologies, digital trust and technological orientation: What matters in open innovation? *Social Change*.
- Mulema, S. A., & García, A. C. (2018). Quality and productivity in aquaculture: Prediction of *Oreochromis mossambicus* growth using a transfer function ARIMA model. *International Journal for Quality Research*, 823–834.
- Naseri, R., Rahmiati, F., & Mohd Esa, M. (2021). Consumer attitude and online purchase intention: A segmentation analysis in Malaysian halal cosmetic industry. *International Journal of Academic Research in Business and Social Sciences*. <https://doi.org/10.6007/IJARBS/v11-i3/8977>
- Popkova, E. G. (2019). Preconditions of formation and development of industry 4.0 in the conditions of knowledge economy. In *Studies in Systems, Decision and Control* (Vol. 169, pp. 65–72). Springer. https://doi.org/10.1007/978-3-319-94310-7_6
- Popkova, E. G., & Sergi, B. S. (2019). *Digital economy: Complexity and variety vs. rationality*. Springer International Publishing.
- Rauter, R., Globocnik, D., Perl-Vorbach, E., & Baumgartner, R. J. (2019). Open innovation and its effects on economic and sustainability innovation. *Journal of Innovation & Knowledge*, 4(4), 226–233. <https://doi.org/10.1016/j.jik.2018.03.004>

- Ravichandran, T. (2018). Exploring the relationships between IT competence, innovation capacity and organizational agility. *Journal of Strategic Information Systems*, 27(1), 22–42. <https://doi.org/10.1016/j.jsis.2017.07.002>
- Rita, P., Oliveira, T., & Farisa, A. (2019). The impact of e-service quality and customer satisfaction on customer behavior in online shopping. *Heliyon*, 5(10), e02690. <https://doi.org/10.1016/j.heliyon.2019.e02690>
- Rohman, I. K., Naufal, M. M., & Naufal, I. (2025). *Indonesian service sector review: Telecommunications*. Economic Research Institute for ASEAN and East Asia (ERIA).
- Sergi, B. S., Popkova, E. G., Sozinova, A. A., & Fetisova, O. V. (2019). *Modeling Russian industrial, tech, and financial cooperation with the Asia-Pacific region*. Emerald Publishing Limited.
- Shang, Q., Jin, J., & Qiu, J. (2019). Utilitarian or hedonic: Event-related potential evidence of purchase intention bias during online shopping festivals. *Neuroscience Letters*, 707, 134665. <https://doi.org/10.1016/j.neulet.2019.134665>
- Shojaei, M., Ahmadi, A., & Shojaei, P. (2019). Implementation productivity management cycle with operational Kaizen approach to improve production performance (Case study: Pars Khodro company). *International Journal for Quality Research*, 13(2), 349–359. <https://oaji.net/pdf.html?n=2019/452-1559580983.pdf>
- Sierla, S., Kyrki, V., Aarnio, P., & Vyatkin, V. (2018). Automatic assembly planning based on digital product descriptions. *Computers in Industry*, 97, 34–46. <https://doi.org/10.48550/arXiv.2104.06509>
- Sierra, A., Gercek, C., Übermasser, S., & Reinders, A. (2019). Simulation-supported testing of smart energy product prototypes. *Applied Sciences*, 9(6), 1194. <https://doi.org/10.3390/app9102030>
- Silverman, G. (2001). *The secrets of word-of-mouth marketing: How to trigger exponential sales through runaway word-of-mouth*. Amacom.
- Singla, A., Ahuja, I. S., & Sethi, A. S. (2018). Comparative analysis of technology push strategies influencing sustainable development in manufacturing industries using TOPSIS and VIKOR technique. *International Journal for Quality Research*, 12(1), 129–146. <https://doi.org/10.18421/IJQR12.01-08>
- Stefanovic, M., Matijevic, M., & Cvijetkovic, V. (2009). Web-based laboratories for distance learning. *International Journal of Engineering Education*, 25(5), 1005–1012. https://www.ijee.ie/articles/Vol25-5/s16_ijee2184.pdf
- Stephen, A. T. (2016). The role of digital and social media marketing in consumer behavior. *Current Opinion in Psychology* 17–21. <https://doi.org/10.1016/j.copsyc.2015.10.016>
- Sweeney, J. C., Soutar, G. N., & Mazzarol, T. (2014). Factors enhancing word-of-mouth influence: Positive and negative service-related messages. *European Journal of Marketing*. <https://doi.org/10.1108/EJM-06-2012-0336>
- Thomas, M. J., Wirtz, B. W., & Weyerer, J. C. (2019). Determinants of online review credibility and its impact on consumers' purchase intention. *Journal of Electronic Commerce Research* 1–20. http://www.jecr.org/sites/default/files/2019vol20no1_Paper1.pdf
- Tran, H. A., Strizhakova, Y., Liu, H., & Golgeci, I. (2021). "If only...": Customer counterfactual thinking in failed recovery. *European Journal of Marketing*. <https://doi.org/10.1108/EJM-12-2019-0883>
- Trilar, J., Zavratnik, V., Cermelj, V., Verovnik, B., Kos, A., & Stojmenova Duh, E. (2019). Rethinking family-centred design approach towards creating digital products and services. *Sensors* 19. <https://doi.org/10.3390/s19051232>
- Vasilyeva, N., Koteleva, N., & Ivanov, P. (2018). Quality analysis of technological process control. *International Journal for Quality Research* 111–128. <https://doi.org/10.18421/IJQR12.01-07>
- Waldfoegel, J. (2016). Cinematic explosion: New products, unpredictability and realized quality in the digital era. *Journal of Industrial Economics* 755–772. <https://doi.org/10.1111/joie.12117>

- Wang, Q., Luo, H., Xiong, J., Song, Y., & Zhang, Z. (2019). Evolutionary algorithm for aerospace shell product digital production line scheduling problem. *Symmetry* 849.
- Wu, J., Shi, M., & Hu, M. (2015). Threshold effects in online group buying. *Management Science* 2025-2040. <https://doi.org/10.1287/mnsc.2014.2015>.
- Zhang, Y. (2019). Application of improved BP neural network based on e-commerce supply chain network data in the forecast of aquatic product export volume. *International Journal of Production Research*. <https://doi.org/10.1080/00207543.2019.1566662>.
- Zhang, Y. (2019). Application of improved BP neural network based on e-commerce supply chain network data in the forecast of aquatic product export volume. *Cognitive Systems Research*. 228-235. <https://doi.org/10.1016/j.cogsys.2018.10.025>
- Zhu, X., Xiao, Z., Dong, M. C., & Gu, J. T. (2019). The fit between firms' open innovation and business model for new product development speed: A contingency perspective. *Technovation* 75-85. <https://doi.org/10.1016/j.technovation.2019.05.005>

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