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PREDICTING CONTINUED USAGE INTENTION BASED ON FIT CONFIDENCE, INNOVATINESS, IMMERSION, AND USER PERCEIVED VALUES

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ABSTRACT

This study aims to analyze the influence of fit confidence, innovativeness, and immersion on continued usage intention through perceived hedonic value, utilitarian value, and social value. The research approach employed a quantitative method with a survey method of AR-based application users, with a purposive sampling technique to ensure respondents were relevant users. Data analysis was conducted using Structural Equation Modeling (SEM) to test the direct and indirect relationships between variables. The results showed that not all proposed hypotheses were empirically proven; however, several variables such as immersion and social value were shown to have a significant influence on continued usage intention. These findings confirm that the level of user engagement and perceived social value are important factors in driving continued usage intention towards AR technology. This study provides theoretical contributions to the digital marketing literature as well as practical implications for developers and marketers in designing engaging and valuable user experiences.

Keywords: Fit confidence, innovativeness, immersion, perceived hedonic, utilitarian value.

ABSTRAK

Penelitian ini bertujuan untuk menganalisis pengaruh fit confidence, innovativeness*, dan* immersion *terhadap* continued usage intention *melalui* perceived hedonic value, utilitarian value, *dan* social value*. Pendekatan penelitian yang digunakan menggunakan metode kuantitatif dengan metode survei terhadap pengguna aplikasi berbasis AR, dengan teknik purposive sampling untuk memastikan responden merupakan pengguna yang relevan. Analisis data dilakukan menggunakan* Structural Equation Modeling (SEM) *untuk menguji hubungan langsung dan tidak langsung antar variabel. Hasil penelitian menunjukkan bahwa tidak semua hipotesis yang diajukan terbukti secara empiris; namun, beberapa variabel seperti* immersion *dan* social value *terbukti memiliki pengaruh signifikan terhadap* continued usage intention*. Temuan ini menegaskan bahwa tingkat keterlibatan pengguna dan nilai sosial yang dirasakan menjadi faktor penting dalam mendorong niat penggunaan berkelanjutan terhadap teknologi AR. Penelitian ini memberikan kontribusi teoretis terhadap literatur pemasaran digital serta implikasi praktis bagi pengembang dan pemasar dalam merancang pengalaman pengguna yang menarik dan bernilai.*

Kata Kunci*:* Fit confidence, innovativeness, immersion, perceived hedonic, utilitarian value.

1. Introduction

The development of digital technology has brought significant changes to consumer consumption patterns, particularly in the realm of interactions between consumers and brands. One rapidly developing innovation is augmented reality technology, which can deliver interactive experiences by combining real-world and digital elements. The application of AR in marketing applications serves not only as an information tool but also as an entertainment medium that can increase consumer engagement (Davis & Aslam, 2024).

IKEA recorded an 86% increase in sales after integrating augmented reality (AR) into their digital catalog (Sasmita & Dewi, 2022). AR technology has been proven to increase consumer confidence, leading to higher engagement and reduced product return rates. Through the IKEA Place app, consumers can more accurately assess the products they intend to purchase by seeing how they look and function in real-world conditions (Wang & Zhang, 2021).

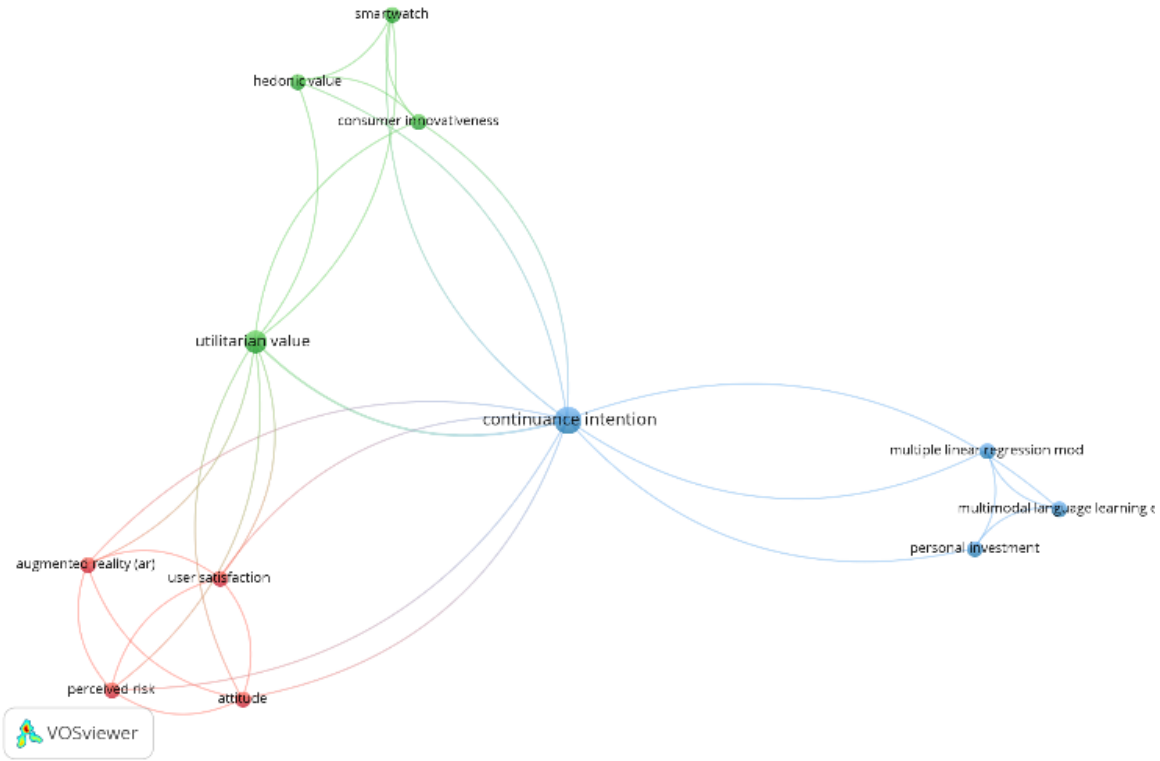
This app is available not only in several European countries but also in Indonesia. The "try before you buy" concept offers added value. Consumers can visualize the size, shape, appearance, and functionality of the product in their space, reducing the risk of post-purchase disappointment. However, the feature's relative lack of popularity means consumers are not fully utilizing it. This is reflected in the 1,013 reviews left on Google Play, with an overall rating of 3.2/5.0 (Ozturkcan, 2021). In fact, using IKEA Place allows shoppers to see how products will fit into their homes, which increases confidence during transactions, reduces returns, and creates a more enjoyable shopping experience. Furthermore, the app also strengthens the engagement between consumers and the brand through immersive and engaging digital interactions (Shaadiqiin & Sari, 2024).

However, the influence of these factors on continued usage intention does not stand alone, but is mediated by consumers' perceived value, whether in the form of hedonistic value, utility value, or social value. This is where the research gap arises, namely, although previous studies have discussed the benefits of AR on the shopping experience or consumer satisfaction, empirical studies that specifically examine the relationship between fit confidence, innovativeness, and immersion with continued usage intention through perceived value, especially in the context of IKEA Place users in Indonesia, are still very limited (Addin et al., 2024).

One factor suspected of contributing to this decline is the use of augmented reality (AR) technology through the IKEA Place app, which has not yet functioned optimally in the Indonesian market. Although AR technology is designed to enhance the consumer shopping experience by allowing users to virtually visualize furniture in their home spaces, its implementation in Indonesia still faces various obstacles, such as low technology adoption rates, limited AR-supported devices, and minimal digital literacy among consumers. These conditions have resulted in the AR feature not being able to drive increased purchase intentions as expected. Furthermore, most Indonesian consumers still prefer the in-person shopping experience in physical stores to ensure product quality, size, and fit in real time, thus reflecting a gap between the digital innovations offered by IKEA and local consumer shopping behavior. Thus, this phenomenon indicates that although AR technology has great potential to support increased sales and customer experience, without adequate education, promotion, and outreach strategies, its impact on sales growth will remain limited and may even contribute to the downward trend in IKEA sales in Indonesia (Kumar et al., 2024).

On the other hand, the development of AR also aligns with the growing trend of gamification and digital entertainment in everyday activities. Consumers, especially the younger generation, seek experiences that are not only useful but also enjoyable. AR addresses this need by combining elements of interactivity, entertainment, and emotional pleasure. In this regard, research indicators such as "using AR apps makes me happy" or "using AR apps makes me excited" reflect a hedonistic dimension that is relevant for further research (Shyr et al., 2024).

Figure 1. VOS Viewer



Source: Researcher (2025)

Based on the data in Figure 1., the VOS Viewer results show that previous research has focused on classic variables such as perceived ease of use, perceived usefulness, and satisfaction, as well as utilitarian and hedonistic values. However, few studies have linked fit confidence, innovativeness, and immersion with continued usage intentions through hedonistic value, utilitarian value, and social value. Therefore, this study offers novelty in expanding the model to include psychological and social dimensions relevant to the behavior of today's digital application users.

The under-explored variables in this study are fit confidence, innovativeness, immersion, and social value. These four variables are considered crucial because they are conceptually directly related to user experience in the context of interactive technologies like AR. Fit confidence highlights the extent to which consumers believe a digital product is appropriate for their needs and context, innovativeness reflects an individual's openness to new technological innovations, immersion describes the level of emotional and cognitive engagement in the AR experience, and social value emphasizes the social benefits and recognition that arise from using the technology. However, these four variables have not been the primary focus of research, particularly in terms of their mediation through perceived consumer values. Although this study focuses on under-explored variables, the use of over-

explored variables such as perceived hedonistic value and utilitarian value is maintained because both have an important role as mediating variables that bridge the relationship between external factors (FC, IN, IM) and continued usage intention. Theoretically, hedonistic and utilitarian values have been proven to be strong predictors of user behavior in the digital context, so their existence remains relevant to comprehensively test the strength of the conceptual model. By combining over- and under-explored variables, this study not only fills the literature gap but also expands the understanding of how cognitive, affective, and social dimensions interact in shaping the intention to continue using AR technology.

2. Literature Review

Relationship between Social Value and Continued Usage Intention

Social value plays a crucial role in shaping continued usage intention, as it reflects the benefits individuals perceive from the social approval, recognition, and connections they gain through use. When users perceive that a product or service enhances their social identity, reputation, or sense of belonging, they are more likely to continue using it (Alalwan, 2020). Social value fosters positive peer influence and social acceptance, which foster continued engagement (Chen & Lin, 2021). Other studies have also shown that social value has a positive effect on continued usage intention (Voicu et al., 2023; Ananda & Patrisia 2024; Kaur et al., 2021; Dhir et al., 2020; Zhao & Bacao 2020; Keni & Tjengharwidjaja 2024; Sari et al. 2025; Wang et al. 2020; Kaur et al. 2020; Tandon et al. 2021). Therefore, the following hypothesis is formulated:

H1a: Social value has a positive effect on continued usage intention.

Relationship between Immersion and Continued Usage Intention

Immersion has been widely recognized as a key determinant positively influencing continued usage intention, particularly in digital and interactive experiences. When users experience immersion, they become highly engaged, attentive, and emotionally connected to the activity, which increases their likelihood of maintaining usage over time. Immersion creates a sense of presence and flow, which encourages users to perceive the activity as more meaningful and enjoyable, thus strengthening their intention to continue using the platform or service (Lee et al., 2020). Immersive experiences increase satisfaction and foster loyalty, as users feel absorbed in the environment and less distracted by external factors (Shin, 2021). Other studies have also shown that immersion has a positive effect on continued usage intention (Hewei & Youngsook 2022; Kang & Hwang 2022; Sari et al. 2025; Voicu et al. 2023; Li et al. 2025; Zhang et al. 2025; Chang & Suh 2025; Seridarana et al. 2024; Jiang et al. 2024; Wu et al. 2022). Therefore, the following hypothesis is formulated:

H1b: Immersion has a positive effect on continued usage intention.

Relationship between Fit Confidence and Continued Usage Intention

Fit confidence, which refers to an individual's belief that a product, service, or digital solution aligns with their needs and preferences, has been shown to positively influence continued usage intention. When users experience high levels of confidence, they are more likely to trust the effectiveness of an offering and feel confident that it will consistently deliver value, thus encouraging continued engagement (Zhao et al., 2020). This confidence reduces uncertainty and increases perceived reliability, leading to stronger intentions to reuse a product or service (Kim & Kim, 2021). Furthermore, fit confidence strengthens the perceived personal relevance of use, which is important for fostering loyalty and reducing switching behavior (Yang & Lin,

2022). Other research also shows that fit confidence has a positive effect on continued usage intention (Voicu et al., 2023; Chen et al., 2024; Kabir et al., 2025; Micheletto et al., 2025; Pookulangaraa et al., 2021; Sricharan et al., 2025; Perret and Schwientek 2025; Attri et al., 2024; Butt et al., 2024; Roster, 2024). So the hypothesis is formulated as follows:

H1c: Fit confidence has a positive effect on continued usage intention.

Relationship between Perceived Utilitarian Value and Continued Usage Intention

Perceived utilitarian value refers to the functional and goal-oriented benefits individuals derive from using a product or service and has been shown to significantly influence continued usage intention. Users who perceive a platform or service as offering efficiency, convenience, and problem-solving capabilities are more likely to maintain their engagement because the platform or service directly meets their needs (Hsieh et al., 2022). This pragmatic value reinforces satisfaction by emphasizing rational benefits such as time savings, cost efficiency, and effectiveness in completing tasks (Lin et al., 2023). Other studies also show that perceived utilitarian value has a positive effect on continued usage intention (Voicu et al., 2023; Yao et al., 2023; Wu & Huang 2023; Elnadi et al., 2024; Han & Zo, 2023; William & Fouad, 2024; Wang & Men, 2025; Ko & Ho, 2024; Maduku & Thusi, 2023; Tumaku et al., 2023). Therefore, the following hypothesis is formulated:

H1d: Perceived utilitarian value has a positive effect on continued usage intention.

Relationship between Immersion and Social Value

Immersion positively impacts social value by increasing users' sense of belonging, connectedness, and interaction with others in a digital context or experience. When individuals experience deep immersion, they tend to feel emotionally and cognitively engaged, which fosters stronger social bonds and shared experiences (Hou et al., 2020). Immersion creates opportunities for individuals to build meaningful interactions, resulting in social recognition and acceptance (Huang et al., 2022). This social connectedness enhances perceptions of social value, as users derive satisfaction from being part of a shared community or environment (Chen et al., 2021). Other studies also show that immersion has a positive effect on social values (Voicu et al., 2023; Cano et al., 2023; Yousefi et al., 2024; Kalantari et al., 2023; Dunivan et al., 2024; Chen & Jin, 2022; Lanzieri et al., 2021; Thurau et al., 2023; Faralla et al., 2023; Sachan et al., 2025). Therefore, the following hypothesis is formulated:

H2: Immersion has a positive effect on social values.

Relationship between Fit Confidence and Immersion

Fit confidence reflects users' belief in the suitability and reliability of a system or product to meet their needs and has been shown to positively influence immersion. When users believe that the technology or service they are using aligns with their expectations and needs, they tend to experience deeper engagement and engagement (Zhao et al., 2020). A high level of fit confidence reduces uncertainty and cognitive dissonance, allowing users to focus on the experience rather than on functionality or usability (Chen et al., 2021). Other studies have also shown that fit confidence has a positive effect on immersion (Voicu et al., 2023; Chen et al., 2024; Aggarwal et al., 2024; Micheletto et al., 2025; Kabir & Kang, 2025; Jiang et al., 2022; Lee et al., 2021; Ricci et al., 2023; Gao & Liang, 2025, Nguyen et al., 2025). Therefore, the following hypothesis is formulated:

H3a: Fit confidence has a positive effect on immersion.

Relationship between Perceived Hedonistic Value and Immersion

Perceived hedonistic value, which refers to the enjoyment, excitement, and pleasure derived from using a product or service, has been shown to positively influence immersion. When users perceive high levels of hedonic value, they tend to experience deep engagement and lose their sense of time during their interactions, which strengthens immersion (Kosa et al., 2020). In digital contexts such as mobile apps, AR/VR, and games, hedonic enjoyment acts as a motivational driver that increases users' focus and emotional engagement (Zhang et al., 2020). Other studies have also shown that perceived hedonistic value has a positive effect on immersion (Voicu et al., 2023; Gao and Liang, 2025; Tan, 2024; Wang et al., 2025; Bai & Tan, 2024; Zhang et al., 2025; Song et al., 2022; Rohden et al., 2025; Micheletto et al., 2025; Zhu et al., 2025). Therefore, the following hypothesis is formulated:

H3b: Perceived hedonistic value has a positive effect on immersion.

Relationship between Immersion and Perceived Utilitarian Value

Immersion has a significant positive effect on perceived utility value because highly engaging experiences enhance users' perceptions of efficiency, functionality, and overall usefulness. When users are immersed, they are more focused and attentive, allowing them to maximize the instrumental benefits of a system or service. For example, immersion in digital platforms helps users process information effectively and perceive greater value in terms of convenience and productivity (Shen et al., 2020). Immersive experiences encourage users to interact longer with the technology, thereby strengthening the perception of utility in achieving goals (Wu & Holsapple, 2022). Other studies have also shown that immersion has a positive effect on perceived utilitarian value (Voicu et al., 2023; Tu & Jia, 2024; Zhu & Wang, 2025; Hewei, 2022; Ricci et al., 2023; Ardura et al., 2023; Gao & Liang, 2025; William & Fouad, 2025; Zhong & Hamouda, 2024; Bagratuni et al., 2025; Wan et al., 2025). Therefore, the following hypothesis is formulated:

H4a: Immersion has a positive effect on perceived utilitarian value.

Relationship between Fit Confidence and Perceived Utilitarian Value

Fit confidence, defined as consumers' belief that a product aligns with their personal needs or preferences, has been shown to positively influence perceived utility value, particularly in digital and retail contexts. When consumers believe a product fits their needs, they are more likely to perceive it as useful and functional, which increases the utility value of their consumption experience (Choi & Kim, 2021). This confidence reduces uncertainty in decision-making and increases efficiency, as customers save time and effort in evaluating alternatives (Kim & Kim, 2020). Other studies also show that fit confidence has a positive effect on perceived utilitarian value (Voicu et al., 2023; Chen et al., 2024; Batool & Mou; 2024; Smitha et al., 2022; Attri et al., 2024; Mollel & Chen, 2025; Kabir & Kang, 2025; Micheletto et al., 2025; Wang et al., 2022; Tawira & Ivanov, 2022). Therefore, the following hypothesis is formulated:

H4b: Fit confidence has a positive effect on perceived utilitarian value.

Relationship between Perceived Hedonistic Value and Perceived Utilitarian Value

Hedonistic value positively influences perceived utilitarian value, as consumers often integrate emotional pleasure with functional benefits when evaluating products or services. When

individuals derive pleasure, excitement, or entertainment from an experience, they tend to perceive it as more rewarding and valuable because such pleasure increases overall satisfaction (Lee & Chen, 2021). Hedonistic experiences contribute to deeper emotional connections that strengthen perceptions of practical benefits, making utilitarian value seem more significant (Xu & Wang, 2020). Other studies have also shown that perceived hedonistic value has a positive effect on perceived utilitarian value (Voicu et al., 2023; Huang & Liu, 2024; Jo, 2022; Lavuri et al., 2021; Ciocodeică et al., 2025; Silalahi et al., 2025; Avcilar & Ozsoy, 2021; Widjaja et al., 2023; Kousi et al., 2023; Zhang et al., 2025). Therefore, the following hypothesis is formulated:

H4c: Perceived hedonistic value has a positive effect on perceived utilitarian value.

Relationship between Innovativeness and Perceived Utilitarian Value

Innovation has been shown to positively influence perceived utility value by improving the efficiency, functionality, and practicality of consumer experiences. Innovative products and services often introduce features that simplify tasks, save time, or optimize performance, thereby increasing their perceived utility. According to Chou et al. (2020), consumer innovation drives the adoption of new solutions that enhance functional benefits, leading to higher perceived utility value. Kim and Lee (2021) highlight that technological innovation in retail environments improves customer decision-making, making shopping more efficient and goal-oriented. Wu & Chen (2022) emphasize that innovative digital platforms provide personalized and adaptive functions, which directly strengthen perceptions of utility. Other studies also show that innovativeness has a positive effect on perceived utilitarian value (Voicu et al., 2023; Jalu et al., 2023; Bu et al., 2023; Maharani & Hidayat, 2023; Yum & Kim, 2024; Hu, 2021; Jeong & Chop, 2022; Bae & Jeon, 2022; Negassa, 2024; Lavuri et al., 2022). Therefore, the following hypothesis is formulated:

H4d: Innovativeness has a positive effect on perceived utilitarian value.

Relationship between Fit Confidence and Perceived Hedonistic Value

Fit confidence, defined as consumers' belief that a product or service aligns with their personal preferences and needs, has a positive influence on perceived hedonistic value by increasing enjoyment, satisfaction, and emotional engagement in consumption. When consumers believe a product is suitable, they experience greater pleasure, excitement, and joy from its use, which strengthens perceptions of hedonic value (Lee & Kim, 2020). Perceived fit enhances emotional responses by reducing uncertainty and fostering trust, allowing consumers to focus on the enjoyment derived from the product (Choi & Park, 2021). Other studies also show that fit confidence has a positive effect on perceived hedonistic value (Voicu et al., 2023; Chen et al., 2024; Letwin & Alex 2023; Nayak et al., 2021; Shang et al., 2023; Batool & Mou 2024; Chen et al., 2024; Micheletto et al., 2025; Prasetyo, 2021; Kariim, 2025). Therefore, the following hypothesis is formulated:

H5a: Fit confidence has a positive effect on perceived hedonistic value.

Relationship between Innovativeness and Perceived Hedonistic Value

Innovation plays a crucial role in shaping perceptions of hedonistic value, as it enhances consumers' sense of enthusiasm, novelty, and enjoyment during product use or shopping experiences. Hedonistic value relates to the emotional satisfaction and pleasure derived from consumption beyond its functional purpose. Innovative products or services often spark curiosity and excitement by offering creative designs, new functionality, or engaging

experiences, contributing to consumers' emotional satisfaction. For example, technological innovations such as augmented reality shopping interfaces or smart devices are associated with higher enjoyment and entertainment, leading to stronger hedonistic perceptions (Kang et al., 2020). Similarly, innovative brand strategies enhance customer experiential engagement, which translates into pleasure and enjoyment during consumption (Choi & Kim, 2021). Other studies also show that innovativeness has a positive effect on perceived hedonistic value (Voicu et al., 2023; Batyar & Esmailpour 2021; Maharani & Hidayat 2023; Sen et al., 2025; Cuong, 2025; Saygılı & Yalçıntekin, 2021; Nny et al., 2024; Eng & Nong, 2024; Bettiga et al., 2020; Yum & Kim, 2024; Park et al., 2023). Therefore, the following hypothesis is formulated:

H5b: Innovativeness has a positive effect on perceived hedonistic value.

Relationship between Innovativeness and Fit Confidence

Innovation has a positive effect on fit confidence because consumers perceive innovative products as better able to meet their personal needs and preferences, thereby strengthening their confidence in the product's fit. When companies introduce innovative features such as advanced customization tools, augmented reality fitting, or smart product recommendations, consumers gain greater certainty that the product will meet their expectations (Huang & Luo, 2021). This high perception of fit reduces uncertainty, thereby increasing fit confidence. Studies in digital retail show that innovative technologies such as virtual try-ons and AI-based personalization increase user confidence in product accuracy and fit (Park & Yoo, 2020). Other studies also show that innovativeness has a positive effect on fit confidence (Voicu et al., 2023; Jiang et al., 2025; Zeng & Song, 2025; Papachristopoulos et al., 2023; Ma & Zhou, 2025; Yu et al., 2025; Deng et al., 2025; Choi et al., 2023; Xiong et al., 2025; Dai et al., 2024; Zhao et al., 2022). Therefore, the following hypothesis is formulated:

H6: Innovativeness has a positive effect on fit confidence.

The Effect of Perceived Hedonistic Value in Mediating the Effect of Fit Confidence on Perceived Utilitarian Value

Perceived hedonistic value serves as a mediating mechanism in the relationship between fit confidence and perceived utilitarian value, as emotional enjoyment enhances the functional benefits derived from product use. When consumers have high fit confidence and believe that a product meets their needs or preferences, they tend to experience feelings of pleasure, enthusiasm, and satisfaction (Huang & Liao, 2021). Positive emotions can increase engagement and perceptions of meaningfulness in interactions, which in turn strengthen perceptions of usefulness and efficiency (Zhang & Zhao, 2022). Other studies have also shown that perceived hedonistic value can mediate the effect of fit confidence on perceived utilitarian value (Voicu et al., 2023; Dieck et al., 2024; Negm, 2024; Rodríguez et al., 2024; Qin et al., 2024; Yo, 2023; Lau & Tang, 2025; Vieira, 2022; Yang, 2021; Hong et al., 2023). Thus, perceived hedonistic value bridges the gap between fit beliefs and utilitarian outcomes, demonstrating how emotional satisfaction enhances the functional value consumers attribute to a product. Therefore, the following hypothesis is formulated:

H7: Perceived hedonistic value can mediate the effect of fit confidence on perceived utilitarian value.

The Effect of Perceived Hedonistic Value in Mediating the Effect of Innovativeness on Immersion

Perceived hedonistic value can mediate the effect of innovation on immersion by transforming users'

openness to novelty into deeper experiential engagement. Innovative individuals or systems introduce stimulating new features that arouse curiosity and enjoyment; this pleasurable response (perceived hedonistic value) increases users' willingness to allocate attention and become absorbed in the experience (Leveau, 2023). Other studies have also shown that perceived hedonistic value can mediate the effect of innovativeness on immersion (Voicu et al., 2023; Laato et al., 2020; Hultman et al., 2021; Ariansyah & Yuniarti, 2021; Li et al., 2022; Phia et al., 2021; Limones et al., 2020; Maharani & Hidayat, 2023; Kim et al., 2025; Sen et al., 2025). Therefore, the following hypothesis is formulated:

H8: Perceived hedonistic value can mediate the effect of innovativeness on immersion.

The Effect of Fit Confidence in Mediating the Effect of Innovativeness on Perceived Hedonistic Value

Fitness confidence can mediate the effect of innovation on perceived hedonistic value by strengthening the emotional satisfaction and enjoyment consumers derive from innovative products. Innovation encourages companies to design products or technologies that better align with user preferences, thereby increasing their belief in the product's fit and personal relevance (Ha et al., 2024). When consumers perceive that an innovative product aligns with their needs and lifestyle, they experience greater pleasure and excitement during consumption, leading to stronger hedonistic value (Fadillah et al., 2022). Other studies have also shown that fit confidence can mediate the effect of innovativeness on perceived hedonistic value (Voicu et al., 2023; Tu et al., 2024; Ardura et al., 2023; Batool & Mou, 2024; Vieira et al., 2022; Dieck et al., 2024; Chen et al., 2024; Geng & Chang, 2022; Yang, 2021; Hewei, 2022). Therefore, when consumers believe in the suitability of an innovative product, they tend to experience higher hedonistic value due to the joy and satisfaction of using a product that feels right for them. Therefore, the following hypothesis is formulated:

H9: Fit confidence can mediate the effect of innovativeness on perceived hedonistic value.

The Effect of Immersion in Mediating the Effect of Fit Confidence on Social Value

Immersion plays a crucial mediating role in linking fit beliefs to social value, as an increased sense of involvement transforms an individual's perception of product fit into a socially meaningful experience. When consumers feel strong fit beliefs, believing that a product aligns with their needs or characteristics, this encourages deeper immersion in the experience, characterized by presence, flow, and attentional absorption (Algharabat et al., 2020). Immersion then strengthens social interactions by making experiences more vivid and shareable, thereby increasing social acceptance and connectedness (Rauschnabel et al., 2022). Other studies have also shown that immersion mediates the effect of fit confidence on social value (Voicu et al., 2023; Aggarwal et al., 2025; Rumokoy & Frank 2025; Best et al., 2024; Teng et al., 2024; Thurau et al., 2022; Lee et al., 2022; Chen et al., 2023; Hossain et al., 2025; Hamilton et al., 2020). Thus, immersion not only enhances personal enjoyment of product fit but also channels it into valuable social outcomes, strengthening the role of depth of experience in creating social value. Therefore, the following hypothesis is formulated:

H10: Immersion mediates the effect of fit confidence on social value.

The Effect of Immersion in Mediating the Effect of Fit Confidence on Perceived Utilitarian Value

Immersion mediates the effect of fit beliefs on perceived utility value by transforming consumer beliefs about product fit into functional and goal-oriented benefits. When consumers hold

strong fit beliefs and believe a product aligns with their preferences or physical characteristics, they tend to engage more deeply in the use or trial experience, characterized by intense concentration, presence, and engagement (Yang & Li, 2021). This increased immersion allows consumers to evaluate a product's functionality more effectively, strengthening perceptions of its practical benefits (Shen et al., 2020). Other studies have also shown that immersion can mediate the effect of fit confidence on perceived utilitarian value (Voicu et al., 2023; Ardura et al., 2023; Hewei, 2022; Gao and Liang, 2025; Naveen et al., 2025; Yum & Kim, 2024; Söderström et al., 2024; Alzayat et al., 2021; Hewei, 2022; Rauschnabel & Babin, 2022). Thus, immersion serves as a psychological bridge, channeling beliefs about product fit into stronger perceptions of usability and efficiency. Immersive engagement ensures that product fit goes beyond simply satisfying aesthetic needs or hedonic experience, but also promotes tangible utilitarian value in consumer evaluations. Therefore, the following hypothesis is formulated:

H11. Immersion can mediate the effect of fit confidence on perceived utilitarian value.

The Effect of Immersion in Mediating the Effect of Fit Confidence on Continued Usage Intention

Immersion can mediate the effect of fit confidence on continued usage intention by transforming users' beliefs about the product's fit into a deep and immersive experience that enhances satisfaction, reduces uncertainty, and encourages habit formation. When fit confidence is high, users perceive the product or virtual representation as fitting their needs or body, enabling greater cognitive and emotional engagement (presence, flow) with the interface. This deeper engagement (immersion) focuses attention on the interaction and enhances perceptions of usefulness and enjoyment, both key antecedents of continuation (Hung, 2021). Other studies have also shown that immersion can mediate the influence of fit confidence on continued usage intention (Voicu et al., 2023; Chang & Suh, 2025; Geng & Chang, 2022; William & Fouad, 2025; Leveau & Camus, 2023; Ambika et al., 2023; Saleem et al., 2024; Wang et al., 2024; Jung et al., 2024; Alam et al., 2022). Therefore, designers who build features that enhance perceived fit while encouraging immersive engagement can transform initial beliefs into long-term user retention. Therefore, the following hypothesis is formulated:

H12: Immersion can mediate the influence of fit confidence on continued usage intention.

The Mediating Effect of Immersion on Continued Usage Intention

Social value plays a significant mediating role in the relationship between immersion and continued usage intention. Immersion, which refers to the deep involvement and absorption users experience in a digital or virtual environment, increases perceptions of social connectedness and recognition within a community (Xu et al., 2020). When users feel immersed, they often experience a stronger sense of belonging and social identity, which contributes to higher social value (Park & Kim, 2021). Other studies have also shown that perceived hedonistic value can mediate the effect of innovativeness on fit confidence (Voicu et al., 2023; Mpinganjira et al.,2024; Jiang et al., 2022; Jung et al., 2024; Li et al., 2022; Ramadhoni & Prassida, 2025; Wu et al., 2024; Tu & Jia, 2024; Yu et al., 2024; Putrid & Syah, 2024; Moonen et al., 2023). Therefore, social value acts as a bridge that transforms immersion into long-term loyalty and continued usage intention. Therefore, the following hypothesis is formulated:

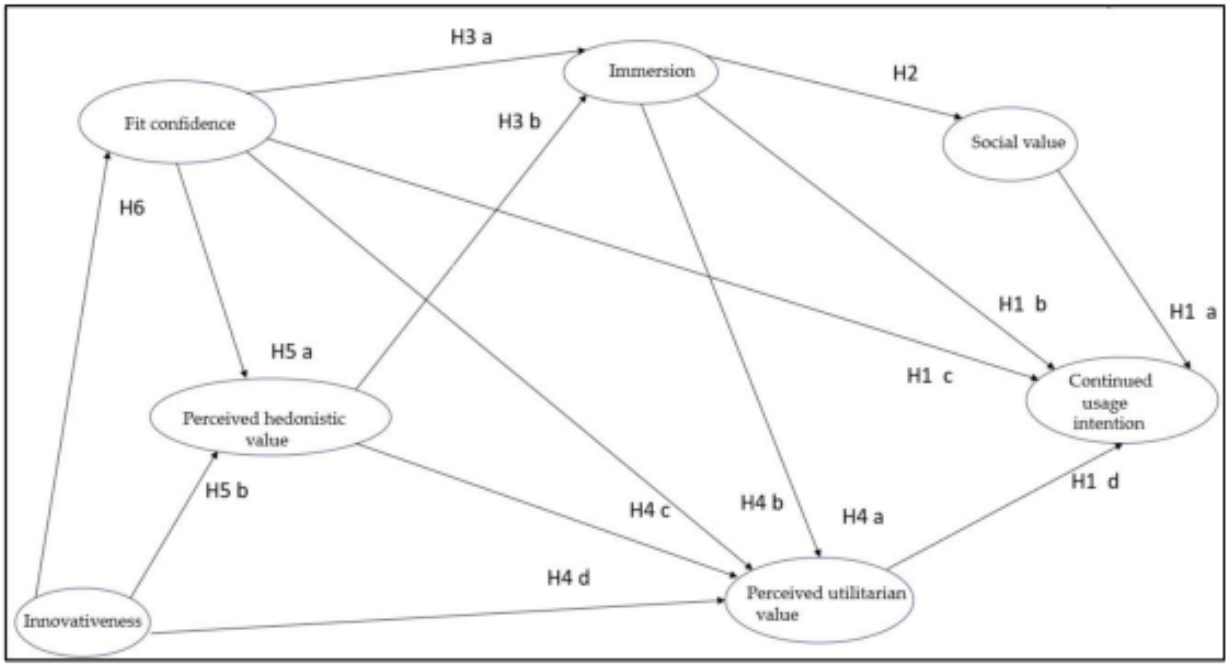
H13: Social value can mediate the effect

of immersion on continued usage intention.

Research Framework

The research framework provides a clear structure that illustrates the relationships among the study variables and guides the development of hypotheses. It helps ensure that the analysis follows a logical and systematic flow based on relevant theories. The research framework used in this study is presented below.

Figure 2. Research Framework



Source: Replication of research by Voicu et al., (2023)

3. Research Method

The sample size in this study was determined using several methodological approaches to ensure that the number of respondents met the requirements for Structural Equation Modeling (SEM). The first approach referred to the inverse square root method proposed by Kock and Hadaya (2018), which is commonly used to estimate the minimum sample size needed for complex PLS-SEM models. Based on this method, a minimum of approximately 160 respondents was required to achieve sufficient statistical power and reduce measurement error within a model involving multiple constructs and indicators (Sekaran & Bougie, 2020).

The second approach involved conducting a power analysis using G*Power version 3.1.9.4, with parameters set at $\alpha = 0.05$, an effect size of 0.15, and a statistical power level of 0.95. The results indicated that at least 153 respondents were needed to detect medium-sized effects within the structural model. To strengthen this estimate, sample sizes used in previous studies with similar research designs were also reviewed, ensuring consistency with empirical standards commonly applied in digital technology and consumer behavior research (Sugiyono, 2020).

The study employed the PLS-SEM rule of thumb, which recommends using at least ten times the number of indicators in the construct with the most indicators, or ten times the number of structural paths directed at a particular latent variable. Based on this rule, the minimum required sample was approximately 150 respondents. Taking all methods into consideration, the final sample size was set at 160 respondents, ensuring that the data collected satisfied methodological rigor and provided reliable input for SEM analysis. The primary analytical

technique used in this research was Structural Equation Modeling (SEM), a statistical method for testing and modeling relationships and influences among variables.

Table 1. Variable Operational Definitions

Variable	Indicators	Source
Continued Usage Intention	• I plan to continue using this AR application when selecting IKEA Indonesia furniture products. • I will always try to use this AR application when shopping for IKEA Indonesia furniture. • I will continue using this AR application as often as I do now. • I expect to purchase IKEA Indonesia furniture after using the AR application. • I will use this AR application every time I choose IKEA Indonesia furniture products,if possible. • I plan to use this AR application for future IKEA Indonesia furniture purchases. • I want to use this AR application for future IKEA Indonesia furniture shopping.	Voicu et al., (2023)
Social Value	• I use the IKEA AR application to create a positive impression of my room for others. • Using the IKEA AR application makes others perceive my room design more positively. • The IKEA AR application helps me feel more accepted by others through attractive room appearance. • I enjoy sharing my AR-based room designs with friends. • The IKEA AR application helps me exchange design experiences with others through social media.	Voicu et al., (2023)
Fit Confidence	• The IKEA furniture I choose through the AR application feels suitable for me. • The AR application helps me find furniture colors that match my preferences. • I believe the AR-displayed furniture fits my personal needs. • The virtual visualization of IKEA furniture looks suitable for my room. • I am confident the furniture dimensions shown via AR match my room space.	Voicu et al., (2023)
Perceived Utilitarian Value	• The IKEA AR application helps me meet my needs in choosing furniture more easily. • The app's features provide practical benefits when shopping for furniture. • Using the IKEA AR app saves me time compared to traditional shopping. • The AR application helps me make better decisions when selecting furniture. • The app provides clear information about IKEA furniture products.	
Immersion	• I am absorbed in what I am doing when using the AR application. • I feel immersed in the process of trying IKEA Indonesia furniture. • I feel drawn into the virtual experience of trying IKEA furniture. • The AR application makes me think actively about how IKEA furniture fits me. • The IKEA furniture displayed through AR feels realistic. • I feel as if I am truly present in the virtual IKEA experience.	Voicu et al., (2023)
Innovativeness	• I enjoy using new technology when shopping for IKEA furniture. • I like learning about new technologies for IKEA product shopping. • I look for opportunities to try new technologies for IKEA furniture. • Compared to friends, I am usually among the first to try AR technology. • I believe AR technology is useful for online IKEA furniture shopping.	
Perceived Hedonistic Value	• I use the IKEA AR application just for fun even when I don't need the products. • I feel entertained when placing IKEA furniture in my space through AR. • I often use the AR feature mainly for entertainment rather than actual need. • I spend a lot of time using the AR application for personal enjoyment. • I still use the AR application even when I don't consider its usefulness	Voicu et al., (2023)

4. Results and Discussion

Respondent's Characteristics

In this study, the sample consists of IKEA Indonesia consumers who reside in Jakarta and have purchased at least one IKEA product within the past month. Based on Table 4.6, most respondents are aged 20–30 years (79 respondents or 49.4%), followed by those aged 31–40 years (68 respondents or 42.5%). Meanwhile, 41–50 years represents 10 respondents (6.3%), and those under 20 years old account for 3 respondents (1.9%).

For the occupation category, the majority are employees (90 respondents or 56.3%), followed by entrepreneurs business owners (38 respondents or 23.8%), and civil servants (PNS) (32 respondents or 20%). Regarding education, most respondents hold a Bachelor's degree (S1) (100 respondents or 62.5%), followed by Diploma graduates (D1/D2/D3) (28 respondents or 17.5%), Master's degree holders (S2) (24 respondents or 15%), and Doctoral graduates (S3) (8 respondents or 5%). For the number of IKEA products purchased in the last month, most respondents bought 1–2 products (81 respondents or 50.6%), followed by 3–4 products (65 respondents or 40.6%), 5–6 products (12 respondents or 7.5%), and more than 6 products (2 respondents or 1.3%).

Table 2. Respondent's Profile

Category	Description	Number of Respondents	Percentage
Gender	Male	90	56.3%
	Female	70	43.8%
Occupation	Employee	90	56.3%
	Civil Servant (PNS)	32	20.0%
	Entrepreneur / Business Owner	38	23.8%
Education Level	Diploma (D1/D2/D3)	28	17.5%
	Bachelor's Degree (S1)	100	62.5%
	Master's Degree (S2)	24	15.0%
	Doctoral Degree (S3)	8	5.0%
Number of Products Purchased	> 6 products	2	1.3%
	1–2 products	81	50.6%
	3–4 products	65	40.6%
	5–6 products	12	7.5%

Convergent Validity

The results of the outer loading test in the actual study showed that all indicators of each research variable met the criteria for convergent validity. The variable of continued usage intention had a factor loading value between 0.740 and 0.858 and a Corrected Item-Total Correlation of 0.583–0.746 with an AVE of 0.667, so all indicators were valid. The variable of fit confidence showed a factor loading of 0.801–0.853, a Corrected Item-Total Correlation of 0.656–0.699, and an AVE of 0.688, indicating that the indicators consistently represented the construct.

Table 3. Outer Loading Test Results

Variables	Indicators	Loading Factor	Corected Item-Total Correlation	AVE	Result
Continued Usage Intention)	CUI1	0,856	0,683	0,667	Valid
	CUI2	0,740	0,583		Valid
	CUI3	0,767	0,626		Valid

Variables	Indicators	Loading Factor	Corected Item-Total Correlation	AVE	Result
	CUI4	0,858	0,746		Valid
	CUI5	0,833	0,717		Valid
	CUI6	0,846	0,742		Valid
	CUI7	0,812	0,695		Valid
Fit Confidence	FIT1	0,832	0,693	0,688	Valid
	FIT2	0,853	0,699		Valid
	FIT3	0,838	0,684		Valid
	FIT4	0,824	0,656		Valid
	FIT5	0,801	0,667		Valid
Immersion	IMM1	0,814	0,666	0,679	Valid
	IMM2	0,796	0,688		Valid
	IMM3	0,847	0,732		Valid
	IMM4	0,836	0,705		Valid
	IMM5	0,869	0,750		Valid
	IMM6	0,779	0,629		Valid
Innovativeness	INT1	0,841	0,682	0,697	Valid
	INT2	0,878	0,769		Valid
	INT3	0,838	0,654		Valid
	INT4	0,822	0,650		Valid
	INT5	0,794	0,582		Valid
Perceived Hedonistic Value	PHV1	0,894	0,781	0,729	Valid
	PHV2	0,816	0,662		Valid
	PHV3	0,876	0,784		Valid
	PHV4	0,889	0,779		Valid
	PHV5	0,789	0,655		Valid
Perceived utilitarian value utilitarian value	PUV1	0,850	0,744	0,767	Valid
	PUV2	0,888	0,772		Valid
	PUV3	0,855	0,731		Valid
	PUV4	0,904	0,816		Valid
	PUV5	0,881	0,777		Valid
Social Value	SV1	0,796	0,614	0,684	Valid
	SV2	0,849	0,694		Valid
	SV3	0,851	0,704		Valid
	SV4	0,814	0,655		Valid
	SV5	0,822	0,663		Valid

Source: SmartPLS Data Processing Results (2025)

Discriminant Validity of Actual Study

Discriminant validity testing using the Heterotrait-Monotrait Ratio (HTMT) shows that all pairs of constructs have values below the threshold of 0.90, so that discriminant validity is met.

Table 4. Discriminant validity of HTMT

Variable	CUI	FIT	IMM	INT	PHV	PUV	SV
Continued Usage Intention							
Fit Confidence	0,804						
Immersion	0,850	0,809					
Innovativeness	0,830	0,884	0,853				
Perceived Hedonistic Value	0,870	0,886	0,882	0,863			
Perceived Utilitarian Value	0,822	0,802	0,880	0,878	0,842		
Social Value	0,882	0,815	0,817	0,815	0,828	0,861	

Source: SmartPLS Data Processing Results (2025)

Based on the Fornell-Larcker discriminant validity test, it can be seen that each construct in the research model meets the criteria for discriminant validity. The values listed on the diagonal of the table are the square roots of the Average Variance Extracted (AVE) of each variable, and the results show that all

AVE root values are higher than the correlations between other constructs in the same column or row. This indicates that each construct is able to differentiate itself well from other constructs in the model. Therefore, it can be concluded that it is valid.

Table 5. Discriminant validity of Fornell Larcker

Variable	CUI	FIT	IMM	INT	PHV	PUV	SV
Continued Usage Intention	0,917						
Fit Confidence	0,905	0,930					
Immersion	0,869	0,904	0.824				
Innovativeness	0,844	0,878	0,861	0,895			
Perceived Hedonistic Value	0,887	0,885	0,790	0,868	0,854		
Perceived Utilitarian Value	0,851	0,909	0,807	0,889	0,863	0,876	
Social Value	0,786	0,901	0,828	0,813	0,835	0,868	0,827

Source: SmartPLS Data Processing Results (2025)

Table 6. Measurement Model Test Results

Variable	Cronbach alpha	Composite reliability (rho A)	Result
Continued Usage Intention	0,916	0,933	Reliable
Fit Confidence	0,887	0,917	Reliable
Immersion	0,905	0,927	Reliable
Innovativeness	0,891	0,920	Reliable
Perceived Hedonistic Value	0,906	0,931	Reliable
Perceived Utilitarian Value	0,924	0,943	Reliable
Social Value	0,884	0,915	Reliable

Source: SmartPLS Data Processing Results (2025)

The Variance Inflation Factor (VIF) values in the measurement model indicate that all indicators are free from multicollinearity. The VIF values recorded for each variable are below the critical threshold of 5, indicating there is no indication of excessive correlation between indicators in the model. For example, fit confidence has the highest VIF of 4.597, while immersion is recorded at 4.107, and innovativeness reaches 4.407. Other variables such as perceived hedonistic value, perceived utilitarian value, and social value also show safe VIF values, all below 5.

Table 7. Results of VIF Values of Measurement Model

Variable	CUI	FIT	IMM	INT	PHV	PUV	SV
Continued Usage Intention							
Fit Confidence	2,846		4,597		4,376	4,460	
Immersion	2,568					4,107	1,000
Innovativeness		1,000			4,376	4,407	
Perceived Hedonistic Value			4,597			4,390	
Perceived Utilitarian Value	2,277						
Social Value	2,786						

Source: SmartPLS Data Processing Results (2025)

These results indicate that each indicator is able to contribute independently to the measurement model without any significant overlap, so that the PLS-SEM analysis can be carried out reliably.

The path coefficient analysis is used to evaluate the strength and significance of the relationships among the constructs within the structural model. This analysis identifies which hypotheses are supported and determines the magnitude of each variable's influence on others. The path coefficient table is presented below:

Table 8. Structural Model Test Results (Path coefficient)

Hypothesis		*Path coefficient*	*t-statistics*	*P-Value*	Result
H1a	Social value has a positive effect on continued usage intention.	0,334	3,668	0,000	Supported
H1b	Immersion has a positive effect on continued usage intention.	0,254	1,520	0,129	Not Supported
H1c	Fit confidence has a positive effect on continued usage intention.	0,295	1,819	0,069	Not Supported
H1d	Perceived utilitarian value has a positive effect on continued usage intention.	0,088	0,761	0,447	Not Supported
H2	Immersion has a positive effect on social value.	0,828	20,073	0,000	Supported
H3a	Fit confidence has a positive effect on immersion.	0,537	4,712	0,000	Supported
H3b	Perceived hedonistic value has a positive effect on immersion.	0,415	3,571	0,000	Supported
H4a	Immersion has a positive effect on perceived utilitarian value.	0,349	2,210	0,027	Supported
H4b	Fit confidence has a positive effect on perceived utilitarian value.	0,655	5,785	0,000	Supported
H4c	Perceived hedonistic value has a positive effect on perceived utilitarian value.	0,249	2,150	0,032	Supported
H4d	Innovativeness has a positive effect on perceived utilitarian value.	0,397	3,288	0,001	Supported
H5a	Fit confidence has a positive effect on perceived hedonistic value.	0,536	4,614	0,000	Supported
H5b	Innovativeness has a positive influence on perceived hedonistic value.	0,397	3,345	0,001	Supported
H6	Innovativeness has a positive effect on fit confidence.	0,878	25,093	0,000	Supported
H7	Perceived hedonistic value can mediate the effect of fit confidence on perceived utilitarian value.	0,133	1,734	0,083	Not Supported
H8	Perceived hedonistic value can mediate the effect of innovativeness on immersion.	0,165	2,169	0,030	Supported
H9	Fit confidence can mediate the effect of innovativeness on perceived hedonistic value.	0,471	4,554	0,000	Supported
H10	Immersion can mediate the effect of fit confidence on social value.	0,444	4,264	0,000	Supported
H11	Immersion can mediate the effect of fit confidence on perceived utilitarian value.	0,187	2,055	0,040	Supported
H12	Immersion can mediate the effect of fit confidence on continued usage intention.	0,136	1,649	0,099	Not Supported
H13	Social value can mediate the effect of immersion on continued usage intention.	0,277	3,511	0,000	Supported

Source: SmartPLS Data Processing Results (2025)

Fit Model

The results of the Model Fit Test show that the SRMR (Standardized Root Mean Square Residual) value in the saturated model is 0.068. This value is below the tolerance limit of 0.10, indicating that the research model has an adequate level of goodness of fit and the difference between the observed and predicted correlations is relatively small. The d_ULS (Squared Euclidean Distance) and d_G (Geodesic Distance) values are 3.407 and 3.721, respectively, indicating that the model has a good level of structural fit because the values are not much different between the two models.

Table 9. Model Fit Test Results

	***Saturated* model**	***Estimated* model**
SRMR	0,068	0,081
d_ULS	3,407	4,872
d_G	3,721	3,937
Chi-square	1660,108	1711,413
NFI	0,654	0,644

Source: SmartPLS Data Processing Results (2025)

Discussion

The results of testing hypothesis 1a indicate that social value has a positive and significant effect on continued usage intention. This indicates that the higher the social value users obtain from using the platform, the greater their intention to continue using the service. Social value

represents the social benefits users perceive, such as recognition, belonging, and interaction with others. These research results align with Voicu et al. (2023) and Tandon et al. (2021).

Hypothesis 1b, which stated that immersion has a positive effect on continued usage intention, was not supported. Immersion did not significantly influence continued usage intention. The rejection of this hypothesis suggests that the level of emotional involvement or feeling immersed in a digital experience does not necessarily guarantee continued use. This is because immersion experiences tend to be temporary and situational, emphasizing immediate enjoyment rather than long-term habit formation. These results are in line with Hamari & Keronen (2022) and Voicu et al. (2023).

Hypothesis 1c, which states that fit confidence has a positive effect on continued usage intention, was not supported. The results showed that fit confidence did not have a significant positive effect on continued usage intention. This result is in line with Song et al. (2023) and Hamari & Keronen (2022).

Hypothesis 1d, which states that perceived utilitarian value has a positive effect on continued usage intention, was not supported. The results showed that perceived utilitarian value did not significantly influence continued usage intention. In the context of respondents who were mostly young and young adult users, basic utility value was already considered standard, so this factor was not sufficient to increase continued usage intention. This result is in line with Zhang et al. (2021) and Sae-tae & Wang (2024).

Hypothesis 2, which states that immersion has a positive effect on social value, is supported. The results of the study indicate that immersion has a positive and significant effect on social value. This indicates that the higher the level of emotional and cognitive engagement of users in the platform, the greater the social value they perceive. Immersion encourages users to interact more actively, build relationships, and gain social recognition from the digital community. These results are in line with Voicu et al. (2023); Hennig-Thurau et al. (2022).

Hypothesis 3a, which states that fit confidence has a positive effect on immersion, is supported. The results indicate that fit confidence has a significant positive effect on immersion. This finding suggests that developers should focus on creating intuitive, adaptable experiences and tailoring features to user needs to strengthen immersion and long-term loyalty. These results align with Voicu et al. (2023); Nguyen et al. (2025).

Hypothesis 3b, which states that perceived hedonistic value has a positive effect on immersion, is supported. This study found that perceived hedonistic value has a positive effect on immersion. This means that the greater the pleasure and enjoyment users experience in using the platform, the higher their level of emotional engagement. Hedonistic value encourages users to engage intensely because pleasurable experiences create a "flow" effect that makes them lose track of time and focus fully on digital activities. These results are in line with Voicu et al. (2023); William & Fouad (2025).

Hypothesis 4b states that fit confidence has a positive effect on perceived utilitarian value, and is supported. The results of the study indicate that fit confidence has a significant positive effect on perceived utilitarian value. This result is in line with Voicu et al. (2023); Wang et al. (2022).

Hypothesis 4c states that perceived hedonistic value has a positive effect on perceived utilitarian value, and is supported. The results of the study indicate that perceived hedonistic value has a positive effect on perceived utilitarian value. This result is in line with Voicu et al. (2023); Jo (2022).

Hypothesis 4d, which states that

innovativeness has a positive effect on perceived utilitarian value, is supported. This study shows that innovativeness has a significant positive effect on perceived utilitarian value. Individuals with high levels of innovativeness tend to more quickly understand and utilize technological functions for practical purposes. This result is in line with Voicu et al. (2023); Lavuri et al. (2022).

Hypothesis 5a, which states that fit confidence has a positive effect on perceived hedonistic value, is supported. The results of the study indicate that fit confidence has a significant positive effect on perceived hedonistic value. This means that the higher the user's confidence in the suitability of the system or application to their preferences, the greater the pleasure and enjoyment they experience during use. This result is in line with Voicu et al. (2023); Micheletto et al. (2025)).

Hypothesis 5b, which states that innovativeness has a positive effect on perceived hedonistic value, is supported. The results of the study indicate that innovativeness has a positive effect on perceived hedonistic value. This means that individuals with high levels of innovativeness tend to experience greater pleasure in trying new technologies. This result is in line with Voicu et al. (2023); Yum & Kim (2024).

Hypothesis 6, which states that innovativeness has a positive effect on fit confidence, is supported. The analysis results show that innovativeness has a significant positive effect on fit confidence. This means that individuals with an innovative tendency are quicker to build confidence in the system's suitability to their needs. They tend to have a high level of curiosity and strong adaptability to new technologies, making it easier to understand platform features and functionality. These results align with Voicu et al. (2023); Papachristopoulos et al. (2023).

Hypothesis 7 states that perceived hedonistic value can mediate the influence of fit confidence on perceived utilitarian value, but it is not supported. The results show that perceived hedonistic value does not mediate the influence between fit confidence and perceived utilitarian value. This rejection indicates that although users who believe in the suitability of the system may feel happy, this pleasure does not automatically increase the perception of the system's functional value. This causes perceived hedonistic value to be unable to bridge the influence of fit confidence on perceived utilitarian value. This result is in line with Voicu et al. (2023); Akdim et al. (2022).

Hypothesis 8 states that perceived hedonistic value can mediate the effect of innovativeness on immersion, and is supported. The results of the study confirm that perceived hedonistic value significantly mediates the relationship between innovativeness and immersion. This result is in line with Voicu et al. (2023); Kim et al. (2025).

Hypothesis 9 states that fit confidence can mediate the effect of innovativeness on perceived hedonistic value, and this is supported. This study found that fit confidence mediates the effect of innovativeness on perceived hedonistic value. This result is in line with Voicu et al. (2023); Chen et al. (2023).

Hypothesis 10, which states that immersion can mediate the effect of fit confidence on social value, is supported. The results show that immersion mediates the effect between fit confidence and social value. This means that when users feel confident in the system's suitability, they are more easily immersed in the digital experience, and this deep engagement leads to increased social value. This result is in line with Voicu et al. (2023); Chen et al. (32024).

Hypothesis 11 states that immersion can mediate the effect of fit confidence on perceived utilitarian value, and is supported. The analysis results show that immersion functions as a significant mediator between fit confidence and perceived utilitarian value. This result is

in line with Voicu et al. (2023); Yum & Kim (2024).

Hypothesis 12, which states that immersion can mediate the effect of fit confidence on continued usage intention, was not supported. The findings indicate that immersion cannot mediate the relationship between fit confidence and continued usage intention. This result is in line with Hamari & Keronen (2022); Seridaran et al. (2024).

Hypothesis 13, which states that social value can mediate the effect of immersion on continued usage intention, is supported. The results show that social value acts as a significant mediator between immersion and continued usage intention. This means that deep engagement increases users' perceived social value, and this social value drives the desire to continue using the platform. This result is in line with Voicu et al. (2023); Putri & Syah (2024).

5. Conclusion

This study concludes that the relationships among innovativeness, fit confidence, immersion, perceived hedonic value, utilitarian value, social value, and continued usage intention are multifaceted and not entirely linear. While several proposed hypotheses were not empirically supported, the study confirms that social value plays a pivotal role in driving continued usage intention, whereas immersion, fit confidence, and utilitarian value do not directly influence it. Furthermore, the findings highlight the importance of immersion as a significant precursor to social value and utilitarian perceptions, and the role of innovativeness and fit confidence in shaping users' hedonic experiences. Several mediating effects were also identified, demonstrating that user perceptions are formed through complex value interactions. Overall, the conclusions of this study emphasize that users' sustained engagement with digital platforms and AR technology is influenced more strongly by emotional and social value pathways than by purely functional benefits.

The conclusions drawn from this study must be interpreted within the context of several research limitations. The sample characteristics, which are relatively homogeneous and drawn from users of a specific digital platform, restrict the generalizability of the findings to broader or more diverse populations. The exclusive reliance on a quantitative survey also limits the depth of understanding regarding users' subjective experiences and emotional responses. Additionally, the conceptual model excludes other potentially influential variables, such as trust, user experience, satisfaction, or community engagement. Future research should therefore expand the scope by involving more diverse user groups, adopting mixed-method approaches to capture richer insights, and integrating additional variables that may offer a more comprehensive explanation of continued usage behavior. Longitudinal research is also recommended to observe how perceptions and usage intentions evolve over time.

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FRICTIONLESS, FUN, AND FAST PATHWAYS TO SPONTANEOUS BUYING IN DIGITAL PAYMENTS

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ABSTRACT

This study examines the effect of digital convenience on impulsive buying behavior, with perceived usefulness and hedonic motivation as mediating variables among e-wallet users in Indonesia. A quantitative explanatory research design was employed, with data collected from 157 respondents through purposive sampling using an online questionnaire. Structural Equation Modeling (SEM-PLS) was applied to analyze the relationships between variables. The results indicate that digital convenience does not have a direct effect on impulsive buying, but it significantly influences impulsive buying indirectly through both perceived usefulness and hedonic motivation. Hedonic motivation was found to be the stronger mediator, suggesting that emotional enjoyment plays a more dominant role than cognitive perceptions of usefulness in driving impulsive purchases. These findings highlight the importance of enhancing both functional convenience and hedonic experiences in digital platforms to better understand consumer behavior in the Indonesian e-commerce context.

Keywords: Digital convenience, impulsive buying, perceived usefulness, hedonic motivation.

ABSTRAK

Studi ini meneliti pengaruh kemudahan digital terhadap perilaku pembelian impulsif, dengan persepsi kegunaan dan motivasi hedonis sebagai variabel mediasi di antara pengguna dompet digital di Indonesia. Desain penelitian kuantitatif eksploratif digunakan, dengan data dikumpulkan dari 157 responden melalui pengambilan sampel bertujuan menggunakan kuesioner daring. Pemodelan Persamaan Struktural (SEM-PLS) diterapkan untuk menganalisis hubungan antar variabel. Hasil menunjukkan bahwa kemudahan digital tidak memiliki pengaruh langsung terhadap pembelian impulsif, tetapi secara signifikan memengaruhi pembelian impulsif secara tidak langsung melalui persepsi kegunaan dan motivasi hedonis. Motivasi hedonis ditemukan sebagai mediator yang lebih kuat, menunjukkan bahwa kenikmatan emosional memainkan peran yang lebih dominan daripada persepsi kognitif tentang kegunaan dalam mendorong pembelian impulsif. Temuan ini menyoroti pentingnya meningkatkan kemudahan fungsional dan pengalaman hedonis di platform digital untuk lebih memahami perilaku konsumen dalam konteks e-commerce Indonesia.

Kata kunci: *Kenyamanan digital, pembelian impulsif, kegunaan yang dirasakan, motivasi hedonik.*

1. Introduction

Digital commerce in Indonesia has expanded rapidly, supported by widespread internet access, high smartphone penetration, and the growing integration of digital payment systems into daily consumption practices. Indonesia has become the largest digital market in Southeast Asia, with e-commerce transaction values exceeding USD 52 billion in 2024 Trade.gov (2024) This market growth has been accompanied by the increasing adoption of e-wallets and platform-based shopping ecosystems, allowing consumers to search, compare, and purchase products with minimal time and effort. As major platforms such as Shopee, Tokopedia, Lazada, and TikTok Shop continue to develop, Indonesian consumers are increasingly exposed to a shopping environment that is always available, highly interactive, and continuously optimized to stimulate purchasing decisions.

A key behavioral phenomenon in this environment is impulsive buying behavior, which refers to unplanned purchases triggered by sudden urges and emotional stimulation rather than careful evaluation (Stern, 1962). In digital settings, impulsive buying may be amplified by situational cues embedded within the platform interface, including flash sales, countdown timers, "limited stock" displays, push notifications, personalized product recommendations, and instant payment features. Such design elements can accelerate decision-making and reduce consumers' ability to engage in reflective judgment. Prior evidence suggests that e-commerce platforms increasingly encourage impulse buying through these situational triggers, particularly in high-frequency categories such as fashion, beauty, and lifestyle products Iftitah et al. (2023). This shift indicates that online shopping is no longer driven solely by utilitarian needs; instead, experiential and entertainment-oriented aspects have become integral to digital consumption.

In this context, digital convenience is often positioned as a central determinant of consumer engagement and purchasing behavior. Digital convenience refers to the perceived ease, speed, and reduced effort experienced throughout the online shopping process, including accessing the platform, searching for products, evaluating information, completing transactions, and obtaining after-sales support (Syamilah et al., 2025). Digital convenience encompasses not only the technical speed of applications or the availability of payment features, but also the ease with which consumers can access, search for, evaluate products, make transactions, and obtain after-sales service. When consumers find the digital shopping process easy and with minimal obstacles, the time and effort required to interact with the platform are reduced, making them more likely to explore products and more susceptible to stimuli that trigger spontaneous purchases. Hernita et al. (2022) placing convenience (ease of access and transactions) as an important predictor of impulse buying among users of applications like Shopee, where promotional features and ease of payment play a significant role in triggering impulsive purchases. Nevertheless, the empirical relationship between digital convenience and impulsive buying is not always straightforward. While convenience can facilitate purchasing, it may not necessarily create the psychological impulse that drives consumers toward unplanned decisions. This indicates that the relationship may depend on internal mechanisms through which convenience is translated into behavioral outcomes.

This inconsistency highlights a critical research gap. Existing literature tends to examine impulsive buying either from a cognitive perspective, such as perceived usefulness derived from the Technology Acceptance Model (TAM), or from an affective perspective, such as hedonic motivation and emotional enjoyment. Studies rarely integrate both mechanisms within a single explanatory framework, particularly in the context of Indonesian e-wallet users. As a result, how digital convenience is translated into impulsive

buying behavior through simultaneous cognitive and affective pathways remains underexplored.

Two mechanisms are especially relevant: perceived usefulness (cognitive pathway) and hedonic motivation (affective pathway). From a cognitive perspective, perceived usefulness, rooted in the Technology Acceptance Model (TAM), reflects users' belief that using a digital platform enhances efficiency and performance, such as saving time, simplifying tasks, and improving decision quality (Davis, 1989). When consumers perceive a platform as useful, they tend to use it more intensively and repeatedly. Higher usage intensity increases exposure to promotional stimuli and product displays, thereby raising the probability of impulsive purchasing opportunities (Rahmawati et al., 2025). In this sense, digital convenience may strengthen perceived usefulness by reducing effort and friction, and usefulness may then shape consumer engagement patterns that indirectly lead to impulsive buying.

From an affective perspective, hedonic motivation represents the degree of pleasure, enjoyment, excitement, and entertainment consumers experience during shopping. Digital platforms increasingly provide features that enhance hedonic value such as interactive interfaces, gamification, aesthetic product presentation, and entertaining promotional content making shopping not only efficient but also emotionally rewarding. Empirical research on Indonesian marketplace users consistently demonstrates that hedonic motivation is strongly associated with impulsive buying tendencies (Natalie et al., 2022). This suggests that even when consumers recognize functional benefits, spontaneous purchases may be more strongly triggered by emotional gratification, enjoyment, and the feeling of "reward" experienced during the shopping process. Research conducted by Refiyahya & Yulinda (2025) found that factors such as customer experience, hedonic shopping value, sales promotions, and payment features including paylater/digital payment have a significant effect on impulse buying, both directly and thru mediating variables such as positive emotions or perceived benefits. The coexistence of these mechanisms suggests that impulsive buying may not be driven directly by convenience itself, but rather by how convenience is cognitively interpreted and emotionally experienced.

Nevertheless, the literature still indicates a research gap in simultaneously testing both mediation pathways (cognitive and affective) within a single integrated model in the Indonesian market. Many studies focus on a single path, for example, only hedonic motivation or only aspects of TAM, so a holistic understanding of how convenience translates into impulsive behavior thru perceived usefulness and hedonic motivation is still limited.

This study aims to examine the effect of digital convenience on impulsive buying behavior among Indonesian e-wallet users by incorporating perceived usefulness and hedonic motivation as mediating variables. Specifically, the study seeks to: (1) examine whether digital convenience directly influences impulsive buying behavior; (2) assess the mediating role of perceived usefulness in explaining this relationship; and (3) assess the mediating role of hedonic motivation in explaining this relationship. By testing both cognitive and affective mechanisms within an integrated model, this research is expected to enrich the digital consumer behavior literature and provide practical insights for platform managers and marketers in designing user experiences that balance functional convenience with responsible engagement strategies in the Indonesian e-commerce ecosystem.

2. Literature Review

2.1 Digital Convenience

Digital convenience is an evolution of the traditional concept of service convenience, which now needs to be redefined to incorporate digital characteristics and technology-based

shopping experiences. The development of e-retailing allows consumers to feel close to retailers without needing physical proximity, and the online shopping experience is becoming increasingly integrated with elements of offline shopping (Craig et al., 2020). In this context, website or application design no longer serves merely as a digital storefront, but becomes a core service component, replacing the absence of direct interaction with service staff. (Acquila-Natalie & Iglesias-Pradas, 2020).

Research shows that consumers tend to assess the quality of retailers and products based on the design, appearance, and ease of use of digital platforms. A well-designed website can enhance the user's flow experience, (Mohammadi & Dickson, 2020), increasing satisfaction, and creating a significant competitive advantage in the digital market (Kalia & Paul, 2021). Therefore, in a multichannel environment, retailers must ensure their web portals or applications have a high level of user-friendliness and support efficient navigation, including ease of search, page loading speed, and simplicity of the transaction process (Agnihotri, 2019)

Additionally, accurate, complete, and easily accessible information is an essential element of digital convenience. High-quality information and easy-to-use online services have proven to be drivers of consumer value in hybrid service systems (hybrid commerce) that combine online and offline channels. This explains why digital platforms must meet consumer needs regarding ease of use, such as website esthetics, the quality of product descriptions, the clarity of stock availability, and even augmented reality features that help evaluate products virtually. (Vyt et al., 2022).

2.2 Perceive Usefulness

According to Devina in Suryano et al. (2021) perceived usefulness is a measure of how much using a technology is believed to bring benefits to each individual who uses it. Consumers can perceive usefulness when the adopted technology can be used anywhere and anytime.

According to Davis in Ali et al. (2022), perceived usefulness is defined as perceived ease of use, referring to the extent to which a person believes that using a particular system will be free of effort. Perceived ease of use is measured by: a) My interaction with the system is clear and understandable; b) interacting with the system does not require much mental effort from me; c) I feel the system is easy to use; and d) I find it easy to get the system to do what I want.

2.3 Hedonic Motivation

Hedonic motivation describes the pleasure, enthusiasm, or entertainment a person experiences when using technology. This drive stems from an internal need to have a pleasant experience while interacting with digital systems. Factors of pleasure, joy, and entertainment make individuals more interested in using a technology, making hedonic motivation one of the elements that can influence a person's decision to adopt it. Based on this understanding, the researcher formulated the hypothesis that hedonic motivation plays a role in driving individuals' interest in using technology (Permana & Parasari, 2019). Meanwhile, according to Prakarsa & Nursyanti (2025), hedonic motivation refers to a person's experience in using mobile e-marketplace applications, specifically their level of pleasure with the technology and information they have used, which makes them want to use the mobile e-marketplace application repeatedly.

2.4 Impulsive Buying

Stern (1962) stated that impulse buying is an act of purchasing made by consumers without prior planning, resulting in sudden decisions without careful consideration. This behavior typically arises spontaneously and evokes specific emotional sensations, where the rapid decision-making process prevents consumers from considering other information or alternatives (Indriawan &

Santoso, 2023). Thus, impulsive buying can be understood as the behavior of buying spontaneously without prior planning or in-depth evaluation.

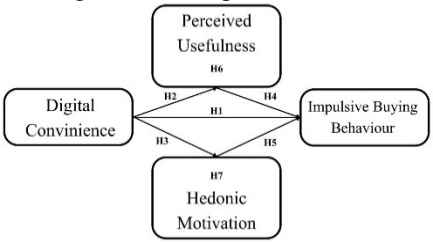
Rock and Hock (in Indriawan & Santoso, 2023) explain that impulsive buying behavior can be measured thru several indicators, namely spontaneity, lack of self-control, psychological conflict, non-cognitive evaluation, and disregard for the consequences of the purchasing decision. On the other hand, the development of technology and modern payment systems such as credit cards and debit cards encourages consumers, especially young people, to become increasingly consumerist, hedonistic, and prone to impulsive purchases.

2.5 Conceptual Framework and Hypotheses Development

This study proposes a conceptual framework that explains the relationship between Digital Convenience and Impulsive Buying Behavior through both cognitive and affective mechanisms. Digital Convenience is posited as an antecedent that enhances consumers' perceptions of usefulness and emotional enjoyment when using e-wallet platforms.

From a cognitive perspective, Digital Convenience increases Perceived Usefulness, as users perceive the platform as efficient, time-saving, and practical. Increased perceived usefulness intensifies platform engagement, which in turn elevates exposure to impulsive purchase triggers. From an affective perspective, Digital Convenience enhances Hedonic Motivation, creating pleasurable and enjoyable shopping experiences that stimulate spontaneous purchasing decisions.

Figure 1. Conceptual Framework



Source: Developed for this study (2026)

Based on this framework (figure 1), the following hypotheses are proposed:

H1: Digital Convenience has a positive effect on Impulsive Buying Behavior.

H2: Digital Convenience has a positive effect on Perceived Usefulness.

H3: Digital Convenience has a positive effect on Hedonic Motivation.

H4: Perceived Usefulness has a positive effect on Impulsive Buying Behavior.

H5: Hedonic Motivation has a positive effect on Impulsive Buying Behavior.

H6: Perceived Usefulness mediates the relationship between Digital Convenience and Impulsive Buying Behavior.

H7: Hedonic Motivation mediates the relationship between Digital Convenience and Impulsive Buying Behavior.

3. Research Method

This study uses a quantitative approach with an explanatory design, aiming to examine the relationship between Digital Convenience, Hedonic Motivation, and Perceived Usefulness and Impulsive Buying Behavior among e-wallet users in Indonesia. Data was collected thru a Google Forms questionnaire, which began with three screening questions to ensure that respondents were active e-wallet users in the past three months and had experience with impulsive purchases. The sampling technique used purposive sampling, with respondent criteria being ≥ 18 years old and having made spontaneous transactions using an e-wallet. The questionnaire consists of four main sections: Digital Convenience (4 items), Hedonic Motivation (4 items), Perceived Usefulness (4 items), and Impulsive Buying Behavior (4 items), all of which are measured using a 1–5 Likert scale. The number of respondents meets the requirements for SEM-PLS analysis according to the recommendations of Hair et al. (2021).

Data analysis was conducted using SmartPLS 4, including evaluation of the outer model—convergent validity test (outer loading ≥ 0.70, AVE ≥ 0.50), discriminant validity (HTMT), and reliability (Composite Reliability & Cronbach Alpha ≥ 0.70). Next, the inner model was tested using path coefficient values, R^2, Q^2, and bootstrapping to determine the significance of the relationships between variables, including testing the mediating effects of Perceived Usefulness and Hedonic Motivation on the influence of Digital Convenience on Impulsive Buying Behavior.

4. Results and Discussion

4.1 Results

Rather than emphasizing extensive technical output from SEM-PLS, this section focuses on interpreting key empirical findings to explain how digital convenience influences impulsive buying behavior among e-wallet users.

The respondent profile indicates that impulsive buying behavior is particularly prominent among Generation Z users, who dominate the sample (91.08%). Most respondents reported making impulsive purchases between three to five times per month, reflecting frequent spontaneous transactions facilitated by digital payment systems. This demographic pattern suggests that impulsive buying is closely embedded in the digital lifestyle of young consumers, who are highly familiar with mobile applications and digital promotions.

From a structural perspective, the results reveal an important insight: Digital Convenience does not directly influence Impulsive Buying Behavior. Although digital platforms successfully reduce transactional barriers, ease of use alone does not automatically trigger spontaneous purchases. This finding implies that convenience functions more as a supporting condition rather than a direct behavioral stimulus.

However, digital convenience strongly influences both mediating variables. The path coefficients show that Digital Convenience significantly enhances Perceived Usefulness (β = 0.827) and Hedonic Motivation (β = 0.731). These results indicate that when users perceive digital platforms as easy, fast, and accessible, they not only recognize functional benefits but also experience greater enjoyment and emotional engagement.

4.1.1 Respondent Characteristics

The primary data obtained thru questionnaires were then processed using SmartPLS software. Based on the 157 respondent data who completed the questionnaire, the following characteristics were obtained:

Table 1. Respondent Characteristic

Variabel	Category Number	(N)	(%)
Frequency of impulsive transactions via e-wallet per month	1–2 times	41	26.11
	3–5 times	56	35.67
	6–10 times	21	13.38
	>10 times	39	24.84
Age	Gen X	6	3.82
	Gen Y	8	5.10
	Gen Z	143	91.08
Gender	Male	58	36.94
	Female	99	63.06
Occupation	Student	115	75.16
	Bachelor of Economics	1	0.65
	Employee	17	11.11
	Farmer	1	0.65
	Entrepreneur	17	11.11
	Housewife	2	1.31
Online shopping expenditure per month via e-wallet	Rp 100.000–500.000	75	47.77
	Rp 500.000–1.000.000	46	29.30
	Rp 1.000.000–5.000.000	22	14.01
	> Rp 5.000.000	14	8.92

The respondent profile indicates that impulsive buying behavior via e-wallets is predominantly associated with young digital consumers. The sample is largely composed of Generation Z users (91.08%), with most respondents being students (75.16%),

reflecting a consumer segment that is highly familiar with mobile applications and digital payment systems. This demographic is typically more exposed to online promotions and interactive shopping features, making them particularly relevant for examining impulsive buying behavior in digital environments.

In terms of behavioral patterns, impulsive transactions are shown to be a recurring activity rather than an occasional occurrence. The majority of respondents reported making impulsive purchases three to five times per month (35.67%), followed by one to two times per month (26.11%) and more than ten times per month (24.84%). This frequency distribution suggests that impulsive buying is embedded in routine e-wallet usage, supported by seamless payment processes and continuous exposure to promotional stimuli.

From a financial perspective, most respondents reported moderate monthly online shopping expenditures, with nearly half spending between Rp100,000 and Rp500,000 (47.77%). However, a notable proportion of users reported higher spending levels, indicating that impulsive buying through e-wallets can extend beyond low-value purchases. Overall, these characteristics portray a digitally savvy, emotionally engaged consumer group, providing a suitable context for analyzing the mediating roles of perceived usefulness and hedonic motivation in impulsive buying behavior.

4.1.2 Structural Model Design (Inner Model)

The structural model in this study is developed to examine the causal relationships among Digital Convenience, Hedonic Motivation, Perceived Usefulness, and Impulsive Buying Behavior. Rather than emphasizing procedural aspects of SEM-PLS, this section focuses on assessing whether the measurement indicators adequately represent their respective latent constructs before interpreting the structural relationships.

The evaluation of the measurement model shows that all indicators exhibit strong associations with their corresponding constructs. Each item demonstrates an outer loading value exceeding the recommended threshold of 0.70, indicating that the indicators are reliable and valid in capturing the underlying dimensions of Digital Convenience, Hedonic Motivation, Perceived Usefulness, and Impulsive Buying Behavior. This result confirms that the constructs are well operationalized and suitable for further structural analysis.

The satisfactory outer loading values suggest that the measurement model provides a solid empirical foundation for testing the hypothesized relationships in the structural model. With reliable and valid indicators, the subsequent analysis of direct and indirect effects can be interpreted with confidence. The calculation results are shown in the following image:

Table 2. Outer Loading

Indikator	DC	HM	IB	PU
DC1	0.864	-	-	-
DC2	0.873	-	-	-
DC3	0.837	-	-	-
DC4	0.760	-	-	-
HM1	-	0.899	-	-
HM2	-	0.899	-	-
HM3	-	0.854	-	-
HM4	-	0.799	-	-
IB1	-	-	0.856	-
IB2	-	-	0.883	-
IB3	-	-	0.847	-
IB4	-	-	0.780	-
PU1	-	-	-	0.837
PU2	-	-	-	0.912
PU3	-	-	-	0.940
PU4	-	-	-	0.916

Based on the results presented in Table 2, all indicators across the four constructs meet the minimum outer loading criterion of 0.70. This confirms that each indicator contributes meaningfully to its latent variable and that the measurement model demonstrates adequate convergent validity. Consequently, all constructs are deemed appropriate for inclusion in the structural model analysis.

4.1.3 Uji Model Pengukuran (Outer Model)

Table 3. Results of Construct Validity and Reliability Test

	Cronbach's alpha	Composite reliability	Composite reliability	AVE
DC	0.854	0.859	0.902	0.697
HM	0.886	0.893	0.922	0.746
IB	0.863	0.867	0.907	0.710
PU	0.923	0.923	0.946	0.813

The evaluation of the measurement model aims to confirm that each construct in the study demonstrates sufficient reliability and validity before proceeding to the structural model analysis. This assessment focuses on internal consistency reliability and convergent validity to ensure that the indicators accurately represent their respective latent variables.

The results indicate that all constructs exhibit strong internal reliability. Cronbach's alpha values for Digital Convenience, Hedonic Motivation, Impulsive Buying Behavior, and Perceived Usefulness exceed the recommended threshold of 0.70, demonstrating consistent measurement across indicators. In addition, composite reliability values further confirm the stability and consistency of each construct.

Convergent validity is also well established, as all Average Variance Extracted (AVE) values are above 0.50. This suggests that each construct explains more than half of the variance of its indicators, indicating that the measurement items effectively capture the intended latent concepts. Overall, the results confirm that the measurement model is reliable and valid, providing a robust foundation for subsequent structural model testing.

4.1.4 Structural Model

Testing SEM using PLS tests the structural model using R-squared (R2) analysis of indirect effects, as well as path coefficient analysis.

a. R-Squared (R^2)

Here are the R2 values based on the output from the PLS software:

Table 4. R^2 Output

	R-Square	R-Square Adjusted
HM	0,534	0,531
IB	0,343	0,331
PU	0,684	0,682

The results indicate that Digital Convenience explains 53.4% of the variance in Hedonic Motivation, 68.4% of the variance in Perceived Usefulness, and 34.3% of the variance in Impulsive Buying Behavior. This suggests that the model is more effective in explaining psychological responses than predicting impulsive behavior directly.

b. Direct Effect Analysis (Path Coefficient)

The following are the results of the direct effect (path coefficient) based on the PLS software output.

Table 5. Path Coefficient

	Original Sample (O)	Sample Mean (M)	Std. Dev	T Statistics	P Values
DC→ HM	0.731	0.730	0.055	13.308	0.000
DC→ IB	-0.085	-0.078	0.098	0.866	0.387
DC→ PU	0.827	0.827	0.039	21.438	0.000
HM→ IB	0.433	0.442	0.094	4.592	0.000
PU→ IB	0.270	0.259	0.130	2.078	0.038

The path coefficient analysis confirms that Digital Convenience significantly enhances both Hedonic Motivation and Perceived Usefulness. However, its direct effect on Impulsive Buying Behavior is not significant. Conversely, both mediating variables significantly influence impulsive buying, confirming their critical role in transmitting the effect of digital convenience to behavioral outcomes.

c. Analysis of Indirect Effects

The structural model evaluation aims to assess the explanatory power of the model and to examine both direct and indirect relationships among the constructs. The analysis focuses on how well Digital Convenience explains variations in Hedonic Motivation, Perceived Usefulness, and Impulsive Buying Behavior, as well as the mediating mechanisms underlying these relationships.

The R-square values indicate varying levels of explanatory strength across constructs. Hedonic Motivation shows a moderate level of explanation, while Perceived Usefulness exhibits a relatively strong explanatory power. In contrast, Impulsive Buying Behavior is explained to a lesser extent, suggesting that impulsive purchasing decisions are influenced by additional psychological or situational factors beyond those included in the current model.

Mediation analysis reveals that Digital Convenience influences Impulsive Buying Behavior indirectly through both Hedonic Motivation and Perceived Usefulness. Notably, the mediation effect through Hedonic Motivation is stronger, reinforcing the role of emotional engagement as the dominant pathway through which convenience translates into impulsive purchasing. Direct effect analysis further confirms that Digital Convenience does not directly stimulate impulsive buying; instead, its influence becomes meaningful only when internalized through cognitive and affective mechanisms.

Table 6. Specific Indirect Effects

Jalur Mediasi	Original Sample (O)	Sample Mean (M)	Std. Dev	T Statistics	P Values
DC→ HM→ IB	0.317	0.324	0.077	4.138	0.000
DC→ PU→ IB	0.223	0.214	0.107	2.087	0.037

The mediation results demonstrate that both Hedonic Motivation and Perceived Usefulness significantly mediate the relationship between Digital Convenience and Impulsive Buying Behavior. The stronger indirect effect through Hedonic Motivation highlights the dominant role of emotional enjoyment in triggering impulsive purchases.

4.2 Discussion

The findings of this study demonstrate that Digital Convenience does not directly influence Impulsive Buying Behavior, indicating that convenience alone is insufficient to trigger spontaneous purchases (Dhewayanti, 2024). This result supports prior research suggesting that reduced transaction friction does not necessarily generate impulsive responses unless accompanied by psychological stimulation This finding suggests that while digital convenience reduces transactional friction, it does not automatically generate impulsive responses unless it is internalized through consumers' psychological processes. In other words, convenience functions as an enabling condition rather than a direct behavioral trigger.

Digital Convenience significantly enhances both Hedonic Motivation and Perceived Usefulness, confirming its dual role in shaping cognitive and affective evaluations. Ease of navigation, fast transactions, and accessibility improve perceived efficiency while simultaneously increasing enjoyment and emotional comfort. This aligns with Dirin and Laine, (2023), who argue that well-designed digital interfaces enhance both functional value and experiential engagement.

The findings demonstrate that Digital Convenience significantly enhances both Hedonic Motivation and Perceived Usefulness, confirming its dual role in shaping cognitive and affective evaluations of digital shopping experiences. Ease of navigation, transaction speed, and accessibility not only improve functional efficiency but also contribute to users' emotional comfort and enjoyment. This aligns with prior studies suggesting that digital convenience increases users' sense of

control and pleasure, which subsequently influences their behavioral responses in online environments (Zhang, et al., 2024).

A key contribution of this study lies in identifying Hedonic Motivation as the stronger mediating mechanism between Digital Convenience and Impulsive Buying Behavior. This result indicates that impulsive buying among e-wallet users is predominantly driven by emotional gratification rather than purely rational considerations. When digital platforms provide enjoyable, entertaining, and stimulating shopping experiences, users are more likely to experience affective arousal that leads to unplanned purchasing decisions. This finding strongly supports hedonic consumption theory, which emphasizes that impulsive behavior is primarily rooted in emotional impulses, pleasure-seeking tendencies, and experiential value rather than deliberate cognitive evaluation (Ciocodeică et al., 2025).

In contrast, Perceived Usefulness also mediates the relationship between Digital Convenience and Impulsive Buying, albeit with a relatively weaker influence. This suggests that perceptions of efficiency, time-saving, and practicality play a supportive role in encouraging impulsive purchases by increasing usage intensity and exposure to purchasing stimuli. However, cognitive evaluations of usefulness alone appear insufficient to override self-control mechanisms unless accompanied by emotional engagement. This reinforces the notion that impulsive buying in digital contexts is less about rational assessment and more about affective experience (Amelia, et al,. 2025).

The stronger role of Hedonic Motivation in this study is particularly relevant within the Indonesian e-wallet context, where digital payment applications are increasingly integrated into lifestyle consumption and entertainment-oriented shopping platforms. Features such as gamified promotions, visually appealing interfaces, instant rewards, and seamless checkout systems create emotionally stimulating environments that heighten consumers' susceptibility to impulsive purchases. Thus, the findings suggest that emotional engagement serves as the primary pathway through which digital convenience translates into impulsive buying behavior (Shukun & Loang, 2024).

Although Perceived Usefulness also mediates the relationship, its influence is comparatively weaker. This suggests that while efficiency and practicality increase usage intensity, they do not independently override self-control mechanisms unless paired with emotional stimulation. Similar conclusions were reported by Yan,et al., (2024) who found that perceived usefulness supports continued usage rather than impulsive behavior. This study underscores that impulsive buying in e-wallet usage is best understood as the outcome of an interaction between functional convenience and emotional experience. Digital platforms that successfully combine efficiency with hedonic value are more effective in stimulating spontaneous purchasing behavior. These findings extend existing literature by empirically demonstrating that affective mechanisms, particularly hedonic motivation, play a more decisive role than cognitive mechanisms in mediating the influence of digital convenience on impulsive buying behavior.

Beyond theoretical contributions, these findings carry important managerial and practical implications (Setkute & Dibb, 2025). The absence of a direct effect of digital convenience on impulsive buying indicates that platform providers should not rely solely on technical efficiency to stimulate spontaneous purchases. Instead, emotional engagement through hedonic design elements such as gamification, interactive visuals, and reward-based promotions should be prioritized, as hedonic motivation emerges as the dominant mediating mechanism. At the same time, perceived usefulness should be strengthened through transparent information, decision-support features, and reliable post-purchase

services to maintain usage intensity. Given the dominance of young users in the sample, ethical and responsible platform design such as spending reminders and customizable notifications also becomes essential to balance commercial objectives with consumer well-being.

5. Conclusion

This study concludes that Digital Convenience does not have a direct impact on Impulsive Buying Behavior, but it has a significant indirect impact thru Hedonic Motivation and Perceived Usefulness. Digital convenience has been proven to increase enjoyment (HM) and perceived usefulness (PU), both of which subsequently drive impulsive purchase behavior among e-wallet users. Hedonic motivation is the strongest mediator, indicating that the emotional aspect is more dominant in triggering spontaneous purchases than the perception of usefulness.

Despite its contributions, this study has several limitations that open avenues for future research. Future studies may incorporate additional psychological variables such as self-control, financial literacy, or impulsive personality traits to better explain individual differences in impulsive buying behavior. Longitudinal or experimental research designs are also recommended to examine behavioral changes over time and to establish stronger causal relationships. Moreover, comparative studies across different generational groups or cultural contexts could provide deeper insights into whether the dominance of hedonic motivation observed in this study is consistent across consumer segments. Exploring platform-specific features such as paylater services or loyalty programs may further enrich the understanding of impulsive buying behavior in digital payment ecosystems.

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TECHNOLOGY-ENABLED IMPLEMENTATION OF INCLUSIVE EDUCATION POLICIES: A SYSTEMATIC REVIEW OF UNIVERSAL DESIGN FOR LEARNING, MULTI-TIERED SYSTEMS OF SUPPORT, AND LEARNING ANALYTICS

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ABSTRACT

This article synthesises evidence on the implementation of inclusive education policies by examining the interplay of technology, pedagogical frameworks, and systemic support in shaping adoption, consistency, adherence, and feasibility across various school contexts. Design/methodology/approach: A Systematic Literature Review (SLR) was conducted in accordance with the PRISMA 2020 guidelines. Seventeen Scopus-indexed articles (2016–2024) were analysed, focusing on study characteristics, theoretical foundations, and implementation indicators. Quality was assessed using JBI checklists. Findings reveal that the combination of assistive technologies, learning management systems, and analytics dashboards enhances adoption and consistency when paired with teacher professional development and Leadership support. The UDL and MTSS frameworks strengthen coherence in curriculum adaptation and monitoring. Nevertheless, affordability, teacher readiness, and infrastructure gaps particularly in LMICs remain significant challenges. Temporal differences emerged: pre-COVID studies emphasised classroom level interventions, while post COVID research highlighted systemic digital infrastructure and accountability. Research limitations include reliance on English only sources, methodological heterogeneity, and potential publication bias. Implications: Policymakers must align inclusion mandates with funding and infrastructure, while school leaders should integrate teacher training and data driven monitoring to support inclusive practices. Researchers are encouraged to adopt mixed method and longitudinal designs across contexts. This study presents a comparative synthesis of pre and post COVID literature, highlighting systemic strategies and justice-oriented perspectives as crucial for sustaining inclusive education.

Keywords: Inclusive education, policy implementation, assistive technology, universal design for learning (UDL), multi-tiered systems of support (MTSS), learning analytics.

ABSTRAK

Artikel ini mensintesis bukti mengenai implementasi kebijakan pendidikan inklusif dengan menelaah keterkaitan antara teknologi, kerangka pedagogi, dan dukungan sistemik dalam membentuk tingkat adopsi, konsistensi, kepatuhan, serta kelayakan di berbagai konteks sekolah. Desain/metodologi/pendekatan: Tinjauan Pustaka Sistematis (Systematic Literature Review/SLR) dilakukan sesuai dengan pedoman PRISMA 2020. Sebanyak tujuh belas artikel terindeks Scopus (2016–2024) dianalisis dengan fokus pada karakteristik studi, landasan teoretis, dan indikator implementasi. Kualitas studi dinilai menggunakan daftar periksa JBI. Temuan menunjukkan bahwa kombinasi teknologi asistif, sistem manajemen pembelajaran, dan dasbor analitik meningkatkan adopsi dan konsistensi ketika dipadukan dengan pengembangan profesional guru dan dukungan kepemimpinan. Kerangka UDL dan MTSS memperkuat koherensi dalam adaptasi kurikulum dan pemantauan. Namun demikian, keterjangkauan biaya, kesiapan guru, dan kesenjangan infrastruktur terutama di negara berpendapatan rendah dan menengah (LMICs) masih menjadi tantangan signifikan. Perbedaan temporal juga muncul: studi pra-COVID menekankan intervensi pada tingkat kelas, sementara penelitian pasca-COVID menyoroti infrastruktur digital sistemik dan akuntabilitas. Keterbatasan penelitian mencakup ketergantungan pada sumber berbahasa Inggris, heterogenitas metodologis, dan potensi bias publikasi. Implikasi: Pembuat kebijakan perlu menyelaraskan mandat inklusi dengan pendanaan dan infrastruktur, sementara pimpinan sekolah sebaiknya mengintegrasikan pelatihan guru dan pemantauan berbasis data untuk mendukung praktik inklusif. Peneliti didorong untuk mengadopsi desain metode campuran dan longitudinal lintas konteks. Studi ini menyajikan sintesis komparatif literatur pra dan pasca COVID, yang menegaskan bahwa strategi sistemik dan perspektif berorientasi keadilan sangat krusial untuk keberlanjutan pendidikan inklusif.

Kata kunci: *Pendidikan inklusif, implementasi kebijakan, teknologi asistif, universal design for learning (UDL), multi-tiered systems of support (MTSS), analitik pembelajaran.*

1. Introduction

Inclusive education is now increasingly positioned as the primary prerequisite for social justice (Equity) as well as an indicator of achieving SDG 4. Inclusive education is seen as the foundation for attaining Equity and quality learning; however, the gap between policy documents and real practices in regular schools remains evident, so a policy school classroom approach is needed to ensure consistent implementation (Novrizal & Manaf, 2024). In addition, organisational readiness and the quality of coordination among actors are fundamental factors in ensuring that policy mandates are consistently translated to the school level. Ariesty (2018) emphasised that the effectiveness of implementation is greatly influenced by the quality of working relationships, clarity of roles, and structured communication mechanisms, which align with the need for cross level coordination in implementing technology based inclusive education policies. The acceleration of digital transformation post-pandemic presents opportunities to differentiate learning through Learning Management Systems (LMS), learning analytics, and assistive technology (AT). However, this condition also reveals challenges in organisational readiness, digital literacy, and infrastructure inequality that could hinder inclusion if not supported by adequate policies and institutional support (Matsieli & Mutula, 2024).

In the Indonesian context, various policy studies and recent implementation evaluations show that the mandate of inclusive education is actually clear. However, its application still varies across regions, particularly regarding resource availability, educator competence, and standard service procedures for students with special needs (Nowak, Kowalski, & Zielinska, 2024). In terms of instructional design, the Universal Design for Learning (UDL) framework provides a foundation for integrating technology with the principle of universal access. The results of the latest meta-analysis also indicate that UDL has a positive impact on learning outcomes, making it a relevant pillar in the operationalisation of technology-based inclusion policies (King-Sears et al., 2023).

At the support system level, Multi-Tiered Systems of Support (MTSS/I-MTSS) emphasise the importance of multi-tiered (universal targeted intensive) support. Recent publications emphasise the importance of consistency in implementing and utilising digital tools to monitor progress and support data driven decision making (Majeika & Rafferty, 2024). Meanwhile, in the realm of assistive technology (AT), a recent systematic review has demonstrated the benefits of AT including augmented reality (AR) based solutions in increasing student participation with disabilities. However, the findings also emphasise that teacher capacity, availability of funds, and governance are essential prerequisites for the impact of AT to be genuinely felt in schools (Navas-Bonilla, Jiménez-Carvajal, & Chaves-García, 2025).

Although the amount of research on EdTech, UDL, MTSS, and AT continues to grow, the existing literature generally still examines these aspects separately and does not provide much of an integrated framework explaining how technology plays a role in operationalising inclusive policies in schools (Almeqdad, Alghamdi, & Ihmeideh, 2023; Majeika & Rafferty, 2024). Another gap is evident in the evidence on the professional development of technology-based teachers (TPD), which is identified as a key lever for implementing inclusive education policies. Recent studies have demonstrated the effectiveness of technology-based TPD; however, their integration with implementation indicators such as procedure adoption, compliance with standards, and monitoring and evaluation mechanisms is still limited (Huang, Liang, Xiong, Wu, & Lim, 2024).

In addition, in the Indonesian context, access to and utilisation of assistive technology (AT) still face significant obstacles, including service availability,

costs, and gaps in the supporting ecosystem. This condition requires policies that strengthen the AT supply chain while increasing educators' capacity, enabling its optimal implementation (Ardianuari, Pasaribu, Amannullah, & Prana, 2023).

To bridge this gap, this study conducted a Systematic Literature Review (SLR) with a focus on how learning technology and digital transformation can operationalize the implementation of inclusive school policies at the policy school classroom level; what are the most consistent factors as supporters and inhibitors; and which models or frameworks (UDL, MTSS, and implementation science) are most productively adopted (Page et al., 2021).

The SLR approach used follows the PRISMA 2020 reporting guidelines and adheres to standards of rigour in SLRs, including transparent protocols, structured coding, and precise theoretical contribution positioning as recommended by Durach et al. (2017) (Page et al., 2021; Durach, Kembro, & Wieland, 2017).

The structure of this article is as follows: Part 2 presents a literature review of key concepts; Part 3 outlines the SLR methodology; Part 4 presents the analysis as well as the findings; Part 5 discusses the results of the research along with its practical implications for practitioners, policymakers, and researchers; and Part 6 presents the conclusions of the study.

Guided by this goal, we posed the following research questions based on a policy-to-practice implementation lens:

RQ1. How do learning technologies, such as LMS, learning analytics, and AT, operationalise the implementation of inclusive school policies at the policy, school, and classroom levels through the integration of the UDL and MTSS frameworks?

RQ2. What are the enabler and barrier factors that most consistently influence the success of technology integration in the implementation of inclusive policies, especially in the Indonesian/LMIC context?

RQ3. How does technology-based teacher professional development contribute to the adoption of procedures, standard compliance, and M&E of inclusive policy implementation in schools?

2. Literature Review

2.1 Theoretical foundations: UDL, MTSS, and implementation science

Universal Design for Learning (UDL) provides a principles-based framework that is proactively designed to deliver a variety of ways to engage, represent, and act. This approach enables diverse learners to access learning without the need for subsequent modifications (King-Sears et al., 2023). Recent meta-analyses have shown that UDL based instruction is associated with improved learning outcomes across various levels and contexts, making it a relevant pedagogical foundation for implementing inclusion policies, especially when combined with digital technology (King-Sears et al., 2023). Meanwhile, the Integrated Multi-Tiered Systems of Support (I-MTSS) operationalises academic and behavioural support (universal, targeted, and intensive). This model highlights the importance of fidelity, data utilisation, and continuous collaboration as key factors in successful implementation in schools (Majeika & Rafferty, 2024). The latest guidance also confirms that the use of digital intervention platforms, technology-based progress monitoring, and analytics can strengthen the decision making cycle in MTSS, provided that Leadership structures and institutional routines are built in advance (Majeika & Rafferty, 2024).

Furthermore, the latest version of the Consolidated Framework for Implementation Research (CFIR 2022) introduces equity salient constructs. It updates the domain to analyse how intervention characteristics, internal and external contexts, individual attributes, and process dynamics affect implementation

effectiveness. It is directly relevant to technology initiatives in inclusive education (Damschroder et al., 2022). Overall, the UDL explains what forms of learning are accessible, the MTSS outlines how support is organised and monitored, while the CFIR highlights why and under what contextual conditions the design can translate into sustainable policy implementation (Damschroder et al., 2022; King-Sears et al., 2023; Majeika & Rafferty, 2024).

2.2 Learning technologies and assistive technologies for inclusion

Systematic evidence suggests that assistive technologies (ATs) including mobile accessibility tools, text to speech, augmentative and alternative communication, and emerging augmented reality (AR) applications can significantly improve students with special needs' participation and learning outcomes when applied to learning routines (Mukhtarkyzy et al., 2025).

A broader systematic literature review (SLR) related to technology for inclusive education reported similar benefits in terms of engagement and access. Still, it emphasised that its effectiveness depends on teacher capacity, the availability of technical support, and suitability with the student's individual curriculum goals and plans, not solely on the device (Navas-Bonilla et al., 2025). The review concludes that AT and learning platforms should be treated as sociotechnical interventions, the success of which depends on policy-based standards, procurement processes, training, and governance at the school level, rather than solely on hardware procurement (Mukhtarkyzy et al., 2025; Navas-Bonilla et al., 2025).

2.3 Technology enabled teacher professional development (TPD)

Recent systematic reviews show that technology enabled TPD including coaching, professional learning communities, micro credentials, and hybrid modalities enhances teachers' knowledge and its application in classroom practice, especially when the program is sustainable, collaborative, and contextually responsive (Huang et al., 2024). The TPD effect is most optimal when the platform is related to formative data, feedback loops from observations, and communities of practice, all of which are relevant to implementation indicators such as adoption, suitability, and consistency, as emphasised in the implementation science literature (Huang et al., 2024; Damschroder et al., 2022).

Thus, technology based TPD is not merely a dissemination activity, but a core strategy in implementing inclusive education policies with technological support, particularly in the context of fundamental limitations in schools (Huang et al., 2024).

2.4 Practice insights from Indonesia and LMIC contexts

Policy analysis in Indonesia reveals a clear legal mandate for inclusive schools; however, their implementation remains uneven due to disparities in resources, variations in teacher preparation, and the absence of standardised service procedures across various regions (Novrizal & Manaf, 2024).

National evidence also indicates that AT needs have not been fully met due to affordability constraints, fragmented supply chains, and limited-service ecosystems, thereby directly limiting schools' ability to meet inclusion policy requirements (Pasaribu et al., 2023).

Studies on prospective teachers in Indonesia show that attitudes towards inclusion are correlated with pedagogical creativity, indicating that teacher capacity development and confidence are essential factors in supporting technology-based inclusion during policy implementation (Soeharto et al., 2024).

Overall, these findings confirm that the implementation of inclusive policies in Indonesia will be highly dependent on the orchestration of AT access, teacher capacity, and school governance with digital

platforms that support UDL based instruction and monitoring according to MTSS (Novrizal & Manaf, 2024; Pasaribu et al., 2023; Soeharto et al., 2024).

2.5 Synthesis and link to this review

The existing literature consistently shows that technology can support the implementation of inclusive education policies if it meets several conditions: (i) it is designed for universal access according to the UDL principles, (ii) it is integrated into a tiered support system according to MTSS with regular data utilization, and (iii) it is implemented through a deliberately designed implementation strategy, such as technology-based TPD, in a supportive context, including Leadership, resource availability, and equity aware governance (Damschroder et al., 2022; Huang et al., 2024; King-Sears et al., 2023; Majeika & Rafferty, 2024).

However, previous reviews have highlighted fragmented reporting of implementation indicators such as the adoption of procedures, compliance with standards, and monitoring and evaluation mechanisms. This SLR explicitly emphasises these aspects to bridge the gap between policy and practice, particularly in the context of LMIC, including Indonesia (Huang et al., 2024; Mukhtarkyzy et al., 2025; Navas-Bonilla et al., 2025; Novrizal & Manaf, 2024).

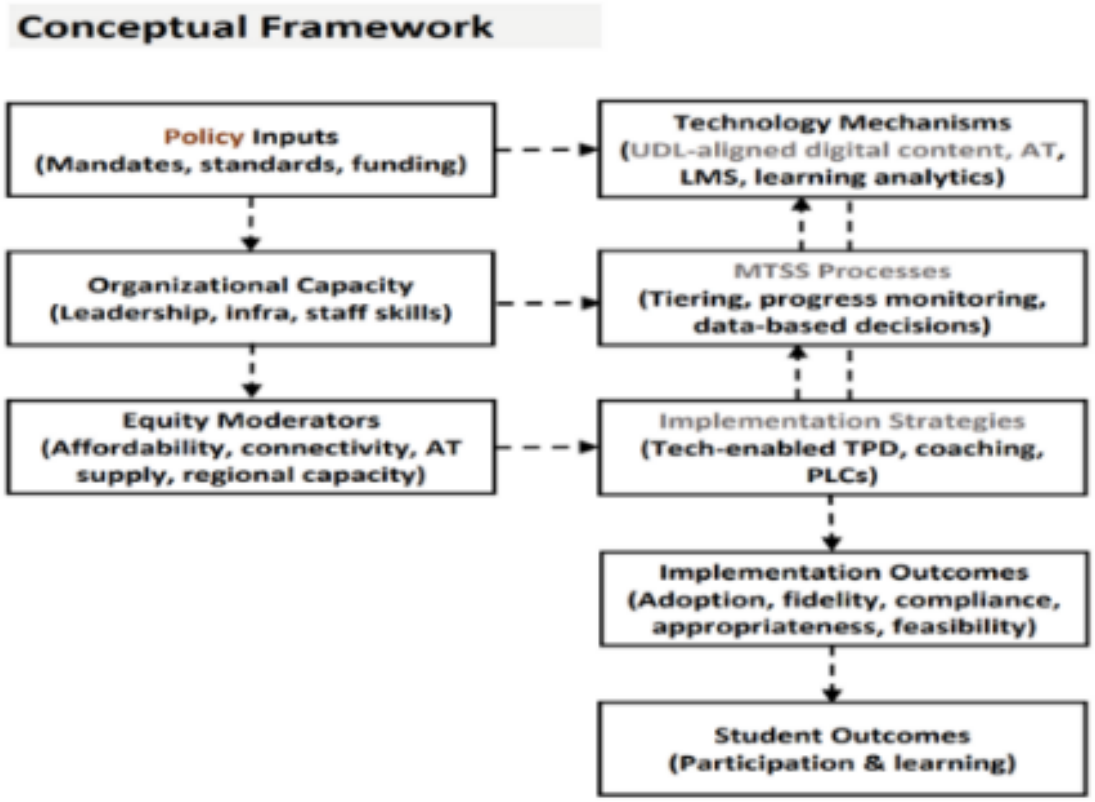
2.6 Conceptual framework

Based on this synthesis, this study adopts a conceptual framework in which policy inputs (inclusive education mandates, funding, and standards) interact with organizational capacity (Leadership, infrastructure, and staff competencies) to activate technological mechanisms including digital materials aligned with UDL, AT, LMS, and analytics organized in the MTSS (tiering, progress monitoring, and data driven decision making) process and implemented through implementation strategies such as technology based TPD and coaching. This entire process results in implementation indicators such as adoption, consistency, suitability, feasibility, and adherence to standards, which further impact student participation and learning outcomes (Damschroder et al., 2022; Huang et al., 2024; King-Sears et al., 2023; Majeika & Rafferty, 2024; Mukhtarkyzy et al., 2025).

In the LMIC and Indonesian contexts, the framework also explicitly includes justice moderators, including AT affordability, supply chain reliability, connectivity, and regional capacity, so that evidence can be interpreted considering feasibility and scalability under limited conditions (Novrizal & Manaf, 2024; Pasaribu et al., 2023; Soeharto et al., 2024). Understanding this conceptual framework can be facilitated through the illustration in Figure 1.

The above framework links policy inputs and organisational capacity influenced by Equity moderators (AT affordability, connectivity, supply, regional capacity) to technology mechanisms (digital content based on UDL, assistive technology, LMS, learning analytics). This mechanism is organised through MTSS processes (tiering, progress monitoring, data-based decisions) and activated by implementation strategies (technology-based TPD, coaching, PLCs). These interactions drive implementation outcomes (adoption, fidelity, compliance, suitability, and feasibility), which, in turn, improve student outcomes (participation & learning). This framework provides a map of causal relationships that will be used to encode, synthesise, and interpret the evidence in this SLR.

Figure 1. Conceptual framework



Source: Prepared by the author based on literature synthesis.

3. Research Method

3.1 Review Design, Protocol, and Reporting

We conduct a systematic literature review (SLR) to synthesise evidence on how learning technologies and digital transformation operationalise inclusive education policy implementation at the policy, school, and classroom levels. (PRISMA 2020; Durach framework). (Page et al., 2021; Durach, Kembro, & Wieland, 2017). Our protocol specifies objectives, eligibility criteria, search sources/strings, screening, appraisal, extraction, and synthesis procedures to maximise transparency and reproducibility. (Page et al., 2021). Reporting adheres to PRISMA 2020 guidelines, and search reporting is aligned with PRISMA-S recommendations. (Page et al., 2021; Rethlefsen et al., 2021).

3.2 Eligibility Criteria

To ensure quality, comparability, and topical relevance, we applied explicit inclusion exclusion criteria to all retrieved records and documented every screening decision in accordance with PRISMA 2020 and PRISMA-S reporting standards (Page et al., 2021; Rethlefsen et al., 2021). In addition to native database searches (Scopus, Web of Science Core Collection, ERIC, and ProQuest Education), we utilised Dimensions AI as a discovery layer to broaden coverage of peer reviewed outputs indexed across major publishers (e.g., Elsevier, Springer Nature) and to cross check for duplicates. Empirical evidence indicates that Dimensions is broadly comparable to Scopus and constitutes a trustworthy tool for scholarly retrieval and auditing (Thelwall, 2018, pp. 430–435; https://www.dimensions.ai). Guided by Durach et al. (2017) on transparent SLR protocols, we then filtered studies to those that examine learning/assistive technologies (e.g., UDL aligned digital materials, LMS, learning analytics, AT) as mechanisms of inclusive policy implementation and that report implementation indicators (adoption,

fidelity, appropriateness, feasibility, compliance, and/or M&E routines). Given the field's rapid evolution around the COVID-19 inflexion point, we restricted the window to 2015–2024 (five years pre and five years post pandemic). We limited it to English language peer reviewed journal articles to maintain terminological consistency for constructs such as UDL, MTSS, and implementation outcomes across databases. Please refer to Table 1.

3.3 Data Sources and Search Strategy

We searched the literature across reputable academic platforms Scopus, ScienceDirect, SpringerLink, Emerald Insight, and Google Scholar (for supplementary/grey discovery) and documented all steps in line with PRISMA 2020 and the PRISMA-S extension for transparent search reporting. This mix combines multidisciplinary indexing (Scopus) with major publisher platforms (Elsevier, Springer Nature, Emerald) and a broad discovery layer (Google Scholar) to improve sensitivity while retaining auditability. To guarantee comprehensive coverage and replicability, we constructed Boolean search strings iteratively, piloted them, and normalised field tags/limits per database (date range, document type, language). Keyword blocks were derived from our review constructs, including inclusive education, learning/assistive technologies, and policy implementation, as well as from anchor frameworks (UDL, MTSS) and implementation outcomes (adoption, fidelity, appropriateness, feasibility, compliance, and monitoring & evaluation).

We restricted the results to 2015–2024 (five years pre and five years post COVID-19) to capture the digital transformation inflexion point while minimising historical heterogeneity, and to English language peer reviewed journal articles to maintain terminological and appraisal consistency across databases. A final update search will be run before the synthesis lock to reduce time lag bias. Core Boolean string (English; used in Scopus/ScienceDirect/SpringerLink/Emerald; adapted per syntax).

("inclusive education" OR inclusion OR "special educational needs" OR "students with disabilities") AND ("educational technology" OR "assistive technology" OR EdTech OR ICT OR "digital transformation" OR LMS OR "learning management system" OR "learning analytics" OR mobile OR tablet) AND ("policy implementation" OR enactment OR compliance OR adoption OR fidelity OR "monitoring and evaluation" OR "progress monitoring") AND (school OR "primary school" OR "secondary school" OR "K-12") AND (UDL OR "Universal Design for Learning" OR MTSS OR "multi-tiered" OR RTI).

The pilot search retrieved 312 records before deduplication across sources; exact counts by database, the deduplication total, and exclusion reasons will be presented in the PRISMA 2020 flow diagram and study log.

3.4 Systematic Search Protocol

An initial search (2015–2024) of English-language journal articles on Scopus/ScienceDirect/SpringerLink/Emerald, as well as Google Scholar, yielded 210 records, which were subsequently registered, bringing the total to 312 articles. Before title and abstract filtering, we deduplicate and filter based on automatic filters (document type, language) to eliminate 134, leaving 178 for title/abstract filtering (PRISMA-S ensures that all steps & reasons are recorded). At the title abstract screening stage, two independent assessors applied implementation-based inclusion/ exclusion criteria, including the need for assistive learning technologies, the context of K-12 inclusion, and implementation indicators (such as adoption, fidelity, compliance, and monitoring and evaluation). A total of 87 records were omitted (focused solely on learning

outcomes/tools without an implementation lens, in the context of higher education, or where technology was not a central variable), leaving 91 articles for full manuscripts (reports sought to be retrieved). Of the 91 articles, 53 were not fully accessible (access constraints/manuscripts were not available/withdrawn), so 38 articles were included in the full manuscript feasibility assessment.

Table 1. Inclusion/Exclusion Criteria

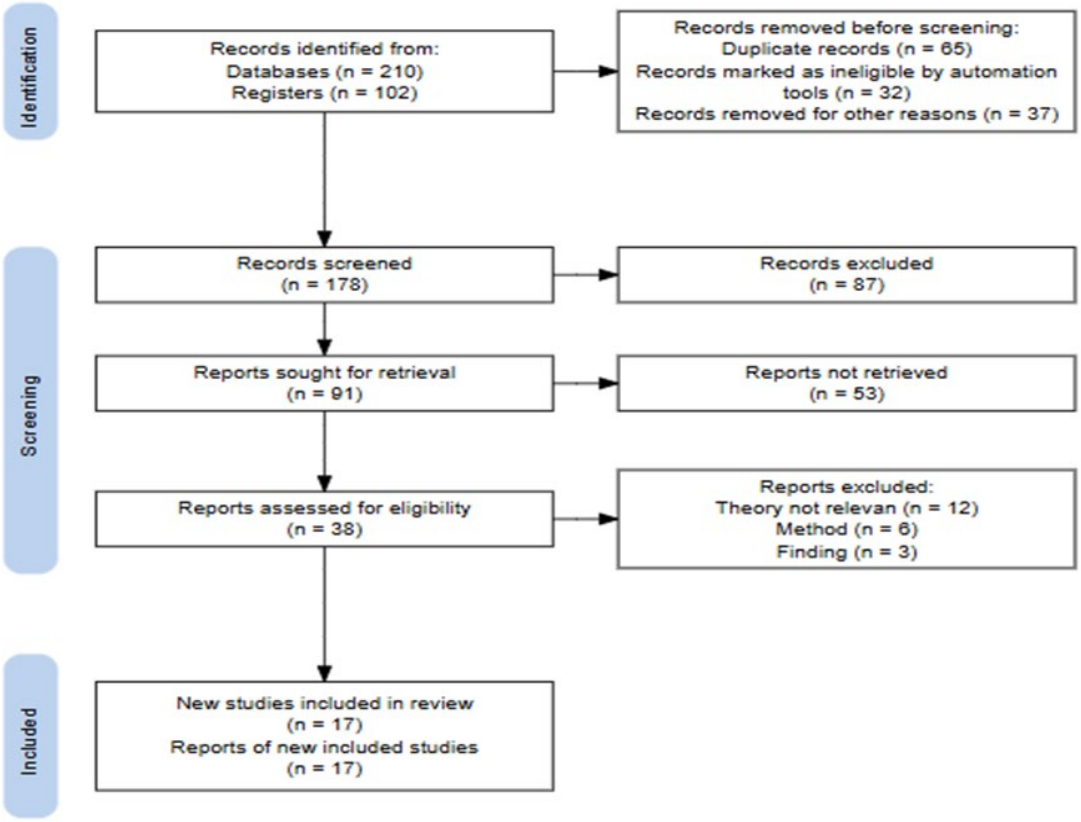
Criteria for Inclusion/Exclusion	Reasoning
Inclusion Criteria	
The paper was published in 2015–2024 (10-year window: five years pre- and five years post-COVID-19)	A decade anchored in the pandemic captures the major pre- and post-digital transformation shift in schools, while limiting historical heterogeneity. Restricting the timeframe to 2015–2024 improves comparability and reduces time-lag bias, with a final update search conducted before synthesis lock (PRISMA/PRISMA-S). (Page et al., 2021; Rethlefsen et al., 2021; Huang et al., 2024).
The paper is a peer-reviewed journal article in English	Ensures methodological transparency and terminological consistency for constructs such as UDL, MTSS, and implementation outcomes, which are predominantly codified in the Anglophone literature and major indexes, thereby enhancing comparability of appraisal across databases. Non-English items are excluded and noted as a limitation. (Page et al., 2021; Rethlefsen et al., 2021).
The study context is regular primary/ secondary schools implementing an inclusive-education policy	Keeps the evidence aligned to K-12 policy implementation rather than tertiary or non-school settings. (Novrizal & Manaf, 2024).
The paper explicitly examines learning/assistive technologies (e.g., UDL-aligned digital materials, AT, LMS, learning analytics).	Aligns the sample to technology mechanisms that operationalise inclusive policy in classrooms and schools. (King-Sears et al., 2023; Majeika & Rafferty, 2024; Mukhtarkyzy et al., 2025).
The paper reports implementation indicators (e.g., adoption, fidelity, appropriateness, feasibility)	Centres the synthesis on policy-to-practice outcomes consistent with implementation-science guidance. (Damschroder et al., 2022).
Empirical designs: qualitative, quantitative, or mixed-methods, with sufficient detail for critical appraisal	Allows consistent quality assessment across designs using JBI tools. (JBI Manual, 2020).
Full-text available	Ensures the extractability of implementation data and accurate appraisal. (Page et al., 2021).
Exclusion Criteria	
Papers outside 2015–2024, non-English, retracted, duplicate, or with no full-text access	Enforces the temporal and language scope, safeguarding evidence integrity and extractability. (Page et al., 2021; Rethlefsen et al., 2021).
Conference abstracts, editorials, protocols without results, or non-peer-reviewed items	Avoids insufficient methodological detail and reporting bias. (Page et al., 2021).
Pure efficacy/technology trials that do not examine implementation processes or indicators	Ensures that technology is studied as a policy implementation mechanism, not merely as an instructional tool. (Damschroder et al., 2022).
Higher-education or non-school settings, unless findings are explicitly transferable to K-12.	Maintains focus on the education sector, where inclusive policies are implemented. (Novrizal & Manaf, 2024).
Studies where technology is not central to the inclusive policy.	Preserves conceptual coherence with the review's framework. (King-Sears et al., 2023; Majeika & Rafferty, 2024).

Source: Prepared by the authors following Durach et al. (2017).

All decisions are recorded along with the reason for exclusion. In the full literature review, exclusion occurred primarily because the theory was not relevant to the UDL / MTSS / implementation framework (n = 12), the

method did not meet the appraisal standards (e.g., inadequate design for implementation indicators; n = 6), and the findings did not extract implementation indicators (e.g., only perceptions of convenience/access without adoption/ fidelity/compliance; n = 3). Two of the three reviewers independently applied the eligibility criteria at the title/abstract and full text stages. Cohen's κ = 0.82 indicated substantial agreement, with disagreements resolved by a third coder, consistent with methodological guidance for interrater reliability. This approach resulted in 17 eligible articles. A PRISMA flowchart, detailing the search conducted on August 21, 2025, is presented in Figure 2, ensuring transparency and rigour as per Durach et al. (2017).

Figure 2. PRISMA Flowchart



Source: prepared by the author based on Petticrew & Roberts (2006)

3.5 Data Extraction and Synthesis

Data extraction began by entering the 17 included studies into a prespecified spreadsheet, following PRISMA 2020 guidance for transparent handling. Each full text was parsed to populate uniform fields suited to implementation research in inclusive education: authors, year, country/ setting, school level, and actors; policy anchors (e.g., IEP standards, national guidelines); technology mechanisms (LMS, learning-analytics dashboards, assistive technologies); stated frameworks (UDL, MTSS/RTI, and any implementation-science lens); design and sample; and predefined implementation indicators adoption, fidelity, compliance, appropriateness, feasibility, and monitoring and evaluation routines. Contextual Equity moderators relevant to LMIC/Indonesia (AT affordability, connectivity, service capacity) and author reported limitations were recorded to support subgroup interpretation and sensitivity checks. Two reviewers independently extracted all items using a shared codebook; any disagreements were resolved through discussion and, if necessary, third-party

adjudication. Inter rater agreement during calibration exceeded $\kappa = 0.80$, indicating substantial consistency across the inclusion of fields and indicator coding.

In parallel, each study received a JBI critical appraisal judgment (Low/Moderate/High concerns) matched to its design, and these ratings were stored alongside the extracted data to inform weighting and robustness analyses. Synthesis proceeded on two tracks. Thematic meta-aggregation grouped open codes (Leadership routines, teacher capacity, data use practices, AT procurement/ maintenance, dashboard usability) and mapped them to CFIR 2022 domains to surface enablers, barriers, and mechanisms. For quantitative or quasi quantitative evidence, we used vote counting by direction of effect for each implementation indicator and summarised patterns in harvest style tables, interpreting results in light of study quality. Prespecified subgroup analyses compared the pre-COVID (2015–2019) period with the post COVID (2020–2024) period, as well as AT versus LMS/learning analytics mechanisms, and Global North versus LMIC/Indonesia contexts. Finally, integrated findings refined the conceptual framework and yielded narrative propositions linking technology mechanisms, MTSS processes, and tech enabled PD to trajectories in adoption, fidelity, and compliance. For the extraction Table, refer to Table 2.

3.6 Quality Appraisal and Risk Of Bias

Consistent with best practice for systematic reviews, all included studies underwent design specific critical appraisal using the JBI checklists, which were conducted independently by two reviewers and reconciled through discussion with third party adjudication when necessary (JBI Manual, 2020). Rather than serving as a binary cut off, appraisal informed interpretation and weighting: each study received an overall judgment (low, moderate, or high concerns) recorded alongside extraction fields, and these judgments guided sensitivity analyses in which syntheses were rerun, excluding studies at high concern. Inter rater agreement during calibration exceeded $\kappa = 0.82$, indicating substantial consistency.

We also documented risks specific to implementation evidence, including selection and attrition issues in school samples, confounding from concurrent initiatives, and reliability of outcome measurement (e.g., fidelity and compliance metrics). We interpreted findings in light of these threats (Higgins et al., 2021). Because our corpus derives from peer reviewed, Scopus indexed Q1–Q2 journals identified through a transparent search protocol, the baseline reporting quality was high; nonetheless, we excluded quality issues unless they rendered implementation indicators non interpretable. Finally, we considered contextual and Equity biases (e.g., differential AT access and connectivity) when comparing the pre and post COVID periods and Global North versus LMIC/Indonesia settings, making these limitations explicit in the narrative synthesis (Page et al., 2021; Damschroder et al., 2022).

4. Result and Discussion

The analysis and its results are discussed in this section. First, the Table presents the eligible articles collected from searches by year of publication, author, country, technology, framework, and indicators. Key findings are also presented in Table 2. Then, general aspects, including Characteristics, research context, research themes, theoretical anchors, methodological qualities, answers to research questions, and suggestions for future research, are explored in detail later.

4.1 Characteristics of the Studies

Seventeen studies published between 2016 and 2024 were included, spanning both the pre-COVID (2015–2019) and post-COVID (2020–2024) phases. Authors originated from multiple regions, with

notable representation from the United States, Australia, Sweden, Indonesia, and multinational collaborations. The venues were predominantly Q1–Q2 Scopus indexed journals in education technology, inclusive education, and implementation studies, ensuring strong methodological quality. Study designs ranged from systematic reviews and quasi experiments to qualitative case studies and meta-analyses, illustrating methodological diversity.

As summarised in Figure 1, the conceptual framework illustrates how policy inputs, organisational capacity, and technological mechanisms interact within MTSS processes to generate implementation outcomes. This framework guided the coding and interpretation of the 17 included studies. Table 2 further operationalises this framework by mapping each survey to the technologies used, theoretical anchors, and implementation indicators, enabling a structured synthesis for answering RQ1–RQ3. Meanwhile, the PRISMA flowchart in Figure 2 contextualises the final evidence base by documenting the selection process and clarifying the review's methodological boundaries.

Table 2. Data Extraction

Author/ Year	Country	Technology	Framework	Indicators	Key finding
Bouck (2016)	USA, national K–12 snapshot	Assistive technology (AT) access & use	Policy–practice implementation	Reported AT provision by disability category; school-level supports	AT use was uneven across disability categories, and schools lacked consistent processes for implementing AT. (SAGE Journals)
Bouck & Flanagan (2016)	USA, secondary schools (NLTS2)	AT receipt and post-school outcomes	Transition outcomes/Equity	In-school vs post-school AT receipt; logistic regression on outcomes	Attendance records in school varied widely and often dropped after school; continuity of support was weak. (PubMed)
Nordströ, (2019)	Sweden, special education (grades 4, 8, HS)	Reading/ writing apps (TTS/STT)	Inclusive pedagogy / UDL-consistent supports	Teacher-perceived effects on student motivation & learning	Teachers reported improved access, motivation, and communication with AT apps after a 6-week intervention. (Taylor & Francis Online)
Ozdowska, (2021)	Australia, single-subject design (K–12 ASD)	AT + SRSD for persuasive writing	SRSD; inclusive writing supports	Writing quality; independence; generalization	AT embedded in SRSD improved students on the autism spectrum's persuasive writing performance. (ERIC)
Svensson, (2021)	Sweden, K–12 reading difficulties	AT for severe reading difficulties	Access & engagement	Reading ability, motivation (transfer effects)	AT boosted motivation and supported reading, with the most substantial benefits observed for the most severe difficulties. (Taylor & Francis Online)
Fernández, (2022)	Global K–12	AT for inclusion—systematic review	Inclusion/Equity	Barriers & facilitators to AT implementation	AT promotes inclusion but faces gaps in teacher training and infrastructure that impede school-level implementation. (ERIC)
Shepley (2022)	USA, special educators	Progress monitoring visuals (DBI)	Data-based decision-making (DBI)	Professional judgments with varied graph displays	Many practitioners misinterpret graphs; targeted training is needed to implement data-based instruction reliably. (SAGE Journals)
King-Sears (2023)	Global PK–adult (incl. K–12 subset)	UDL instruction (meta-analysis)	UDL	Achievement effect sizes under UDL vs BAU	UDL environments improved overall learner achievement, supporting classroom-level adoption in inclusive schools. (Semantic Scholar)
Tuğtekin (2023)	Türkiye, higher education	Comparative LMS implementation	Transactional Distance Theory	Usability, dialogue/structure/	LMS design features (dialogue/autonomy) affect

	(transferable to K–12 systems)	(Moodle vs ALMS)		autonomy, exam processes	implementation quality, particularly in school LMS rollouts. (IRRODL)
Hooshyar (2023)	Global, mixed contexts (incl. K–12)	Learning analytics (LA) to support the agency	Self-regulated learning	Engagement proxies and agency outcomes	LA can enhance agency when dashboards move beyond descriptive analytics to actionable feedback loops. (MDPI)
Hardy (2024)	OECD systems, policy level	Inclusive education policy analysis	Critical policy analysis	Policy design, governance, funding, accountability	Policy texts often obscure delivery responsibilities; robust governance/funding are prerequisites for faithful school implementation. (Taylor & Francis Online)
Paolucci et al. (2024)	Global PK–12	Learning analytics in K–12 (metasynthesis)	Equity & ethics lens	Opportunities/challenges, teacher use, safeguards	LA offers promise for data-informed instruction, but it requires ethics, transparency, and teacher capacity to be implemented effectively. (PubMed)
Rundquist (2024)	Global K–12 mathematics	LA for K–12 math (scoping review)	Teacher decision-making	Types of LA usage: impact on teaching/learning	LA supported formative decisions and differentiation; evidence emphasises the importance of teacher mediation for impact. (ResearchGate)
Soeharto, (2024)	Indonesia, pre-service teachers	Attitudes to inclusion ↔ teaching for creativity	Teacher-beliefs / readiness	Attitudes, creativity, teaching, and background factors	Positive links between teaching for creativity and inclusive attitudes signal leverage points for teacher preparation. (ScienceDirect)
Majeika (2024)	USA, elementary schools	Integrated MTSS (I-MTSS) practical applications	Implementation science	Practical steps, tools, and role clarity	Concrete practices and tools help schools integrate academic + SEB supports—clarifying who does what and how. (mtss.org)
Huang (2024)	Global K–12 + cross-sector	Tech-enabled teacher PD during COVID-19	TPD effectiveness	PD designs, teacher learning outcomes	Well-designed, tech-enabled PD improved teacher knowledge/skills—an enabler for policy implementation fidelity. (ScienceDirect)
Ardianuar, (2024)	Indonesia, national	National AT unmet need (rATA)	Systems/financing	% Unmet need; barriers; system levers	Approximately 60% of AT needs remain unmet; affordability and funding gaps hinder inclusive access to schooling, and policy coordination is critical. (Taylor & Francis Online)

4.2 Research Context

The majority of studies focused on K–12 schools, though some included higher education as a comparative or transferable lens. Contexts varied from urban Indonesian schools implementing AT policies to European experiments with reading apps and North American data driven IEP compliance studies. A recurring contextual factor was resource disparity, particularly between the Global North and LMICs, with Indonesia providing crucial insights into how policy aspirations are constrained by affordability, infrastructure, and teacher readiness.

4.3 Research Themes

Three dominant themes emerged:

a) Technology as an enabler of policy implementation, including LMS, learning analytics dashboards, and AT devices.
b) Pedagogical frameworks, such as UDL and MTSS, served as guiding anchors for fidelity and compliance.
c) Equity and systemic constraints, with repeated emphasis on gaps in access, funding, and training that influenced adoption and feasibility.

4.4 Theoretical Anchor

Most studies explicitly employed Universal Design for Learning (UDL) and

Multi-Tiered Systems of Support (MTSS) as theoretical anchors. In contrast, others relied on implementation science frameworks such as CFIR or Transactional Distance Theory. These anchors provided analytical clarity for indicators such as adoption, fidelity, and compliance. Theories of governance and Equity also emerged in policy-oriented studies, emphasising the structural dimensions of inclusive education.

4.5 Methodological Quality

Appraisal using JBI tools revealed that the majority of studies demonstrated low to moderate concerns, with clear research aims, consistent methods, and transparent data presentation. Only a minority had high concerns, primarily due to small sample sizes or unclear reporting of outcomes. Inter rater reliability exceeded $\kappa = 0.80$, providing confidence in the appraisal process. Overall, the evidence base was methodologically robust enough to support a reliable synthesis.

4.6 Answers to Research Questions

RQ1. How do learning technologies, such as LMS, learning analytics, and AT, operationalise the implementation of inclusive school policies at the policy, school, and classroom levels through the integration of the UDL and MTSS frameworks?

Learning technologies operate differently across policy, school, and classroom levels. At the policy level, learning management systems (LMS) and learning analytics (LA) translate inclusion mandates into standardised operational procedures, such as IEP workflows, accommodation checklists, and progress monitoring schedules. These systems function as implementation infrastructure that increases procedural consistency and supports monitoring and evaluation (Damschroder et al., 2022).

At the school level, LA dashboards strengthen MTSS processes by enabling instructional teams to review student data, identify risk patterns, and escalate support when needed. LMS repositories also allow schools to curate UDL aligned instructional materials that provide multiple means of representation, engagement, and action.

At the classroom level, assistive technologies (AT) such as text to speech, alternative communication tools, and accessibility devices reduce barriers to participation. UDL aligned digital modules enable flexible expression and engagement, supporting diverse learners. The integration of UDL with MTSS becomes visible when LA indicators trigger instructional adjustments while UDL based lesson designs maintain access for all learners.

RQ2. What are the enabler and barrier factors that most consistently influence the success of technology integration in the implementation of inclusive policies, especially in the Indonesian/LMIC context?

Across the reviewed studies, four enablers consistently support technology based implementation of inclusive education policies: (a) Leadership that establishes clear routines, role expectations, and cross unit accountability; (b) teacher capacity, particularly digital literacy and UDL/MTSS competencies; (c) adequate infrastructure and financing; and (d) data governance structures that enable ethical and actionable use of learning analytics.

In LMIC and Indonesian contexts, recurring barriers include the high cost of assistive technologies, supply chain fragmentation, limited connectivity, and heavy teacher workloads, all of which hinder data reflection. Policy fragmentation and budget misalignment further reduce implementation consistency across regions.

Supporting factors that mitigate these challenges include network-based procurement schemes, open source LMS and analytics tools, telecom operators' zero rating of data access, and UDL ready digital content in local languages. Regional coaching models also help bridge teacher capacity gaps by providing continuous, context sensitive support at the school level.

RQ3. How does technology-based teacher professional development contribute to the adoption of procedures, standard compliance, and M&E of inclusive policy implementation in schools?

Technology enabled teacher professional development (TPD) serves as a bridge between policy and classroom practice. Blended TPD models combining synchronous workshops, asynchronous modules, and coaching encourage a learn apply reflect cycle. Dashboards provide real time feedback on UDL implementation and MTSS compliance, strengthening teachers' procedural consistency and adoption of accommodations.

In resource limited settings, micro credentials, modular TPD, and low cost LMS supported training increase feasibility. When supported by mentoring and ready to use UDL based materials, such TPD models foster sustained adoption, routine M&E practices, and a stronger culture of data informed decision making in schools.

4.7 Suggestions for Future Study

Future research should expand comparative designs across Global North and LMICs to explore contextual contingencies more deeply. There is also a need for longitudinal studies on the sustainability of implementation, particularly in the wake of the COVID-19 pandemic and its impact on digital adoption. Greater integration of equity focused frameworks is recommended to capture the lived realities of students with disabilities in under resourced contexts. Finally, mixed method studies that connect quantitative adoption/compliance data with qualitative insights from teachers and leaders would enrich understanding of implementation dynamics.

4.8 Discussion

4.8.1 Cross Study Synthesis

The synthesis of seventeen studies demonstrates that the implementation of inclusive education policies depends on the interaction between technological mechanisms, pedagogical frameworks, and systemic supports. Assistive technologies, LMS platforms, and learning analytics dashboards consistently strengthen adoption, fidelity, and monitoring when combined with teacher professional development and school Leadership routines.

The findings in RQ1 are consistent with the meta-analysis by King-Sears et al. (2023), which showed that applying UDL principles through digital platforms significantly improves accessibility and learning outcomes when integrated with a structured implementation routine. These results also align with Paolucci et al. (2024), who argue that learning analytics can strengthen decision making within the MTSS framework when teachers receive actionable information through the dashboard. Thus, this pattern of findings places technology not just as an aid, but as an implementation mechanism that connects policies, school procedures, and classroom practices.

4.8.2 Comparison with Previous Literature

Earlier studies on inclusive education tended to emphasise the technical potential of interventions, such as UDL aligned lessons or assistive technologies, without examining the implementation conditions required for scale. Reviews before 2020 also lacked a systematic evaluation of policy alignment and institutional readiness.

The present review extends this literature by demonstrating that post COVID research increasingly applies implementation science frameworks such as CFIR and MTSS. These frameworks capture not only outcomes but also processes of uptake, fidelity, and compliance. Studies from Indonesia and other LMICs further introduce an Equity lens, highlighting affordability, unmet needs, and variability in infrastructure factors often absent in earlier research. The findings regarding leverage and inhibiting

factors in RQ2 are also supported by Ardianuari et al. (2023), which shows that financing gaps, service fragmentation, and infrastructure unpreparedness are the main obstacles to the implementation of technology-based policies in Indonesia. These results are reinforced by Ariesty, W. (2018), from the DeReMa Journal of Management, who found that schools' readiness to adopt technology is greatly influenced by teacher capacity, device availability, and managerial support. The consistency of these findings confirms that resource disparity remains a determining factor in the implementation of technology based inclusive policies in LMICs.

4.8.3 Implications

Implications for policy makers. For policy makers, the findings underscore the need to pair inclusive mandates with enabling conditions. Policies that call for AT provision or UDL adoption cannot succeed without dedicated funding streams, procurement strategies that reduce costs, and systematic training programs for educators. Governments must also invest in digital infrastructure to ensure reliable connectivity and equitable access to devices.

Implications for school leaders and practitioners. For school leaders, the review underscores the importance of Leadership orchestration in bridging the gap between policy and classroom practice. Leaders need to cultivate a school culture that values inclusive practices, allocate resources strategically, and prioritise professional development.

Implications for the research community. For researchers, this synthesis indicates the value of implementation science frameworks for studying inclusive education. UDL and MTSS provide pedagogical anchors, but frameworks such as CFIR allow systematic mapping of barriers, enablers, and contextual moderators. Future research should move beyond descriptive accounts to comparative and longitudinal designs that track implementation trajectories over time, particularly in the context of shocks such as the COVID-19 pandemic. Moreover, studies should deliberately include LMIC settings, as these contexts expose how Equity and systemic fragility shape implementation outcomes.

Finally, methodological innovation is needed: combining quantitative indicators (adoption rates, compliance scores) with qualitative insights (teacher narratives, student voices) would provide a more holistic understanding of how inclusive policies materialise in practice. These findings align with those of Huang et al. (2024), who found that technology based TPD programs lead to significant improvements in teacher consistency when implementing formative accommodations and assessments, especially when combined with data driven coaching and feedback. Thus, TPD functions not only as skills training but also as an implementation strategy that directly affects the adoption of procedures, compliance with standards, and monitoring and evaluation routines in the implementation of inclusive policies.

5. Conclusion

This systematic literature review synthesises evidence from seventeen studies published between 2016 and 2024 to examine the implementation of inclusive education policies through technological and pedagogical mechanisms. The analysis shows that the success of translating the inclusion mandate into practice depends not only on the availability of assistive technologies, learning management systems (LMS), or analytics dashboards, but also on their integration in coherent frameworks such as Universal Design for Learning (UDL) and Multi-Tiered Systems of Support (MTSS). Adoption and implementation consistency are strongest in contexts where teachers receive structured professional development, Leadership can orchestrate organisational capacity, and policy mandates are supported by adequate infrastructure and funding.

In contrast, in low and middle-income countries (LMICs), affordability, connectivity, and training limitations limit feasibility and compliance, despite strong policy intentions. The findings also point to temporal evolutions: pre-COVID studies emphasised the effectiveness of specific devices, such as SRSD based reading or AT apps, while post COVID studies focused on systemic approaches, examining how digital infrastructure enables monitoring, data driven accountability, and continuous professional learning at scale. It confirms the crisis's role as both a disruptive factor and a driver of educational innovation, while also highlighting the persistent inequality between the Global North and LMICs.

From a policy perspective, the review emphasises the need for a balance between accountability and Equity, with policy design that includes clear funding allocations, procurement strategies, and teacher development initiatives that go beyond aspirational declarations. For practitioners, especially school leaders, it is essential to embed an inclusion framework in everyday teaching, using data not only for compliance but also for instructional improvement. For the researchers, this synthesis highlights the need for longitudinal and mixed method studies that explicitly consider the contextual factors shaping the implementation pathway.

5.1 Limitations

This review has several limitations. First, restricting the corpus to English language peer reviewed journals may exclude insights published in local languages, mainly from non-English LMIC contexts. Second, the evidence base is weighted toward post 2020 studies, limiting direct comparisons between pre and post pandemic periods. Third, methodological heterogeneity and varying operationalisations of implementation indicators reduce the feasibility of meta statistical aggregation. Fourth, some studies stem from higher education contexts, and although included for their relevance to mechanisms, their transferability to K–12 may be limited.

Future research should address these limitations by incorporating non-English evidence, employing longitudinal designs that follow implementation trajectories over time, combining quantitative fidelity evidence with qualitative insights from teachers and students, and comparing diverse LMIC regions with varying infrastructure readiness to strengthen external validity.

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BRAND TRUST AND BRAND IMAGE IN SHAPING CONSUMER PURCHASE DECISIONS: A TPB-BASED MEDIATION MODEL OF BRAND LOYALTY

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ABSTRACT

This study investigates the influence of brand trust and brand image on consumer purchase decisions, with brand loyalty serving as a mediating variable, in the context of Fore Coffee, an Indonesian specialty coffee shop brand that offers freshly prepared beverages for immediate consumption (ready-to-drink coffee). Grounded in the Theory of Planned Behavior (TPB), this research explores how attitudinal and control beliefs shape behavioral intentions and actual consumer actions. Using a quantitative approach, data were collected from 193 working consumers across Semarang, Solo, and Yogyakarta, and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that both brand trust and brand image significantly influence purchase decisions, both directly and indirectly through brand loyalty. The mediating analysis confirms that brand loyalty partially mediates these relationships, suggesting that emotional commitment reinforces the conversion of brand perceptions into consumer actions. These insights affirm the TPB framework and underscore the importance of cultivating trust and image to foster loyalty and drive purchasing behavior. The study offers practical implications for brand managers and contributes theoretically to consumer behavior literature in emerging digital markets.

Keywords: Brand trust, brand image, brand loyalty, purchase decision, theory of planned behavior.

ABSTRAK

*Penelitian ini mengkaji pengaruh kepercayaan merek (*brand trust*) dan citra merek (*brand image*) terhadap keputusan pembelian konsumen, dengan loyalitas merek (*brand loyalty*) sebagai variabel mediasi, dalam konteks Fore Coffee, sebuah merek kedai kopi spesialti asal Indonesia yang menawarkan minuman segar siap konsumsi (*ready-to-drink coffee*). Berlandaskan* Theory of Planned Behavior *(TPB), penelitian ini mengeksplorasi bagaimana keyakinan sikap (*attitudinal beliefs*) dan keyakinan kontrol (*control beliefs*) membentuk niat perilaku serta tindakan nyata konsumen. Dengan menggunakan pendekatan kuantitatif, data dikumpulkan dari 193 konsumen pekerja di Semarang, Solo, dan Yogyakarta, kemudian dianalisis menggunakan* Partial Least Squares Structural Equation Modeling *(PLS-SEM). Hasil penelitian menunjukkan bahwa kepercayaan merek dan citra merek berpengaruh signifikan terhadap keputusan pembelian, baik secara langsung maupun tidak langsung melalui loyalitas merek. Analisis mediasi mengonfirmasi bahwa loyalitas merek memediasi secara parsial hubungan tersebut, yang mengindikasikan bahwa komitmen emosional memperkuat konversi persepsi merek menjadi tindakan konsumen. Temuan ini menegaskan kerangka TPB serta menyoroti pentingnya membangun kepercayaan dan citra merek guna menumbuhkan loyalitas dan mendorong perilaku pembelian. Penelitian ini memberikan implikasi praktis bagi manajer merek serta kontribusi teoretis terhadap literatur perilaku konsumen di pasar digital yang sedang berkembang.*

Kata kunci: *Kepercayaan merek, citra merek, loyalitas merek, keputusan pembelian,* theory of planned behavior.

1. Introduction

In recent years, Indonesia has witnessed a significant boom in the coffee shop industry that serves beverages ready for immediate consumption ("ready-to-drink coffee"), driven by changing lifestyles, urbanization, and a surge in digital consumption (Firmansyah & Rachman, 2025; Mahasin & Hasbullah, 2024). In this study, the term ready-to-drink coffee refers to freshly prepared coffee beverages sold through modern coffee shop outlets (dine-in, takeaway, or app-based delivery) that are consumed shortly after purchase, rather than canned or bottled coffee drinks sold in retail stores (Fauzan et al., 2020; Iisnawati et al., 2024). Brands like Fore Coffee have emerged as key players by leveraging mobile technology and delivery-based models to target tech-savvy urban consumers (Ghassani & Ramli, 2020; Rakhmanita et al., 2022; Suminar & Nurhadi, 2021) . These developments mirror global trends where consumer behavior is increasingly influenced not only by product attributes but also by the strength and perception of the brand (Safeer et al., 2022). For businesses operating in highly competitive sectors, understanding the psychological and emotional aspects that guide consumer decision-making is now more critical than ever (Anwer et al., 2020; Bachwani et al., 2025).

In 2023, Indonesia's coffee exports reached approximately 279.9 thousand tons, with a total value of around US$ 929 million. These exports spanned five continents (Asia, Africa, Australia, the Americas, and Europe), with Europe serving as the primary destination; the five largest importing countries in 2023 were the United States, Egypt, Malaysia, India, and Italy. Conversely, coffee imports have exhibited an upward trend, increasing from 19 thousand tons (US$ 31 million) in 2014 to about 41 thousand tons (US$ 117 million) in 2023, indicating growing domestic demand for specific coffee types or quality segments that are not yet fully supplied by local production (BPS, 2024).

The combination of a substantial economic contribution, extensive cultivated area and production volume, and vibrant international trade demonstrates that Indonesia's coffee industry has developed into a relatively mature business ecosystem, extending from upstream (coffee plantations and green bean trading) to downstream activities (processing, roasting, and modern coffee shops) (Ashardiono & Trihartono, 2024; Wibowo et al., 2024). Within this context, Fore Coffee operates in the downstream segment, leveraging the availability of domestic coffee supply to offer ready-to-drink coffee products in urban environments where coffee consumption is expanding rapidly (Febrianty et al., 2023; Nesta, 2025). This dynamic context underscores the importance of understanding how brand image, brand trust, and brand loyalty shape consumers' purchase decisions toward Fore Coffee (Cardoso et al., 2022; Maduretno & Junaedi, 2022).

Despite the increasing number of studies on brand management and consumer behavior, there remains a limited understanding of how trust and image toward a brand culminate into purchase decisions, especially in emerging markets like Indonesia (Bachwani et al., 2025; D'Aniello & Donato, 2025). Existing literature often treats consumer loyalty as a dependent outcome rather than a mediating mechanism that connects brand evaluations with buying behavior (Tahir et al., 2024). More specifically, prior research has seldom explored this dynamic within the context of modern coffee chains that blend technology with local cultural nuances (Alamsyah et al., 2023; Bashiri et al., 2021; Hu & Lee, 2019). This gap leaves unanswered how consumers develop loyalty and how this loyalty ultimately influences their purchasing intentions in such settings.

Studies have long acknowledged that brand trust, the consumer's belief that a brand will fulfill its promises and brand image the set of associations held about a

brand play significant roles in shaping consumer attitudes (Husain et al., 2022; Leung & Seah, 2022). Research by Sohaib and Han (2023) that trusted brands are more likely to secure repeat purchases, while Huang (2022) emphasizes that a positive brand image enhances consumer preference. Furthermore, brand loyalty has been recognized as a strategic asset, contributing not only to market share but also to the cost-efficiency of customer retention (Sun et al., 2024). However, these studies largely originate from Western contexts or product categories such as electronics or fashion, which may not directly translate to the food and beverage sector in Southeast Asia (Xiao et al., 2025).

Although prior studies support the direct influence of brand trust and image on purchase behavior, few have rigorously tested the mediating role of brand loyalty in these relationships (Ngo et al., 2020; Wang et al., 2024). Moreover, studies contextualized in the Indonesian market particularly those examining local coffee chains like Fore Coffee are scarce. There is also a geographic and demographic gap: research often overlooks secondary urban centers such as Semarang, Solo, and Yogyakarta, where digital consumption is growing rapidly among working professionals. These cities represent an underexplored yet commercially vital region whose consumer patterns may differ from those in Jakarta or Surabaya. Thus, this study seeks to bridge these gaps by examining brand-related determinants of purchase decisions within this unique sociocultural and geographic setting (G & Asokan-Ajitha, 2020; Hosain & Mamun, 2023).

This study aims to investigate how brand trust and brand image influence consumers' purchase decisions for Fore Coffee, both directly and indirectly through brand loyalty as a mediating variable. By integrating these constructs into a comprehensive model, this research seeks to contribute both theoretically and practically to the field of consumer behavior and brand management. The study applies a quantitative approach to working professionals in Semarang, Solo, and Yogyakarta, representing a relevant and growing consumer demographic. The novelty of this research lies in its mediation-centric framework within a localized brand context, offering fresh insights into how emotional and perceptual brand components operate in tandem to influence purchasing outcomes (Discetti et al., 2024). By introducing brand loyalty as a mediating factor, the study challenges traditional linear perspectives and aligns with contemporary theories emphasizing dynamic consumer-brand relationships (Hanaysha, 2022; Hussain et al., 2025). Moreover, the focus on a homegrown brand like Fore Coffee enhances the relevance and applicability of the findings for emerging markets and local entrepreneurs navigating similar consumer landscapes.

This study is geographically confined to three major cities in Central Java and the Special Region of Yogyakarta, with respondents being employed individuals who are both digitally literate and economically active (Dartanto et al., 2023; Nababan, 2024). This targeted demographic provides a focused lens through which brand dynamics can be understood in a real-world context (Monfort et al., 2025). The findings are expected to offer valuable implications for brand managers, marketers, and business strategists, especially those operating in the coffee retail and FMCG sectors across Southeast Asia. Given these considerations, this study seeks to answer the following research question: To what extent do brand trust and brand image influence purchase decisions for Fore Coffee, and does brand loyalty mediate these relationships among working consumers in Semarang, Solo, and Yogyakarta?

2. Literature Review

The Theory of Planned Behavior (TPB), introduced by Ajzen (1991) has become a foundational framework in

understanding and predicting human behavior, particularly in the context of decision-making processes. According to TPB, behavioral intention which precedes actual behavior is influenced by three key determinants: attitudes toward the behavior, subjective norms, and perceived behavioral control. In the context of brand-related consumer decisions, this theory provides a robust structure for analyzing how brand-related beliefs and perceptions influence purchasing behaviors (Agyei et al., 2025; Hu et al., 2025). In particular, brand trust and brand image can be conceptualized as attitudinal beliefs that contribute to favorable behavioral intentions, while brand loyalty acts as a reinforcing psychological state that mediates the translation of these beliefs into purchase decisions (Hung et al., 2021; Karoui et al., 2024). Applying TPB allows for a theoretically grounded exploration of how consumers internalize brand-related stimuli and translate them into actual buying actions (Moeinaddini & Habibian, 2025).

Brand Trust and Brand Loyalty

Brand trust refers to the consumer's confidence in a brand's reliability, honesty, and ability to deliver consistent value over time (Wongsansukcharoen, 2022). Grounded in the Theory of Planned Behavior (TPB), brand trust operates as a cognitive belief that significantly shapes a consumer's attitude toward the brand (Weng et al., 2025). When consumers perceive that a brand consistently meets expectations whether through product quality, service integrity, or transparent communication, they experience reduced uncertainty, which enhances perceived behavioral control. This control translates into a sense of assurance that choosing the brand is a safe and beneficial action, reinforcing the formation of positive behavioral intentions. In the context of Fore Coffee, consumers who trust the brand are likely to view their purchasing behavior as low-risk and high-reward, thereby strengthening their predisposition to engage repeatedly with the brand (Dai et al., 2025; Rao et al., 2021).

Moreover, trust serves as a foundation for building emotional attachment, which over time evolves into brand loyalty. Loyalty is not formed merely through satisfaction with isolated experiences but through a history of reliable performance that fosters deeper psychological commitment (Lefkeli et al., 2024; Zhao et al., 2024). This transition from trust to loyalty is supported by prior research, such as Juhaidi et al. (2024) which shows that trust leads to affective dedication, making consumers more resistant to competitive alternatives. As trust deepens, consumers are more likely to internalize the brand as part of their identity, leading to habitual purchasing and advocacy behaviors. Hence, the logical progression from trust (a rational evaluative belief) to loyalty (an emotional and behavioral commitment) is well-aligned with TPB's premise that attitudinal beliefs shape consistent behavioral patterns (Kini et al., 2024; J. Li et al., 2025). Thus, we hypothesize:

H1: Brand Trust has a positive effect on Brand Loyalty.

Brand Image and Brand Loyalty

Brand image encompasses the collective perceptions, associations, and symbolic values that consumers attribute to a brand (Alzate et al., 2022). Within the TPB framework, brand image contributes to the formation of favorable attitudes toward behavior (Tanveer et al., 2025). When a brand is perceived as modern, high-quality, or culturally aligned with the consumer's values, it enhances the emotional and social desirability of purchasing from that brand. In lifestyle-oriented markets like coffee, image can convey status, self-expression, and social belonging. These associations shape not only cognitive evaluations but also normative expectations what the consumer believes others will approve of thus reinforcing behavioral intention through both attitudinal and subjective

norm pathways (Kumar et al., 2024; Mansoor et al., 2025).

A strong brand image fosters emotional connection and reinforces consumers' alignment with the brand's identity, which is central to the development of loyalty. When consumers perceive that a brand represents something aspirational or consistent with their self-concept, they are more likely to form lasting commitments. This is particularly evident in Fore Coffee's case, where its sleek branding and digital convenience are appealing to young, urban professionals. Over time, these symbolic and emotional connections transform into brand loyalty, reflected in repeat purchases and advocacy (Gazi et al., 2024). Therefore, brand image acts not just as a surface-level appeal but as a deep driver of enduring brand commitment Therefore, we propose the following hypothesis:

H2: Brand Image has a positive effect on Brand Loyalty.

Brand Trust and Purchase Decision

Brand trust also plays a direct role in shaping actual purchase decisions, beyond its effect on loyalty (Konuk, 2021). From a TPB perspective, perceived behavioral control refers to the consumer's belief in their ability to perform a behavior under favorable conditions. Trust reduces perceived risk, simplifies decision-making, and increases a consumer's confidence in choosing a brand (Joel-Edgar et al., 2025). When trust is high, the psychological barriers to purchase such as doubt, hesitation, or concern about value are significantly reduced. Consumers feel empowered and in control of the outcome, which TPB identifies as a key precursor to translating intention into action (Yadav et al., 2019).

In the context of Fore Coffee, consumers who trust the brand are more likely to decide quickly and confidently to make a purchase, without requiring extensive deliberation or comparison. The sense of reliability associated with the brand acts as a decision-making shortcut, especially in habitual or convenience-driven consumption situations (Shikalgar et al., 2024). As trust solidifies, consumers transition from considering a purchase to making it repeatedly and effortlessly. Therefore, brand trust enhances both the intention and the likelihood of executing the behavior.. Based on this rationale, the following hypothesis is advanced:

H3: Brand Trust has a positive effect on Purchase Decision.

Brand Image and Purchase Decision

Brand image also exerts a direct influence on purchase decisions by shaping both the affective appeal of the brand and the consumer's alignment with social expectations (Lin et al., 2021). As conceptualized by the Theory of Planned Behavior (TPB), subjective norms are an essential component of behavioral intention, they reflect perceived social pressure to engage or not engage in a behavior (Astrini et al., 2021). A positive and aspirational brand image often aligns with peer group values and societal trends, especially in categories tied to lifestyle, such as coffee consumption. Consumers may choose a brand not just for its functional benefits but because it represents a desired identity or earns social validation (Nguyen-Viet et al., 2024).

Moreover, a compelling brand image simplifies choice by evoking emotional resonance and reinforcing favorable brand attitudes. In the case of Fore Coffee, the modern and tech-enabled image may signal trendiness, quality, and a digitally connected lifestyle. These associations can directly trigger purchase decisions, particularly when consumers are seeking brands that reflect their personal values or public persona (Nilashi et al., 2023). As a result, brand image is not only a precursor to loyalty but also a catalyst for immediate purchasing action. Therefore, a favorable brand image contributes both emotionally

and socially to the decision-making process, supporting the following hypothesis:

H4: Brand Image has a positive effect on Purchase Decision.

Brand Loyalty and Purchase Decision

Brand loyalty represents a deep psychological commitment and habitual behavior pattern toward a brand (Masud et al., 2024). According to TPB, behavioral intention is the most immediate antecedent to behavior. Loyalty, in this case, embodies the intention reinforced by past satisfaction, emotional attachment, and identity alignment. When loyalty is present, consumers are not just willing but motivated to repeat their behavior, often without reconsidering alternatives. Loyalty becomes a powerful behavioral predictor that bridges cognitive evaluation and actual consumer action (Sun et al., 2024; Zhao et al., 2024).

In Fore Coffee's context, loyal consumers are those who repeatedly choose the brand, recommend it to others, and perceive its value as superior to competitors. Loyalty increases the likelihood of purchase even in the presence of convenience barriers, price promotions from competitors, or new market entrants (Lolemo & Pandya, 2025). It also strengthens resistance to persuasion, making loyal consumers more consistent and less price-sensitive. As such, brand loyalty converts intention into action, reinforcing the TPB pathway from belief to behavior. This leads to the following hypothesis:

H5: Brand Loyalty has a positive effect on Purchase Decision.

The Mediating Role of Brand Loyalty in the Relationship Between Brand Trust, Brand Image, and Purchase Decision

Brand trust plays a critical role not only in shaping consumers' immediate confidence but also in fostering a sustained behavioral pattern when mediated by brand loyalty (Bigné et al., 2023; Li & Zhang, 2023). Under the lens of the Theory of Planned Behavior (TPB), trust contributes to the formation of perceived behavioral control by reducing uncertainty and increasing the consumer's belief in their ability to make sound decisions (Kresnanto et al., 2025). However, TPB also emphasizes that beliefs alone are not always sufficient for behavior to occur, there must be a strong intention, often embodied in loyalty (Malaza et al., 2025). Trust forms the evaluative basis, but loyalty transforms it into emotional and behavioral commitment. In the context of Fore Coffee, when trust leads to loyalty, consumers become not only confident in the brand but also habitual in their choices, forming the bridge between belief and behavior.

Brand loyalty, in this pathway, serves as a psychological mechanism that amplifies the influence of trust on purchase decision-making (Xiao et al., 2025). A consumer who merely trusts a brand might still explore alternatives, but a loyal consumer exhibits resistance to change and a preference for continuity. This loyalty reinforces repeated behavior, enabling the effects of trust to extend beyond singular transactions into consistent, long-term engagement. Consequently, trust influences purchase decisions both directly by increasing decision confidence and indirectly by deepening loyalty, which in turn reinforces the intention to act (Kumar et al., 2021).

Similarly, brand image impacts consumer behavior through a parallel mediating route. Drawing upon the Theory of Planned Behavior, brand image shapes attitudes by providing symbolic value, aspirational appeal, and emotional resonance (Jumani & Sukhabot, 2020; Panjaitan et al., 2025). While a strong brand image can enhance consumers' favorable evaluations, it often requires an additional psychological anchor brand loyalty to ensure consistent purchasing behavior. Brand image may initially draw the consumer in, but without loyalty, its

influence may be fleeting (Hamzah et al., 2023). For example, consumers may find Fore Coffee visually appealing or aligned with their lifestyle, yet without forming a loyal bond, they may still switch to alternatives under promotional pressure or convenience.

Brand loyalty transforms these positive perceptions into habitual behavior. When consumers internalize the symbolic and emotional benefits of a brand through loyalty, they develop enduring behavioral intentions that are more likely to translate into action. In this way, loyalty functions as a stabilizing force that reinforces brand image and anchors the consumer's behavior in consistent repurchase. It is through loyalty that the emotional allure of brand image is preserved, deepened, and enacted (Jiang et al., 2024; Rastogi et al., 2024). Thus, we hypothesize:

H6: Brand Loyalty mediates the relationship between Brand Trust and Purchase Decision.

H7: Brand Loyalty mediates the relationship between Brand Image and Purchase Decision.

3. Research Method

This study adopts a quantitative research approach using a structured survey instrument to examine the causal relationships among brand trust, brand image, brand loyalty, and purchase decision. The research is explanatory in nature, designed to empirically test a theoretical model developed from the Theory of Planned Behavior (TPB). The model hypothesizes both direct and mediating effects among the constructs. Structural Equation Modeling (SEM) using Partial Least Squares (PLS) via SmartPLS 4 was employed to assess the measurement and structural models, which is appropriate for exploratory models and complex path analysis involving latent variables (Hair et al., 2011)

The population of this study consists of working individuals who have made purchases at Fore Coffee outlets located in Semarang, Solo, and Yogyakarta. These cities were selected to represent Central Java and the Special Region of Yogyakarta, areas experiencing rapid urbanization and digital consumer behavior adoption. This study focuses on consumers in Semarang, Solo, and Yogyakarta, which were selected as research sites because they are medium-sized urban centers with a rapidly expanding coffee shop industry, a high concentration of Millennial and Generation Z residents, and strong adoption of digital platforms for food and beverage purchases (Afendi & Indriani, 2022; Lim & Keni, 2025). These characteristics make them suitable contexts for examining how brand image, brand trust, and brand loyalty shape purchase decisions toward tech-enabled coffee shop brands such as Fore Coffee (Iisnawati et al., 2024). Respondents were selected using purposive sampling, focusing specifically on individuals who (1) are employed either formally or informally, (2) have purchased Fore Coffee at least once in the past three months, and (3) are aware of the brand's digital service model. This sampling strategy ensured the selection of participants who have relevant experience and exposure to the brand, aligning with the study's behavioral focus (Sekaran & Bougie, 2016).

A total of 214 questionnaires were distributed both online and offline. After data screening for completeness and consistency, 193 valid responses were retained for analysis, representing a usable response rate of approximately 90.2%. This sample size meets the minimum requirement for PLS-SEM analysis based on the rule of ten times the maximum number of structural paths pointing at a particular construct, and is considered robust for the proposed model complexity (Becker et al., 2022). All constructs in the questionnaire were measured using reflective indicators adapted from established scales in prior studies. Each item was rated using a 10-point bipolar scale, ranging from 1 ("Strongly Disagree")

to 10 ("Strongly Agree"), to capture subtle variations in respondent attitudes and perceptions. The scale was designed to provide high sensitivity and improve the reliability of the responses (Malhotra et al., 2017).

The data were collected over a four-week period between January and March 2025 using both digital survey distribution and on-site approaches in selected coffee outlets. Participants were briefed on the purpose of the study and assured of the confidentiality and anonymity of their responses. Ethical guidelines were followed by obtaining informed consent prior to participation. The data collection tool was pre-tested with 15 respondents for clarity and relevance, and necessary adjustments were made to ensure validity and comprehension. The collected data were analyzed using SmartPLS 4, a variance-based SEM software suitable for complex predictive models and small to medium-sized samples. The analysis was conducted in two stages. First, a measurement model evaluation was performed to test construct reliability, indicator loadings, convergent validity (via Average Variance Extracted or AVE), and discriminant validity (via Fornell-Larcker criterion and HTMT ratio). Second, a structural model analysis was carried out to assess the significance of path coefficients, the strength of mediation effects, and the explanatory power of the model using R^2 and Q^2 values. Bootstrapping with 5,000 resamples was used to determine the statistical significance of the hypotheses (Becker et al., 2022; Hair et al., 2011).

To ensure the integrity of the analysis, multicollinearity was examined using Variance Inflation Factor (VIF) scores, and all indicators met acceptable thresholds (VIF < 5). Common method bias was minimized by separating independent and dependent variables within the questionnaire and using different wording structures. Additionally, the normality assumption was checked through skewness and kurtosis values, although PLS-SEM does not require strict normal distribution due to its non-parametric nature (Shamhuyenhanzva & Masitenyane, 2025). The methodology employed in this study reflects a careful balance between theoretical grounding and empirical robustness (Becker et al., 2022). The integration of TPB constructs, mediated path design, and reflective indicators allows for a nuanced exploration of consumer brand behavior. The use of SmartPLS 4 facilitates detailed examination of the model's predictive capabilities, while purposive sampling ensures relevance and contextual validity among working consumers of Fore Coffee in Java's growing urban centers.

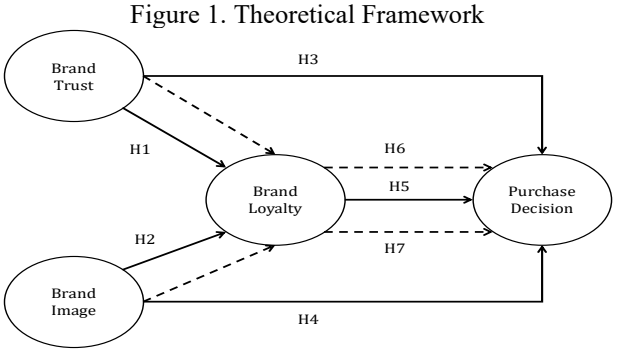
Table 1. Operationalization of Variables

Variable	Operational Definition	Indicators	Source
Brand Image	The set of perceptions, associations, and emotional responses consumers hold toward Fore Coffee.	▪ BI1: Fore Coffee has a modern and attractive brand appearance. ▪ BI2: Fore Coffee makes me feel confident when consuming it in public. ▪ BI3: I perceive Fore Coffee as high-quality and innovative.	Alzate et al. (2022):Huang (2022): Kumar et al. (2024)
Brand Trust	The consumer's belief that Fore Coffee is reliable, honest, and consistently delivers quality.	▪ BT1: Fore Coffee consistently delivers on its promises. ▪ BT2: I feel confident about the quality when buying Fore Coffee. ▪ BT3: I trust Fore Coffee to prioritize customer interest.	Leung and Seah (2022);Sohaib and Han (2023);Bigné et al. (2023)
Brand Loyalty	A consumer's deep commitment to repeatedly choose Fore Coffee despite alternatives.	▪ BL1: I prefer Fore Coffee even when other brands are available. ▪ BL2: I often recommend Fore Coffee to others. ▪ BL3: I am committed to staying loyal to Fore Coffee.	Zhang et al. (2023);Xu et al. (2022);Zhao et al. (2024)
Purchase	The outcome of a	▪ PD1: I usually choose Fore Coffee when I want coffee.	Gupta et al.

Decision	consumer's choice to buy Fore Coffee based on prior beliefs and loyalty.	▪ PD2: My past experience with Fore Coffee influences my purchase. ▪ PD3: I prefer Fore Coffee because it offers better overall value. ▪ PD4: Fore Coffee is among my top coffee choices.	(2021);Muslich ah M et al. (2019); Qu et al. (2023);Yu et al. (2022)

Source: Researcher (2025)

Figure 1. Theoretical Framework



4. Results and Discussion

This study involved a total of 193 respondents drawn from three major urban centers in Indonesia: Semarang, Solo, and Yogyakarta. The distribution of participants was relatively balanced across these locations, with 33.7% from Semarang, 33.2% from Solo, and 33.2% from Yogyakarta. In terms of gender, female respondents represented a slight majority at 54.9%, while males constituted 45.1% of the total. This gender distribution may reflect the active engagement of female consumers in café-related lifestyle activities, a factor that is particularly relevant to the market positioning of Cafe Fore.

With regard to age, the majority of respondents were young adults, with 36.8% aged between 20 and 24 years, followed by 27.5% in the 25–29 age group. Respondents aged under 20 years accounted for 11.4%, while those between 30–34 years and 35 years or older represented 14.5% and 9.8% of the sample, respectively. This age profile aligns with the target demographic of lifestyle cafés, which typically appeal to younger, urban populations. Educationally, most respondents held an undergraduate degree (49.7%), with additional groups having completed senior high school (19.7%), diploma programs (15.0%), and postgraduate education (15.5%). These figures suggest that the sample is generally well-educated, a factor that may influence consumer behavior, preferences, and the interpretation of brand-related experiences.

Table 2. Respondent Profile

Characteristics	Frequency	Percentage (%)
Gender		
Male	87	45,1
Female	106	54,9
Age		
<20	22	11,4
20-24	71	36,8
25-29	53	27,5
30-34	28	14,5
≥35	19	9,8
Educational Background		
Senior High School	38	19,7
Diploma	29	15,0
Undergraduate	96	49,7
Postgraduate	30	15,5
Income Range(IDR)		
<2 million	41	21,2
2-4 million	67	34,7
4-6 million	50	25,9
>6 million	35	18,1
Occupation		
Student	72	37,3
Private Sector Employee	58	30,1
Government Employee	28	14,5
Entrepreneur	22	11,4
Others(freelancer, homemaker)	13	6,7
Location Distribution		
Semarang	65	33,7
Solo	64	33,2
Yogyakarta	64	33,2

Source: Questionnaire data processing (2025)

Monthly income levels among respondents were diverse: 34.7% reported earnings between IDR 2 million and 4 million, 25.9% between IDR 4 million and 6 million, 21.2% earned less than IDR 2 million, and 18.1% earned above IDR 6

million. This distribution reflects the socioeconomic heterogeneity of the consumer base. Professionally, students made up the largest segment (37.3%), followed by private sector employees (30.1%), government employees (14.5%), entrepreneurs (11.4%), and others such as freelancers and homemakers (6.7%). The predominance of students and early-career professionals is consistent with the café's strategic orientation toward younger, aspirational consumers. Overall, the demographic profile provides a robust foundation for exploring consumer behavior within the context of emerging urban café culture in Indonesia.

Table 3 presents the factor loadings, composite reliability (CR), average variance extracted (AVE), and Cronbach's alpha for each construct, providing empirical support for the reliability and validity of the measurement model. All loading values exceed the commonly accepted threshold of 0.70, indicating strong indicator reliability (J. F Hair et al., 2019). Specifically, the indicators for Brand Image (BI.1 = 0.83; BI.2 = 0.80; BI.3 = 0.73), Brand Trust (BT.1 = 0.81; BT.2 = 0.88; BT.3 = 0.80), Brand Loyalty (BL.1 = 0.85; BL.2 = 0.94; BL.3 = 0.90), and Purchase Decision (PD.1 = 0.81; PD.2 = 0.86; PD.3 = 0.82; PD.4 = 0.78) all demonstrate sufficient convergent loading, reinforcing the appropriateness of their reflective measurement.

Table 3. Factor Loading of Items

Variables	Construct	Indicator Loading	CR	AVE	Cronbach's Alpha
Brand Image	BI.1	0.83	0.71	0.62	0.70
	BI.2	0.80			
	BI.3	0.73			
Brand Trust	BT.1	0,81	0.79	0.69	0.78
	BT.2	0.88			
	BT.3	0.80			
Brand Loyalty	BL.1	0.85	0.88	0.81	0.88
	BL.2	0.94			
	BL.3	0.90			
Purchase Decision	PD.1	0.81	0.84	0.67	0.83
	PD.2	0.86			
	PD.3	0.82			
	PD.4	0.78			

Source: PLS output (2025)

The composite reliability (CR) values range from 0.71 to 0.88, all exceeding the 0.70 minimum threshold, confirming internal consistency among indicators within each construct. Similarly, AVE values span from 0.62 to 0.81, which are above the 0.50 standard, confirming convergent validity (Becker et al., 2022). These findings affirm that the constructs adequately capture the underlying latent variables they are intended to measure. From the lens of the Theory of Planned Behavior (TPB), the constructs and their associated indicators map directly onto the model's three determinants of behavioral intention: attitude, subjective norm, and perceived behavioral control. Brand Image and Brand Trust serve as proxies for attitudinal beliefs, shaping consumers' evaluations and confidence in the brand (Hu et al., 2025; Novendah et al., 2024). Their high factor loadings demonstrate that consumers associate Fore Coffee with positive brand attributes (e.g., modernity, reliability, trustworthiness), which are foundational for forming favorable intentions.

Brand Loyalty, as a psychological and behavioral construct, represents a bridging variable between beliefs and action a central mechanism within TPB that reinforces intention and commitment over time (Hussain et al., 2025; H. Li et al., 2025). Its consistently high loadings (BL.1–BL.3 ranging from 0.85 to 0.94) suggest that respondents not only prefer Fore Coffee but also exhibit recommendation and repurchase behaviors. This aligns with TPB's concept of behavioral intention solidified by attitudinal commitment, and further supports the role of loyalty as a mediator that transforms favorable brand evaluations into actual purchase decisions.

Finally, Purchase Decision indicators also show robust loadings (PD.1–PD.4 between 0.78 and 0.86), validating the construct's ability to capture the ultimate behavioral outcome in the TPB chain. Each item reflects varying aspects of consumer decision-making habitual choice, past experience, value perception, and brand ranking collectively forming a comprehensive measure of consumer action

influenced by brand-related cognition and loyalty.

Discriminant validity is essential in structural equation modeling to confirm that each latent construct reflects a distinct conceptual domain. Using the Heterotrait-Monotrait Ratio (HTMT), this study confirmed that Brand Image, Brand Trust, Brand Loyalty, and Purchase Decision are empirically distinct. All HTMT values were below the recommended threshold of 0.85 (Becker et al., 2022), ensuring no multicollinearity. This indicates that while interrelationships exist, each construct maintains a unique contribution to the model.

Table 4. Discriminant Validity- Heterotrait-monotrait ratio (HTMT)

Variable	Heterotrait-monotrait ratio (HTMT)
Brand Loyalty ←→ Brand Image	0.436
Brand Trust ←→ Brand Image	0.197
Brand Trust ←→ Brand Loyalty	0.579
Purchase Decision ←→ Brand Image	0.466
Purchase Decision ←→ Brand Loyalty	0.583
Purchase Decision ←→ Brand Trust	0.541

Source: PLS output (2025)

Discriminant validity was further assessed using the Heterotrait–Monotrait ratio of correlations (HTMT), which has been recommended as a more sensitive criterion than the traditional Fornell–Larcker criterion and cross-loadings for detecting discriminant validity problems in PLS-SEM models (Becker et al., 2022). Table 4 reports the HTMT values for all pairs of latent constructs. All HTMT values are below the recommended thresholds of 0.85–0.90, indicating that the constructs are empirically distinct and that discriminant validity is adequately established (Henseler et al., 2016).

In other words, the relatively low HTMT ratios suggest that the correlations between different constructs are not excessively high compared to the correlations among indicators within the same construct, which supports the distinction among brand trust, brand image, brand loyalty, and purchase decision.

From the perspective of the Theory of Planned Behavior (TPB), these constructs represent different psychological drivers: Brand Image aligns with attitudinal beliefs, Brand Trust reflects perceived behavioral control, Brand Loyalty functions as the mediator translating beliefs into commitment, and Purchase Decision captures actual behavior (Crisafulli et al., 2022; Li et al., 2020). The HTMT values support the theoretical structure by demonstrating that constructs such as trust and image are conceptually separate, even as they interact to influence loyalty and decision-making. These results reinforce the integrity of the model and provide strong empirical support for the TPB-based framework used in this study. The distinctiveness of each construct ensures meaningful path analysis, confirming that brand-related beliefs, emotional attachment, and behavioral outcomes are systematically connected yet independently measured. This adds theoretical and practical value to the understanding of consumer decision-making in the digital coffee retail context, exemplified by Fore Coffee.

Table 5. Fornell-Larcker criterion

Variable	Brand Image	Brand Loyalty	Brand Trust	Purchase Decision
Brand Image	0.787			
Brand Loyalty	0.348	0.898		
Brand Trust	0.134	0.485	0.830	
Purchase Decision	0.366	0.508	0.434	0.816

Source: PLS output (2025)

Table 5 presents the Fornell-Larcker Criterion values used to assess discriminant validity by comparing the square root of the Average Variance Extracted (AVE) of each construct to its correlations with other constructs. According to Hair et al. (2011) a construct is considered to have adequate discriminant validity if its AVE square root exceeds the correlations it has with other

latent variables. In this study, the diagonal elements Brand Image (0.787), Brand Loyalty (0.898), Brand Trust (0.830), and Purchase Decision (0.816) are all greater than the off-diagonal values in their respective rows and columns. These results provide further evidence that each construct measures a unique dimension of the conceptual model and supports the integrity of the reflective measurement structure adopted in this research.

Within the framework of the Theory of Planned Behavior, these findings underscore the distinct yet interconnected psychological constructs that underlie consumer decision-making. Brand Image and Brand Trust, as attitudinal beliefs and perceived behavioral control respectively, exhibit moderate correlations with Brand Loyalty and Purchase Decision, without indicating multicollinearity (Discetti et al., 2024; Yeh et al., 2025). This balance is important, as TPB posits that intention and behavior arise from separate but complementary cognitive evaluations. The relatively high AVE square root for Brand Loyalty (0.898) affirms that this construct is particularly well-differentiated, consistent with its role as a mediating variable that synthesizes prior evaluations into consistent behavioral tendencies.

Furthermore, the correlation between Brand Loyalty and Purchase Decision (0.508), though moderate, remains lower than the square roots of their respective AVEs, validating their empirical distinction. This pattern aligns with the TPB-based interpretation that while loyalty significantly influences purchasing behavior, it does so as an independent mediator rather than an indistinct extension of the outcome variable. Similarly, the lower correlation between Brand Trust and Brand Image (0.134) reinforces the conceptual separation between functional confidence and symbolic appeal. These distinctions are crucial for understanding the layered nature of consumer behavior in lifestyle-oriented, digitally mediated consumption environments like Fore Coffee. In sum, the Fornell-Larcker results complement the HTMT analysis, further validating the structural model and supporting the theoretical delineation of constructs embedded in TPB

Table 6 reports the predictive relevance (Q^2 Predict) and explanatory power (R^2 and adjusted R^2) of the structural model for the two endogenous constructs: Brand Loyalty and Purchase Decision. The Q^2 values for both constructs are above the recommended threshold of 0.00 specifically, 0.298 for Brand Loyalty and 0.264 for Purchase Decision indicating that the model has satisfactory predictive relevance (J. F Hair et al., 2019). These positive Q^2 values were obtained through the blindfolding procedure in SmartPLS and confirm that the exogenous variables (Brand Image and Brand Trust) contribute meaningfully to explaining the variability of the endogenous constructs beyond mere statistical fitting. This is particularly significant in the context of behavioral studies, where prediction is often more important than model perfection.

Table 6. Q^2 Predict and R-Square

Variable	Q^2predict	R^2	R^2-adjusted
Brand Loyalty	0.298	0.317	0.309
Purchase Decision	0.264	0.349	0.338

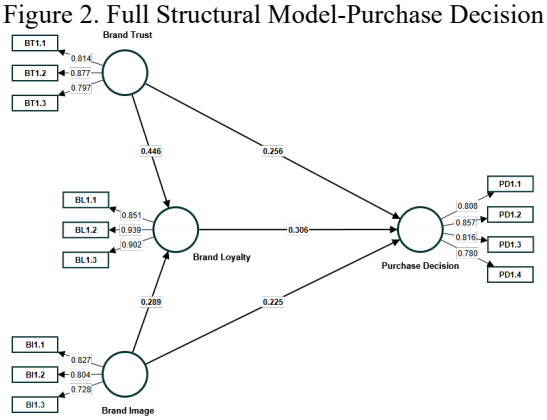
Source: PLS output (2025)

The R^2 value for Brand Loyalty is 0.317, suggesting that approximately 31.7% of the variance in Brand Loyalty can be explained by Brand Image and Brand Trust. Likewise, the R^2 value for Purchase Decision is 0.349, indicating that 34.9% of the variation in consumer purchase decisions is accounted for by the combined influence of Brand Loyalty, Brand Trust, and Brand Image. These levels of explained variance are considered moderate, and they reflect the practical complexity of consumer behavior in real-world consumption contexts. Within the framework of the Theory of Planned Behavior, these findings validate the model's structure, where attitudinal beliefs (e.g., image), perceived control (e.g., trust), and internalized

intentions (e.g., loyalty) coalesce to produce actual behavioral outcomes.

These predictive indicators underscore the importance of considering both direct and mediated pathways in modeling consumer behavior. The predictive strength of Brand Loyalty as both an endogenous and a mediating variable illustrates its pivotal role in converting brand evaluations into actions. This resonates with TPB's proposition that behavioral intention, shaped by attitude and perceived control, serves as a strong predictor of behavior especially when reinforced by loyalty as a habitual and affective commitment (Agyei et al., 2025). In the context of Fore Coffee, where branding strategies target digitally savvy, emotionally engaged consumers, the Q^2 and R^2 results affirm the robustness of a model that integrates psychological predictors with brand loyalty as a bridge to real-world purchasing decisions.

Figure 2. Full Structural Model-Purchase Decision



The path coefficient analysis reveals the relative strengths of causal relationships among the key constructs: Brand Image, Brand Trust, Brand Loyalty, and Purchase Decision. The strongest path observed is from Brand Trust to Brand Loyalty (β = 0.446), followed by Brand Loyalty to Purchase Decision (β = 0.306), indicating that consumer trust serves as a foundational antecedent for long-term attitudinal commitment, which in turn drives behavioral outcomes. Additionally, Brand Image significantly affects Brand Loyalty (β = 0.289) and has a direct influence on Purchase Decision (β = 0.225), suggesting that the emotional and symbolic attributes of a brand shape consumer preferences not only through loyalty development but also through direct persuasive appeal. These values collectively underscore the theoretical premise of TPB, where attitudinal beliefs (trust and image) and intention (loyalty) sequentially and simultaneously shape actual behavior (purchase decision).

Table 7. Path Coefficients

Variable	Brand Image	Brand Loyalty	Brand Trust	Purchase Decision
Brand Image		0.289		0.225
Brand Loyalty				0.306
Brand Trust		0.446		0.256
Purchase Decision				

Source: PLS output (2025)

Table 7 reports the path coefficients of the structural model estimated using PLS-SEM. The table presents the standardized regression weights between the latent constructs, together with their associated t-values and p-values, which are used to test the hypothesized direct and mediating effects (Joseph F. Hair et al., 2019; Henseler et al., 2016). These coefficients indicate both the direction and the strength of the relationships among brand trust, brand image, brand loyalty, and purchase decision, and allow the comparison of the relative importance of each predictor in explaining brand loyalty and purchase decision in the context of Fore Coffee (Cardoso et al., 2022; Maduretno & Junaedi, 2022).

This model structure validates TPB's multidimensional explanation of behavior, where attitude toward the behavior (Brand Image) and perceived behavioral control (Brand Trust) independently contribute to the formation of behavioral intention (Brand Loyalty). The subsequent translation of this intention into action is captured by the Brand Loyalty–Purchase Decision path (Husain et al., 2022; Monfort et al., 2025). Importantly, the magnitude of the trust-loyalty relationship surpasses that

of image-loyalty, suggesting that in the Fore Coffee context, credibility and consistency are even more critical than aesthetics or perception in building consumer loyalty. Meanwhile, both Brand Trust and Brand Image also maintain direct, though comparatively weaker, effects on Purchase Decision, which reinforces the interpretation of partial mediation. Overall, the pattern of coefficients reflects a structurally sound and theoretically coherent model, where belief, intention, and behavior interact in ways that mirror the complexities of real-world consumer decision-making.

An examination of multicollinearity within the structural model reveals that all predictor constructs exhibit acceptable Variance Inflation Factor (VIF) values, comfortably below the conservative threshold of 5.0 (Becker et al., 2022). The highest observed VIF is 1.463, corresponding to the influence of Brand Loyalty on Purchase Decision a value well within the acceptable range. Similarly, the paths from Brand Image to Brand Loyalty (1.018), Brand Image to Purchase Decision (1.140), Brand Trust to Brand Loyalty (1.018), and Brand Trust to Purchase Decision (1.309) also demonstrate low multicollinearity. These findings indicate that the predictors do not share excessive variance, allowing each construct to exert a distinct and non-redundant influence on the model's endogenous variables. As a result, the stability and interpretive clarity of the path coefficients are preserved, reinforcing the model's structural robustness.

Table 8. Collinearity statistics (VIF)-Inner Model

Variable	VIF
Brand Image→Brand Loyalty	1.018
Brand Image →Purchase Decision	1.140
Brand Loyalty→ Purchase Decision	1.463
Brand Trust→ Brand Loyalty	1.018
Brand Trust→Purchase Decision	1.309

Source: PLS output (2025)

The absence of multicollinearity affirms the theoretical premise that each component attitudinal beliefs, perceived behavioral control, and mediating intentions, operates as a distinct predictor within the behavioral decision-making process (Phan et al., 2023). Brand Image and Brand Trust, representing attitudinal and control beliefs respectively, do not interfere statistically with each other's influence on Brand Loyalty or Purchase Decision. This statistical independence is theoretically important, as TPB maintains that the motivation to perform a behavior arises from the additive and differentiated effects of these beliefs. The low VIF values provide empirical support for this structure, ensuring that the interaction among predictors reflects genuine psychological dynamics rather than statistical artifact.

Furthermore, the moderate VIF value for the path from Brand Loyalty to Purchase Decision (1.463) supports the mediating role of loyalty as proposed in the TPB-based model. This suggests that loyalty exerts a unique and non-overlapping influence on the decision to purchase, independent from the direct effects of Brand Image and Brand Trust. In a high-involvement consumer context such as Fore Coffee where brand attachment, habitual preference, and digital convenience play central roles ensuring non-redundant predictor influence is crucial. The absence of problematic collinearity among the constructs not only strengthens the reliability of the structural model but also enhances confidence in the conclusions drawn about consumer behavior in dynamic, brand-driven market environments.

The hypothesis testing results presented in Table 9 demonstrate strong empirical support for all proposed relationships in the structural model, reinforcing the theoretical assumptions derived from the Theory of Planned Behavior (TPB). All p-values fall below the 0.05 significance threshold, and corresponding t-values exceed the critical value of 1.96, indicating statistically significant and positive relationships among the constructs (Hair et al., 2019). These findings validate the model's underlying logic: brand-related cognitive and emotional antecedents (Brand Trust and

Brand Image) influence behavioral outcomes (Purchase Decision), both directly and indirectly through an attitudinal commitment (Brand Loyalty). The empirical strength of these associations confirms the relevance of TPB in explaining consumer decisions in lifestyle-driven, brand-mediated contexts such as Fore Coffee.

Table 9. Hypotheses Testing

Hypotheses	*p*-values	*t*-values	Type of Relationship	Sig. <0.05
H1: BT→BL	0.000	7.885	+	Supported
H2: BI→BL	0.000	4.891	+	Supported
H3: BT→PD	0.000	3.719	+	Supported
H4: BI→PD	0.001	3.279	+	Supported
H5: BL→PD	0.000	4.403	+	Supported
H6: BT→BL→PD	0.000	3.847	+	Supported
H7: BI→BL→PD	0.001	3.291	+	Supported

Source: PLS output (2025)

Direct path analyses reveal that Brand Trust positively influences Brand Loyalty (H1: $p < 0.001$, $t = 7.885$) and Purchase Decision (H3: $p < 0.001$, $t = 3.719$), aligning with TPB's conceptualization of perceived behavioral control. Consumers who believe in the reliability and ethical standards of a brand experience a higher sense of confidence in their purchasing ability, thus reinforcing both commitment and action. Similarly, Brand Image shows a significant positive effect on both Brand Loyalty (H2: $p < 0.001$, $t = 4.891$) and Purchase Decision (H4: $p = 0.001$, $t = 3.279$). This suggests that favorable brand perceptions such as quality, modernity, and social appeal enhance consumer attitudes, thereby elevating loyalty and increasing the likelihood of a purchase. These results confirm that both dimensions of belief formation in TPB attitude and perceived control are independently impactful. Furthermore, the results confirm that Brand Loyalty significantly predicts Purchase Decision (H5: $p < 0.001$, $t = 4.403$). This supports TPB's assertion that behavioral intention, especially when reinforced through psychological attachment, leads to consistent and deliberate action. In the context of Fore Coffee, consumers who have developed a strong emotional commitment to the brand are more likely to actualize their preferences through repeat purchases. Loyalty thus emerges as a crucial intermediary that binds evaluative beliefs to consistent consumption, particularly in coffee shop settings where ready-to-drink beverages are purchased for immediate consumption and where habit, identity, and convenience converge (Sun et al., 2024).

The mediation hypotheses (H6 and H7) offer deeper insight into the mechanism through which brand evaluations influence purchasing behavior. H6 examines the mediating role of Brand Loyalty between Brand Trust and Purchase Decision. The significant indirect effect ($p < 0.001$, $t = 3.847$) alongside a still-significant direct effect from Brand Trust to Purchase Decision indicates a case of partial mediation. This suggests that trust affects consumer behavior both directly by reducing uncertainty and indirectly by fostering loyalty over time. Similarly, H7 assesses the mediating role of Brand Loyalty between Brand Image and Purchase Decision, which is also supported ($p = 0.001$, $t = 3.291$), while the direct effect of Brand Image on Purchase Decision remains significant. This also reflects partial mediation, indicating that Brand Image contributes to purchase intentions by shaping attitudes and reinforcing loyalty, yet retains a direct influence through its symbolic and emotional appeal.

These findings underscore the multidimensional nature of consumer decision-making as conceptualized by TPB. Rather than a simple linear process, brand evaluations operate through intertwined cognitive, affective, and behavioral pathways (Discetti et al., 2024). Partial mediation in both H6 and H7 reflects the real-world complexity of consumer behavior, where trust and image simultaneously evoke immediate purchase decisions and cultivate longer-term loyalty. In the case of Fore Coffee, these dynamics are particularly salient among urban, tech-

savvy consumers who value both brand performance and emotional resonance. The empirical support for both direct and mediated relationships affirms the robustness of the proposed model and contributes to a more nuanced understanding of brand-driven behavior in emerging digital marketplaces.

5. Conclusion

This study affirms that both brand trust and brand image exert a significant influence on consumer purchase decisions related to Fore Coffee, operating through both direct and indirect pathways. Specifically, brand loyalty serves as a key mediating variable that channels these brand perceptions into behavioral outcomes. These findings align with the stated research objectives, offering empirical support for how attitudinal beliefs and emotional commitment shape consumer actions. Among the antecedents, brand trust exhibited the most substantial effect on brand loyalty, followed by brand image indicating that perceptions of reliability and ethical consistency provide a more enduring basis for emotional attachment than symbolic or aesthetic associations alone. Brand loyalty, in turn, emerged as a pivotal construct, translating cognitive evaluations into consistent purchasing behavior, thereby enhancing the explanatory robustness of the Theory of Planned Behavior (TPB) in lifestyle-oriented consumption settings (Hu et al., 2025; Jampala & Shivnani, 2024).

Nonetheless, the study is subject to certain limitations. The research was geographically confined to three urban areas Semarang, Solo, and Yogyakarta and focused exclusively on employed consumers with prior purchasing experience of Fore Coffee. While this provides targeted insights into a rapidly evolving consumer segment, it restricts the generalizability of the findings to other groups, such as students, rural consumers, or populations in different urban regions. Furthermore, the study employed a cross-sectional design, limiting its capacity to establish causal relationships over time. Future research should consider longitudinal or experimental approaches and broaden the demographic and geographical scope to enhance external validity. Including additional constructs from the TPB such as subjective norms or integrating complementary psychological factors like perceived value could further enrich the model and offer a more holistic understanding of consumer behavior.

The practical implications of this research are particularly salient for practitioners in the competitive food and beverage industry. For brands like Fore Coffee, cultivating and sustaining brand trust through consistent quality, transparent communication, and dependable service should be prioritized. Simultaneously, developing a strong and emotionally resonant brand image can deepen consumer identification with the brand. To reinforce retention and repeat behavior, brand managers should implement loyalty-driven initiatives such as personalized marketing, interactive digital engagement, and community-centric branding strategies especially in markets increasingly shaped by digital consumption and lifestyle trends. Enhancing brand loyalty not only drives repeated purchases but also fosters brand advocacy and consumer resistance to competitor offerings (Malaza et al., 2025; Masud et al., 2024).

From a theoretical standpoint, this study contributes to the evolving application of TPB by illustrating the dynamic interplay between belief, intention, and behavior within a brand-mediated consumer environment (Samoggia et al., 2025). By establishing brand loyalty as a central mediating mechanism, the research challenges linear behavioral assumptions and offers a more layered understanding of the psychological drivers of purchasing behavior. These contributions extend the theoretical discourse in consumer behavior and brand management, particularly within the

context of emerging digital-native brands in transitional markets, and provide a foundation for future inquiry into mediated behavioral frameworks.

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CULTURAL IMPRINTING AND LEADERSHIP IN HIGHER EDUCATION: A SYSTEMATIC LITERATURE REVIEW FROM THE PERSPECTIVE OF EMERGING COUNTRIES

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ABSTRACT

This study examines how cultural imprinting, values internalized during early socialization, shapes leadership orientations and strategic leadership practices in higher education, particularly in emerging-country contexts. A systematic literature review (SLR) of peer-reviewed studies published between 2020 and 2025 was conducted following PRISMA guidelines to synthesize leadership, cross-cultural, and imprinting scholarship. The review identifies three thematic domains: (1) cultural imprinting and leadership orientation, (2) contextual variations between Western and emerging-country leadership practices, and (3) strategic implications for internationalization, digital transformation, and graduate reputation. Building on these insights, this study proposes an integrative conceptual framework, the *Cultural Imprinting Leadership Framework*, synthesizing imprinting theory, cross-cultural leadership perspectives, and strategic leadership in higher education. The study contributes theoretically by extending leadership theory through the integration of cultural imprinting, contextually by highlighting leadership dynamics in emerging countries, and practically by informing culturally grounded leadership development strategies. However, the findings are conceptual and require empirical validation through future cross-cultural and longitudinal research.

Keywords: Cultural imprinting, higher education leadership, systematic literature review, emerging countries, strategic leadership, internationalization.

ABSTRAK

Penelitian ini mengkaji bagaimana cultural imprinting, yaitu nilai-nilai yang terinternalisasi selama proses sosialisasi awal, membentuk orientasi kepemimpinan dan praktik kepemimpinan strategis di pendidikan tinggi, khususnya dalam konteks negara berkembang. Tinjauan pustaka sistematis (Systematic Literature Review/SLR) terhadap studi bereputasi yang dipublikasikan antara tahun 2020–2025 dilakukan dengan mengikuti pedoman PRISMA untuk mensintesis kajian tentang kepemimpinan, lintas budaya, dan teori imprinting. Hasil tinjauan mengidentifikasi tiga domain tematik utama: (1) cultural imprinting dan orientasi kepemimpinan, (2) variasi kontekstual antara praktik kepemimpinan Barat dan negara berkembang, serta (3) implikasi strategis bagi internasionalisasi, transformasi digital, dan reputasi lulusan. Berdasarkan temuan tersebut, penelitian ini mengusulkan sebuah kerangka konseptual integratif, yaitu Cultural Imprinting Leadership Framework, yang mensintesis teori imprinting, perspektif kepemimpinan lintas budaya, dan kepemimpinan strategis dalam pendidikan tinggi. Kontribusi penelitian ini bersifat teoretis melalui perluasan teori kepemimpinan dengan mengintegrasikan cultural imprinting, kontekstual dengan menyoroti dinamika kepemimpinan di negara berkembang, serta praktis dengan memberikan landasan bagi pengembangan kepemimpinan yang berakar pada budaya. Namun demikian, temuan penelitian ini masih bersifat konseptual dan memerlukan validasi empiris melalui penelitian lintas budaya dan longitudinal di masa mendatang.

Kata kunci: *Cultural imprinting, kepemimpinan pendidikan tinggi, tinjauan pustaka sistematis, negara berkembang, kepemimpinan strategis, internasionalisasi.*

1. Introduction

Universities today are tasked not only with advancing knowledge, but also with producing graduates who can navigate globalized, unequal, and hyper connected labor markets. In such a landscape, leadership in higher education becomes pivotal for aligning missions, mobilizing resources, and orchestrating international partnerships that elevate institutional and graduate reputation (Jones et al., 2021; Macfarlane, 2024).

Leadership in higher education plays a critical role in shaping institutional strategies, global engagement, and graduate outcomes in increasingly complex and globalized educational ecosystems. Universities today operate under intense pressures related to internationalization, digital transformation, global rankings, and graduate employability. These pressures demand leadership approaches that are both globally responsive and locally legitimate.

Yet, much of the leadership literature in higher education remains rooted in Western centric paradigms such as transformational, servant, and distributed leadership. While these models offer valuable insights, they often assume cultural neutrality and overlook the deeply ingrained cultural factors that shape leaders' orientations and strategic choices (Nguyen et al., 2021; Macfarlane, 2024). This presents a critical theoretical gap, particularly in the context of emerging countries, where leadership practices are profoundly shaped by cultural values of collectivism, hierarchy, and communal responsibility (Zander et al., 2020; Mynbayeva et al., 2024). Emerging countries, particularly in Asia, Africa, and Latin America, operate within distinct cultural logics characterized by collectivism, hierarchical social structures, and communal responsibility. Such cultural contexts fundamentally shape how leaders think, decide, and act.

One underexplored dimension in this regard is cultural imprinting, the enduring influence of cultural values internalized during childhood. Cultural imprinting suggests that early experiences within family, community, and local traditions leave a lasting mark that continues to shape leaders' behavior and decision-making well into adulthood (Kitt et al., 2024). While imprinting theory has been widely applied in organizational and HR studies, its application to higher education leadership remains limited. This gap becomes particularly salient in emerging countries, where leaders' personal histories and cultural backgrounds often intersect with institutional strategies for internationalization, digital transformation, and graduate reputation (de Wit & Jones, 2022; Jing et al., 2025).

In an era where universities face growing global competition, the question is no longer whether leadership matters, but how it is formed and shaped by cultural roots. If leadership is understood only through imported models, there is a risk of overlooking the contextual realities of universities in emerging countries realities where cultural imprinting plays a pivotal role. Evidence from the 6th IAU Global Survey confirms that while more institutions have formal internationalization policies, implementation often lags behind ambition, highlighting the critical role of leadership in translating policy into practice (IAU, 2024).

This systematic literature review addresses this gap by synthesizing recent scholarship on leadership, culture, and imprinting in higher education. Specifically, the study aims to integrate imprinting theory with cross-cultural leadership and strategic leadership frameworks to develop a culturally grounded conceptual framework for higher education leadership in emerging countries.

The review also engages emerging evidence on culture-change mechanisms (Kezar et al., 2025) and digital academic leadership (Jing et al., 2025), offering practice-oriented pathways for contexts outside the West.

This SLR contributes to the literature and practice of higher education leadership

in three important ways. First, the study advances theoretical understanding by integrating the concept of cultural imprinting into leadership theory. While existing frameworks such as transformational or distributed leadership have illuminated many aspects of leadership practice, they often overlook how early-life cultural experiences shape leaders' orientations. By bridging cultural imprinting with higher education leadership, this review extends current theory and highlights the lasting influence of childhood socialization on decision-making and strategic choices (Liden et al., 2022).

Second, the research provides contextual nuance**,** particularly for universities in emerging countries where leadership cannot be divorced from cultural roots. In these contexts, leaders' strategies for internationalization, global outreach, and reputation building are deeply shaped by cultural norms such as collectivism, hierarchy, and communal responsibility. By focusing on non-Western settings, the study challenges the dominance of Western-centric leadership paradigms and offers insights that resonate more strongly with the lived realities of higher education leaders in Asia, Africa, and Latin America (Macfarlane, 2024).

Third, the study contributes practical implications by providing actionable guidance for both policymakers and institutional leaders. The findings emphasize the importance of designing leadership development programs, policy reforms, and internationalization strategies that are culturally grounded yet globally competitive. In doing so, the study positions cultural imprinting not as a barrier to modernization but as a valuable resource for crafting leadership practices that align local traditions with global agendas. This threefold contribution strengthens both academic theory and institutional practice, situating the *Cultural Imprinting Leadership Model* as a relevant framework for higher education in a globalized era.

In line with this objective, the study formulates the following research questions.

RQ1. How has *cultural imprinting* been conceptualized in the higher education leadership?
RQ2. In what ways do cultural values internalized from early childhood influence leadership orientations (e.g., decision-making, relational style, authority use) in higher education?
RQ3. How are leadership practices in emerging countries shaped by cultural imprinting, and how do they differ from Western centric models of higher education leadership?
RQ4. What strategic implications does cultural imprinting have for higher education leadership in relation to internationalization, digital transformation, and graduate reputation?
RQ5. What theoretical gaps and practical opportunities can be identified from the existing literature, and how can these inform the development of a *Cultural Imprinting Leadership Model* for higher education?

2. Literature Review

This study integrates three strands of scholarship: imprinting theory, cross-cultural leadership theories, and strategic leadership in higher education. Imprinting theory explains how early cultural environments shape enduring values and behavioral orientations (Marquis & Tilcsik, 2013). Cross-cultural leadership theories demonstrate how cultural contexts influence leadership styles, authority relations, and organizational practices (Hofstede, 2011; House et al., 2004). Strategic leadership literature highlights the role of leaders in shaping institutional direction, internationalization strategies, and graduate outcomes (Jones et al., 2021; Jing et al., 2025).

Leadership in higher education has been examined through various theoretical lenses, most notably transformational

leadership (Bass & Riggio, 2006), servant leadership (Greenleaf, 1977), and distributed leadership (Bolden, 2011). These models emphasize inspiration, service, and shared responsibility, and have been widely adopted in studies across universities worldwide. However, they are often rooted in Western-centric paradigms**,** assuming leadership is culturally neutral and transferable across contexts. Recent scholarship has challenged this assumption, highlighting that leadership practice is deeply embedded in socio-cultural environments (Macfarlane, 2024; Zander et al., 2020).

To address this gap, the present study draws on *imprinting theory* (Stinchcombe, 1965; Marquis & Tilcsik, 2013), which argues that individuals and organizations carry lasting marks from their early environments that continue to shape behaviors and strategies over time. In the context of leadership, cultural imprinting refers to the values, norms, and worldviews internalized during childhood that influence leadership orientations in adulthood. These imprints, such as collectivism, respect for hierarchy, or communal responsibility, affect how leaders make decisions, build relationships, and adopt strategies in higher education institutions.

2.1 Cultural Imprinting and Leadership Orientation

The literature consistently demonstrates that values internalized during early socialization significantly influence leadership orientations in higher education. Cultural imprints such as collectivism, respect for hierarchy, religiosity, and communal responsibility shape leaders' decision-making styles, relational behaviors, and authority usage (Marquis & Tilcsik, 2013; Kitt et al., 2024). Leaders from collectivist contexts tend to prioritize consensus-building, relational trust, and harmony, whereas leaders from individualistic contexts emphasize autonomy and performance-driven outcomes (Zander et al., 2020) continue to influence leadership orientations well into adulthood.

For instance, leaders who grew up in collectivist cultural contexts often demonstrate a preference for consensus-building and relational trust as the foundation of strategic choices (Zander, Mockaitis, & Butler, 2020; Kitt, Sender, Reiche, & Harzing, 2024). Such orientations are markedly different from the more individualistic and autonomy-driven leadership styles common in Western higher education systems.

2.2 Contextual Divergence Between Western and Emerging-Country Leadership

A second thematic domain highlights systematic differences between Western-centric leadership models and leadership practices in emerging countries. Western frameworks often emphasize individual agency, distributed leadership, and innovation-driven change (Bolden, 2011), whereas emerging-country contexts reflect hierarchical governance structures, relational legitimacy, and culturally embedded authority structures (Mynbayeva et al., 2024; Macfarlane et al., 2024). These contextual divergences challenge the universal applicability of dominant leadership theories.

In Kazakhstan, for example, leadership styles remain closely tied to hierarchical traditions, emphasizing authority, respect, and institutional stability (Mynbayeva et al., 2024). Similarly, Macfarlane (2024) argues that leadership in Asian higher education must be understood not only in terms of managerial functions but also through cultural frames that prioritize legitimacy and collective responsibility. These insights demonstrate that the transplantation of Western-centric models such as transformational or distributed leadership does not fully capture the cultural logics at play in emerging countries.

2.3 Strategic Leadership Implications of Cultural Imprinting

The literature further indicates that cultural imprinting shapes strategic leadership choices in higher education. Leaders influenced by collectivist and hierarchical cultural values prioritize long-term partnerships, institutional stability, and relational governance in internationalization strategies (Jones et al., 2021; de Wit & Jones, 2022). Cultural imprinting also influences digital transformation leadership, where relational negotiation and collective adaptation are emphasized over rapid technological disruption (Jing et al., 2025). These findings suggest that cultural imprinting mediates strategic leadership adoption in global outreach, digital initiatives, and graduate reputation building.

2.4 Theoretical Framework

The framework for this study integrates three core theoretical pillars:

1. *Imprinting Theory* : Imprinting theory explains how early cultural environments shape enduring values and behavioral orientations (Marquis & Tilcsik, 2013)
2. *Cross-Cultural Leadership Theories*: Cross-cultural leadership theories demonstrate how cultural contexts influence leadership styles, authority relations, and organizational practices (Hofstede, 2011; House et al., 2004).
3. *Strategic Leadership in Higher Education* : Strategic leadership literature highlights the role of leaders in shaping institutional direction, internationalization strategies, and graduate outcomes (Jones et al., 2021; Jing et al., 2025).

By synthesizing these perspectives, this research proposes the Cultural Imprinting Leadership Model, which links cultural imprinting with leadership orientations (decision-making, relational style, authority use) and strategic choices in higher education. The model assumes that while global pressures, such as internationalization and digitalization, push universities toward convergence, the strategies chosen by leaders remain strongly influenced by their cultural roots.

Thus, the theoretical framework positions cultural imprinting as a missing link between leadership theory and practice in higher education. It extends existing leadership models by embedding them in socio-cultural contexts, thereby offering a more nuanced understanding of how leaders in emerging countries navigate the intersection of local traditions and global expectations.

The theoretical framework guiding this study is illustrated in Figure 2. It integrates three major strands of scholarship: Imprinting Theory**,** Cross-Cultural Leadership Theories, and Strategic Leadership in Higher Education. Together, these perspectives provide the foundation for understanding how cultural imprinting shapes leadership orientations and, ultimately, strategic leadership adoption in universities.

Imprinting Theory (Stinchcombe, 1965; Marquis & Tilcsik, 2013) explains that individuals carry enduring marks from their early environments, which continue to shape their orientations and behaviors throughout life. In this study, imprinting is conceptualized as the internalization of cultural values during childhood, such as respect for hierarchy, communal responsibility, and collectivism. These values form the foundation of what is referred to here as *cultural imprinting*.

Cross-Cultural Leadership research (Hofstede, 2011; House et al., 2004) further demonstrates that leadership practices are strongly influenced by cultural contexts. Leadership is not enacted in a vacuum; rather, it reflects societal norms regarding power, authority, and social relations. By linking imprinting with cross-cultural leadership theory, this framework highlights how cultural values internalized early in life shape leaders' approaches to decision-making, relational styles, and authority use.

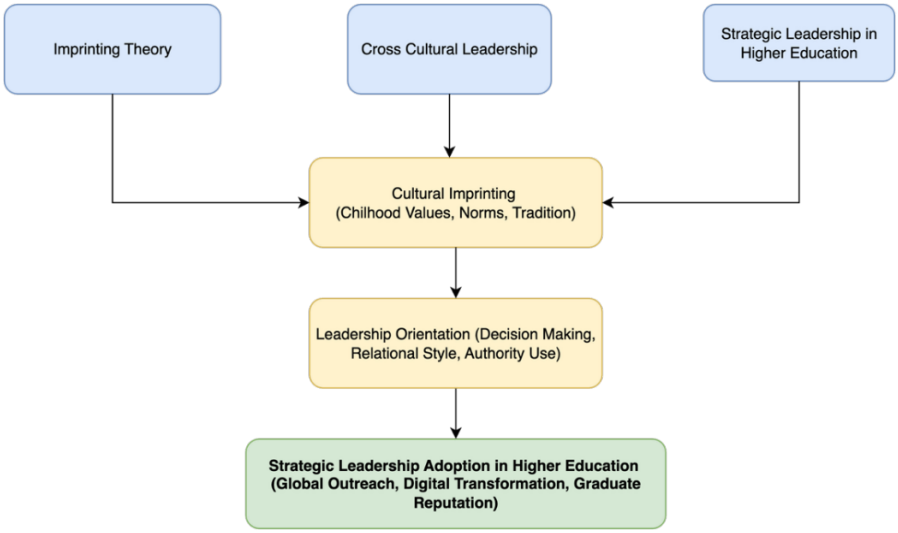
Strategic Leadership in Higher Education (Jones et al., 2021; Jing et al., 2025) emphasizes the role of university

leaders in navigating global pressures such as internationalization, digital transformation, and the pursuit of graduate reputation. These challenges require leaders to mobilize resources, build international collaborations, and balance global competitiveness with local cultural legitimacy.

At the center of this framework lies *Cultural Imprinting*, which acts as the connecting bridge between theory and practice. Childhood values and traditions inform Leadership Orientation, influencing how leaders think, decide, and interact. This orientation then shapes the way leaders in higher education institutions adopt strategies related to global outreach, digital initiatives, and graduate employability.

In summary, the theoretical framework positions cultural imprinting as a missing link in existing leadership theories. It extends conventional models by embedding them within socio-cultural realities, offering a more nuanced explanation of why leadership in emerging countries often diverges from Western-centric paradigms. This model provides both a theoretical foundation and a practical guide for examining leadership strategies in higher education that are culturally grounded yet globally responsive.

Figure 2. Theoritical Frameworks



3. Research Methodology

This study adopts a systematic literature review (SLR) design following PRISMA guidelines (Petticrew & Roberts, 2006; Xiao & Watson, 2019). Although scoping principles informed the initial mapping of the literature, the review follows systematic procedures to ensure transparency, replicability, and analytical rigor. The methodology used in this SLR is as follows:

1) Formulation of Research Questions

   The first step was to formulate guiding research questions, focusing on how cultural imprinting influences leadership in higher education, particularly in the context of emerging countries. The review also explored which leadership frameworks have been applied, how cultural values are embedded in leadership strategies, and what gaps remain in the literature.

2) Identification of Relevant Studies

   Studies were included if they were peer-reviewed journal articles published in English, focused on higher education leadership, and examined cultural, social, or imprinting-related dimensions.

   The search strategy combined Boolean operators and keywords:

   1) (“higher education leadership” OR “academic leadership” OR “university

leadership")
AND
2) ("cultural imprinting" OR "childhood values" OR "cultural roots" OR "socio-cultural background") AND
3) ("strategic leadership" OR "internationalization" OR "graduate reputation" OR "global outreach").

The review covered studies published between 2020 and 2025 to ensure the most recent and relevant evidence was captured.

3) Study Selection and Screening
The screening process followed a three-stage procedure; title screening, abstract screening, and full-text review. The PRISMA flow diagram was used to document the selection process and ensure transparency. After screening, a final set of studies was retained for thematic synthesis.

The inclusion criteria were as follows:
a) Peer-reviewed journal articles published in English.
b) Studies focusing on leadership in higher education.
c) Research addressing cultural, social, or imprinting factors related to leadership.

Exclusion criteria included non-peer-reviewed sources, publications prior to 2020, studies outside higher education contexts, and studies without cultural or strategic leadership relevance

4) Data Extraction
Data extracted included author(s), year, context, research design, theoretical framework, key findings, and implications for leadership and culture. A thematic synthesis approach was used to identify recurring patterns, conceptual themes, and emergent insights across the literature.

The extracted data were synthesized thematically to identify key trends and knowledge gaps. The review highlighted three major thematic clusters:
1) The role of cultural imprinting in shaping leadership orientation.
2) The contextual variations of leadership in emerging vs. Western settings.
3) Strategic implications for internationalization, digital transformation, and graduate reputation.

3.1 Inclusion and Exclusion Criteria

The search was conducted using Dimensions AI (www.dimensions.ai), an online scientific research platform that integrates content from multiple academic publishers such as Frontiers, Springer, and Taylor & Francis. To ensure the rigor and relevance of the systematic literature review, specific inclusion and exclusion criteria were applied (see Table 1).

Studies were included if they were peer-reviewed journal articles published between 2020 and 2025, written in English, and focused on leadership or management within the context of higher education. In particular, the review targeted studies that examined strategic leadership practices, cultural influences, and institutional strategies related to internationalization and the attraction of international students. Articles that provided theoretical, empirical, or review-based insights into the relationship between culture, leadership orientation, and higher education strategy were retained for further analysis.

By contrast, studies were excluded if they were outside the temporal scope (before 2020), not peer-reviewed (e.g., reports, dissertations, or opinion papers), or published in languages other than English. In addition, literature that focused solely on leadership in primary or secondary education, corporate organizations, or political institutions was excluded, as were studies that emphasized operational or administrative management without addressing cultural or strategic dimensions.

Table 1. Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Publication Type	Peer-reviewed journal articles, book chapters, and conference papers indexed in Scopus/Web of Science.	Grey literature (blogs, magazines, theses, reports without peer review).
Publication Years	2020 – 2025	Publications prior to 2020.
Language	English	Non-English publications.
Focus of Study	Leadership in higher education (university/college settings).	Leadership in primary/secondary education, corporate, or political domains.
Cultural Dimension	Studies addressing cultural imprinting, cultural values, socio-cultural background, or cross-cultural leadership.	Studies without discussion of culture or cultural influences.
Leadership Strategy	Research examining strategic leadership adoption (e.g., internationalization, digital transformation, graduate reputation).	Studies focusing solely on operational/administrative management without cultural or strategic perspective.

3.2 Systematic Search Protocol

The author applied restrictions in searching for journals on Dimensions.ai (www.dimensions.ai), limiting the period to the years 2020–2025, which initially resulted in 1,184 articles. To increase focus, the search was refined by limiting the results to source titles most relevant to leadership, cultural studies, and higher education management, which reduced the number to 276 articles.

From this pool, the researcher identified and selected 12 core journals with higher relevance and academic credibility in the field, including: *Frontiers in Education (Q2)*, *Frontiers in Psychology (Q1)*, *Higher Education (Q1)*, *Higher Education Research & Development (Q2)*, *Journal of Studies in International Education (Q1)*, *Journal of Higher Education Policy and Management (Q2)*, *Tertiary Education and Management (Q3)*, *Journal of Leadership in Education (Q2)*, *Oxford Review of Education (Q1)*, *Journal of Marketing for Higher Education (Q2)*, *International Journal of Educational Management (Q2)*, and *Education Sciences (Q2)*.

Narrowing the search to these journals resulted in 168 articles. The researcher then conducted a three-stage screening process:

1) Title screening (removing studies not related to leadership or higher education).
2) Abstract screening (eliminating studies without cultural or strategic dimensions).
3) Full-text review (assessing methodological rigor and relevance to cultural imprinting and leadership strategy).

After applying the inclusion and exclusion criteria (see Table 1), 128 articles were excluded for reasons such as focus on non-higher-education contexts, lack of cultural dimension, or methodological weaknesses. This process yielded 40 final articles that were judged relevant and of sufficient quality for synthesis.

Figure 1 presents the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram summarizing the search and screening process, conducted on 12th September 2025**.**

3.3 Quality Appraisal and Finding Extraction

According to Xiao and Watson (2019), scoping reviews are designed to map the breadth of available studies rather than to exclude research based on strict quality thresholds. In this sense, quality assessment is not always treated as a decisive inclusion criterion, but rather as a way for reviewers to acknowledge differences in rigor across studies. In contrast, the present review places particular emphasis on selecting empirical articles published in reputable journals, identified through a systematic search using Dimensions AI. After a series of in-depth content analyses, the pool of studies was progressively narrowed until only eight core articles remained. Each of these articles was carefully validated to

ensure both methodological soundness and relevance to the research objectives.

For the data extraction stage, all selected articles were first organized in Microsoft Excel using a customized template for metadata collection. At this point, general bibliographic details that were less relevant were replaced with a structured set of key research aspects. These included publication year, author(s), article title, abstract, journal outlet, research context, central themes, theoretical framework, research questions or assumptions, methodological approach, key findings, and recommendations for future research. Each article was systematically coded according to these categories, allowing for thematic synthesis across the dataset. The results of this coding and synthesis process are presented in the following section.

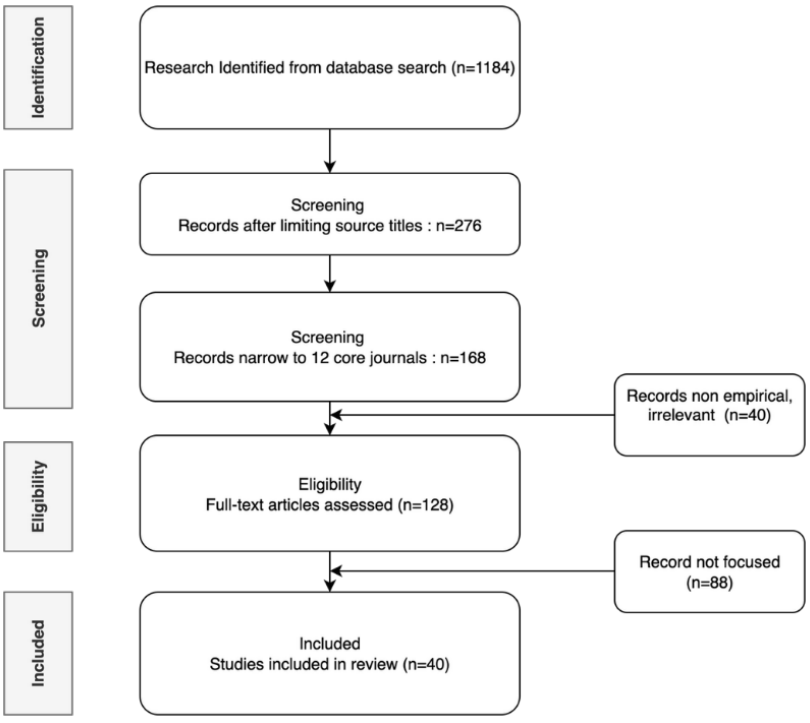
4. Result and Discussion

This section provides an overview of the analysis and results. To establish a foundation for the discussion, Table 2 summarizes the set of eligible articles identified through the systematic search. The table presents essential bibliographic information, such as the year of publication, author(s), and article title together with the corresponding research questions. This overview not only clarifies the scope of the reviewed studies but also highlights the thematic focus that guided the subsequent synthesis and interpretation.

The PRISMA flow diagram in Figure 1 illustrates the systematic process undertaken for this review. The initial search on Dimensions.ai yielded 1,184 records. After refining the results by limiting them to relevant source titles, the number was reduced to 276. To further ensure relevance and quality, the search was then focused on 12 core journals in the fields of education, leadership, and management, narrowing the pool to 168 articles.

From there, a three-stage screening process covering titles, abstracts, and full-text reviews was conducted. During this stage, 128 articles were excluded because they did not meet the established inclusion criteria, such as a lack of cultural or strategic dimensions or insufficient methodological rigor. Ultimately, 40 studies were deemed eligible and included in the final synthesis.

Figure 1. PRISMA Flowchart of SLR



Source: Petticrew and Roberts (2006)

Data Extraction Table

Table 2. Result of the SLR

No	Year	Author	Title	Research Questions/Assumption	Research Theme	Theoretical Anchor
1	2021	Jones, E.; Leask, B.; Brandenburg, U.; de Wit, H.	Global social responsibility and the internationalisation of higher education for society	How should internationalisation advance social responsibility beyond mobility metrics?	Internationalisation; Strategy; Society	Internationalisation of HE; University social responsibility
2	2022	de Wit, H.; Jones, E.	A new view of internationalization: From a Western, competitive paradigm to a global cooperative strategy	What paradigm shift is needed from competitive to cooperative internationalisation?	Policy shift; Cooperation; Global strategy	Critical/ transformative internationalisation
3	2024	Macfarlane, B.	Three perspectives on leadership in higher education	How do traditionalist, reformist, pragmatist lenses frame HE leadership?	Leadership perspectives; Conceptual analysis	HE leadership theory
4	2024	Mynbayeva, A.; et al.	Examining leadership styles in higher education management in Kazakhstan	What leadership styles prevail in Kazakhstan's HE and why?	Cross-cultural leadership; Emerging context	Cross-cultural leadership; Contextualism
5	2025	Jing, M.; Wang, H.; Zhang, X.	Higher education digital academic leadership: Perceptions and practices from Chinese university leaders	How do leaders perceive/enact digital academic leadership (DAL)?	Digital transformation; Leadership practice	UTAUT; Digital leadership
6	2025	Kezar, A.; Hallett, R. E.; Corwin, Z. B.	Moving toward institutional culture change in higher education: Cross-functional PLCs	How do PLCs enable culture change across units?	Institutional culture; Change leadership	Organisational change; PLCs
7	2024	Kitt, A.; Sender, A.; Reiche, B. S.; Harzing, A.-W.	Imprinting in HR process research: A systematic review and research agenda	How has imprinting been studied in HR and what gaps exist?	Imprinting; HR processes; Review	Imprinting theory
8	2020	Zander, L.; Mockaitis, A. I.; Butler, C. L.	Interpersonal leadership across cultures	How do cultural contexts shape interpersonal leadership?	Cross-cultural leadership; Interpersonal	Cross-cultural leadership theory
9	2025	Riza, M. F.; et al.	Fostering high-performing organizations in higher education: Participative leadership, culture, and innovation	Do participative leadership and culture predict performance/commitment?	Participative leadership; Innovation; Performance	Leadership: performance linkage
10	2023	Caingcoy, M. E.	Culturally responsive leadership in higher education milieu: A scoping review	What is the state and direction of culturally responsive leadership in HE?	Culturally responsive leadership; Review	Culturally responsive leadership
11	2024	Le Fevre, D. M.	Navigating senior leadership in higher education	What helps/hinders senior leaders (incl. gendered/cultural factors)?	Senior leadership; Identity; Barriers	Leadership identity; Gender/culture lenses
12	2023	Carvalho, T.	Digital transformation, state HEI performance and leadership style	How do cybernetic/shared leadership interact with DT to affect performance?	Digital transformation; Performance	Shared/cybernetic leadership

13	2023	Maheshwari, G.	A bibliometric analysis of leadership styles in higher education	What leadership styles dominate HE and with what impacts?	Bibliometrics; Leadership styles	Multi-theory mapping of styles
14	2024	Etomes, S. E.	Transformational leadership for sustainable productivity in HEIs (Cameroon)	Can transformational leadership drive sustainable productivity in HEIs?	Transformational leadership; Sustainability	Transformational leadership theory
15	2024	Ellis, R. A.	The education leadership challenges for universities in a postdigital/GAI era	How should executive leaders respond to rapid GAI-driven disruption?	Postdigital leadership; AI strategy	Postdigital theory; Change leadership
16	2023	Liu, W.	The international comparative approach to HE leadership development (China)	What impacts do leadership development programs have on Chinese HE leaders?	Leadership development; International comparison	Adult learning; Leadership development
17	2024	Katsumoto, S.	Internationalizing international students' experiences: Curriculum, campus, and mobility	How do on-campus vs. study-abroad curricula shape outcomes?	Internationalisation; Student experience	Internationalisation of Curriculum (IoC)
18	2024	Grecic, D.	The Epistemological Chain: An agenda for guiding transnational education interactions	Can the EC framework improve transnational education design?	Transnational education; Curriculum; Strategy	Epistemological Chain framework
19	2024	Şahin, N.; Bilir, F. P.	The effect of transformational leadership and personal cultural values on creating a learning organization	Do leaders' cultural values amplify TL effects on learning org outcomes?	Cultural values; TL; Learning org	Transformational leadership; Cultural values
20	2024	Lizier, A.	Middle leaders in higher education: the role of social networks and contexts	How do social networks/context shape middle leadership practice?	Middle leadership; Networks	Social capital; Contextual leadership
21	2024	Caliskan, O.; et al.	Science Mapping the Knowledge Base (1929–2022) on Internationalisation of HE	What are the thematic clusters and trends in IHE research?	Internationalisation; Science mapping	Bibliometric mapping; IHE scholarship
22	2024	Grogan, M. (Ed.)	Insights in leadership in education: 2022 (Editorial collection)	What post-pandemic issues shape educational leadership research?	Educational leadership; post-pandemic	Editorial synthesis; Leadership discourse
23	2022	Kasalak, G.; et al.	The relation between leadership styles in HEIs and academic staff job satisfaction: A meta-analysis	How do leadership styles correlate with job satisfaction in HEIs?	Meta-analysis; Leadership styles; Satisfaction	Meta-analytic leadership model
24	2022	Schiffecker, S.; et al.	Leading the way – Understanding women's university presidents' crisis leadership (COVID-19)	How did women university presidents enact crisis leadership?	Crisis leadership; Gender; HE	Feminist Educational Leadership (FEL)
25	2022	Elo, J.	Theorising pedagogical dimensions of higher education leadership	How should HE leadership be theorised vis-à-vis pedagogy and society?	HE leadership theory; Pedagogy	Pedagogical leadership; Multilevel analysis
26	2021	Agostinelli, A. V.; et al.	Culturally Engaging Campus for International Students: A multiple case study	How culturally engaging is a US campus for international students?	Campus culture; International students	Culturally Engaging Campus Environments (CECE)

27	2021	Alharbi, E.; et al.	Academic satisfaction of international students at Irish universities	What factors shape international students' academic satisfaction?	Internationalisation; Student outcomes	Student engagement; Satisfaction models
28	2024	Vargas, J. H.	Eradicating dominant ideologies in higher education	How can leadership challenge dominant ideologies in HE?	Leadership and ideology; Change	Critical leadership; Cultural mismatch
29	2025	Köpsell, S.; et al.	Digitalization attempts in higher education: the role of leadership and governance	How do leadership/governance configurations shape digitalisation outcomes?	Digitalisation; Governance; Leadership	Change leadership; Socio-technical systems
30	2025	Tesfaye, D.; et al.	Exploring multifaceted leadership concepts in public universities in Ethiopia	What leadership concepts operate in Ethiopian public HEIs?	Leadership concepts; Emerging context	Contextual leadership
31	2022	Boche, L.	Giving a lot of ourselves: Mother leaders in higher education during COVID-19	How does motherhood intersect with HE leadership in crisis?	Identity; Crisis leadership; Gender	Feminist leadership; Identity work
32	2024	Kufaine, N.	Leadership Framework for Internationalisation of Higher Education	What leadership framework supports HE internationalisation?	Internationalisation leadership; Framework	Strategic leadership; Internationalisation
33	2022	Knight, J.; de Wit, H.	Internationalization of higher education: Looking back and looking ahead	What are the evolving meanings and practices of IHE?	Internationalisation; Strategy	IHE frameworks; Policy analysis
34	2024	Whittaker, J. A.	Advancing a cultural change agenda in higher education	How can leaders enact cultural change agendas in HE?	Culture change; Leadership	Organisational culture change
35	2023	Nguyen, Q.; Tran, L.; Le, T.	Distributed leadership in higher education: A literature review	How is distributed leadership theorised/applied in HE?	Distributed leadership; Review	Distributed leadership theory
36	2023	Altbach, P. G.; de Wit, H.	Internationalization and geopolitics: Implications for HE leadership	How do geopolitical shifts reshape HE leadership strategies?	Internationalisation; Geopolitics	Global HE; Policy leadership
37	2024	Mok, K. H.; et al.	From response to resilience: Asian HE leadership after the pandemic	What leadership shifts occurred in Asian HE post-pandemic?	Resilience; Asian HE leadership	Resilience theory; Adaptive leadership
38	2021	Brandenburg, U.; et al.	The future of internationalisation in higher education for society (IHES)	How can IHES align with societal needs and leadership roles?	IHES; Strategy	Internationalisation for society (IHES)
39	2024	Leask, B.; Beelen, J.	Internationalisation of the curriculum: New directions for leaders	What are leaders' roles in IoC post-pandemic?	IoC; Leadership; Pedagogy	IoC framework; Curriculum leadership
40	2022	de Gayardon, A.; et al.	Reframing equity and inclusion through internationalisation leadership	How can internationalisation leadership advance equity/inclusion?	Equity; Inclusion; IHE leadership	Equity-oriented internationalisation

According to RQ1. How has cultural imprinting been conceptualized in higher education leadership? The literature conceptualizes cultural imprinting as the process through which individuals internalize cultural values, norms, and social expectations during early stages of life, which later shape cognitive frameworks and leadership behavior. Imprinting theory suggests that early

experiences leave enduring marks on individuals' decision-making patterns and organizational behavior (Marquis & Tilcsik, 2013). Within higher education leadership, cultural imprinting manifests through leaders' attitudes toward authority, collaboration, and institutional governance.

Several studies emphasize that leadership practices in universities are not purely managerial or technical but are deeply embedded in cultural contexts. Leaders bring with them culturally rooted assumptions about hierarchy, collectivism, and social responsibility that influence how they interpret institutional challenges and formulate strategies (Schein, 2010; Yukl, 2013). In this sense, cultural imprinting provides an explanatory framework for understanding why leadership practices in higher education vary across different cultural environments.

RQ2. In what ways do cultural values internalized from early childhood influence leadership orientations in higher education? The literature indicates that cultural values formed through early socialization significantly influence leadership orientations in several key dimensions. First, cultural imprinting shapes decision-making styles. Leaders socialized in collectivist societies tend to prioritize consensus-building and relational harmony, while those influenced by more individualistic contexts often emphasize autonomy and rapid decision-making (Hofstede, 2001).

Second, cultural imprinting influences relational leadership styles. In many emerging countries, leadership tends to emphasize trust-building, interpersonal relationships, and communal responsibility. These relational orientations often reflect broader societal norms that value social cohesion and collective well-being (House et al., 2004).

Third, cultural values affect how leaders exercise authority and hierarchy. In high power-distance cultures, leadership often relies on formal authority structures, whereas in lower power-distance contexts leaders may adopt more participatory and distributed governance models (Hofstede, 2001). These patterns demonstrate that leadership orientations in universities are not solely shaped by professional training but are also deeply influenced by culturally embedded cognitive frameworks developed early in life.

RQ3. How are leadership practices in emerging countries shaped by cultural imprinting, and how do they differ from Western-centric models of higher education leadership? Leadership practices in emerging countries often reflect culturally embedded governance approaches that differ from Western-centric leadership models. Western leadership frameworks typically emphasize managerial efficiency, performance metrics, and individual leadership agency. However, in many emerging contexts, leadership is shaped by broader socio-cultural considerations such as community relationships, collective identity, and social legitimacy.

University leaders in emerging countries frequently operate within institutional environments where cultural traditions and social expectations strongly influence decision making processes. As a result, leadership practices tend to emphasize relational governance, negotiation, and adaptive collaboration rather than purely managerial rationality (Altbach & Salmi, 2011).

This suggests that dominant Western leadership theories may not fully capture the complexities of leadership in universities within emerging regions. Cultural imprinting therefore offers a valuable lens for understanding leadership behaviors that are shaped by historically embedded cultural values.

RQ4. What strategic implications does cultural imprinting have for higher education leadership in relation to internationalization, digital transformation, and graduate reputation? Cultural imprinting has important strategic implications for how university leaders approach institutional transformation.

Leaders culturally embedded values influence how they interpret and implement strategic initiatives such as internationalization and digital transformation.

RQ5. What theoretical gaps and practical opportunities can be identified, and how can these inform the development of a Cultural Imprinting Leadership Model? For example, leaders influenced by collectivist cultural traditions may frame international partnerships as opportunities for collaborative knowledge exchange and national development rather than purely competitive positioning in global rankings. Similarly, digital transformation initiatives may be implemented through participatory processes that emphasize stakeholder engagement and institutional consensus.

In addition, cultural imprinting shapes leaders perspectives on graduate reputation and societal impact. Universities led by culturally grounded leadership often emphasize producing graduates who contribute to societal development and community welfare, reflecting broader cultural values regarding social responsibility (Altbach et al., 2009). Thus, strategic leadership in higher education cannot be separated from the cultural frameworks that guide leaders' interpretations of institutional goals.

4. Conclusion

This systematic literature review synthesizes recent scholarship on cultural imprinting and leadership in higher education, with a focus on emerging-country contexts. The findings demonstrate that cultural imprinting significantly shapes leadership orientations and strategic leadership practices (Kitt et al., 2024; Zander et al., 2020). By integrating imprinting theory, cross-cultural leadership theories, and strategic leadership frameworks, this study proposes the Cultural Imprinting Leadership Framework as an integrative conceptual model.

The study contributes theoretically by extending leadership theory through cultural imprinting, contextually by highlighting leadership dynamics in emerging countries, and practically by informing culturally grounded leadership development strategies (Jones et al., 2021).

While dominant frameworks such as transformational, servant, and distributed leadership provide useful insights (Bass & Riggio, 2006; Bolden, 2011), they often overlook the role of cultural roots in shaping leadership practice. The findings of this review show that in non-Western contexts, leadership is often driven by collectivist values, hierarchical traditions, and communal responsibility (Mynbayeva et al., 2024; Macfarlane, 2024). By integrating insights from imprinting theory, cross-cultural leadership studies, and higher education strategy, this study introduces the *Cultural Imprinting Leadership Model*, which offers a contextually relevant explanation of leadership in higher education.

The contributions of this review are threefold. Theoretically**,** it extends leadership theory by embedding cultural imprinting as a determinant of leadership orientations (Liden, Antonakis, & Day, 2022). Contextually, it enriches understanding of leadership in emerging-country universities, where leaders must balance global competitiveness with cultural legitimacy (de Wit & Jones, 2022). Practically**,** it offers guidance for policymakers and institutional leaders in designing leadership development programs that are both culturally grounded and globally responsive (Jing, Wang, & Zhang, 2025).

Although this review provides meaningful insights into the role of cultural imprinting in higher education leadership, it also highlights several areas that require further exploration. Future research should empirically test the proposed framework and explore cross-cultural and longitudinal leadership dynamics.

First, future studies should focus on the empirical validation of the proposed *Cultural Imprinting Leadership Model*.

Quantitative methods such as Structural Equation Modeling (SEM-PLS) or mixed-method approaches could help establish and test the causal pathways between cultural imprinting, leadership orientations, and strategic outcomes (Hair et al., 2021).

In addition, there is significant potential for comparative cross-country research. Studies contrasting Western and non-Western higher education institutions would provide a clearer picture of how cultural differences shape leadership orientations and strategic choices (Zander, Mockaitis, & Butler, 2020; Jones, Leask, Brandenburg, & de Wit, 2021).

Beyond cross-sectional comparisons, longitudinal research is needed to trace how cultural values embedded in childhood evolve across leaders' professional trajectories, and how these interact with changing institutional and global demands (Marquis & Tilcsik, 2013). Another promising avenue lies in adopting intersectional perspectives, examining how cultural imprinting intersects with gender, religion, or socioeconomic background in shaping leadership identity and practice (Estrada et al., 2024). Finally, greater attention should be devoted to policy and practiceoriented research. Specifically, studies should investigate how leadership development programs and higher education policies can integrate cultural imprinting insights, ensuring that leadership preparation is not only globally relevant but also locally resonant (Kezar, Hallett, & Corwin, 2025).

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