



Point of Sale (PoS) System Usage Behavior among Food and Beverage Entrepreneurs: A Study in Thailand

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Abstract

This study aims to investigate the usage behavior of Point-of-Sale (POS) technology among food and beverage entrepreneurs in Mueang District, Nakhon Si Thammarat Province. The sample consisted of 400 entrepreneurs who utilized POS systems in their businesses. Data were collected using a questionnaire and analyzed through descriptive and inferential statistics. The findings revealed that most respondents were female, aged between 35–44 years, held a bachelor's degree, were business owners, had 2–5 years of experience, and operated dessert shops, bakeries, or cafés. Overall, the acceptance of POS technology was at a high level, particularly in terms of perceived usefulness. The hypothesis testing indicated that personal factors such as gender, age, and education level, as well as all four dimensions of technology acceptance, were significantly related to POS usage behavior. The results suggest that promoting the effective use of POS systems in the food and beverage sector should focus on enhancing perceived usefulness and system ease of use, while also considering user diversity.

Keywords: Technology Usage Behavior, Point-Of-Sale (POS) System, Technology Acceptance, Food And Beverage Entrepreneurs

1. Introduction

In the era where digital technologies play an increasingly integral role in everyday life—coupled with changing consumer behavior and the impact of the COVID-19 pandemic—the food and beverage (F&B) industry in Thailand has been compelled to adapt to these transformative shifts. According to the Kasikorn Research Center (2022) ^[13], the number of food and beverage businesses in 2022 increased by 14.7% compared to the previous year. Furthermore, it is projected that between 2024 and 2026, this sector will continue to grow at an annual rate of 4.0–5.0% (Kasikorn Research Center, 2022) ^[13]. At the regional level, data from the Department of Business Development (2020) ^[11] show that in 2020, Nakhon Si Thammarat Province—particularly Mueang District, the economic hub—experienced a 10% increase in food and beverage establishments. This has intensified competition within the industry, prompting entrepreneurs to seek technologies that enhance their competitive advantage. The Point of Sale (POS) system has become one of the most widely adopted technologies due to its multifaceted benefits in managing restaurant operations. However, the implementation of POS systems still faces several challenges, including cost, technological complexity, workforce readiness, and users' attitudes and behavioral tendencies (Department of Business Development, 2020) ^[11].

Given these circumstances, investigating the behavior of food and beverage entrepreneurs regarding the use of POS technology in Mueang District, Nakhon Si Thammarat, is both significant and timely. The findings of this study are expected to provide valuable insights in several dimensions: enabling entrepreneurs to make informed decisions regarding technology investment; offering actionable recommendations for POS developers to better meet user needs; and guiding government agencies in providing appropriate support to help local food businesses transition effectively into the digital age. Moreover, this research contributes to the body of knowledge on technology acceptance in the context of small and medium-sized enterprises (SMEs), serving as a foundation for future scholarly work.

2. Literature Review

This study on the usage behavior of Point of Sale (POS) technology among food and beverage entrepreneurs in Mueang District, Nakhon Si Thammarat, is grounded in an extensive review of relevant books, articles, documents, and previous research. This review aims to inform the research direction, theoretical framework, and conceptual components necessary for developing the study's hypotheses and research model.

2.1 Concepts and theories related to the point of sale (POS) system

The Point of Sale (POS) system is a computerized system used to manage sales transactions at the point where goods or services are exchanged between a seller and a customer (O'Brien, 2007) ^[18]. The POS system integrates front-office sales operations with back-office functions to enhance business operational efficiency. It consists of two primary components: hardware, which includes various computer-based devices used to input and process sales data, and software, which refers to the computer programs that control hardware operations and process transactional data (Tesone, 2006) ^[21]. The restaurant industry is one of the sectors that has widely adopted POS systems due to their numerous advantages (Abu Karim, 2013; Lee, 2012; Tesone, 2006) ^[1, 14, 21]. These systems enable accurate and swift billing and transaction processing, minimize errors, and expedite service delivery through automatic order transmission to the kitchen. POS systems also support daily, monthly, and annual sales tracking, which aids in marketing planning and promotional campaign development. Furthermore, they facilitate inventory management by notifying users when stock levels are low.

In addition, POS systems store and analyze sales data to help refine customer-oriented strategies. They assist in allocating human resources based on peak service times, reduce cash loss, and prevent employee fraud. Business owners can access real-time sales reports anytime and anywhere. These systems also enhance marketing efforts by allowing for loyalty programs and point accumulation, encouraging repeat visits. Given these diverse functions and benefits, POS systems significantly enhance the efficiency of restaurant operations. They provide up-to-date information for decision-making, contribute to increased sales, reduced costs, and improved customer satisfaction over the long term. Therefore, investing in a POS system is considered a key factor in strengthening competitive advantage and achieving sustainable growth in the contemporary restaurant industry.

2.2 Concepts and theories of technology acceptance

Technology acceptance is a significant subject of inquiry in understanding user behavior, especially in terms of the factors that influence individuals' decisions to adopt and continue using a particular technology. Numerous theoretical frameworks have been developed to explain this phenomenon. The Technology Acceptance Model (TAM), proposed by Davis (1989) ^[8], posits that users' intention to adopt technology is determined by two primary perceptions: perceived usefulness and perceived ease of use. These factors directly affect users' attitudes and subsequent behaviors. Another influential theory is the Theory of Planned Behavior (TPB), which highlights the importance of attitude toward the behavior, subjective norms, and perceived behavioral control as predictors of behavioral intentions (Ajzen, 1991) ^[2].

Additionally, Rogers' (2003) ^[20] Diffusion of Innovations (DOI) theory emphasizes five key attributes—relative advantage, compatibility, complexity, trialability, and observability—that shape the rate and extent of innovation adoption. Building upon these frameworks, the Unified Theory of Acceptance and Use of Technology (UTAUT) integrates key variables from earlier models. It identifies performance expectancy, effort expectancy, social influence, and facilitating conditions as determinants of technology usage behavior (Venkatesh *et al.*, 2003) ^[24]. Similarly, the Information Systems Success Model (DeLone & McLean, 1992; 2003) ^[9, 10] explains that system quality, information quality, and service quality significantly affect user satisfaction and actual system use, which in turn generate net benefits for organizations. Although each model contains unique components, they share several essential constructs—such as perceived usefulness, ease of use, social influence, facilitating conditions, user satisfaction, and behavioral intention—which are consistently associated with technology acceptance. A comprehensive evaluation of these factors is therefore necessary for gaining in-depth insights into user behaviors and for designing technology systems that align with users' needs and expectations.

2.3 Concepts and theories related to the use of point of sale (POS) technology

Technology usage behavior refers to the actions of individuals or organizations in utilizing technology to meet their needs, achieve objectives, and enhance operational efficiency. This includes decisions related to the type of technology used, frequency, duration, intensity, and the manner of usage (Davis, 1989; Venkatesh *et al.*, 2003) ^[8, 24]. In the context of restaurant and beverage entrepreneurs, this refers to the adoption of POS systems to assist in business management. The Technology Acceptance Model (TAM) explains that user acceptance is primarily influenced by two key perceptions: perceived usefulness and perceived ease of use, which subsequently shape positive attitudes, intentions, and actual usage behavior (Davis, 1989) ^[8]. Entrepreneurs who perceive that the POS system is beneficial and user-friendly are more likely to adopt it. Rogers' (1995) ^[19] Diffusion of Innovations theory posits that innovation acceptance is influenced by five attributes: relative advantage, compatibility, complexity, trialability, and observability. If a POS system offers superior performance compared to previous methods, is easy to use, aligns with business operations, allows for trial use, and demonstrates clear benefits, its likelihood of adoption increases.

Furthermore, the 6W1H consumer behavior model—asking Who, What, Why, Who Participates, When, Where, and How—can be adapted to analyze the behavior of POS users and gather comprehensive data to support systematic conclusions. In addition, the Theory of Planned Behavior (TPB) identifies three factors influencing behavior: attitudes toward behavior, subjective norms, and perceived behavioral control (Ajzen, 1991) ^[2]. Restaurant owners are more inclined to adopt POS systems if they hold positive attitudes toward the technology, experience social pressure within the business context, and possess adequate resources for system implementation.

The integration of these theoretical frameworks into the research design, instrument development, discussion, and recommendations enhances the rigor and credibility of the study. It also provides practical insights that can help promote

more widespread and effective use of POS systems in the restaurant industry. Based on the literature review,

observable variables and operational definitions are summarized in Table 1.

Table 1: Variables, Components, Indicators, and References

Variable	Component	Indicator	Reference
POS Technology Acceptance	Perceived Usefulness	Adapted TAM-3 (The Technology Acceptance Model 3)	Venkatesh & Bala (2008)
	Perceived Ease of Use		
	Attitude Toward Usage		
	Behavioral Intention to Use		
POS Usage Behavior	6W1H Consumer Behavior Theory	Behavioral analysis using seven key questions: Who, What, Where, When, Why, Whom, and How	Kotler & Armstrong (2003)

2.4 Related Research

A review of relevant studies highlights the importance of consumer behavior research in understanding the needs and decision-making processes of target groups when purchasing goods or services. The 6W1H analytical framework has been widely applied to investigate consumer behavior, revealing that demographic characteristics and purchasing behaviors influence the marketing mix factors that consumers prioritize differently (Sirinya Yasae & Phairapan Phutatsana, 2024; Thitirat Thienngam, 2024) ^[22]. In regard to the acceptance of technology, prior studies indicate that factors such as perceived usefulness, ease of use, user attitudes, behavioral intention, social influence, and the quality of systems and services significantly impact users' acceptance of technology. Furthermore, technology acceptance has been

found to be positively associated with actual usage behavior (Jenjira Chuepradit, 2020; Wasuthida Nuritmon, 2019; Orathai Chan *et al.*, 2021) ^[5, 17, 4]. Additionally, individual characteristics such as gender, age, education level, occupation, income, and job position have been shown to influence the likelihood of accepting technology (Kietsak Onsi, 2021; Orathai Chan *et al.*, 2021) ^[4]. These findings support the notion that user demographics play a significant role in shaping perceptions and behaviors toward technology usage.

Based on the literature review, the present study on the behavior of Point of Sale (POS) technology adoption among restaurant and beverage business owners in Mueang District, Nakhon Si Thammarat, was conceptualized. The resulting research framework is illustrated in Figure 1.

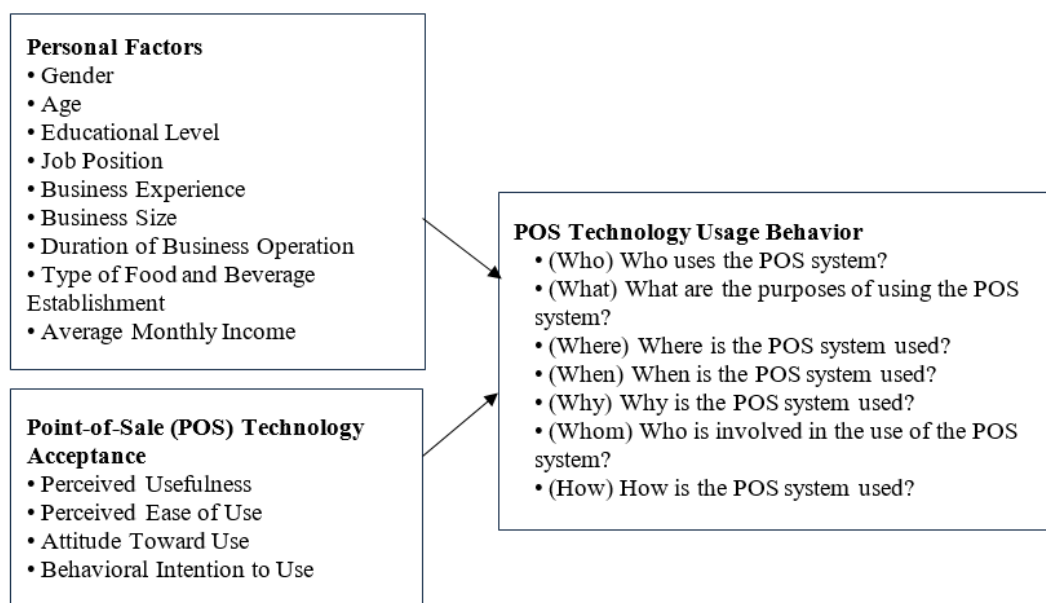


Fig 1: Conceptual Framework

Hypothesis 1 (H1): Personal factors are associated with the behavior of using Point of Sale (POS) technology among restaurant and beverage entrepreneurs in Mueang District, Nakhon Si Thammarat Province.

Hypothesis 2 (H2): POS technology acceptance is associated with the behavior of using POS technology among restaurant and beverage entrepreneurs in Mueang District, Nakhon Si Thammarat Province.

3. Research Methodology

3.1 Research Design

This study employs a causal research design, aiming to examine cause-and-effect relationships between independent and dependent variables. A survey research method was

adopted using a cross-sectional study design, which involves collecting data from the sample at a single point in time (Creswell & Creswell, 2018) ^[7]. The population of this study consists of restaurant and beverage entrepreneurs who utilize Point of Sale (POS) systems in Mueang District, Nakhon Si Thammarat Province. Since the exact population size was unknown, the sample size was determined using Cochran's formula (1977), with a confidence level of 95%, an acceptable margin of error of 0.05, and an estimated population proportion of 0.5, based on the principles of Machin *et al.* (2018) ^[15]. The calculated sample size was 385 participants, which was increased to 400 to account for potential incomplete responses.

A stratified random sampling technique was employed, in

which the population was divided into strata based on business size: micro, small, medium, and large enterprises—factors considered influential in technology acceptance. Proportions for each stratum were determined according to data from the Business Census (2022) ^[16], and simple random sampling was conducted within each stratum to ensure an appropriately distributed and representative sample of each business group.

3.2 Research Instrument

The instrument used for data collection in this study was a questionnaire developed by the researcher based on a comprehensive review of literature, theories, and relevant prior research. The questionnaire comprised three main sections: (1) Personal demographic information of the respondents, presented in a checklist format with 9 items; (2) Technology acceptance of the POS system, measured using a five-point Likert scale with 12 items; and (3) POS usage behavior, assessed using 7 checklist-format questions. After developing the questionnaire, the researcher conducted a quality assessment of the instrument by evaluating content validity. This was done by consulting three subject matter experts to assess the alignment of each item with the research objectives using the Item-Objective Congruence (IOC) index, selecting items with an IOC score of 0.67 or higher (Turner & Carlson, 2003) ^[23], and revising them according to expert feedback.

Subsequently, a pilot test was conducted with 30 participants who had similar characteristics to the target sample. The reliability of the questionnaire was assessed using Cronbach's Alpha Coefficient, with a threshold of 0.70 or higher considered acceptable for internal consistency (Hair *et al.*, 2014) ^[12]. The results confirmed that the questionnaire was sufficiently reliable for actual data collection.

3.3 Data analysis methods

The data collected were analyzed using two types of statistical methods:

- Descriptive statistics, including frequency distributions, percentages, means, and standard deviations, were used to describe the general characteristics of the sample, the levels of technology acceptance, and POS usage behavior.
- Inferential statistics, specifically the Chi-square test, were employed to test the research hypotheses concerning the relationships between personal demographic factors, technology acceptance, and POS usage behavior.

All statistical analyses were conducted using SPSS software. The findings from these analyses provided insights into the acceptance and usage patterns of POS technology among restaurant and beverage entrepreneurs in the study area. Additionally, they enabled the researcher to evaluate the relationships among the key variables, thereby supporting the interpretation of results, formulation of discussions, and development of recommendations relevant to the local food service industry. These results are expected to contribute to the strategic promotion of POS adoption for optimal business benefits.

4. Research Results

4.1 General information of the respondents

The analysis of demographic characteristics of the 400 respondents revealed that the majority were female (54.50%). Most respondents were aged between 35 and 44 years (39.00%) and held a bachelor's degree or equivalent (94.75%). The majority identified as business owners (80.50%) and had 2–5 years of experience in the food and beverage business (38.50%), as presented in Table 2.

Table 2: Demographic Characteristics of the Respondents

Demographic Characteristics	Frequency	Percentage (%)
Gender		
Male	182	45.50
Female	218	54.50
Total	400	100.00
Age		
Under 25 years	11	2.75
25–34 years	111	27.75
35–44 years	156	39.00
45–54 years	80	20.00
55 years and above	42	10.50
Total	400	100.00
Highest Educational Level		
Below Bachelor's degree	16	4.00
Bachelor's degree or equivalent	379	94.75
Higher than Bachelor's degree	5	1.25
Total	400	100.00
Job Position		
Business Owner	322	80.50
Store Manager	12	3.00
Operational Staff	66	16.50
Total	400	100.00
Experience in Food and Beverage Business (Years)		
Less than 2 years	52	13.00
2–5 years	154	38.50
6–10 years	128	32.00
More than 10 years	66	16.50
Total	400	100.00

4.2 Business characteristics of food and beverage establishments

Analysis of data regarding the respondents' food and beverage establishments showed that most businesses employed 1–5 staff members, classifying them as micro-

enterprises (95.75%). The majority had been operating for 4–6 years (50.25%). In terms of business type, dessert shops, bakeries, and cafés were the most common (38.25%), with an average monthly revenue ranging from 50,001 to 100,000 baht (39.25%), as shown in Table 3.

Table 3: Characteristics of Food and Beverage Establishments

Characteristics	Frequency	Percentage (%)
Number of Employees		
1–5 people (Micro business)	383	95.75
6–30 people (Small business)	16	4.00
31–100 people (Medium business)	1	0.25
Total	400	100.00
Years of Operation		
Less than 1 year	39	9.75
1–3 years	64	16.00
4–6 years	201	50.25
7–9 years	60	15.00
10 years and above	36	9.00
Total	400	100.00
Type of Food and Beverage Business		
Thai/Local restaurant	102	25.50
International restaurant	35	8.75
Dessert/Bakery/Café	153	38.25
Shabu/BBQ restaurant	43	10.75
Fast food restaurant	59	14.75
Others	8	2.00
Total	400	100.00
Job Position		
Business Owner	322	80.50
Store Manager	12	3.00
Operational Staff	66	16.50
Total	400	100.00
Average Monthly Income		
Less than 20,000 THB	42	10.50
20,001–50,000 THB	115	28.75
50,001–100,000 THB	157	39.25
100,001–500,000 THB	79	19.75
More than 500,000 THB	7	1.75
Total	400	100.00

4.3 Technology acceptance of POS systems among food and beverage entrepreneurs

The analysis of POS technology acceptance among food and beverage entrepreneurs indicated that the overall level of acceptance was high, with a mean score of 3.789. When

analyzed by individual dimensions, perceived usefulness had the highest mean score (4.014), followed by attitude toward usage (3.789), behavioral intention to use (3.727), and perceived ease of use (3.628), which had the lowest mean, as presented in Table 4.

Table 4: Technology Acceptance of POS Systems among Food and Beverage Entrepreneurs in Mueang District, Nakhon Si Thammarat Province

Dimensions of Technology Acceptance (POS)	Mean	Standard Deviation (S.D.)
1. Perceived Usefulness	4.014	0.405
2. Perceived Ease of Use	3.628	0.561
3. Attitude Toward Usage	3.789	0.488
4. Intention to Use	3.727	0.519
Overall	3.789	0.248

4.4 Hypothesis testing results

The results of Hypothesis 1 revealed that gender, age, and education level were significantly associated with POS usage behavior, while job position was not.

For Hypothesis 2, the variables of perceived usefulness, perceived ease of use, attitude toward usage, and behavioral intention to use were all significantly associated with POS usage behavior, as shown in Table 5.

Table 5: Summary of Hypothesis Testing Results

Research Hypotheses	Result
Hypothesis 1: Personal factors are associated with the behavior of using POS technology among food and beverage entrepreneurs in Mueang District, Nakhon Si Thammarat.	
1.1 Gender is associated with POS usage behavior.	Accepted
1.2 Age is associated with POS usage behavior.	Accepted
1.3 Education level is associated with POS usage behavior.	Accepted
1.4 Job position is associated with POS usage behavior.	Rejected
Hypothesis 2: POS technology acceptance is associated with the behavior of using POS technology among food and beverage entrepreneurs in Mueang District, Nakhon Si Thammarat.	
2.1 Perceived usefulness is associated with POS usage behavior.	Accepted
2.2 Perceived ease of use is associated with POS usage behavior.	Accepted
2.3 Attitude toward usage is associated with POS usage behavior.	Accepted
2.4 Intention to use is associated with POS usage behavior.	Accepted

5. Discussion

The findings of this study align with relevant theories, particularly the Technology Acceptance Model (TAM), which posits that perceived usefulness and perceived ease of use are key determinants of users' attitudes, intentions, and behaviors regarding technology adoption (Davis, 1989) ^[8]. This corresponds with the study's results, which found that all four dimensions of technology acceptance were significantly associated with POS system usage behavior. Additionally, the relationship between personal demographic factors and technology use behavior was consistent with prior research showing that gender, age, and education level influence the degree of technology acceptance (Kiatthisak Aonsri, 2021; Orathai Chan *et al.*, 2021) ^[3, 4]. These results underscore the importance of demographic characteristics in promoting technology adoption among entrepreneurs. However, a notable contrast emerged regarding the lack of a significant relationship between job position and POS usage behavior. This discrepancy may be attributed to the fact that most respondents were business owners, potentially reducing variation in technology use based on job role. Further investigation is required to explore this issue in greater depth.

5.1 Practical Recommendations

1. Government agencies and related organizations should enhance awareness of the benefits of POS systems for restaurant management, particularly targeting entrepreneurs with low levels of technology acceptance, such as older individuals or those with lower educational attainment. This can foster positive attitudes and encourage broader adoption.
2. POS system developers should prioritize user-friendly design to accommodate diverse user groups. Reducing usability barriers will likely lead to higher adoption and continued usage.
3. Incentive mechanisms, such as tax benefits or financial subsidies, should be implemented to motivate food and beverage entrepreneurs to adopt POS technology in their business operations.
4. Qualitative research should be conducted to gain a deeper understanding of the behavioral nuances behind POS system usage, including gender differences, age variations, and restaurant types. These insights can support the design of more effective, context-specific promotion strategies.

5.2. Recommendations for Future Research

1. Future studies should explore POS usage behaviors in other districts beyond Mueang District, enabling

comparative analyses across different geographic and socio-economic contexts.

2. Additional variables related to technology adoption—such as government support, system security, and trust—should be incorporated to provide a more comprehensive understanding of influencing factors.
3. A mixed-methods approach combining qualitative methods, such as in-depth interviews and focus groups, with quantitative analysis is recommended to provide richer insights into POS usage behaviors.
4. Future research should extend to other service businesses beyond food and beverage establishments to examine cross-sectoral differences in technology acceptance and implementation.

6. Conclusion

This study aimed to examine the usage behavior of Point-of-Sale (POS) technology among food and beverage entrepreneurs in Mueang District, Nakhon Si Thammarat Province. The sample consisted of 400 food and beverage business owners who had adopted POS systems. Data were collected using a structured questionnaire and analyzed using both descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics (Chi-square test). The findings revealed that the majority of respondents were female, aged between 35 and 44 years, held a bachelor's degree, occupied the position of business owner, and had 2–5 years of business experience. Most businesses were micro-enterprises that had been operating for 4–6 years, primarily consisting of dessert shops, bakeries, or cafés, with an average monthly income ranging from 50,001 to 100,000 baht.

Regarding technology acceptance, the overall level of POS system acceptance was high. Among the four dimensions, perceived usefulness had the highest mean score, followed by attitude toward use, behavioral intention to use, and perceived ease of use. Hypothesis testing indicated that personal factors such as gender, age, and education level were significantly associated with POS usage behavior. Additionally, all four dimensions of technology acceptance—perceived usefulness, perceived ease of use, attitude, and intention—were significantly related to usage behavior. The results suggest that both technology acceptance factors and personal characteristics play a critical role in influencing the use of POS systems among food and beverage entrepreneurs in the study area. Therefore, to enhance the adoption of POS systems, it is essential to focus on communicating the benefits of the system, improving system usability, and fostering positive attitudes and

intentions toward usage, while also taking individual differences into account.

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