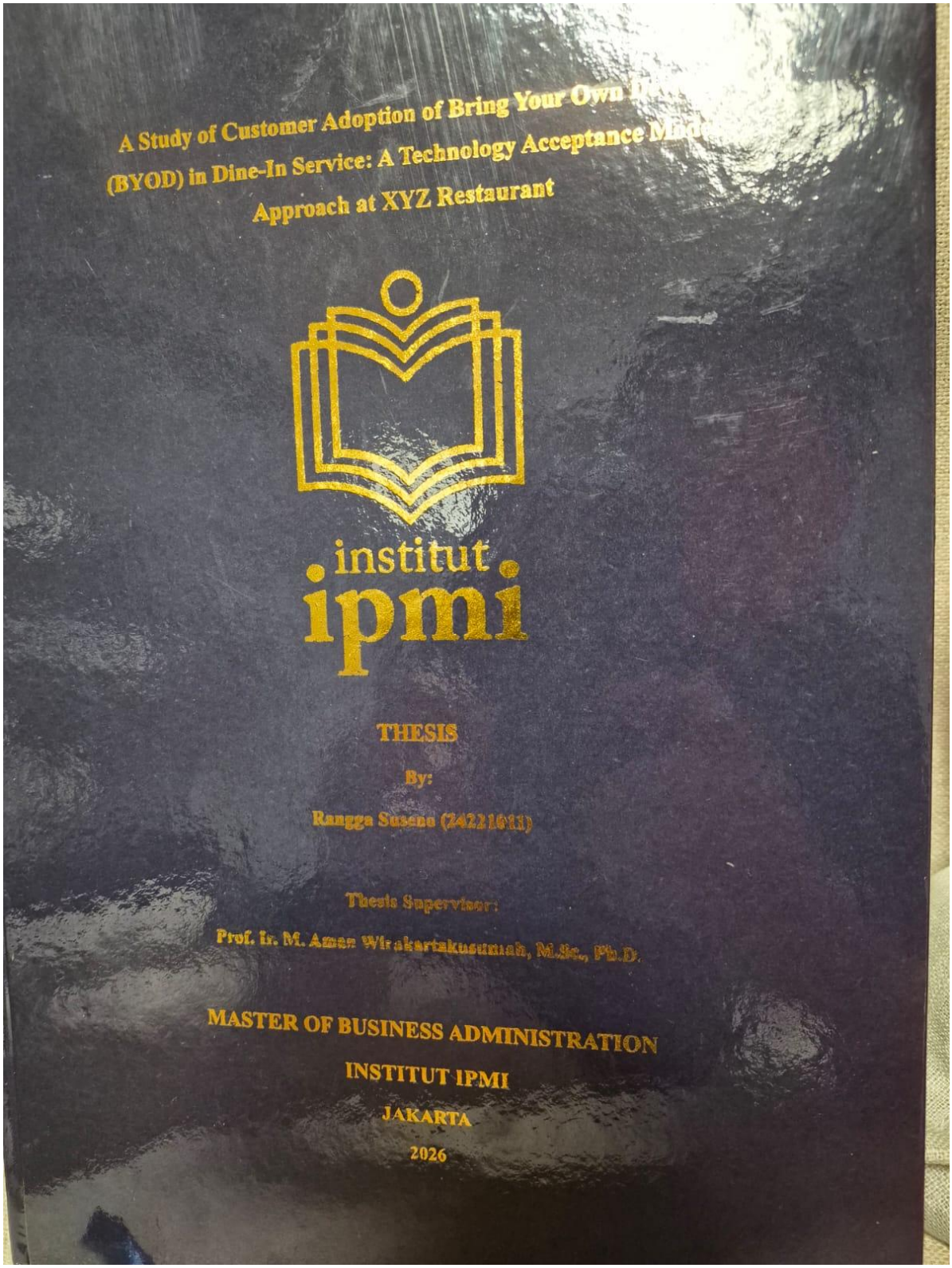
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Prepared by :

Rangga Suseno (24221011)

A THESIS

Submitted in partial fulfillment of the requirements for the degree of Master of Business Administration

CERTIFICATE OF APPROVAL

Name & Student ID : Rangga Suseno (24221011)

Topic : A Study of Customer Adoption of Bring Your Own Device (BYOD) in Dine-In Service: A Technology Acceptance Model Approach at XYZ Restaurant

We hereby declare that this Thesis is from the student's own work, has been read and presented to Institut IPMI Board of Examiners, and has been accepted as part of the requirements needed to obtain a Master of Business Administration Degree and has been found to be satisfactory.

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This Thesis is a presentation of my original research work. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature, and acknowledgment of collaborative research and discussions. Also, this work is being submitted in partial fulfillment of the requirements for the Master of Business Administration degree and has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Jakarta, August 3, 2026

Rangga Suseno

24221011

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LIST OF ABBREVIATIONS

Abbreviation	Meaning
AT	Attitude toward BYOD
AVE	Average Variance Extracted
BYOD	Bring Your Own Device
CMB	Common Method Bias
CRM	Customer Relationship Management
CR	Composite Reliability
DINESERV	Dining Service Quality Model
F&B	Food and Beverage
GDP	Gross Domestic Product
G*Power	Statistical Power Analysis Software
HTMT	Heterotrait–Monotrait Ratio
IPMA	Importance–Performance Map Analysis
IU	Intention to Repeat Use
PEOU	Perceived Ease of Use
PLS-SEM	Partial Least Squares Structural Equation Modeling
POS	Point of Sale
PU	Perceived Usefulness
Q^2	Predictive Relevance
QSR	Quick Service Restaurant
R^2	Coefficient of Determination
RATER	Reliability, Assurance, Tangibles, Empathy, and Responsiveness
SEM	Structural Equation Modeling
SPSS	Statistical Package for the Social Sciences

Abbreviation	Meaning
SST	Self-Service Technology
TAM	Technology Acceptance Model
UTAUT2	Unified Theory of Acceptance and Use of Technology 2
UI	User Interface
UX	User Experience
VIF	Variance Inflation Factor

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ABSTRACT

The rapid digitalization of the food and beverage (F&B) industry has accelerated adoption of self-service technologies to enhance operational efficiency and customer experience. One such innovation is Bring Your Own Device (BYOD), which enables customers to use their smartphones to place orders and complete payments during dine-in visits. Although BYOD offers operational advantages, including improved labor productivity and reduced service costs, its adoption at XYZ Restaurant declined from 33.7% in 2024 to 28.5% in 2025, indicating that successful implementation alone is insufficient to sustain customer usage. This study therefore investigates the factors influencing customers' Intention to Repeat Use BYOD based on the Technology Acceptance Model (TAM). A quantitative explanatory design was employed using survey data from 500 customers who had experience using the BYOD ordering system at XYZ Restaurant in Greater Jakarta. The proposed model was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), while Importance–Performance Map Analysis (IPMA) identified managerial priorities for improving adoption. Findings show that Perceived Ease of Use significantly enhances both Perceived Usefulness and Attitude toward BYOD. Perceived Usefulness also positively affects Attitude but does not directly influence Intention to Repeat Use; instead, its effect operates through Attitude, making Attitude the dominant predictor of continuance intention. These results suggest that sustained BYOD adoption depends not only on functional benefits but also on customers' willingness to embrace it as part of the dining experience. This study extends TAM by explaining continuance intention in an experiential restaurant context and complements PLS-SEM with IPMA to translate empirical findings into actionable managerial priorities, offering practical guidance for XYZ's management to strengthen customer acceptance and improve its digital ordering initiatives.

Keywords: *Bring Your Own Device (BYOD), Technology Acceptance Model (TAM), Perceived Ease of Use, Perceived Usefulness, Attitude, Intention to Repeat Use, PLS-SEM, IPMA, Digital Transformation.*

CHAPTER I

INTRODUCTION

1.1 Research Background

1.1.1 Industry Context

Strong domestic consumption and rapid urbanization have positioned Indonesia as the largest food and beverage (F&B) market in ASEAN. After experiencing a contraction during the COVID-19 pandemic in 2020, Indonesia's economy and foodservice sector demonstrated a clear recovery trajectory, with economic growth rebounding from –2.1% in 2020 to 3.7% in 2021 and stabilizing at around 5% in 2022–2024, as shown in Table 1, indicating a return to pre-pandemic growth levels. In 2024 alone, the foodservice industry grew by 18.5% and contributed an estimated value of about USD 31.2 billion to national GDP (Bank Indonesia, 2024), underscoring the structural importance of the F&B sector in Indonesia's domestic demand–driven economy.

Table 1. F&B Service Value ($ bn)

Year	2019	2020	2021	2022	2023	2024
GDP (US$ bn)	1,120	1,059	1,185	1,319	1,355	1,396
Economic Growth (%)	5.0%	-2.1%	3.7%	5.3%	5.1%	5.0%
Value of F&B (US$ bn)	24.5	22.7	23.3	23.3	26.3	31.2
Value of F&B Growth	12.4%	-7.7%	3.0%	-0.1%	12.9%	18.5%

Source: Bank Indonesia, 2024

This is also supported by the Survey of Food and Beverage Service Activities 2024 (VREST) conducted by Badan Pusat Statistik (BPS), which shows that the F&B sector remains one of the most dynamic and resilient components of the Indonesian economy. The sector continues to evolve in response to shifts in consumer behavior and its strategic role in supporting domestic consumption and the national tourism ecosystem.

In 2024, Indonesia's F&B industry sustained positive growth momentum, reinforcing investor confidence and industry optimism. This expansion has been

reflected in the significant increase in the number of F&B business establishments between 2023 and 2024. As shown in Table 2, the total number of F&B businesses rose from 4.85 million units in 2023 to 5.28 million units in 2024, representing a net increase of 422,680 establishments or 9% year-on-year growth.

Table 2. The Number of F&B Businesses in Indonesia

Number of F&B	2023	2024	Incr./ (Decr.)	%
Restaurant	1,201,714	2,511,128	1,309,414	109%
Catering	168,878	293,247	124,369	74%
Non-Permanent	706,660	724,597	17,937	3%
Others	2,777,059	1,748,019	(1,029,040)	-37%
Total	**4,854,311**	**5,276,991**	**422,680**	**9%**

Source: BPS.go.id, 2025

The restaurant segment emerged as the primary growth driver within the industry. The number of restaurant establishments more than doubled, rising from 1.20 million units in 2023 to 2.51 million in 2024, representing a 109% increase. This expansion significantly outpaced other F&B segments, including catering services (74% growth) and non-permanent food businesses (3% growth). The scale and pace of this growth signal both strong market entry and intensifying competition, thereby increasing the importance of operational efficiency and cost discipline for F&B players to maintain profitability.

1.1.2 Company Context

PT ABC is the official franchisee of XYZ, a U.S.-based international brand, in Indonesia, operating across both dine-in restaurant and delivery segments. As of December 2024, the company managed nearly 600 outlets across 36 provinces, positioning XYZ as one of the most extensive food and beverage networks in the country.

Despite the growth of Indonesia's F&B industry and XYZ restaurant's nationwide presence, PT ABC continued to face financial pressure in 2024. As shown in Table 3, the company recorded a net loss of IDR 72.8 billion, improving

from IDR 96.2 billion in 2023, yet remaining unprofitable. This performance was primarily driven by a decline in revenue from IDR 3.54 trillion in 2023 to IDR 2.80 trillion in 2024, reflecting weakening demand among middle-income consumers, who constitute XYZ's core customer base.

Table 3. PT ABC Profit & Loss 2023 and 2024

(in IDR Full) *%o.s: cost as percentage of revenue*

Profit & Loss PT ABC	2023	% o.s	2024	% o.s
Revenue	**3,543,982,915,761**		**2,798,983,342,354**	
COGS	(1,184,091,535,180)	-33.4%	(865,613,526,984)	-30.9%
Gross Profit	**2,359,891,380,581**	**66.6%**	**1,933,369,815,370**	**69.1%**
Operating Expenses				
Selling Expense	(2,190,662,223,176)	-61.8%	(1,833,201,684,294)	-65.5%
General & Adm.	(215,419,557,899)	-6.1%	(196,449,585,673)	-7.0%
Other Operating Income	22,157,928,862	0.6%	62,638,203,437	2.2%
Other Operating Expense	(16,149,712,319)	-0.5%	(10,765,396,867)	-0.4%
Loss from Operation	**(40,182,183,951)**	**-1.1%**	**(44,408,648,027)**	**-1.6%**
Interest Income	574,913,619	0.0%	461,444,389	0.0%
Interest & Finance Exp.	(59,302,744,666)	-1.7%	(53,769,383,046)	-1.9%
Loss Before Tax	**(98,910,014,998)**	**-2.8%**	**(97,716,586,684)**	**-3.5%**
Income Tax Benefit	2,685,187,715	0.1%	24,881,463,878	0.9%
Net Loss	**(96,224,827,283)**	**-2.7%**	**(72,835,122,806)**	**-2.6%**

Source: PT ABC Financial Statements, 2025

Although gross profit margin improved from 66.6% to 69.1% due to lower cost of goods sold, high operating expenses particularly selling expenses, which accounted for 65.5% of revenue continued to exert pressure on profitability. A significant component of selling expenses is personnel cost, which primarily comprises salary and benefits, training and recruitment, and uniform-related expenses. As shown in Table 4, total personnel cost decreased in absolute terms from IDR 720.8 billion in 2023 to IDR 591.3 billion in 2024. However, its proportion of total revenue increased from 20.3% to 21.1%, indicating reduced operating leverage amid declining sales.

Table 4. PT ABC Personnel Cost as percentage of Sales 2023 and 2024

(in IDR Full) *%o.s: cost as percentage of revenue*

Personnel Cost	2023	% o.s	2024	% o.s	Var
Salary & Benefit	714,837,968,548	*20.2%*	583,321,884,623	*20.8%*	*0.7%*
Training & Recruitment	5,183,540,646	*0.1%*	5,411,275,278	*0.2%*	*0.0%*
Uniform	819,107,244	*0.0%*	2,583,086,345	*0.1%*	*0.1%*
Total Personnel Cost	**720,840,616,438**	***20.3%***	**591,316,246,246**	***21.1%***	***0.8%***

Source: PT ABC Financial Statements, 2025

Salary and benefits remained the dominant element of personnel cost, accounting for approximately 20.8% of revenue in 2024. While training and recruitment expenses remained relatively stable, uniform-related costs increased marginally, reflecting ongoing operational requirements. Overall, the rising share of personnel cost within selling expenses underscores the labor-intensive nature of the business and highlights the importance of improving workforce productivity to mitigate margin pressure.

In response to rising personnel costs, PT ABC accelerated the adoption of digital solutions to improve labor productivity and cost efficiency. One key initiative is the implementation of self-service technology (SST) for ordering and payment, particularly Bring Your Own Device or BYOD. BYOD refers to a policy that allows users to utilize their personal devices to access organizational systems (Meuter et al., 2000; Venkatesh & Davis, 2000). In the restaurant context, BYOD refers to customers using their own smartphones to access QR-based ordering and payment services.

Operationally, the BYOD process at XYZ restaurant follows a structured and controlled flow. After being seated, customers scan a QR code displayed on the dining table, which connects their personal device to the restaurant's ordering system. Orders placed by customers are transmitted directly to the Point of Sale (POS) system in real time. When customers initiate an online payment request, the system automatically locks the order, preventing any further modifications through the POS. This lock mechanism ensures transaction integrity by eliminating discrepancies between ordered items and the final payment amount. Customers then complete payment through the application using available digital payment methods, such as credit cards or e-wallets. Once payment is completed, the transaction status

is automatically recorded and synchronized across the system, providing real-time confirmation for both the customer and the restaurant.

From the company's perspective, BYOD offers several strategic benefits. It helps improve labor cost efficiency, reduce operating expenses, and enhance the collection of customer data, while also enabling the company to obtain real-time feedback. From the customer's point of view, BYOD provides greater convenience and a smoother dining experience, while allowing access to personalized promotions and loyalty programs.

In Indonesia, BYOD applications are widely used across the F&B industry and are supported by various solution providers. As illustrated in Table 5, their adoption among major F&B brands indicates that BYOD is increasingly becoming an industry standard.

Table 5. Examples of F&B brands in Indonesia using BYOD

Platforms Used	BYOD for Ordering	BYOD for Payment	F&B Business/ Restaurant
iSeller	Yes	Yes	Janji Jiwa, Es Teler 77, RANS, Hop-Hop, Harlan + Horden, Hong Tang, Mama Roz, CRP, Dear Butter, Cut the Crab, Master FC, Sang Pisang, Charcago etc
DOKU	Yes	Yes	Tomoro Coffee
WisdomPOS	Yes	Yes	Kaiza Izakaya, Jaggi's Indian Eatery, Manor Thai, Zaytouna Lebanese, Hot Lips, Davidson Pizzeria, etc
BayarInd	Yes	Yes	Plataran, Yuloti, Gavji Ramen, Jinjja Daebak, etc
Runchise	Yes	Yes	Kafe Betawi, D'Cika Cakes, Sego Ndog, Flow House
Labamu	Yes	Yes	RM Khas Makassar, Parle Boga Nusantara, Tocoffee
Own Apps	Yes	Yes	Eatwell Culinary group, McDonald's, etc

Source: Author's compilation based on company/platform information, 2025.

Beyond its operational role, BYOD represents a broader organizational shift toward digital transformation within the restaurant industry. Digital transformation extends beyond the adoption of new technologies; it involves redesigning business processes, customer interactions, and organizational capabilities to create sustainable value. In restaurant operations, digital platforms increasingly function as strategic assets that integrate customer engagement, operational execution, and managerial decision-making. Consequently, the effectiveness of BYOD should not be evaluated solely through labor cost savings or technology deployment, but also through its ability to reshape customer experience and support long-term organizational competitiveness.

From a strategic management perspective, successful digital transformation depends on whether customers continuously embrace the technology as part of their service experience. Investments in digital infrastructure generate business value only when technological capabilities are translated into sustained customer usage and organizational performance. Therefore, understanding the determinants of customer acceptance is not merely an operational concern but a strategic imperative that enables restaurants to maximize returns on digital investments, strengthen customer relationships, improve operational efficiency, and establish sustainable competitive advantage. In this context, customer adoption of BYOD serves as a critical mechanism linking digital transformation initiatives with superior business performance.

1.2 Research Gap

To highlight the relevance of this study, Table 6 summarizes key prior research in this area. The comparison indicates that existing studies have largely focused on self-service technology (SST), BYOD implementation, and customer acceptance mechanisms.

Table 6: Research Gap

No.	Author & Year	Research Title	Variables	Method	Key Findings / Implications
1	Iqbal et al. (2018)	Impact of SST service quality on loyalty and behavioral intention	- SST Service Quality - Customer Satisfaction - Loyalty - Behavioral Intention	SEM (n = 238)	SST service quality significantly influences satisfaction, loyalty, and behavioral intention, with satisfaction acting as a mediator.
2	Djajanto et al. (2014)	Effect of SST, service quality, and relationship marketing on satisfaction and loyalty	- SST - Service Quality - Relationship Marketing - Satisfaction - Loyalty	PLS-SEM (n = 201)	SST significantly affects satisfaction but does not directly influence loyalty; satisfaction becomes a key mediator.
3	Shukla & Sharma (2018)	Adoption of mobile technology using TAM in grocery shopping	- Perceived Usefulness (PU) - Perceived Ease of Use (PEOU) - Attitude - Adoption	PLS-SEM (n = 346)	TAM variables significantly explain adoption; however, adoption in specific contexts (e.g., grocery) remains limited, indicating contextual gaps.
4	Elargo et al. (2017)	Design of BYOD food ordering system in restaurant context	- BYOD System Design - Operational Efficiency - Customer Convenience	Conceptual / System Design	BYOD improves efficiency and customer convenience, but lacks empirical validation on customer acceptance and behavioral intention.
5	Abezie (2019)	Service quality and customer satisfaction in restaurant (DINESERV)	- Service Quality (DINESERV) - Customer Satisfaction	Quantitative (survey)	Service quality strongly influences satisfaction; however, study focuses on human service interaction, not technology-mediated service.

(Source: Author)

Existing studies have established that Self-Service Technology (SST) improves operational efficiency (Djajanto et al., 2014; Elargo et al., 2017), while the Technology Acceptance Model (TAM) explains technology adoption through users' perceptions of usefulness and ease of use (Shukla & Sharma, 2018), and DINESERV highlights the importance of service quality in shaping customer experiences (Iqbal et al., 2018; Abezie, 2019). However, these studies primarily focus on the factors influencing initial technology acceptance and pay limited attention to why digitally enabled services that are operationally successful often fail to sustain customer adoption over time. This gap is evident in the case of BYOD at XYZ Restaurant, where operational improvements were accompanied by declining customer usage. Therefore, this study extends the existing literature by examining customer acceptance as the critical link between digital transformation initiatives and their long-term organizational value, explaining how customers'

cognitive evaluations influence their continued intention to repeat use BYOD in dine-in restaurant settings.

1.3 Problem Identification

XYZ Restaurant has implemented BYOD ordering since June 2022 as a strategic response to rising labor costs, increasing operational complexity, and the need to improve efficiency in dine-in operations. Internal performance data indicate that BYOD has delivered measurable labor cost efficiencies, particularly in part-time worker expenses, as reflected by a lower labor cost–to–sales ratio during periods when BYOD's contribution to total dine-in sales is higher. This suggests that greater customer adoption and consistent repeat usage of BYOD directly enhances workforce efficiency.

However, despite these operational benefits, as illustrated in Table 7, BYOD adoption in 2025 declined compared to 2024 (from 33.7% to 28.5%), accompanied by deterioration in worker cost efficiency as Part Time Workers cost-to-revenue increase from 3.7% to 4.5%. This trend indicates that the effectiveness of BYOD is not determined solely by system deployment but critically depends on customer acceptance and continued usage.

Table 7. The Correlation Between BYOD Adoption and PT Worker Efficiency

Year	BYOD Contribution to Dine-in Revenue	% Part Time Workers Cost to Revenue
2022	8.5%	4.9%
2023	17.8%	4.6%
2024	33.7%	3.7%
2025	28.5%	4.5%

Source: Internal Data PT ABC, 2025

BYOD fundamentally transforms the ordering process by shifting customer interaction from staff-assisted service to direct engagement with a digital interface. In dine-in settings, customers' intention to adopt and continue using BYOD is largely influenced by their attitude toward it. This attitude, in turn, is shaped by customers' perceptions of the ease of use and usefulness of the technology.

Accordingly, this study examines these relationships by providing empirical evidence on how perceived ease of use and perceived usefulness influence customer attitude, which in turn drives intention to adopt and continue using BYOD. In doing

so, it aims to generate actionable insights for XYZ Restaurant and other F&B operators seeking to drive customer adoption and sustained usage of BYOD, both of which are essential to achieving labor efficiency while minimizing customer friction.

1.4 Research Questions

This study addresses the following research questions in accordance with the mentioned research problems:

1. How does perceived ease of use of BYOD affect perceived usefulness in dine-in services at XYZ?
2. How does perceived ease of use of BYOD affect customers' attitude toward BYOD in dine-in services at XYZ?
3. How does perceived usefulness of BYOD affect customers' attitude toward BYOD in dine-in services at XYZ?
4. How does customers' attitude toward BYOD affect their intention to repeat use BYOD in dine-in services at XYZ?
5. How does perceived usefulness of BYOD affect customers' intention to repeat use BYOD in dine-in services at XYZ?

1.5 Research Objectives

This research seeks to accomplish the following objectives based on the highlighted issues:

1. To analyze the effect of perceived ease of use of BYOD on perceived usefulness in dine-in service at XYZ.
2. To analyze the effect of perceived ease of use of BYOD on customers' attitude toward BYOD in dine-in service at XYZ.
3. To analyze the effect of perceived usefulness of BYOD on customers' attitude toward BYOD in dine-in service at XYZ.
4. To analyze the effect of customers' attitude toward BYOD on their intention to repeat use BYOD in dine-in service at XYZ.
5. To analyze the effect of Perceived Usefulness of BYOD on customers' intention to repeat use BYOD in dine-in service at XYZ.

Overall, this research aims to explain customer adoption of BYOD ordering in dine-in restaurant settings at XYZ by examining how perceived ease of use and perceived usefulness shape customers' attitude toward BYOD and their intention to repeat use BYOD continuously.

1.6 Research Scope

This study adopts a quantitative explanatory research design, employing a survey method to collect data from Indonesian customers who have experience using BYOD ordering in dine-in restaurant settings. The research focuses on customers of XYZ Restaurant located in the Greater Jakarta area (Jabodetabek), representing one of the key urban markets with high digital adoption.

The target respondents consist of adult customers aged 18 years and above who have used or attempted to use BYOD ordering during their dine-in visit. To ensure data relevance and accuracy, the target respondents were selected from the company's customer data to confirm their prior experience with BYOD.

Data are collected over a defined period through structured online questionnaires. This approach ensures that respondents are active smartphone users who are capable of evaluating key constructs such as Perceived Ease of Use and Perceived Usefulness of BYOD ordering systems.

1.7 Research Benefits

This study is expected to generate both theoretical and practical benefits by strengthening academic understanding of digital self-service adoption in dine-in restaurants and providing actionable, evidence-based insights to support managerial and Board-level decision-making in the foodservice industry.

1.7.1 Theoretical Benefits

From a theoretical perspective, this study contributes to digital service management and technology acceptance literature by positioning BYOD dine-in ordering as a system-mediated service encounter. While prior studies have examined technology acceptance and restaurant service quality as separate domains, this study extends existing self-service technology research by examining

customers' comparative perception of BYOD relative to human-assisted ordering, capturing both complementary (AT1) and substitutive (AT2) framings within the Attitude construct, which are descriptively profiled in Chapter IV. By examining perceived ease of use and perceived usefulness as the key cognitive mechanisms shaping customer attitude, the study enriches understanding of how digital self-service technologies affect customer acceptance and behavioral intention in experience-oriented restaurant environments.

1.7.2 Practical Benefits

From a practical perspective, this study provides valuable insights for the management and Board of Directors of XYZ, operated by PT ABC, in evaluating and refining the implementation of BYOD ordering in dine-in restaurants. The findings help identify which aspects of BYOD most strongly drive customer acceptance and intention to repeat use, and which system characteristics may hinder broader adoption among dine-in customers.

The results support managerial decision-making by clarifying how digital self-service can be designed to achieve efficiency objectives without compromising customer experience. Specifically, the study offers guidance on prioritizing improvements in system responsiveness, usability, reliability, and security, as well as aligning staff roles to complement rather than conflict with BYOD usage.

1.8 Research Structure

The overall structure of this thesis is systematically designed to guide the reader from problem identification and theoretical grounding to empirical analysis and managerial recommendations. This thesis consists of five main chapters, outlined as follows:

Chapter I: Introduction

Presents the research background (industry and company context), research gap, problem identification, research questions, objectives, scope, and significance, providing the rationale for examining BYOD adoption.

Chapter II: Literature Review

This chapter reviews relevant theories and prior empirical studies related to the Technology Acceptance Model (TAM), self-service technology, and system-based service quality (RATER–DINESERV). It synthesizes these perspectives to develop a conceptual research framework and formulates the research hypotheses that guide the empirical analysis. The chapter concludes by establishing the theoretical rationale for extending PLS-SEM with Importance–Performance Map Analysis (IPMA) as a bridge between predictive and practical value.

Chapter III: Research Methodology

This chapter describes the research design, data sources, population and sampling techniques, data collection procedures, and measurement of variables. The study employs a quantitative approach using Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the proposed hypotheses, complemented by Importance–Performance Map Analysis (IPMA) to translate statistical findings into actionable managerial priorities.

Chapter IV: Results and Discussion

This chapter presents the results of the data analysis, including evaluation of the measurement model, testing of the structural model, and Importance–Performance Map Analysis (IPMA) to identify managerial priority areas. The findings are discussed in relation to the proposed hypotheses, theoretical framework, and prior studies, highlighting key insights on BYOD acceptance and intention to repeat use in dine-in contexts.

Chapter V: Conclusions and Recommendations

This chapter summarizes the main findings and draws conclusions based on the research objectives. It discusses theoretical contributions and practical implications for XYZ, outlines study limitations, and provides recommendations for managerial practice and directions for future research related to digital self-service adoption in restaurants.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction

This chapter establishes the theoretical and empirical foundation for examining customer adoption of Bring Your Own Device (BYOD) ordering in dine-in restaurant settings within a quantitative explanatory study framework. It develops a conceptual model that explains how customers evaluate digital self-ordering systems and how these evaluations influence their attitudes and behavioral intentions to use BYOD.

Digital self-service technologies (SST) are increasingly adopted in the food and beverage industry to improve operational efficiency, reduce labor dependency, and ensure service consistency. However, successful implementation depends not only on technological capability but also on customer acceptance. As BYOD shifts the service process from employee interaction to customer–system interaction, understanding the underlying psychological drivers becomes critical for explaining user behavior.

To address this, the chapter integrates insights from the Technology Acceptance Model (TAM) and service quality literature (DINESERV). Rather than treating DINESERV as a separate construct, it is used as a conceptual basis for deriving measurement indicators that reflect system-based service attributes embedded within TAM.

This chapter has four objectives. First, it provides theoretical grounding by reviewing key concepts in technology acceptance and digital service quality. Second, it synthesizes prior empirical studies on self-service technology and digital ordering in restaurant contexts to support the proposed model. Third, it develops the conceptual framework and research hypotheses that will be empirically tested in Chapter III. Fourth, it previews the rationale for extending PLS-SEM with Importance–Performance Map Analysis (IPMA) in Section 2.7, ensuring the model's practical relevance for XYZ Restaurant's management.

2.2 Self Service Technology (SST) and BYOD

Self-Service Technology (SST) refers to technological interfaces that enable customers to obtain services without direct involvement of service employees (Meuter et al., 2000). By replacing traditional human-delivered service encounters with customer–technology interactions, SST allows firms to enhance service efficiency, reduce labor dependency, and deliver more standardized service experiences.

In restaurant settings, Bring Your Own Device (BYOD) represents a specific form of SST in which customers use their personal mobile devices to perform service tasks such as ordering and payment. BYOD-based service systems allow customers to access digital platforms independently, thereby transforming customers into partial co-producers of the service process. Prior empirical studies indicate that SST-driven platforms improve operational efficiency, reduce waiting time, and enhance customer convenience, which collectively contribute to higher customer satisfaction and stronger behavioral intention to reuse the system (Meuter et al., 2000). These findings confirm that BYOD-driven SST platforms are not merely technological innovations but strategic operational tools that influence both customer experience and firm performance.

Consequently, SST and BYOD theories provide a strong foundation for examining digital ordering adoption in dine-in restaurant contexts, where customer acceptance determines whether operational benefits from digital transformation can be fully realized.

2.3 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Davis (1989), is one of the most widely adopted frameworks for explaining and predicting user acceptance of new technologies. TAM proposes that technology adoption is primarily driven by two cognitive beliefs: Perceived Usefulness (PU), defined as the extent to which users believe that a technology enhances their performance or outcomes, and Perceived Ease of Use (PEOU), which refers to the degree to which the technology is perceived as effortless to use. In service settings, a system that is intuitive, convenient, and easy to navigate is more likely to be perceived as useful,

thereby fostering a favorable Attitude (AT) and stronger behavioral intention to use the technology. Extending the original model, Venkatesh and Davis (2000) argue that technology acceptance is also shaped by contextual factors, such as users' experience and social influence, suggesting that acceptance evolves through the interaction between individual cognitive evaluations and the surrounding environment.

Accordingly, TAM provides a robust theoretical foundation for explaining customer adoption of BYOD in dine-in restaurants, where customers independently interact with digital ordering systems. Previous studies consistently show that customers are more likely to adopt and continue using self-service technologies when they perceive them as easy to use and beneficial to their dining experience (Meuter et al., 2000).

Consistent with the original TAM, this study adopts Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude (AT), and Intention to Repeat Use (IU) as the core constructs to explain customers' continued use of BYOD. In addition, external variables are treated as contextual antecedents that influence customers' perceptions of ease of use and usefulness rather than as independent constructs within the research model.

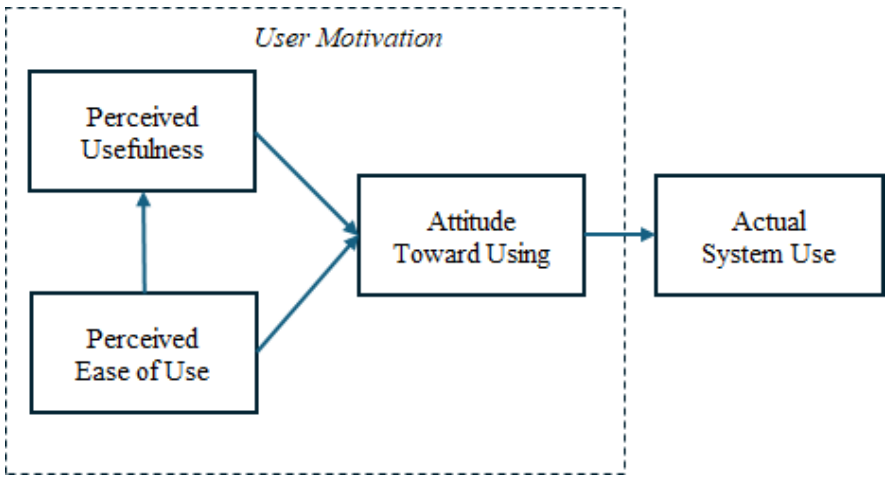

Figure 1. Technology Acceptance Model (TAM) Conceptual Model

Source: Davis (1989) and Venkatesh & Davis (2000).

2.4 DINESERV Framework: Service Quality Model

Service quality has long been recognized as a critical determinant of behavioral intention, customer satisfaction and loyalty in service industries. One of the most influential frameworks for measuring service quality is SERVQUAL, developed by Parasuraman, Zeithaml, and Berry (1988), which conceptualizes service quality as the gap between customer expectations and perceived service performance.

SERVQUAL proposes that customers evaluate service quality through five fundamental dimensions, known as the RATER model: Reliability, Assurance, Tangibles, Empathy, and Responsiveness as illustrated in Figure 2.

Figure 2. RATER Model

Source: Zeithaml, Parasuraman & Berry (1988)

DINESERV, developed by Stevens, Knutson, and Patton (1995), is a direct adaptation of SERVQUAL specifically designed for the restaurant industry. It retains the same five RATER dimensions but reformulates measurement items to reflect dining-specific service encounters, including staff interactions, physical dining environments, and service delivery processes. The attached literature confirms that DINESERV is an adaptation of SERVQUAL for restaurant services while preserving the RATER dimensional structure.

While TAM explains technology acceptance from a cognitive perspective, it provides limited insight into how service quality influences users' perceptions during digital interactions. DINESERV complements this limitation by

emphasizing that customers evaluate service experiences through dimensions such as reliability, responsiveness, assurance, empathy, and tangibles (Stevens et al., 1995). As restaurant services become increasingly digital, these dimensions remain relevant because customers continue to assess service quality through the performance of the digital platform rather than through direct employee interactions.

For this reason, this study integrates TAM and DINESERV conceptually rather than treating them as separate models. TAM explains the cognitive process underlying customer acceptance, whereas DINESERV provides the service-quality perspective that informs the development of measurement indicators. This integration offers a more comprehensive understanding of customer adoption of BYOD in dine-in restaurant settings.

2.5 Research Framework

The Technology Acceptance Model (TAM) remains one of the most widely used and empirically validated models in explaining technology adoption behavior across various domains. A recent systematic review by Du, Hashim, and Kamarudin (2024) confirms that TAM continues to be the most frequently applied framework across industries, highlighting its strong explanatory power and adaptability in different contexts. In addition, empirical studies such as "Analysing the Relationship of Perceived Ease of Use, Perceived Usefulness, Attitude towards Usage and Behavioural Intention to Use E-Government Services in State of Punjab" by Kaur (2020) further demonstrate the continued relevance and robustness of TAM in explaining user adoption of digital technologies across e-learning and e-government settings.

Building on this foundation, this study proposes a research framework grounded in TAM to explain customer adoption of BYOD ordering in dine-in restaurant settings. In the proposed framework as illustrated in Figure 3, Perceived Ease of Use (PEOU) influences Perceived Usefulness (PU). Both PEOU and PU shape customers' Attitude toward BYOD ordering, which subsequently drives customers' Intention to Repeat Use BYOD. Additionally, PU is hypothesized to

have a direct effect on Intention to Repeat Use BYOD, consistent with prior self-service technology adoption studies.

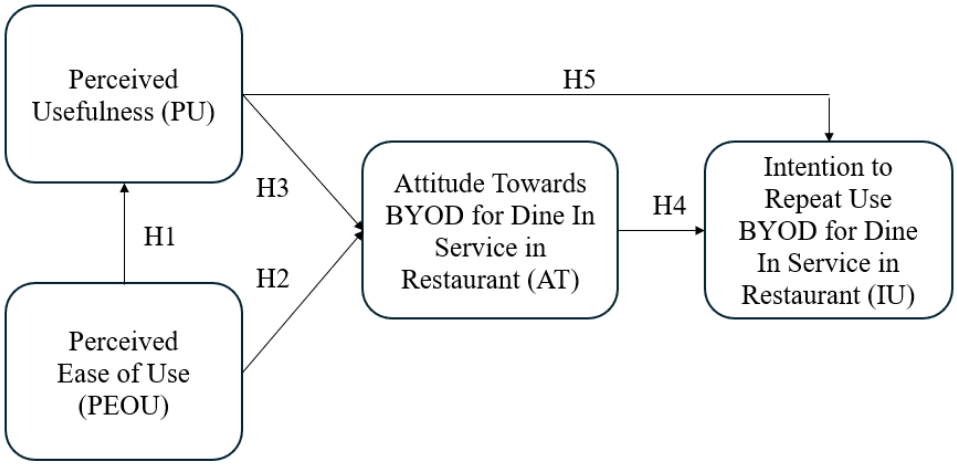

Figure 3. Research Framework

Source: Author (2026)

This study adopts the Technology Acceptance Model (TAM) as the primary theoretical framework because it has been widely validated in explaining users' acceptance of digital technologies across various service settings. The proposed model assumes that customers first evaluate whether BYOD is easy to use (Perceived Ease of Use), which subsequently enhances its perceived benefits (Perceived Usefulness). These cognitive evaluations shape customers' Attitude toward BYOD and ultimately influence their Intention to Repeat Use. In addition, Perceived Usefulness is hypothesized to directly affect behavioral intention, reflecting customers' tendency to continue using technologies that deliver tangible value and improve their dining experience.

Following the original TAM specification and its subsequent empirical refinements, this research does not include a direct relationship between Perceived Ease of Use and Intention to Repeat Use (PEOU → IU). The influence of ease of use is expected to occur indirectly through Perceived Usefulness and Attitude, as customers are unlikely to continue using a technology solely because it is easy to operate. Instead, continued usage depends on whether that ease of use creates meaningful benefits and fosters a favorable attitude toward the technology. Excluding this direct path also enhances the theoretical parsimony of the model while remaining consistent with established TAM literature.

2.6 Research Hypotheses

Referring to the research framework, the hypotheses are formulated as follows:

H1: Perceived Ease of Use → Perceived Usefulness

Perceived Ease of Use (PEOU) is theorized as a key antecedent of Perceived Usefulness (PU) in the Technology Acceptance Model (TAM). According to Fred Davis (1989), when a system is easier to use, users require less cognitive and physical effort, which enhances their perception of its usefulness. This relationship is grounded in the cognitive instrumental process perspective, where ease of interaction increases efficiency and task performance, thereby strengthening perceived utility. Empirical evidence consistently supports that systems perceived as easy to use are more likely to be considered useful in technology-mediated environments (Venkatesh & Davis, 2000).

H1: Perceived Ease of Use (PEOU) of BYOD has a significant positive effect on Perceived Usefulness (PU) in dine-in restaurant settings.

H2: Perceived Ease of Use → Attitude

The relationship between PEOU and Attitude is supported by both TAM and the Theory of Reasoned Action (Fishbein & Ajzen, 1975). Ease of use reduces user frustration and uncertainty, leading to more favorable affective evaluations toward the system. From a behavioral perspective, when individuals perceive a system as effortless, they are more likely to develop a positive attitude toward using it. This is particularly relevant in dine-in settings where customers expect seamless and intuitive interactions.

H2: Perceived Ease of Use (PEOU) of BYOD has a significant positive effect on customers' Attitude (AT) toward BYOD in dine-in restaurant settings.

H3: Perceived Usefulness → Attitude

Perceived Usefulness (PU) is a primary determinant of Attitude in TAM. According to TAM, individuals form favorable attitudes toward a system when they believe it enhances their performance or provides tangible benefits. This relationship is also aligned with expectancy-value theory, where beliefs about outcomes (usefulness) directly influence evaluative judgments (attitude). In the context of BYOD ordering, customers who perceive efficiency, convenience, and time-saving benefits are more likely to develop a positive attitude toward the system.

H3: Perceived Usefulness (PU) of BYOD has a significant positive effect on customers' Attitude (AT) toward BYOD in dine-in restaurant settings.

H4: Attitude → Intention to Repeat Use

The influence of Attitude on behavioral intention is rooted in the Theory of Planned Behavior and TRA (Fishbein & Ajzen, 1975). These theories posit that an

individual's intention to perform a behavior is primarily driven by their attitude toward that behavior. A more favorable attitude leads to a stronger intention to repeat use the technology. In the BYOD context, customers who evaluate the system positively are more likely to continue using it in future dine-in experiences.
H4: Customers' Attitude (AT) toward BYOD has a significant positive effect on their Intention to Repeat Use (IU) BYOD in dine-in restaurant settings.

H5: Perceived Usefulness → Intention to Repeat Use

Beyond its indirect effect through attitude, TAM also posits a direct relationship between Perceived Usefulness and Intention to Repeat Use, as further emphasized by Viswanath Venkatesh and Fred Davis (2000). This reflects a utilitarian decision-making process where users prioritize performance benefits over affective evaluation. When users perceive that a system significantly improves efficiency or outcomes, they may intend to use it regardless of their overall attitude. This direct effect is particularly relevant in self-service technologies, where functional value often dominates adoption decisions.
H5: Perceived Usefulness (PU) of BYOD has a significant positive direct effect on customers' Intention to Repeat Use (IU) BYOD in dine-in restaurant settings.

In line with the original Technology Acceptance Model (TAM), this study does not include a causal path from Perceived Usefulness (PU) to Perceived Ease of Use (PEOU), nor a direct path from PEOU to Intention to Repeat Use (IU). This specification is theoretically grounded and consistent with established TAM literature.

First, the absence of a PU → PEOU relationship follows the original causal logic proposed by Fred Davis (1989). In TAM, Perceived Ease of Use is an antecedent of Perceived Usefulness, as users first evaluate how easy a system is to use before assessing its usefulness. Reversing this relationship would contradict the theoretical direction of causality established in TAM.

Second, this study excludes a direct path from PEOU to IU because TAM proposes that the influence of ease of use on behavioral intention is primarily indirect through Perceived Usefulness and Attitude. Although early TAM versions acknowledged a possible direct effect, later refinements, particularly TAM2 by Viswanath Venkatesh and Fred Davis (2000), emphasize Perceived Usefulness as the primary driver of intention.

Empirical evidence also shows that the direct effect of PEOU on intention is often weak or insignificant when PU is included in the model. Instead, PEOU

enhances intention indirectly by increasing perceived usefulness and fostering a positive attitude toward system use. These hypotheses provide the theoretical foundation for the PLS-SEM analysis in Chapter III, explaining how PEOU and PU influence customer attitude, which subsequently drives customers' intention to adopt and continue using BYOD.

2.7 The Role of IPMA as a Bridge Between Predictive and Practical Value

While the Technology Acceptance Model (TAM) explains the cognitive mechanisms underlying customers' adoption and continued use of BYOD, conventional PLS-SEM analysis has limited managerial applicability. Path coefficients identify the relative importance of relationships among constructs but do not indicate current performance or reveal which constructs should be prioritized for improvement. To overcome this limitation, this study incorporates Importance–Performance Map Analysis (IPMA), which complements PLS-SEM by integrating total effects with construct performance scores. As noted by Sternad Zabukovšek et al. (2022), this approach moves beyond identifying what matters to determining what should be improved first, thereby generating more actionable managerial insights.

IPMA is particularly suitable for the BYOD context, where customer interaction occurs through a self-service digital interface. In a related vein, Magno and Dossena (2023) show that IPMA identifies constructs with high strategic importance but relatively low performance, representing the greatest opportunities for improvement. Accordingly, this study applies IPMA as a complementary second-stage analysis to PLS-SEM. While PLS-SEM explains the determinants of customers' intention to continue using BYOD, IPMA translates these findings into a performance-based priority matrix, helping XYZ Restaurant allocate resources more effectively and enhancing the practical contribution of TAM-based research to digital transformation.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology employed to examine customer adoption of Bring Your Own Device (BYOD) ordering in dine-in restaurant settings at XYZ. The methodological approach is designed to achieve two primary objectives: (1) to empirically test the hypothesized relationships proposed in the Technology Acceptance Model (TAM), and (2) to translate statistically validated findings into actionable managerial priorities.

To accomplish these objectives, the study adopts a quantitative research design utilizing Partial Least Squares Structural Equation Modeling (PLS-SEM). PLS-SEM is selected due to its suitability for predictive research, complex structural models, and reflective measurement constructs.

To enhance the practical relevance of the findings, the study further applies Importance–Performance Map Analysis (IPMA) as an extension of PLS-SEM. While PLS-SEM evaluates the magnitude and significance of relationships among constructs, IPMA provides a structured framework for identifying managerial priority areas based on empirical importance and current performance levels.

This chapter explains the research design, population and sampling procedures, instrument development, data collection process, data analysis techniques, and the integration of PLS-SEM and IPMA results.

3.2 Research Design

This study employs a quantitative explanatory research design. The research seeks to test theoretically grounded hypotheses derived from the Technology Acceptance Model in the context of BYOD ordering within dine-in restaurant services.

The research design consists of two sequential analytical stages:

1. **PLS-SEM Analysis** to test the structural relationships among Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude toward BYOD (AT), and Intention to Repeat Use BYOD (IU).

2. **Importance–Performance Map Analysis (IPMA)** to translate structural model results into prioritized managerial improvement areas.

All latent constructs are specified as reflective constructs, consistent with TAM theory and prior empirical research. This design ensures theoretical consistency while maintaining managerial relevance.

3.3 Source of Data

This study primarily utilizes primary data collected through an online questionnaire administered to eligible dine-in customers at XYZ Restaurant. Respondents are approached after experiencing BYOD ordering, and participation is voluntary and anonymous.

The questionnaire is designed to measure key constructs, including perceived ease of use, perceived usefulness, customer attitude, and intention to repeat use of BYOD. All measurement items are assessed using a four-point Likert scale, ranging from 1 (Strongly Disagree), 2 (Disagree), 3 (Agree) and 4 (Strongly Agree). This scale enables respondents to indicate varying levels of agreement, thereby facilitating the quantification of attitudes, perceptions, and behavioral intentions.

The use of primary data combined with a standardized Likert scale ensures consistency in response interpretation and supports robust statistical analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM).

3.4 Data Collection Method

Data are collected over a defined period through a Google Forms–based online survey distributed to eligible dine-in customers at XYZ Restaurant. The study focuses on customers in the Greater Jakarta area, which represents one of Indonesia's key urban markets with high levels of digital adoption.

This online approach enhances time efficiency and minimizes data entry errors. Respondents are approached after experiencing BYOD ordering to ensure the relevance of their responses.

Participation is voluntary and anonymous. Respondents are informed that there are no right or wrong answers and that all responses are used solely for academic purposes.

3.5 Population and Sampling

3.5.1 Population & Respondent Criteria

The population of this study consists of dine-in customers at XYZ Restaurant in the Greater Jakarta area who have used BYOD ordering during their dining experience. Purposive (non-probability) sampling is employed to ensure that respondents possess direct and relevant experience with BYOD ordering.

This approach is more appropriate than probability sampling for several reasons. First, the study specifically requires respondents who have actually used the BYOD system, meaning the target population is not easily identifiable within the general customer base. Using probability sampling would risk including respondents without relevant experience, thereby reducing the validity of the findings. Second, there is no accessible sampling frame that lists only BYOD users, making random selection impractical. Third, purposive sampling allows for more efficient data collection by directly targeting qualified respondents, which is particularly important in applied, context-specific research such as technology adoption in a dine-in setting.

By focusing on respondents with actual usage experience, this method ensures that participants are able to meaningfully evaluate key constructs such as perceived ease of use and perceived usefulness based on real interaction with the system.

Respondents must meet the following criteria: (1) be a dine-in customer at XYZ Restaurant, (2) have scanned the QR code and used BYOD ordering at least once, and (3) be at least 18 years old. A screening question is included at the beginning of the questionnaire to ensure respondent eligibility.

3.5.2 Sampling

In determining the minimum sample size for Partial Least Squares Structural Equation Modeling (PLS-SEM), this study adheres to the 'ten-times rule'

as proposed by Hair et al. (2022). This heuristic suggests that the sample size should be at least ten times the total number of indicators used to measure the constructs. With four latent variables each measured by three indicators (totaling 12 indicators), a minimum of 120 respondents is required.

To strengthen the justification for the sample size, this study complemented the 10-times rule with statistical power analysis (G*Power), as recommended by Hair et al. (2022). Assuming a medium effect size ($f^2 = 0.15$), a significance level of 5% ($\alpha = 0.05$), a statistical power of 0.95, and a maximum of two predictors for the most complex endogenous construct, the G*Power analysis indicates a minimum sample size of approximately 107 respondents. Since this study collected data from approximately 500 respondents, the sample size substantially exceeds both the minimum statistical requirement suggested by G*Power and the 10-times rule. Therefore, the sample is considered adequate to provide sufficient statistical power, improve parameter estimation accuracy, and enhance the robustness of the PLS-SEM results.

3.6 Measurement of Variables

This study examines four key variables: Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude toward BYOD (AT), and Intention to Repeat Use of BYOD (IU). Within the proposed model, PEOU and PU serve as independent variables influencing AT, which subsequently affects IU.

All measurement items were adapted to align with the context of XYZ Restaurant. Each variable was measured using a four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). A four-point scale was intentionally employed to eliminate neutral responses and encourage respondents to provide more definitive evaluations.

Table 8: Operationalization of Variables

No	Variable	Code	Indicator / Item
1	**Perceived Ease of Use (PEOU)**	PEOU1	Clarity of interface
2		PEOU2	System speed
3		PEOU3	Ease of navigation
4	**Perceived Usefulness (PU)**	PU1	Order accuracy
5		PU2	Order status visibility
6		PU3	Payment security
7	**Attitude toward BYOD (AT)**	AT1	Perception as a complement
8		AT2	Perception as a substitute
9		AT3	Preference over other methods
10	**Intention to Repeat Use (IU)**	IU1	Intention to reuse
11		IU2	Preference as primary method
12		IU3	Intention to recommend

Note: DINESERV-RATER (R: Reliability, A: Assurance, T: Tangibles, E: Empathy, RS: Responsiveness) embedded within PEOU and PU indicators only

As presented in Table 8, this study utilizes three indicators for each variable/ construct to ensure focus and measurement clarity. The indicators are developed with reference to service quality attributes derived from the RATER–DINESERV framework, which are embedded within the indicator of PEOU and PU to capture system-related service characteristics. Each indicator is designed to represent the core dimensions of the respective construct, thereby maintaining conceptual

validity and enabling robust evaluation of the research model using the PLS-SEM approach.

Although the Technology Acceptance Model (TAM) provides a robust framework for explaining technology adoption, its emphasis on cognitive beliefs may not fully capture the full range of factors shaping customer behavior in digital self-service environments. This limitation is further addressed in Chapter V, which discusses potential theoretical extensions in light of the study's explanatory power.

3.7 Questionnaire Design

The questionnaire used in this study consists of two main sections: Section A and Section B. Section A captures the demographic and behavioral profile of the respondents, including gender, age, education level, occupation, frequency of dining at XYZ Restaurant, and prior experience using BYOD/QR ordering. These variables are collected to provide a comprehensive understanding of respondent characteristics and to support the descriptive analysis of the sample.

Section B comprises measurement items related to four key constructs: Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude toward BYOD (AT), and Intention to Repeat Use of BYOD (IU). The core measurement items were adapted from TAM-based constructs and contextualized using service-quality attributes informed by the RATER–DINESERV framework, particularly incorporating RATER-based service quality attributes, which are embedded within the PEOU and PU constructs to capture system-related service characteristics.

All items are measured using a four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). A four-point Likert scale was deliberately employed in this study to eliminate the neutral midpoint, thereby reducing central tendency bias commonly observed particularly in collectivist cultures such as Indonesia (Hofstede, 2001; Harzing, 2006; Garland, 1991). This forced-choice format ensures more decisive and actionable responses, which is particularly appropriate given the managerial orientation of this study's findings.

The questionnaire is designed to be clear, concise, and easy to understand, ensuring that respondents can provide accurate and consistent responses (see Appendix). This study did not conduct a separate conventional pilot test because

the measurement instrument was adapted from well-established and extensively validated scales in previous studies on the Technology Acceptance Model (TAM).

3.8 Validity & Reliability of Questionnaire

Reliability, defined as the consistency of measurement (Carmines & Zeller, 1979), was assessed using Cronbach's Alpha, with a threshold of 0.70 indicating acceptable internal consistency (Hair et al., 2022).

Validity refers to the extent to which the instrument accurately measures the intended constructs. Content validity was established through expert review and adaptation from prior validated studies, while construct validity was evaluated using PLS-SEM in the main analysis.

The refined instrument demonstrated acceptable reliability and validity and was deemed appropriate for large-scale data collection.

3.8.1 Common Method Bias (CMB)

The purpose of testing for Common Method Bias (CMB) is to ensure that the observed relationships among constructs are not systematically distorted or particularly inflated due to variance attributable to the measurement method rather than the constructs themselves (Podsakoff et al., 2003). In survey-based research where both independent and dependent variables are collected from the same respondents, using the same instrument, at the same point in time, shared method variance may artificially inflate or otherwise distort inter-construct correlations, thereby threatening the internal validity of the study's conclusions.

CMB may arise in this study as data for all constructs like Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude toward BYOD (AT), and Intention to Repeat Use (IU) are collected from the same respondents using a single self-administered questionnaire.

Given that each construct is measured reflectively through multiple indicators (e.g., interface clarity, system responsiveness, order accuracy, and usage intention), procedural remedies were implemented to minimize potential bias, including ensuring respondent anonymity, using clear and concise wording,

In addition, statistical assessment using the Variance Inflation Factor (VIF) was conducted to evaluate the extent of common method bias. Common method bias was assessed using the full collinearity VIF approach proposed by Kock (2015), VIF values were computed for each indicator in the measurement model. A VIF value below 3.3 suggests that common method bias is unlikely to pose a substantial threat and indicates that the model is free from pathological collinearity, whereas a value at or above 3.3 suggests a potential common method bias concern that may artificially inflate the observed relationships (Kock, 2015). In this study, all VIF values were found to be below the threshold of 3.3, confirming that common method bias does not pose a substantial threat to data validity. These steps ensure that the associations among PEOU, PU, AT, and IU reflect true theoretical relationships rather than measurement artifacts.

3.9 Data Analysis

Following data collection and cleaning, the next stage involved data analysis to test the proposed hypotheses and examine the relationships among the constructs defined in the research framework. The analysis encompassed both the measurement model and the structural model to ensure that the constructs were valid, reliable, and capable of explaining the hypothesized relationships.

This study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4. PLS-SEM was selected due to its robustness in handling non-normal data and moderate sample sizes, as well as its ability to simultaneously estimate complex relationships among latent variables (Hair et al., 2022). This approach enables the integrated assessment of both measurement and structural models within a single analytical framework.

The analysis was conducted in two stages. First, the measurement model was evaluated by assessing indicator reliability, internal consistency (Cronbach's Alpha and Composite Reliability), convergent validity (Average Variance Extracted/AVE), and discriminant validity (HTMT ratio). Second, the structural model was assessed using path coefficients, t-statistics, and p-values derived from bootstrapping to determine the significance and strength of the relationships among

constructs. Additionally, R^2, f^2, and Q^2 values were examined to evaluate the model's explanatory and predictive power.

Through this approach, the study provides empirical evidence on how perceived ease of use and perceived usefulness influence customer attitude, which in turn affects the intention to adopt and continue using BYOD among customers of XYZ Restaurant. The combination of reliability, validity, and hypothesis testing ensures that the findings are both statistically robust and theoretically grounded.

3.9.1 Respondent Profile

This section presents the demographic profile of respondents and descriptive statistical analysis to summarize the characteristics of dine-in customers at XYZ Restaurant in Greater Jakarta (Jabodetabek), as well as their general perceptions of the key research variables.

Demographic data include gender, age, education, occupation, dining frequency, and BYOD usage experienc. The data were analyzed using Microsoft Excel to produce frequency distributions, percentages, and graphical summaries, enabling the identification of patterns across respondent groups.

Descriptive statistics were used to summarize responses for each variable, including mean, standard deviation, variance, skewness, and kurtosis. These measures provide insights into central tendency, variability, and data distribution, and support the suitability of the data for further analysis.

3.9.2 Partial Least Square Structural Equation Modeling (PLS-SEM) Analysis

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. This method was selected due to its suitability for complex models, non-normal data, and moderate sample sizes (Hair et al., 2022), allowing simultaneous assessment of measurement validity and structural relationships. This methodological choice follows the comprehensive guidance provided by Hair, Hult, Ringle, and Sarstedt (2022) in the third edition of A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM), which remains the principal methodological reference for PLS-SEM applications in consumer technology adoption research.

The analysis comprised two stages: evaluation of the measurement model and the structural model. The measurement model was assessed for reliability and validity using factor loadings (≥ 0.70), Composite Reliability (≥ 0.70), and Average Variance Extracted (≥ 0.50). Discriminant validity was examined using the HTMT ratio.

The structural model was evaluated using path coefficients, t-statistics, and p-values obtained through bootstrapping, with significance determined at $t > 1.96$ and $p < 0.05$. Model performance was evaluated using the coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2). According to Hair et al. (2022), R^2 values of 0.75, 0.50, and 0.25 indicate substantial, moderate, and weak explanatory power respectively. Effect size (f^2) values of 0.02, 0.15, and 0.35 represent small, medium, and large effects, as proposed by Cohen (1988). Meanwhile, Q^2 values greater than zero indicate that the model has predictive relevance. This approach ensures robust validation of constructs and testing of the hypothesized relationships within the research framework.

3.9.2.1. Measurement Model

The measurement model, or outer model in PLS-SEM, specifies the relationship between latent constructs and their observed indicators. Two types of measurement models are commonly distinguished: reflective and formative. Reflective models treat indicators as manifestations of the underlying construct, whereas formative models view indicators as defining the construct (Nunnally & Bernstein, 1994; Hair et al., 2022).

This study adopts a reflective measurement model for PEOU, PU, AT, and IU, as each construct is conceptualized as a latent variable reflected by its indicators, consistent with established practices in social science research.

The reflective measurement model was evaluated based on three criteria: internal consistency reliability, convergent validity, and discriminant validity (Hair et al., 2022). Internal consistency was assessed using Cronbach's Alpha and Composite Reliability (CR), with values above 0.70 indicating acceptable reliability. Convergent validity was examined through indicator loadings (≥ 0.70) and Average Variance Extracted (AVE ≥ 0.50), ensuring that indicators adequately

represent their constructs. Discriminant validity was evaluated using the Heterotrait–Monotrait (HTMT) ratio, following the recommendation of Hair et al. (2022). Overall, the results indicate that all constructs are reliable and valid, supporting their suitability for subsequent structural model analysis.

3.9.2.2. Structural Model

The structural model (inner model) in PLS-SEM specifies the hypothesized relationships among latent constructs, explaining how exogenous variables influence endogenous variables and providing the basis for hypothesis testing (Hair et al., 2022).

Model evaluation focuses on the strength, significance, and predictive capability of these relationships. Collinearity was assessed using the Variance Inflation Factor (VIF), with values below 5 indicating no multicollinearity issues. The significance of relationships was evaluated through path coefficients (β), t-statistics, and p-values obtained via bootstrapping (5,000 resamples), with significance determined at $t > 1.96$ and $p < 0.05$.

The model's explanatory power was assessed using the coefficient of determination (R^2), while effect size (f^2) and predictive relevance (Q^2) were used to evaluate the contribution and predictive accuracy of the model. In line with the proposed framework, the structural relationships are specified as follows:

$PU = \beta_1 PEOU + \varepsilon_1$

$AT = \beta_2 PEOU + \beta_3 PU + \varepsilon_2$

$IU = \beta_4 AT + \beta_5 PU + \varepsilon_3$

where:

PU = Perceived Usefulness

PEOU = Perceived Ease of Use

AT = Attitude toward BYOD

IU = Intention to Repeat Use of BYOD

β_i = path coefficient estimated by PLS-SEM

ε_i = error term for each endogenous construct

These equations operationalize the hypothesized relationships, where PEOU and PU influence AT, which in turn affects IU. Mediation effects were assessed using bootstrapping of indirect effects. Overall, this approach ensures that the structural relationships are statistically robust, theoretically grounded, and suitable for hypothesis testing.

3.9.3 Importance–Performance Map Analysis (IPMA)

Beyond extending the structural model descriptively, IPMA is a well-established analytical technique within the PLS-SEM framework. According to Hair et al. (2022), IPMA complements structural model results by integrating two dimensions: importance, measured by the total effects of each construct on the target variable, and performance, measured by rescaled latent variable scores (0–100). As emphasized by Ringle and Sarstedt (2016), managerial priorities should be based on both dimensions, since highly important constructs with low performance offer the greatest improvement potential.

Consistent with the theoretical rationale presented in Section 2.7, this study applies IPMA as a second-stage analysis after structural model evaluation. By combining importance and performance, IPMA translates PLS-SEM findings into actionable managerial priorities for XYZ Restaurant, enabling more effective resource allocation (Hair et al., 2022; Sternad Zabukovšek et al., 2022; Magno & Dossena, 2023).

3.9.3.1 Purpose of IPMA

While PLS-SEM identifies statistically significant determinants of Intention to Repeat Use BYOD, it does not directly indicate which areas require managerial prioritization. Importance–Performance Map Analysis, originally conceptualized by Martilla and James (1977) and subsequently formalized within the PLS-SEM framework by Ringle and Sarstedt (2016), extends PLS-SEM by simultaneously considering:

- **Importance**: Total effects of constructs on a target variable
- **Performance**: Average latent variable scores, ranging from 0 to 100 (Ringle & Sarstedt, 2016)

By combining importance (total effects) and performance, IPMA enables the identification of priority areas for managerial improvement. In this study, IPMA is applied to determine which factors, such as Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) have the greatest impact on Attitude (AT) and Intention to Repeat Use (IU), while also identifying constructs with relatively lower performance that require strategic attention.

3.9.3.2 Target Construct Selection

The primary target construct for IPMA is: Intention to Repeat Use (IU)

This selection is justified because:

- Intention represents the final endogenous construct in TAM.
- Intention serves as a leading indicator of actual usage.
- Objective usage data at the respondent level are not available.
- Increasing intention aligns directly with the company's strategic objective of increasing BYOD adoption.

3.9.3.3 IPMA Procedure

IPMA is conducted in SmartPLS 4 using the following steps:

1. Select Intention to Repeat Use as the target construct.
2. Calculate total effects (importance).
3. Compute average latent variable scores (performance).
4. Rescale performance values to a 0–100 range.
5. Plot constructs into a four-quadrant matrix:

    - High importance – Low performance → Priority improvement
    - High importance – High performance → Maintain performance
    - Low importance – Low performance → Lower priority
    - Low importance – High performance → Potential overinvestment

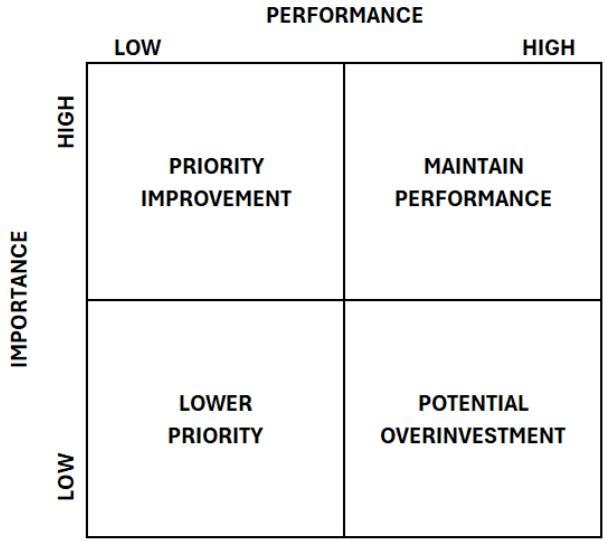

Figure 4. IPMA Quadrant

Source: Martilla & James (1977)

This study focuses on construct-level IPMA, as the three predictor constructs (PEOU, PU, AT) provide sufficient granularity for identifying managerial priorities relative to Intention to Repeat Use

3.10 Analysis and Interpretation

The results are interpreted in relation to the theoretical framework and research hypotheses by comparing empirical findings from PLS-SEM with the literature discussed in Chapter II. The analysis examines whether the data support, partially support, or contradict the proposed relationships among perceived usefulness, perceived ease of use, attitude toward BYOD, and intention to continue using BYOD. The findings are further contextualized within established frameworks, including the Technology Acceptance Model (TAM), DINESERV, and Self-Service Technology (SST), to assess their alignment with and contribution to existing theories.

Integration of findings is conducted at two levels. First, at the theoretical level, PLS-SEM validates the proposed TAM-based relationships within the context of BYOD ordering in dine-in restaurant settings. Second, at the managerial level, Importance–Performance Map Analysis (IPMA) translates statistically significant relationships into prioritized areas for improvement. This integrated approach ensures that managerial recommendations are directly grounded in empirically

validated causal mechanisms, thereby enhancing both theoretical rigor and practical relevance in improving the dine-in customer experience.

3.11 Research Workflow

Based on the theoretical framework, this study follows a structured workflow from research design to analysis and interpretation. The process begins with the research method foundation, including research design, data source, data collection, population and sampling, and measurement of variables. A quantitative approach based on the Technology Acceptance Model (TAM) is employed.

Next, the questionnaire is developed and administered to respondents. The collected data are then evaluated through validity, reliability, and Common Method Bias (CMB) tests to ensure measurement quality. The study proceeds with data analysis using PLS-SEM (SmartPLS 4), covering both measurement model and structural model evaluation to test the hypothesized relationships.

To enhance managerial relevance, Importance–Performance Map Analysis (IPMA) is conducted to identify priority areas for improving BYOD adoption.

Finally, the results are analyzed and interpreted to generate conclusions and actionable recommendations aligned with the research objectives.

The overall workflow of this research is illustrated in Figure 5 below.

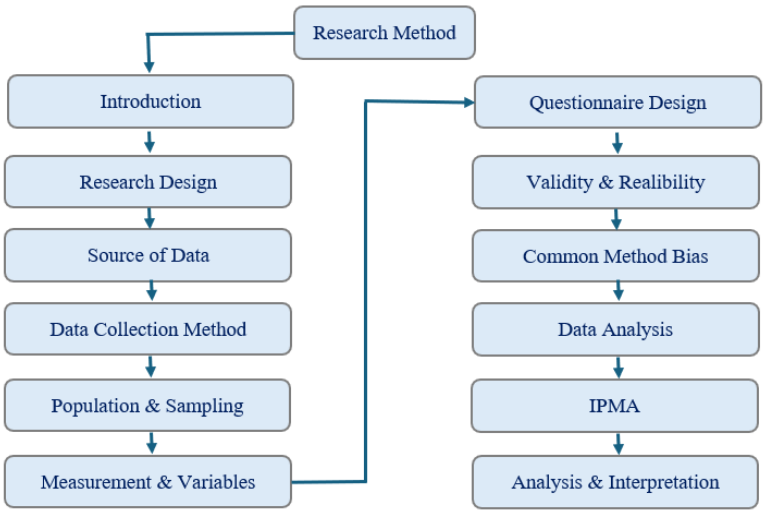

Figure 5. Research Workflow

Source: Author (2026)

CHAPTER IV

RESULTS AND DISCUSSION

This chapter presents the empirical findings derived from 500 valid respondents who have experienced using the Bring Your Own Device (BYOD) ordering system during dine-in visits at XYZ Restaurant. The analytical framework proceeds across six systematically organized sections: respondent profile analysis, descriptive statistics of research variables, measurement model evaluation (outer model), structural model evaluation (inner model), Importance–Performance Map Analysis (IPMA), and a critical synthesis of findings. The entire analysis adheres to the Partial Least Squares Structural Equation Modeling (PLS-SEM) procedure recommended by Hair et al. (2022), processed using SmartPLS 4.1 software with a bootstrapping procedure of 5,000 resamples.

4.1 Respondent Profile Analysis

The respondent profile analysis characterizes the demographic and behavioral composition of the study's sample. Because BYOD ordering is a smartphone-based self-service technology, demographic variables such as gender, age, educational attainment, and occupational background can meaningfully shape customers' digital readiness and, consequently, their propensity to adopt and continuously use the system. Understanding the respondent profile thus provides essential contextual grounding for interpreting the subsequent PLS-SEM findings.

4.1.1 Gender Distribution

Table 9 Gender Distribution of Respondents

No.	Gender	Frequency (n)	Percentage (%)
1	Female	325	65%
2	Male	175	35%
	Total	500	100%

Source: Primary survey data processed by author, 2026 (n = 500)

As presented in Table 9, female respondents constitute the majority of the sample at 65% (n = 325), while male respondents account for 35% (n = 175). This gender composition reflects the characteristic customer base of casual dining

restaurants in Indonesia, where women frequently serve as primary decision-makers regarding family dining occasions and restaurant selection (Iqbal et al., 2018). Their predominance in the sample provides meaningful insights into the segment most engaged with the BYOD experience.

From a technology adoption perspective, the relatively broad gender representation indicates that BYOD usage is not restricted to a specific gender group, suggesting the system's interface carries cross-gender applicability. Given the predominance of female respondents established above, the attitudinal findings discussed later in this chapter, particularly regarding customers' comparative preference for BYOD over waiter-assisted ordering, carry direct managerial relevance for this segment of primary dining decision-makers.

4.1.2 Age Distribution

Table 10 Age Distribution of Respondents

No.	Age Group	Frequency (n)	Percentage (%)
1	18 – 24 Years	5	1.0%
2	25 – 34 Years	48	9.6%
3	35 – 44 Years	90	18.0%
4	45 – 54 Years	291	58.2%
5	Above 54 Years	66	13.2%
	Total	500	100.0%

Source: Primary survey data processed by author, 2026 (n = 500)

Table 10 reveals that the dominant age cohort is 45–54 years (58.2%, n = 291), followed by 35–44 years (18.0%, n = 90), above 54 years (13.2%, n = 66), 25–34 years (9.6%, n = 48), and 18–24 years (1.0%, n = 5). Collectively, respondents aged 35 years and above account for 89.4% of the sample.

This result is theoretically significant because technology adoption research traditionally associates higher acceptance rates with younger, digitally native populations. The concentration of respondents in the 45–54 age bracket challenges this conventional assumption. It suggests that XYZ's BYOD-enabled dine-in experience is actively used by middle-aged customers who have achieved sufficient digital literacy through widespread smartphone adoption in Indonesia, consistent

with the occupational profile presented in Section 4.1.4, where working adults constitute the majority of respondents. Importantly, this demographic profile suggests that BYOD adoption barriers in this sample are unlikely to stem primarily from generational technology unfamiliarity. This interpretation is further supported by the construct-level descriptive results presented in Section 4.2, where Perceived Ease of Use registers a consistently high mean (M = 3.49) while Attitude toward BYOD records the lowest mean among the four constructs (M = 3.44). Taken together, this pattern suggests that the observed adoption gap may be more attributable to attitudinal factors than to generational differences in digital literacy, a proposition examined more directly through the structural model in Section 4.4.

4.1.3 Educational Level

Table 11 Educational Level of Respondents

No.	Education Level	Frequency (n)	Percentage (%)
1	Senior High School	33	6.6%
2	Diploma (D3)	77	15.4%
3	Bachelor's Degree (S1/D4)	282	56.4%
4	Master's Degree or Above	103	20.6%
5	Other	5	1.0%
	Total	500	100.0%

Source: Primary survey data processed by author, 2026 (n = 500)

Educational attainment within the sample is predominantly at tertiary level. Bachelor's degree holders constitute the largest group at 56.4% (n = 282), followed by Master's degree or higher at 20.6% (n = 103), Diploma graduates at 15.4% (n = 77), high school graduates at 6.6% (n = 33), and other qualifications at 1.0% (n = 5). In aggregate, 92.4% of respondents possess at least a diploma-level qualification.

Higher educational attainment is generally associated with greater information processing capability, stronger comfort with digital interfaces, and a more analytical approach to evaluating technology benefits (Venkatesh & Davis, 2000). This respondent profile is therefore contextually well-suited for evaluating a smartphone-based ordering platform because responses are expected to reflect

substantive user experience assessments rather than limitations in digital comprehension. This high digital literacy baseline further suggests that perceived barriers to BYOD adoption among this sample are unlikely to stem from cognitive difficulty, reinforcing the relevance of attitudinal factors in explaining adoption variance.

4.1.4 Occupation

Table 12 Occupational Profile of Respondents

No.	Occupation	Frequency (n)	Percentage (%)
1	Employee	207	41.4%
2	Freelance / Other	182	36.4%
3	Entrepreneur	79	15.8%
4	Professional	31	6.2%
5	Student	1	0.2%
	Total	500	100.0%

Source: Primary survey data processed by author, 2026 (n = 500)

Employees represent the largest occupational group at 41.4% (n = 207), followed by freelance or other occupations at 36.4% (n = 182), entrepreneurs at 15.8% (n = 79), professionals at 6.2% (n = 31), and students at 0.2% (n = 1). The dominant presence of employed individuals confirms that the sample is well-aligned with XYZ Restaurant's primary target market of working urban consumers in Greater Jakarta.

Working adults are routinely exposed to digital workflows, mobile applications, and online transaction systems within their professional contexts. This accumulated digital exposure translates into higher baseline competence and comfort when encountering smartphone-based self-service technologies in commercial settings (Meuter et al., 2000).

4.1.5 Frequency of Dine-In Visits

Table 13 Frequency of Dine-In Visits at XYZ Restaurant (Past 3 Months)

No.	Dine-In Frequency	Frequency (n)	Percentage (%)
1	Not Yet Dine-in in P3M*	32	6.4%
2	1–2 Times	300	60.0%
3	3–4 Times	116	23.2%
4	5–6 Times	30	6.0%
5	More than 6 Times	22	4.4%
	Total	500	100.0%

* Had previously visited for dine-in but has not returned in the past three months.

Source: Primary survey data processed by author, 2026 (n = 500)

Table 13 indicates that the majority of respondents (60.0%, n = 300) visited XYZ Restaurant one to two times during the preceding three months, constituting what may be classified as occasional customers. A further 23.2% (n = 116) visited three to four times, while 6.4% (n = 32) had not yet returned within the observation window. High-frequency visitors, defined here as those dining five or more times, represent 10.4% of the sample in aggregate.

The predominance of occasional visitors is contextually important because this segment tends to be less habituated to the BYOD interface and may thus provide a more nuanced evaluation of ease of use and usefulness than highly frequent users whose assessments could be biased by automation of usage behaviors. From a strategic standpoint, this segment also represents significant growth potential: improving their BYOD experience may positively encourage higher visit frequency, thereby simultaneously increasing customer lifetime value and BYOD adoption rates.

4.1.6 Average Spending per Dine-In Visit

Table 14 Average Spending per Dine-In Visit at XYZ Restaurant

No.	Spending per DI Visit	Frequency (n)	Percentage (%)
1	Below Rp 200,000	75	15.0%
2	Rp 200,000 – Rp 299,999	196	39.2%
3	Rp 300,000 – Rp 399,999	125	25.0%
4	Rp 400,000 – Rp 499,999	55	11.0%
5	Above Rp 500,000	49	9.8%
	Total	500	100.0%

Source: Primary survey data processed by author, 2026 (n = 500)

The majority of respondents spend between Rp 200,000 and Rp 299,999 per visit (39.2%, n = 196), followed by Rp 300,000 to Rp 399,999 (25.0%, n = 125), below Rp 200,000 (15.0%, n = 75), Rp 400,000 to Rp 499,999 (11.0%, n = 55), and above Rp 500,000 (9.8%, n = 49). A total of 64.2% of respondents spend between Rp 200,000 and Rp 399,999, indicating a predominantly mid-range spending customer profile.

This spending distribution reflects XYZ's positioning as a mid-segment casual dining restaurant. Customers in this tier tend to hold higher expectations for ordering accuracy and service efficiency, making them particularly sensitive to BYOD's performance. Functional shortcomings, such as delayed responsiveness or payment errors, can meaningfully detract from the dining experience and undermine adoption continuity.

4.1.7 Frequency of Prior BYOD Usage

Table 15 Frequency of Prior BYOD Usage Experience

No.	Prior BYOD Usage	Frequency (n)	Percentage (%)
1	First Time	72	14.4%
2	1–2 Times	105	21.0%
3	3–4 Times	122	24.4%
4	5–6 Times	45	9.0%
5	More than 6 Times	156	31.2%
	Total	500	100.0%

Source: Primary survey data processed by author, 2026 (n = 500)

Table 15 reveals that 31.2% of respondents (n = 156) had used the BYOD system more than six times, making them the single largest group by BYOD usage frequency. This is followed by those with 3–4 prior uses (24.4%, n = 122), 1–2 prior uses (21.0%, n = 105), first-time users (14.4%, n = 72), and those with 5–6 prior uses (9.0%, n = 45).

Critically, 85.6% of respondents had prior BYOD experience beyond their first encounter, confirming that the sample is composed predominantly of experienced users rather than first-impression evaluators. This composition strengthens the reliability and ecological validity of the survey responses, as assessments of perceived ease of use, perceived usefulness, and behavioral attitude are anchored in repeated, authentic interaction with the system rather than initial novelty effects (Davis, 1989). The presence of first-time users (14.4%) also provides important evaluative diversity, capturing the onboarding experience that will influence the system's ability to attract new adopters.

4.2 Descriptive Statistics of Research Variables

Following the respondent profile analysis, descriptive statistics were examined to characterize respondents' perceptions across all four latent constructs and their twelve constituent indicators. Each indicator was measured on a four-point Likert scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). Descriptive analysis at both the indicator and construct levels offers preliminary insights into which dimensions of BYOD performance are perceived most and least favorably, providing an important diagnostic foundation for interpreting the subsequent structural model findings.

Table 16 Descriptive Statistics of Research Indicators (n = 500)

Var.	Code	Indicator Description	Mean	Std. Dev	Interp.
PEOU	PEOU1	Clarity of interface & menu structure (UI)	3.54	0.67	High
	PEOU2	System responsiveness / speed	3.44	0.75	High
	PEOU3	Ease of navigation & order completion	3.50	0.70	High
PU	PU1	Order accuracy & reliability	3.61	0.65	High

Var.	Code	Indicator Description	Mean	Std. Dev	Interp.
	PU2	Real-time order & payment tracking	3.59	0.64	High
	PU3	Payment security & transaction reliability	3.59	0.65	High
AT	AT1	Positive view of BYOD (complement to ordering)	3.61	0.62	High
	AT2	Belief BYOD can replace conventional ordering	3.51	0.71	High
	AT3	Preference superiority over traditional ordering	3.20	0.84	High
IU	IU1	Willingness to continue using BYOD	3.49	0.74	High
	IU2	Preference to choose BYOD as primary method	3.40	0.81	High
	IU3	Advocacy / recommendation intention	3.46	0.74	High

Source: Primary data processed using SmartPLS 4.1, 2026 (n = 500)

Table 17 Descriptive Statistics of Research Constructs (n = 500)

Variable	Mean	Std. Dev	Interpretation
Perceived Ease of Use (PEOU)	3.49	0.63	High
Perceived Usefulness (PU)	3.60	0.59	High
Attitude toward BYOD (AT)	3.44	0.65	High
Intention to Repeat Use (IU)	3.45	0.73	High

Source: Primary data processed using SmartPLS 4.1, 2026 (n = 500)

Tables 16 and 17 present descriptive statistics at the indicator and construct levels respectively. At the construct level, all four variables exceed a mean value of 3.40 on the four-point scale, indicating uniformly high levels of positive customer perception toward the BYOD ordering system.

Perceived Usefulness records the highest construct mean (M = 3.60, SD = 0.59), suggesting that customers most consistently recognize the functional value delivered by the BYOD system—including order accuracy (PU1: M = 3.61), real-time status tracking (PU2: M = 3.59), and payment security (PU3: M = 3.59). The low standard deviation for this construct (0.59) further reflects a high degree of consensus among respondents regarding these perceived benefits.

Perceived Ease of Use achieves a mean of 3.49 (SD = 0.63). Among its indicators, UI clarity (PEOU1: M = 3.54) receives the most favorable rating, while system responsiveness (PEOU2: M = 3.44, SD = 0.75) records the lowest score within this construct. The comparatively higher dispersion for PEOU2 suggests that customers experience variability in system speed—a factor likely influenced by internet connectivity conditions within restaurant environments, as acknowledged in the questionnaire item itself.

Attitude toward BYOD registers the lowest construct mean (M = 3.44, SD = 0.65). Notably, indicator AT3—measuring whether customers prefer BYOD over traditional ordering—achieves the lowest mean score across all twelve indicators (M = 3.20, SD = 0.84). This finding is strategically significant: despite generally recognizing BYOD's usefulness and ease of use, a meaningful segment of customers has not yet fully internalized BYOD as their preferred ordering method over conventional staff-assisted approaches. This attitudinal gap provides a compelling explanatory lens for the observed decline in BYOD adoption rates from 33.7% in 2024 to 28.5% in 2025.

Intention to Repeat Use records a mean of 3.45 (SD = 0.73). The highest standard deviation across constructs (0.73) indicates that future behavioral intentions are somewhat more heterogeneous than perceptions of usefulness or ease of use, reflecting meaningful diversity in customers' commitment to sustained BYOD adoption. Indicator IU2 (preference for BYOD as primary ordering method) records the lowest score within this construct (M = 3.40), mirroring the attitudinal hesitation captured by AT3.

4.3 Measurement Model Evaluation (Outer Model)

Prior to evaluating the structural relationships among latent constructs, the measurement model must be assessed to confirm that the observed indicators adequately and reliably operationalize their respective latent variables. In PLS-SEM, measurement model evaluation for reflective constructs involves four sequential assessments: indicator reliability (outer loadings), internal consistency reliability (Cronbach's Alpha and Composite Reliability), convergent validity

(Average Variance Extracted), and discriminant validity (HTMT ratio). All evaluations follow the criteria recommended by Hair et al. (2022).

4.3.1 Indicator Reliability (Outer Loadings)

Indicator reliability assesses the extent to which each observed item explains variance in its corresponding latent construct. Hair et al. (2022) prescribe a minimum standardized outer loading threshold of 0.70, which indicates that at least 50% of an indicator's variance is accounted for by the construct it measures.

Table 18 Outer Loadings of Research Indicators

Construct	Indicator	Item Description	Loading	≥0.70
PEOU	PEOU1	Clarity of interface	0.903	✓
	PEOU2	System speed	0.858	✓
	PEOU3	Ease of navigation	0.914	✓
PU	PU1	Order accuracy	0.932	✓
	PU2	Order Status Visibility	0.913	✓
	PU3	Payment security	0.900	✓
AT	AT1	Perception as a complement	0.918	✓
	AT2	Perception as a substitute	0.936	✓
	AT3	Preference over other methods	0.856	✓
IU	IU1	Intention to Re-use	0.954	✓
	IU2	Preference as primary method	0.967	✓
	IU3	Intention to Recommend	0.935	✓

Source: SmartPLS 4.1 PLS-Algorithm output, processed 2026 (n = 500)

As shown in Table 18, all twelve indicators achieve outer loading values ranging from 0.856 to 0.967, substantially exceeding the recommended threshold of 0.70. The Intention to Repeat Use construct exhibits the strongest indicator relationships, with IU2 recording the highest loading in the entire model (0.967), followed by IU1 (0.954) and IU3 (0.935). These values indicate that customers respond to the behavioral intention items with remarkable internal consistency, reflecting the centrality of deliberate choice in their BYOD usage decisions.

Perceived Usefulness indicators also demonstrate strong loadings (PU1: 0.932; PU2: 0.913; PU3: 0.900), affirming that customers coherently evaluate BYOD's functional contribution to ordering accuracy, transparency, and payment security. Perceived Ease of Use loadings range from 0.858 to 0.914, with PEOU2 (system responsiveness) recording the lowest loading within the construct—consistent with the descriptive finding of higher dispersion for this item, reflecting network-dependent variability in the customer experience. For Attitude toward BYOD, AT3 (preference superiority) records the lowest loading (0.856), again consistent with its lower mean score in the descriptive analysis. No indicator required removal, and all twelve items are retained for the subsequent analysis stages.

4.3.2 Internal Consistency Reliability

Internal consistency reliability evaluates the degree to which indicators sharing a common construct produce correlated responses. Following Hair et al. (2022), this study employs Cronbach's Alpha and Composite Reliability (rho_c), both of which must exceed the minimum threshold of 0.70 to confirm reliable measurement.

Table 19 Internal Consistency Reliability Results

Construct	Cronbach's Alpha	Composite Reliability (ρc)	α ≥ 0.70	CR ≥ 0.70
Perceived Ease of Use (PEOU)	0.871	0.921	✓	✓
Perceived Usefulness (PU)	0.903	0.939	✓	✓
Attitude toward BYOD (AT)	0.888	0.931	✓	✓
Intention to Repeat Use (IU)	0.948	0.967	✓	✓

Source: SmartPLS 4.1 PLS-Algorithm output, processed 2026 (n = 500)

Table 19 demonstrates that all four constructs satisfy the reliability criteria by comfortable margins. Cronbach's Alpha values range from 0.871 (PEOU) to 0.948 (IU), while Composite Reliability values range from 0.921 (PEOU) to 0.967 (IU). The Intention to Repeat Use construct achieves the highest reliability by both

measures, reflecting the high inter-correlation among items addressing behavioral intention toward BYOD usage. All constructs substantially exceed the minimum threshold of 0.70, confirming that the measurement instrument demonstrates excellent internal consistency and that the questionnaire items within each construct consistently measure the same underlying concept.

4.3.3 Convergent Validity (Average Variance Extracted)

Convergent validity is established when indicators of the same construct share a sufficient proportion of common variance. The Average Variance Extracted (AVE) is the standard metric, with a minimum threshold of 0.50 indicating that a construct explains more than half of its indicator variance (Hair et al., 2022).

Table 20 Average Variance Extracted (AVE) Results

Construct	AVE	Variance Explained	AVE ≥ 0.50
Perceived Ease of Use (PEOU)	0.795	79.5%	✓
Perceived Usefulness (PU)	0.838	83.8%	✓
Attitude toward BYOD (AT)	0.817	81.7%	✓
Intention to Repeat Use (IU)	0.906	90.6%	✓

Source: SmartPLS 4.1 PLS-Algorithm output, processed 2026 (n = 500)

As shown in Table 20, AVE values range from 0.795 (PEOU) to 0.906 (IU), with all constructs substantially exceeding the required threshold of 0.50. The Intention to Repeat Use construct achieves the highest AVE (0.906), explaining 90.6% of the variance in its three indicators, an exceptional level of convergent validity that reflects the strong conceptual coherence of the behavioral intention items. Perceived Usefulness (AVE = 0.838), Attitude toward BYOD (AVE = 0.817), and Perceived Ease of Use (AVE = 0.795) similarly demonstrate excellent convergent validity, with each explaining well above the minimum threshold variance. Collectively, these results confirm that each construct's indicators cluster meaningfully around their intended latent variable.

4.3.4 Discriminant Validity (HTMT Ratio)

Discriminant validity confirms that each latent construct measures a conceptually distinct phenomenon from other constructs within the model. This

study employs the Heterotrait-Monotrait Ratio (HTMT) as the discriminant validity criterion, following the recommendation of Hair et al. (2022). An HTMT value below 0.85 satisfies the conservative threshold, values below 0.90 satisfy the liberal threshold, and values approaching 1.00 indicate a discriminant validity concern.

Table 21 Heterotrait-Monotrait Ratio (HTMT) Matrix

Construct Pair	HTMT Value	Criterion	Assessment
Intention to Repeat Use ↔ Attitude toward BYOD	0.954	< 1.00	Acceptable
Perceived Ease of Use ↔ Attitude toward BYOD	0.872	< 0.90	Fit
Perceived Ease of Use ↔ Intention to Repeat Use	0.756	< 0.85	Fit
Perceived Usefulness ↔ Attitude toward BYOD	0.927	< 1.00	Acceptable
Perceived Usefulness ↔ Intention to Repeat Use	0.816	< 0.85	Fit
Perceived Usefulness ↔ Perceived Ease of Use	0.909	< 1.00	Acceptable

Source: SmartPLS 4.1 PLS-Algorithm output, processed 2026 (n = 500)

Table 21 presents the HTMT matrix for all six construct pairs. Two relationships satisfy the conservative threshold of 0.85: PEOU ↔ IU (0.756) and PU ↔ IU (0.816). One relationship, PEOU ↔ AT (0.872), falls just above the conservative threshold but still satisfies the liberal threshold of 0.90. Three construct pairs exceed the liberal threshold of 0.90 but remain below the more stringent absolute threshold of 1.00. Given the theoretical relatedness among Attitude, Intention to Repeat Use, and Perceived Usefulness, these elevated HTMT values warrant cautious interpretation. Nevertheless, all values remain below 1.00, suggesting that the constructs remain empirically distinguishable under the adopted criterion.

The relatively elevated HTMT values among AT, IU, and PU are theoretically expected within the Technology Acceptance Model framework. These constructs represent sequential cognitive stages in the adoption process: perceived usefulness informs attitude formation, and attitude subsequently drives behavioral intention. Their theoretical interdependence naturally produces higher inter-

construct correlations, which the HTMT ratio appropriately reflects. These values represent conceptual relatedness rather than construct redundancy and are further justified by the strong indicator reliability and convergent validity results demonstrated in the preceding sections.

4.3.5 Summary of Measurement Model Evaluation

Table 22 Summary of Measurement Model Evaluation Criteria

Evaluation Criterion	Threshold	Range Obtained	Status
Indicator Reliability (Outer Loadings)	≥ 0.70	0.856 – 0.967	Met
Cronbach's Alpha	≥ 0.70	0.871 – 0.948	Met
Composite Reliability (ρc)	≥ 0.70	0.921 – 0.967	Met
Average Variance Extracted (AVE)	≥ 0.50	0.795 – 0.906	Met
HTMT Ratio	< 1.00	0.756 – 0.954	Fit (3 of 6 pairs) and Acceptable (3 of 6 pairs)

0.90 is a liberal criterion, and <1.00 is used as an absolute upper-bound criterion.

Source: SmartPLS 4.1 PLS-Algorithm output, processed 2026 (n = 500)

As summarized in Table 22, the measurement model satisfies all required psychometric criteria. Indicator reliability, internal consistency reliability, and convergent validity all substantially exceed their respective thresholds. The results indicate high conceptual relatedness among several constructs, while all HTMT values remain below 1.00. These findings collectively establish that the measurement instrument is both reliable and valid for assessing customer acceptance of BYOD ordering at XYZ Restaurant, providing a robust empirical foundation for the structural model analysis presented in the following section.

4.4 Structural Model Evaluation (Inner Model)

With the measurement model confirmed as both valid and reliable, the analysis proceeds to the structural model evaluation. The inner model examines the hypothesized relationships among the latent constructs and evaluates their statistical significance and practical explanatory power. Following the systematic procedure recommended by Hair et al. (2022), this section reports: (1) collinearity assessment,

(2) hypothesis testing via bootstrapping, (3) coefficient of determination (R^2), (4) effect size (f^2), and (5) predictive relevance (Q^2).

4.4.1 Collinearity Assessment (Inner VIF)

Before evaluating path coefficients, the structural model was inspected for multicollinearity among predictor constructs using the Variance Inflation Factor (VIF). Multicollinearity inflates standard errors and distorts path coefficient estimates. Hair et al. (2022) specify that VIF values below 5.00 are acceptable, with values below 3.30 suggesting an absence of common method bias concerns (Kock, 2015).

Table 23 Inner Model VIF Values (Collinearity Assessment)

Structural Path	VIF	Threshold	Assessment
Attitude toward BYOD → Intention to Repeat Use	3.316	< 5.00	✓
Perceived Ease of Use → Attitude toward BYOD	2.909	< 5.00	✓
Perceived Ease of Use → Perceived Usefulness	1.000	< 5.00	✓
Perceived Usefulness → Attitude toward BYOD	2.909	< 5.00	✓
Perceived Usefulness → Intention to Repeat Use	3.316	< 5.00	✓

Source: SmartPLS 4.1 inner model output, processed 2026 (n = 500)

Table 23 demonstrates that all VIF values fall within the acceptable range of 1.000 to 3.316. The PEOU → PU path yields a VIF of 1.000, confirming perfect collinearity independence, as PEOU operates as the sole predictor of PU in the model. The highest VIF values (3.316) are observed for paths leading to Intention to Repeat Use from both Attitude toward BYOD and Perceived Usefulness, a natural consequence of their high theoretical association within the TAM framework. Nevertheless, all values remain well below the critical threshold of 5.00 and below the 3.30 common method bias benchmark, confirming structural model suitability for hypothesis testing.

4.4.2 Hypothesis Testing via Bootstrapping

Hypothesis testing was conducted using the bootstrapping procedure with 5,000 resamples, as recommended by Hair et al. (2022). Statistical significance was evaluated based on the standardized path coefficient (β), t-statistic, and p-value. A relationship is considered statistically significant when $p < 0.05$ ($t > 1.96$).

Table 24 Bootstrapping Results:

Direct Path Coefficients and Hypothesis Testing

H	Path	β	T-Stat	P-Value	Sig.	Decision
H1	PEOU → Perceived Usefulness	0.810	27.983	0.000	$p < 0.001$	Supported
H2	PEOU → Attitude toward BYOD	0.276	4.445	0.000	$p < 0.001$	Supported
H3	PU → Attitude toward BYOD	0.612	9.872	0.000	$p < 0.001$	Supported
H4	AT → Intention to Repeat Use	0.799	16.919	0.000	$p < 0.001$	Supported
H5	PU → Intention to Repeat Use	0.090	1.765	0.078	$p > 0.05$	Not Supported

Source: SmartPLS 4.1 bootstrapping output (5,000 resamples), processed 2026 (n = 500)

H1: Perceived Ease of Use → Perceived Usefulness (Supported)

The path from Perceived Ease of Use to Perceived Usefulness demonstrates the strongest structural relationship in the model ($\beta = 0.810$, $t = 27.983$, $p < 0.001$). This result confirms that customers perceive BYOD ordering as more useful when the system is easy to understand, responsive, and enables effortless menu navigation. The coefficient of 0.810 indicates that an improvement of one standard deviation in PEOU is associated with a 0.810 standard deviation increase in PU, establishing usability as the primary cognitive gateway through which customers derive value from the BYOD experience.

This result is fully consistent with the foundational TAM proposition advanced by Davis (1989). Beyond supporting the proposed hypothesis, this result indicates that ease of use is the primary driver of customers' perceived value of BYOD. For restaurant management, this implies that investments should prioritize improving the user experience, such as simplifying the ordering process, enhancing

menu navigation, ensuring fast system response, and maintaining reliable internet connectivity, rather than simply adding new features. From a strategic perspective, successful digital transformation depends not only on implementing digital technology but also on creating a seamless customer experience that encourages continuous usage and maximizes operational efficiency.

H2: Perceived Ease of Use → Attitude toward BYOD (Supported)

Perceived Ease of Use exerts a positive and statistically significant, though comparatively weaker, effect on Attitude toward BYOD ($\beta = 0.276$, $t = 4.445$, $p < 0.001$). While interface usability does contribute to forming favorable customer attitudes, its influence magnitude is substantially smaller than that of Perceived Usefulness. This finding is theoretically consistent with the SST literature (Meuter et al., 2000), which positions ease of use as a baseline expectation rather than a primary value driver as customers expect digital ordering platforms to function smoothly, and meeting this expectation contributes modestly to attitude formation but does not constitute a sufficient condition for strong positive attitudes.

H3: Perceived Usefulness → Attitude toward BYOD (Supported)

Perceived Usefulness demonstrates a strong and highly significant positive effect on Attitude toward BYOD ($\beta = 0.612$, $t = 9.872$, $p < 0.001$). This outcome confirms that customers develop favorable attitudes toward BYOD when they consistently experience meaningful operational benefit, including order accuracy, real-time status transparency, and payment security. The coefficient of 0.612 is more than twice the magnitude of PEOU's direct influence on attitude ($\beta = 0.276$), establishing Perceived Usefulness as the dominant attitudinal driver within the TAM model framework.

H4: Attitude toward BYOD → Intention to Repeat Use (Supported)

Attitude toward BYOD exhibits the strongest direct influence on Intention to Repeat Use in the model ($\beta = 0.799$, $t = 16.919$, $p < 0.001$). This result identifies customer attitude as the central behavioral lever determining continuous BYOD adoption, with a path coefficient nearly nine times larger than the non-significant direct path from Perceived Usefulness ($\beta = 0.090$). The finding supports the position advanced by Self-Service Technology literature (Meuter et al., 2000) that technology acceptance in experiential service settings is driven not merely by

functional utility but by customers' holistic affective evaluation of the technology within the service encounter.

H5: Perceived Usefulness → Intention to Repeat Use (Not Supported)

Contrary to the hypothesis, the direct relationship between Perceived Usefulness and Intention to Repeat Use fails to achieve statistical significance ($\beta = 0.090$, $t = 1.765$, $p = 0.078$). This finding indicates that although customers acknowledge BYOD's functional benefits, usefulness perceptions alone do not directly translate into continuous usage intention. Instead, the influence of Perceived Usefulness on behavioral intention operates exclusively through the mediating pathway of Attitude toward BYOD. The indirect effect of PU on IU (operating through AT) is estimated at $\beta = 0.612 \times 0.799 = 0.489$, the findings suggest that the effect of PU on IU operates primarily through AT. This represents the theoretically important findings of the study and will be elaborated in the discussion section.

4.4.3 Coefficient of Determination (R^2)

Table 25 Coefficient of Determination (R^2) Results

Endogenous Construct	R^2	R^2 Adjusted	Classification
Perceived Usefulness (PU)	0.656	0.656	Moderate
Attitude toward BYOD (AT)	0.725	0.723	Moderate
Intention to Repeat Use (IU)	0.766	0.765	Substantial

Source: SmartPLS 4.1 inner model output, processed 2026 (n = 500)

Table 25 reveals that the structural model achieves strong explanatory power across all three endogenous constructs. Perceived Usefulness is explained by 65.6% of its variance ($R^2 = 0.656$), attributable entirely to its relationship with Perceived Ease of Use. Attitude toward BYOD achieves $R^2 = 0.725$, indicating that the combined influence of PEOU and PU accounts for 72.5% of variance in customer attitudes—a strong model performance that underscores the adequacy of the TAM framework for capturing attitudinal formation in this context. Most notably, Intention to Repeat Use achieves $R^2 = 0.766$, indicating that the structural model explains 76.6% of the variance in customer behavioral intention through the direct effects of Attitude toward BYOD and Perceived Usefulness, together with

the indirect contribution of Perceived Ease of Use through the model's mediating pathways. According to Hair et al. (2022), R^2 values exceeding 0.75 are classified as substantial, confirming that the proposed TAM model possesses excellent explanatory capability for predicting BYOD adoption behavior at XYZ Restaurant.

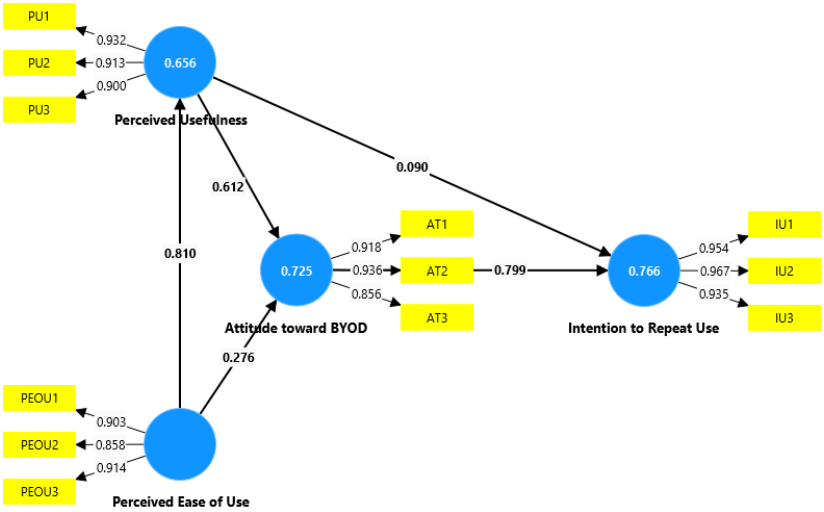

Figure 6. Structural Model with R^2 Values

Source: Software SmartPLS 4.1 2026

4.4.4 Effect Size (f^2)

Table 26 Effect Size (f^2) Results

Path	f^2	Effect Size Classification
PEOU → Perceived Usefulness	1.909	Large
PEOU → Attitude toward BYOD	0.095	Small
PU → Attitude toward BYOD	0.468	Large
AT → Intention to Repeat Use	0.823	Large
PU → Intention to Repeat Use	0.010	Negligible

Source: SmartPLS 4.1 inner model output, processed 2026 (n = 500) | Classification: < 0.02 = Negligible; 0.02–0.15 = Small; 0.15–0.35 = Medium; > 0.35 = Large (Hair et al., 2022)

Table 26 presents the effect size (f^2) for each structural path. The relationship between PEOU and PU yields the largest effect size in the entire model (f^2 = 1.909), confirming an exceptionally strong practical contribution of usability to usefulness perceptions which is well beyond the large threshold of 0.35. The AT → IU path also demonstrates a large effect (f^2 = 0.823), reinforcing attitude as the dominant driver of continuous usage intention. The PU → AT relationship achieves a large effect (f^2 = 0.468), while PEOU → AT produces a small effect (f^2 = 0.095),

numerically reflecting the differential importance of these two antecedents in attitude formation. The PU → IU path records a negligible effect ($f^2 = 0.010$), which is entirely consistent with its non-significant hypothesis outcome and further substantiates the argument that Perceived Usefulness influences behavioral intention exclusively via the attitudinal mediation pathway.

4.4.5 Predictive Relevance (Q^2)

Table 27 Predictive Relevance (Q^2) via Blindfolding

Endogenous Construct	SSO	SSE	Q^2	Classification
Attitude toward BYOD	1,500	622.743	0.585	Large
Intention to Repeat Use	1,500	468.199	0.688	Large
Perceived Usefulness	1,500	684.928	0.543	Large

Source: SmartPLS 4.1 blindfolding output, processed 2026 (n = 500) | $Q^2 = 1 - (SSE/SSO)$ | Classification: > 0.35 = Large (Hair et al., 2022)

All three endogenous constructs achieve Q^2 values substantially exceeding zero, confirming that the model demonstrates meaningful predictive relevance for all endogenous variables. Intention to Repeat Use records the highest Q^2 value (0.688), followed by Attitude toward BYOD (0.585) and Perceived Usefulness (0.543). According to Hair et al. (2022), Q^2 values above 0.35 indicate large predictive capability. The model therefore not only explains substantial variance in existing data but also possesses strong capacity to predict customer behavioral patterns in new observations—affirming its practical utility as a diagnostic and managerial tool for XYZ Restaurant.

4.5 Importance–Performance Map Analysis (IPMA)

While the PLS-SEM structural model identifies which constructs significantly influence customer behavioral intention, it does not inherently indicate where managerial resources should be prioritized. This study therefore extends the analytical framework by conducting an Importance–Performance Map Analysis (IPMA), targeting Intention to Repeat Use (IU) as the outcome construct. IPMA combines two dimensions for each predictor construct: importance, derived from total effects on the target construct, and performance, derived from rescaled latent variable scores on a 0–100 scale. This combined perspective enables strategically actionable prioritization of managerial interventions (Ringle & Sarstedt, 2016).

This methodological addition constitutes a significant analytical enhancement over a conventional PLS-SEM approach and distinguishes this study's contribution to practical BYOD adoption management.

4.5.1 Construct-Level IPMA Results

Table 28 IPMA Results: Target Construct = Intention to Repeat Use (IU)

Construct	Total Effect (Importance)	LV Performance (0–100)	IPMA Quadrant
Attitude toward BYOD (AT)	0.799	82.407	Quadrant IV – Priority Improvement
Perceived Ease of Use (PEOU)	0.689	83.249	Quadrant III – Lower Priority
Perceived Usefulness (PU)	0.579	86.565	Quadrant II – Potential Overinvestment

Source: SmartPLS 4.1 IPMA output, processed 2026 (n = 500) | Average Importance: 0.689 | Average Performance: 84.074

As shown in Table 28, Attitude toward BYOD exhibits the highest total effect on Intention to Repeat Use (Importance = 0.799) while recording the lowest performance score among the three constructs (Performance = 82.407). Perceived Ease of Use occupies a middle-ground position (Importance = 0.689; Performance = 83.249), while Perceived Usefulness achieves the highest performance score (86.565) but the lowest importance score (0.579) among the three.

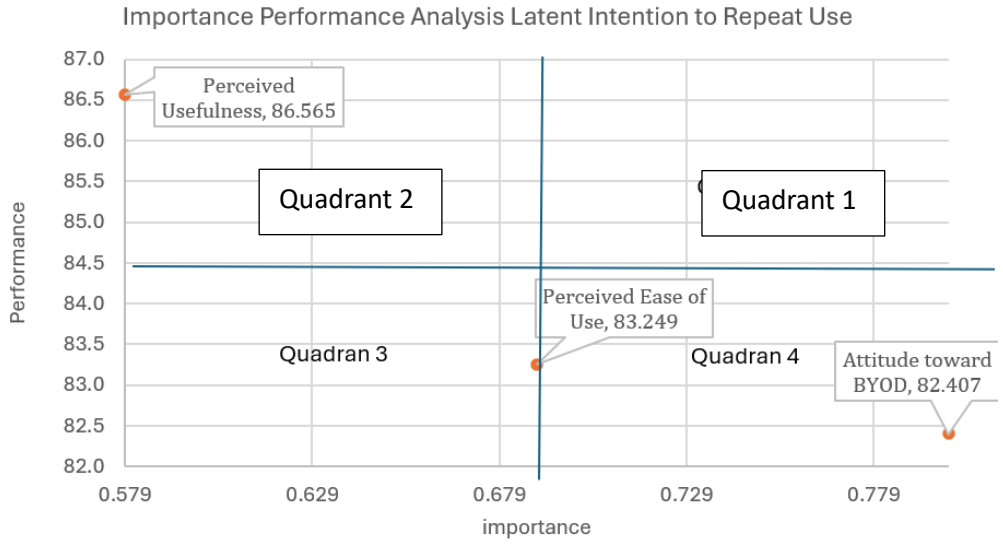

Figure 7. IPMA Result

Source: Software SmartPLS 4.1 2026

4.5.2 Quadrant Analysis and Managerial Interpretation

Based on the IPMA coordinates relative to the average importance (0.689) and average performance (84.074) intersection, each construct is positioned within the following quadrants:

Quadrant IV – Priority Improvement: Attitude toward BYOD (AT) via Attitudinal Strengthening

Attitude toward BYOD occupies the Priority Improvement quadrant, characterized by high importance (0.799 — the highest in the model) combined with below-average performance (82.407). This positioning makes Attitude toward BYOD the single most critical area for managerial intervention, demanding targeted Attitudinal Strengthening strategies. Despite customers generally acknowledging the functional superiority of BYOD ordering (as reflected in PU scores), their holistic emotional acceptance of and preference for the technology remains comparatively underdeveloped. This gap directly maps onto the strategic problem articulated in Chapter I: the decline in BYOD adoption from 33.7% to 28.5% in 2025 is attributable less to technological deficiency and more to insufficient attitudinal commitment to the system. Therefore, Attitudinal Strengthening through proactive in-restaurant staff guidance and tailored digital loyalty programs is highly projected to improve performance in this quadrant. Even modest increments in attitudinal optimization will yield the greatest marginal gains in Intention to Repeat Use.

Quadrant III – Lower Priority: Perceived Ease of Use (PEOU) via Network Reliability and Interface Enhancement.

Perceived Ease of Use falls in the Lower Priority quadrant with moderate importance (0.689) and moderate performance (83.249). This empirical evidence demonstrates that respondents already perceive BYOD's interface as reasonably navigable and sufficiently responsive. However, descriptive diagnostics indicate that maintaining this baseline usability requires continuous operational focus on two pillars: Network Reliability and Interface Enhancement. Since system responsiveness under variable internet conditions remains vulnerable, ensuring Network Reliability through dedicated in-restaurant Wi-Fi infrastructure is essential to protect the ease-of-use threshold. Concurrently, incremental Interface

Enhancement—such as streamlining the QR scanning flow and optimizing menu layout—should be sustained as a lower, secondary priority. While extensive investments directed exclusively at interface simplification are unlikely to generate proportionally significant improvements in customer adoption intentions, these dual operational efforts ensure that PEOU continues to fulfill its critical role as a foundational antecedent to both Perceived Usefulness and Attitude.

Quadrant II – Potential Overinvestment: Perceived Usefulness (PU) via Functional Maintenance

Perceived Usefulness occupies the Potential Overinvestment quadrant, characterized by high performance (86.565 — the strongest in the model) but below-average importance (0.579) relative to the other constructs. Customers already perceive the BYOD system's functional benefits—order accuracy, real-time status visibility, and payment security—at an excellent level. The non-significant direct effect of PU on IU (H5, $p = 0.078$) further confirms that increasing functional performance beyond its current level will not directly and meaningfully increase customers' continuous usage intentions. Consequently, instead of developing new technical features, resources should be diverted toward a Functional Maintenance approach. Management must preserve the current high standards of order precision and transaction security, ensuring these attributes are consistently maintained to support the broader, high-priority Attitudinal Strengthening initiatives, as further functional overinvestment will yield diminishing returns unless translated into attitudinal improvements.

It should be noted that, because only three predictor constructs are evaluated in this IPMA, the mean importance value (0.689) used as the quadrant boundary is itself an average of the same three total effects, including PEOU's own score of 0.689. As a result, PEOU's position relative to the importance boundary reflects a narrow numerical margin rather than a substantively distinct category from Attitude toward BYOD. This does not alter the overall managerial conclusion, since PEOU consistently records a lower total effect and a lower performance score than AT across the structural model, descriptive statistics, and IPMA results reported throughout this chapter. It does mean, however, that the quadrant boundary in Figure 7 should be interpreted as indicative of relative priority rather than as a

precise categorical cutoff, a limitation inherent to IPMA applications with a small number of predictor constructs.

4.5.3 Strategic Implications of IPMA Findings

The IPMA findings converge on a clear strategic diagnosis: the central challenge for XYZ Restaurant's BYOD program is attitudinal, not technological. Customers are aware of the system's utility and perceive it as relatively easy to use, yet a meaningful segment has not internalized BYOD as their preferred ordering method. This attitudinal deficit—most clearly expressed in AT3 (preference superiority over traditional ordering, M = 3.20)—represents both the primary barrier to adoption recovery and the primary opportunity for intervention.

Practical managerial initiatives should target attitude formation through experiential and relational strategies. These include: (1) improving the visual aesthetics and personalization of the BYOD interface to enhance perceived enjoyment; (2) reducing post-scan friction by optimizing QR code responsiveness and load speed across network conditions; (3) deploying proactive in-restaurant staff assistance during the ordering initiation phase for first-time and occasional users; (4) introducing behavioral incentives such as loyalty point multipliers or exclusive digital-ordering promotions to positively reinforce BYOD usage; and (5) redesigning staff communication scripts to actively communicate BYOD's convenience advantages during the customer greeting process.

4.6 Discussion and Synthesis of Findings

This study examined the determinants of customers' intention to continue using the Bring Your Own Device (BYOD) ordering system at XYZ Restaurant using the Technology Acceptance Model (TAM) framework. The empirical evidence, derived from 500 valid respondents and analyzed through PLS-SEM, provides a coherent and theoretically grounded explanation for the observed decline in BYOD adoption and offers actionable insights for its recovery.

4.6.1 The Primacy of Ease of Use in Driving Perceived Usefulness (H1)

The strongest relationship in the entire model is the effect of Perceived Ease of Use on Perceived Usefulness ($\beta = 0.810$, $f^2 = 1.909$, $p < 0.001$). This result offers a strong empirical affirmation of Davis's (1989) foundational TAM proposition: the

effort-free quality of a technology is the primary lens through which users evaluate its functional value. In the BYOD context, customers who find the interface intuitive and responsive naturally attribute greater practical benefit to the system's capabilities, including ordering accuracy, status tracking, and payment security.

The managerial implication follows directly from this pathway: since usability functions as the gateway to perceived usefulness, any degradation in system responsiveness—particularly under variable network conditions (reflected in PEOU2's relatively lower mean of 3.44 and highest standard deviation within PEOU at 0.75)—not only diminishes ease of use evaluations but cascades into reduced perceptions of system usefulness. Addressing network reliability within restaurant environments, whether through dedicated Wi-Fi infrastructure or optimized low-bandwidth rendering, therefore has amplified downstream effects on the customer's holistic value assessment.

4.6.2 Perceived Usefulness as the Dominant Attitudinal Driver (H2, H3)

While both PEOU and PU significantly influence Attitude toward BYOD, their relative magnitudes are strikingly different. Perceived Usefulness ($\beta = 0.612$) exerts more than twice the attitudinal influence of Perceived Ease of Use ($\beta = 0.276$), confirming that customers form favorable attitudes primarily when they experience substantive functional value rather than merely operational convenience.

The strategic relevance of this differential lies in how the two constructs behave. Ease of use functions as a hygiene factor in the SST literature (Meuter et al., 2000): its presence does not create delight, but its absence creates dissatisfaction. Perceived Usefulness, by contrast, functions as a motivator—its consistent delivery actively builds positive attitudes. For XYZ Restaurant, this means that operational reliability, ordering accuracy (PU1: M = 3.61), and payment security (PU3: M = 3.59) must be maintained at high levels not because they directly drive repeat usage (H5 Not Supported), but because they constitute the primary mechanism through which positive customer attitudes are cultivated.

4.6.3 Attitude as the Central Mechanism for Continuous Adoption (H4)

The most strategically significant structural finding is the dominant role of Attitude toward BYOD in predicting Intention to Repeat Use ($\beta = 0.799$, $f^2 = 0.823$, $p < 0.001$), establishing attitude as the primary behavioral driver of sustained BYOD adoption. This finding supports the original TAM framework (Davis, 1989; Fishbein & Ajzen, 1975), which posits that attitude mediates the relationship between cognitive evaluations and behavioral intention. It also extends Self-Service Technology (SST) theory (Meuter et al., 2000) by demonstrating that continued technology adoption in experiential restaurant settings depends not only on recognizing BYOD's utility but also on developing a favorable attitude toward its use.

The relatively low score of AT3 ($M = 3.20$, $SD = 0.84$), measuring customers' preference for BYOD over waiter-assisted ordering, identifies the principal source of attitudinal resistance. Many customers continue to value the interpersonal aspects of restaurant service, including personalized interaction, social comfort, and confidence in resolving ordering issues. This suggests that BYOD should be positioned as a technology that enhances rather than replaces staff-assisted service. This interpretation is further supported by the higher mean of AT1 (BYOD as a complement to existing ordering methods; $M = 3.61$) compared with AT2 (BYOD as a replacement for waiter-assisted ordering; $M = 3.51$), indicating greater customer acceptance of a complementary rather than substitutive role. Collectively, these findings support a co-existence model of BYOD adoption in dine-in restaurants, consistent with the strategic recommendations presented in Section 4.5.3.

4.6.4 The Mediation Finding: Usefulness Requires Attitudinal Translation (H5)

The non-support for H5 (PU → IU direct effect: $\beta = 0.090$, $p = 0.078$) is the most theoretically rich finding of this study. It establishes that Perceived Usefulness exerts its influence on behavioral intention exclusively through the attitudinal mediation pathway (indirect effect = $\beta = 0.489$), suggesting that the effect of Perceived Usefulness on Intention to Repeat Use operates primarily through Attitude toward BYOD.

This evidence diverges from some earlier TAM applications in which PU directly predicted behavioral intention (Venkatesh & Davis, 2000). The divergence may be explained by the distinctive nature of the restaurant dine-in context. Unlike office software or mobile banking applications where efficiency is the primary evaluative criterion, restaurant customers engage with BYOD within an experiential service environment where emotional response to the technology interaction matters as much as functional output. Customers who find BYOD useful but perceive it as impersonal, uncertain, or socially awkward within the dining context may acknowledge its utility without committing to its repeated use.

At a more granular level, this result offers a compelling explanation for the macro-level adoption decline observed at XYZ Restaurant (from 33.7% in 2024 to 28.5% in 2025). The structural analysis confirms that improvements in system functionality have not translated into sustained adoption because the attitudinal commitment necessary to bridge perceived usefulness and behavioral intention has not been adequately cultivated. The problem is not the product but the experience.

4.6.5 Theoretical Consistency and Confirmation of Findings

Having discussed each hypothesis individually, this section synthesizes the overall findings against the theoretical framework established in Chapter II to evaluate the extent to which this study confirms, extends, or departs from the Technology Acceptance Model (TAM).

The empirical results show that four of the five hypothesized relationships (H1–H4) are statistically significant and generally consistent with the original TAM. Consistent with Davis (1989) and Venkatesh and Davis (2000), Perceived Ease of Use (PEOU) influences Perceived Usefulness (PU), while both cognitive beliefs shape Attitude, which subsequently drives behavioral intention. The strong PEOU→PU relationship ($\beta = 0.810$) is comparable with prior digital self-service studies, confirming that TAM's core causal structure remains valid in the BYOD dine-in context. However, the direct effect of PU on Intention to Repeat Use is not significant ($\beta = 0.090$, $p = 0.078$), with its influence occurring entirely through Attitude (indirect effect $\beta = 0.489$). This finding partially departs from TAM2 (Venkatesh & Davis, 2000) under an experiential restaurant context, which

proposes a direct PU→behavioral intention relationship, suggesting that this assumption depends on whether technology is adopted in utilitarian or experiential settings.

Recent restaurant technology research supports this pattern. Ma and Chang (2024) found that Attitude significantly mediates the relationship between cognitive beliefs and intention to use restaurant subscription platforms, while Shaker et al. (2023) similarly identified attitude as the dominant mediator in voluntary, experience-based technology adoption. Together, these studies indicate that the direct PU→IU relationship weakens in experiential service environments, where technology partially replaces human interaction. Accordingly, this study extends TAM by demonstrating that, in a BYOD dine-in context, Attitude is the primary mechanism through which both Perceived Ease of Use and Perceived Usefulness influence continuance intention. This also explains why the high perceived usefulness of BYOD (IPMA performance = 86.565) has not been sufficient to prevent adoption from declining from 33.7% to 28.5% between 2024 and 2025. Therefore, the present findings confirm that TAM remains theoretically robust, but the relative importance of its constructs varies according to the service context.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

This chapter synthesizes the key findings of the study, discusses their theoretical and managerial implications, acknowledges the research limitations, and proposes directions for future scholarly inquiry. The chapter is organized into five sections: conclusions drawn from empirical analysis, theoretical implications for the Technology Acceptance Model and Self-Service Technology literature, managerial implications for XYZ Restaurant, research limitations, and recommendations for future research.

5.1 Conclusions

This study examined the determinants of customers' continuous intention to repeat use the Bring Your Own Device (BYOD) ordering system during dine-in service at XYZ Restaurant through the lens of the Technology Acceptance Model (TAM). Using a quantitative explanatory design and data collected from 500 valid respondents in the Greater Jakarta area, the study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) and Importance–Performance Map Analysis (IPMA) to test five research hypotheses and identify strategic managerial priorities. The following conclusions are drawn based on empirical evidence.

Table 29 Summary of Hypothesis Testing Results

H	Structural Path	β	T-Stat	P-Value	Decision
H1	PEOU → Perceived Usefulness	0.810	27.983	0.000	Supported
H2	PEOU → Attitude toward BYOD	0.276	4.445	0.000	Supported
H3	PU → Attitude toward BYOD	0.612	9.872	0.000	Supported
H4	AT → Intention to Repeat Use	0.799	16.919	0.000	Supported
H5	PU → Intention to Repeat Use	0.090	1.765	0.078	Not Supported

Source: SmartPLS 4.1 bootstrapping output (5,000 resamples), processed 2026 (n = 500)

5.1.1 Perceived Ease of Use Positively Influences Perceived Usefulness (H1 – Supported)

The first hypothesis is supported, demonstrating that Perceived Ease of Use (PEOU) exerts a strong positive and significant effect on Perceived Usefulness ($\beta = 0.810$, $t = 27.983$, $p < 0.001$). This is the strongest structural relationship in the entire model, confirming that customers perceive the BYOD system as substantially more useful when it is intuitive, responsive, and easy to navigate. The interface clarity (PEOU1: M = 3.54) and navigation fluency (PEOU3: M = 3.50) of the BYOD system are evaluated positively by respondents, though system responsiveness under variable network conditions (PEOU2: M = 3.44) represents the weakest ease-of-use dimension and a concrete operational improvement opportunity. The effect size of this relationship ($f^2 = 1.909$) is exceptionally large, underscoring the paramount importance of usability as the cognitive gateway through which customers derive and evaluate the functional value of self-service technology in the restaurant environment.

5.1.2 Perceived Ease of Use Positively Influences Attitude toward BYOD (H2 – Supported)

The second hypothesis is supported, confirming that Perceived Ease of Use positively and significantly influences Attitude toward BYOD ($\beta = 0.276$, $t = 4.445$, $p < 0.001$). Although statistically significant, the magnitude of this relationship is considerably smaller than that of Perceived Usefulness on Attitude (H3), affirming that ease of use operates primarily as a hygiene factor in this context. Customers generally expect a digital ordering platform to function with minimal friction; meeting this expectation contributes modestly to positive attitude formation but does not constitute a sufficient condition for strong attitudinal commitment. This finding is consistent with Self-Service Technology (SST) literature, which positions usability as a prerequisite rather than a competitive differentiator in the customer's evaluation of technology-mediated service encounters.

5.1.3 Perceived Usefulness Positively Influences Attitude toward BYOD (H3 – Supported)

The third hypothesis is supported, establishing that Perceived Usefulness exerts a strong positive effect on Attitude toward BYOD ($\beta = 0.612$, $t = 9.872$, $p <$

0.001). Perceived Usefulness is the dominant attitudinal driver in the model, exerting more than twice the influence of Perceived Ease of Use on attitude formation ($f^2 = 0.468$ versus $f^2 = 0.095$). Customers form genuinely favorable attitudes toward BYOD when they consistently experience its functional benefits: order accuracy (PU1: M = 3.61), real-time order status monitoring (PU2: M = 3.59), and payment security (PU3: M = 3.59). This result confirms that the operational reliability of the BYOD system—not its technical sophistication—is what fundamentally shapes customers' attitudinal disposition toward continued engagement with the technology.

5.1.4 Attitude toward BYOD Positively Influences Intention to Repeat Use (H4 – Supported)

The fourth hypothesis is supported with the highest path coefficient in the structural model ($\beta = 0.799$, $t = 16.919$, $p < 0.001$, $f^2 = 0.823$). This result establishes Attitude toward BYOD as the single most critical determinant of customers' continuous usage intention, exerting a large and dominant behavioral effect. Customers who genuinely embrace BYOD as a preferred, trustworthy, and superior ordering method are substantially more likely to commit to its repeated use during future restaurant visits. The relatively lower mean score of AT3—measuring whether customers prefer BYOD over waiter-assisted ordering (M = 3.20, SD = 0.84)—identifies the specific attitudinal dimension requiring the most strategic attention and explains, at least in part, the observed decline in BYOD adoption rates from 33.7% in 2024 to 28.5% in 2025.

5.1.5 Perceived Usefulness Does Not Directly Influence Intention to Repeat Use (H5 – Not Supported)

The fifth hypothesis is not supported, as the direct effect of Perceived Usefulness on Intention to Repeat Use fails to achieve statistical significance ($\beta = 0.090$, $t = 1.765$, $p = 0.078$). While customers clearly recognize BYOD's functional utility, these perceptions alone do not directly motivate continuous usage in the restaurant dine-in context. Instead, the influence of Perceived Usefulness on behavioral intention operates entirely through the attitudinal mediation pathway, with a statistically significant indirect effect estimated at $\beta = 0.489$ (0.612×0.799). The findings suggest that the effect of Perceived Usefulness on Intention to Repeat

Use operates primarily through Attitude toward BYOD, indicating that in experiential casual-dining settings, the absolute drive of functional utility depends heavily on emotional and attitudinal acceptance before triggering direct behavioral commitment.

5.1.6 Overall Model Performance

The overall research model demonstrates excellent explanatory and predictive capability. The coefficient of determination (R^2) for Intention to Repeat Use reaches 0.766, classified as substantial according to Hair et al. (2022), indicating that the structural model explains 76.6% of the variance in customers' continuous usage intention through both direct and indirect relationships among the model constructs. The Q^2 value of 0.688 indicates strong predictive relevance of the model. The IPMA analysis further reveals that Attitude toward BYOD represents the highest-importance construct (total effect = 0.799) while simultaneously recording the lowest performance score (82.407 on a 0–100 scale) among the three constructs examined, identifying it as the single most critical priority area for managerial intervention.

5.2 Theoretical Implications

This study makes three principal theoretical contributions to the fields of Technology Management, Digital Service Innovation, and Consumer Behavior research.

First: Enriches Literature through Empirical Validation of TAM in Indonesian Restaurant SST Settings. This study provides large-scale empirical validation of the Technology Acceptance Model in a BYOD-enabled restaurant dine-in context in Indonesia, enriching digital service management and technology acceptance literature by contextualizing TAM within system-mediated dine-in services. Prior SST adoption research in the Indonesian food service sector has relied predominantly on theoretical or conceptual frameworks without robust empirical validation (Elargo et al., 2017). The demographic profile of respondents, predominantly aged 45–54 years (58.2%), with high educational attainment (92.4% tertiary) and a working-age, economically active base in which Employees

represent the largest single occupational group (41.4%), challenges the assumption that digital SST adoption in developing markets is primarily driven by younger, digitally native consumers. This contextual contribution enriches the broader Technology Management literature with evidence from an underrepresented geographic and industry setting.

By explicitly measuring how digital, self-service interfaces shape customer evaluations independent of waiter-delivered interaction, this study also addresses the gap identified in prior restaurant service quality literature (e.g., DINESERV-based studies such as Abezie, 2019), which has predominantly examined human-delivered service encounters rather than system-mediated ones

Second: Provides New Evidence on Customer Acceptance — Asymmetric Antecedent Effects on Attitude. The markedly different effect magnitudes of Perceived Ease of Use ($\beta = 0.276$) and Perceived Usefulness ($\beta = 0.612$) on Attitude provide new evidence on how self-service technology (SST) shapes customer acceptance in restaurant settings. Consistent with Meuter et al.'s (2000) SST theory, ease of use operates as a hygiene factor, necessary but not differentiating, while perceived usefulness functions as the true motivator that actively constructs positive attitudinal evaluations. This asymmetry has not been consistently articulated in prior BYOD or restaurant technology literature, and its formal documentation here constitutes a meaningful theoretical refinement. Future TAM-based research in self-service and digital service contexts may benefit from explicitly testing for this asymmetric structure rather than treating PEOU and PU as symmetrically weighted antecedents.

Third: Provides New Evidence on Behavioral Intention — Contextual Boundary Condition of the PU–IU Relationship. The rejection of H5 provides new evidence on how self-service technology influences behavioral intention in restaurant settings, specifically identifying a boundary condition for the Technology Acceptance Model (Davis, 1989; Venkatesh & Davis, 2000). While prior TAM applications in utilitarian technology contexts, such as enterprise software or mobile banking, have consistently found a significant direct effect of Perceived Usefulness on behavioral intention, this study demonstrates that in

experiential service environments, specifically restaurant dine-in settings, this direct pathway is fully mediated by Attitude, unlike in utilitarian contexts. This evidence demonstrates that the relative weight of affective versus cognitive determinants of behavioral intention is context-dependent, and that experiential service environments amplify the role of attitude as a behavioral mediator. This extends the TAM framework by introducing service context as a moderating condition that shapes how functional perceptions translate into behavioral commitments.

5.3 Managerial Implications

The empirical findings of this study provide actionable strategic recommendations for XYZ Restaurant's management, organized according to the IPMA-derived priority hierarchy. Given that BYOD adoption declined from 33.7% to 28.5% between 2024 and 2025, worsening the part-time labor cost-to-revenue ratio from 3.7% to 4.5%, the following interventions are proposed:

Table 30 Summary of Managerial Implications by Strategic Priority

No.	Priority Area	Key Actions	Timeframe	Priority
1	Attitudinal Strengthening (AT – Priority Improvement)	In-restaurant onboarding staff, loyalty incentives, BYOD-first communication	Short-term (0–6 months)	High
2	Network Reliability (PEOU2 gap)	Dedicated in-restaurant Wi-Fi or optimized low-bandwidth rendering	Short-term (0–6 months)	High
3	Interface Enhancement (PEOU – Lower Priority)	Streamlined QR scanning, improved menu categorization, visual redesign	Medium-term (6–12 months)	Medium
4	Functional Maintenance (PU – Maintain)	Sustained order accuracy, payment security audits, real-time tracking reliability	Ongoing	High
5	Adoption Monitoring	Monthly BYOD adoption rate tracking against labor efficiency KPIs	Ongoing	Medium

Source: Author's synthesis based on PLS-SEM and IPMA results, 2026

Priority 1 – Strengthen Customer Attitude toward BYOD (Most Critical).

Given that Attitude toward BYOD is identified as both the highest-importance construct (total effect = 0.799) and the lowest-performing construct in the IPMA analysis (performance score = 82.407), strengthening customer attitudes should be the overriding strategic priority for XYZ Restaurant. The specific attitudinal gap is concentrated in AT3—customers' preference for BYOD over traditional waiter-assisted ordering (M = 3.20)—indicating that a meaningful segment still perceives conventional service as superior or more comfortable. Management should deploy proactive floor staff who actively guide first-time and occasional BYOD users through the ordering initiation process, transforming the technology encounter from a moment of potential uncertainty into one of guided empowerment. Additionally, introducing loyalty point multipliers or exclusive promotions accessible only through BYOD ordering can create positive reinforcement mechanisms that encourage repeated engagement and build habitual preference.

Priority 2 – Address System Responsiveness and Network Reliability.

The descriptive analysis reveals that PEOU2 (system responsiveness) records the lowest mean score among all ease-of-use indicators (M = 3.44) and the highest standard deviation within the PEOU construct (SD = 0.75), indicating inconsistent customer experience with BYOD speed and reliability under variable internet conditions. Since PEOU exerts a large effect on Perceived Usefulness ($f^2 = 1.909$), any degradation in system responsiveness cascades into reduced perceptions of system usefulness and, ultimately, diminished attitudinal commitment to BYOD. Management should invest in dedicated in-restaurant Wi-Fi infrastructure, or work with the BYOD system developer to optimize page rendering for low-bandwidth environments, ensuring that QR code scanning, menu loading, and order submission perform consistently across all outlet locations.

Priority 3 – Maintain and Communicate Perceived Usefulness.

Perceived Usefulness achieves the highest performance score in the IPMA analysis (86.565), reflecting strong customer recognition of BYOD's functional benefits. Although PU does not directly drive repeat usage intention (H5 not supported), it

remains the primary driver of attitude formation (β = 0.612). Management must therefore sustain operational reliability across all three usefulness dimensions: order accuracy (PU1), real-time status tracking (PU2), and payment security (PU3). Additionally, marketing communication within the restaurant—through table cards, digital displays, and staff scripts—should explicitly highlight these functional benefits to customers who have not yet internalized them, thereby supporting ongoing attitude formation among new and occasional users.

Priority 4 – Leverage BYOD Adoption to Recover Labor Efficiency.

The strategic motivation for improving BYOD adoption extends beyond customer experience into operational profitability. The concurrent decline in BYOD adoption (from 33.7% to 28.5%) and deterioration in part-time labor cost efficiency (from 3.7% to 4.5% of revenue) demonstrates a direct operational linkage. Each percentage point increase in BYOD adoption enables XYZ Restaurant to reallocate part-time frontliner resources from order-taking to higher-value service functions, improving labor productivity without reducing service quality. Management should establish clear BYOD adoption rate targets as operational KPIs, measured on a monthly basis at the outlet level, enabling performance tracking and targeted corrective action where adoption lags persist.

General Industrial Applications

Beyond functioning as a digital ordering system, BYOD has the potential to evolve into a strategic digital platform that supports multiple business functions across restaurant operations. Every customer interaction generates valuable data that can be utilized to better understand purchasing behavior, dining preferences, and visit frequency. These insights enable management to improve menu engineering, develop personalized promotions, and identify cross-selling opportunities that increase customer value.

At the operational level, integrating BYOD data with loyalty programs and Customer Relationship Management (CRM) systems enables personalized customer engagement while providing valuable insights into customer behavior. Supported by advanced analytics and AI-driven recommendations, BYOD can

improve marketing effectiveness, optimize operational decisions, and enhance the overall customer experience. Consequently, BYOD should be viewed not merely as a digital ordering tool, but as a strategic platform that connects customer analytics, operational excellence, and business intelligence to drive long-term competitive advantage.

5.4 Research Limitations

While this study contributes meaningfully to the technology adoption and restaurant management literature, several limitations should be acknowledged when interpreting its findings and generalizing its conclusions.

(1) Geographic Boundary. The study is confined to XYZ Restaurant outlets in the Greater Jakarta (Jabodetabek) area. Consumer behavior, digital literacy levels, and network infrastructure quality may differ substantially across other Indonesian regions, limiting the generalizability of findings to outlet clusters in Tier 2 and Tier 3 cities where BYOD adoption dynamics may be driven by different structural factors.

(2) Cross-Sectional Research Design. Data were collected at a single point in time, providing a static snapshot of customer perceptions rather than capturing the dynamic evolution of attitudes and behavioral intentions over repeated BYOD interactions. Technology acceptance is inherently a longitudinal process, and the relationships between PEOU, PU, Attitude, and Intention may evolve as customers accumulate experience with the system. A longitudinal design would more accurately capture these temporal dynamics.

(3) Self-Report Bias. All data were collected through self-administered questionnaires, which are susceptible to common method bias and social desirability effects. Although procedural and statistical remedies were implemented (anonymized responses, randomized question order, VIF-based CMB check yielding values below 3.3), the possibility of response inflation cannot be entirely eliminated. Behavioral data from actual BYOD transaction logs would complement self-reported survey findings and strengthen measurement validity.

(4) TAM Framework Scope. This study operationalizes TAM using four constructs (PEOU, PU, AT, IU) and twelve indicators. While the model achieves substantial explanatory power (R^2 = 0.766 for IU), the remaining 23.4% unexplained variance may be attributed to factors outside the TAM framework, including social influence, perceived enjoyment, personal innovativeness, network quality, trust, and situational factors such as restaurant busyness or table arrangement. Incorporating these constructs in future research could yield a more comprehensive adoption model.

(5) Non-Probability Sampling. The study employed purposive sampling targeting customers who had used BYOD at least once. This eligibility criterion, while methodologically appropriate for the research objectives, excludes customers who actively avoided BYOD ordering—arguably the most relevant segment for understanding adoption resistance. Future research incorporating non-users or lapsed adopters would provide a more complete picture of the behavioral factors underlying the observed adoption decline.

(6) Single Restaurant Chain Context. This study focused exclusively on one casual dining brand, XYZ Restaurant. Consumer expectations regarding technology-mediated ordering may differ substantially across other restaurant formats, such as quick-service restaurants (QSR) or fine dining establishments, where service pacing, price sensitivity, and the perceived value of staff interaction operate under different norms. Consequently, the findings of this study may not be directly transferable to restaurant categories outside the casual dining segment

5.5 Recommendations for Future Research

The findings of this study, together with its acknowledged limitations, suggest several avenues for future research on self-service technology adoption, restaurant digital transformation, and consumer behavior in experiential service settings.

(1) Longitudinal Analysis of BYOD Adoption. Future studies should employ longitudinal designs to examine how Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude, and Intention to Repeat Use evolve as customers gain experience with BYOD. Tracking the same respondents over multiple periods

would clarify whether the attitudinal mediation identified in this study remains stable or diminishes as BYOD usage becomes habitual.

(2) Extending TAM with UTAUT2 Constructs. Future research is encouraged to enrich the present TAM framework by incorporating Social Influence, Hedonic Motivation, and Habit from UTAUT2 (Venkatesh et al., 2012). Social Influence is particularly relevant because restaurant visits are typically group-based, where dining companions may shape BYOD adoption decisions (Li et al., 2024). Hedonic Motivation captures the enjoyment associated with technology use, which has been shown to strengthen continuance intention in restaurant self-service technologies (Seo, 2020). Habit reflects the extent to which BYOD becomes an automatic behavior, an important consideration given that 89.4% of respondents in this study were aged 35 years or above and are therefore more likely to exhibit established behavioral routines (Na et al., 2021). Integrating these constructs may improve the explanatory power of continuance intention beyond the classical TAM.

(3) Comparative Studies Across Restaurant Formats and Markets. Since this research focused on a single casual dining brand in urban Indonesia, future studies should compare BYOD adoption across restaurant formats (QSR, fast-casual, and fine dining), different regions, and cross-country settings within Southeast Asia to examine the moderating effects of restaurant type, market characteristics, and culture on TAM relationships.

(4) Expanding the Explanatory Model. Although the proposed model explains 76.6% of the variance in Intention to Repeat Use ($R^2 = 0.766$), approximately 23.4% remains unexplained. Future research should investigate additional determinants beyond the cognitive dimensions of TAM to better capture the social, emotional, and experiential aspects of repeated BYOD usage.

(5) Investigating Adoption Barriers. This study examined only customers who had previously used BYOD. Future research should include non-users and lapsed adopters to identify the attitudinal, situational, and system-related barriers preventing sustained adoption. Combining qualitative and quantitative approaches would provide a more comprehensive understanding of adoption discontinuance.

(6) Network Quality as a Moderating Variable. Given that system responsiveness (PEOU2) exhibited the highest response variability (SD = 0.75), future studies should examine internet connectivity as a moderator of the PEOU–PU and PEOU–Attitude relationships. Objective measures of network performance could provide stronger evidence for infrastructure investments supporting BYOD adoption.

(7) Cross-Industry Validation. Future research should replicate the proposed TAM-IPMA framework in other Indonesian self-service technology contexts, such as retail self-checkout, healthcare, transportation, and public services. Such studies

would assess whether the predominant mediating role of Attitude observed in this research represents a broader pattern of technology acceptance across consumer-facing digital services.

In conclusion, this study demonstrates that sustaining BYOD adoption at XYZ Restaurant depends primarily on strengthening customers' attitudes rather than further improving technological functionality. While customers already perceive BYOD as useful and easy to use, they have not fully developed a preference for it over conventional ordering. Accordingly, initiatives that enhance the customer experience, strengthen staff facilitation, and reinforce positive usage behavior are likely to deliver greater adoption gains than purely technical improvements. The integration of TAM and IPMA provides a robust and actionable framework for guiding these managerial initiatives and evaluating their effectiveness over time.