Analysis of Factors Influencing the Decision to Choose Rental Rooms, Dormitories, and Apartments for Developing Digital Solutions

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***Abstract*—** The selection of residential accommodations is influenced by various factors, such as rental price, location, safety, and available amenities. This study aims to examine the factors influencing the decision to choose residential accommodations, specifically rented rooms, dormitories, and apartments, and is divided into four main objectives: (1) to study the factors affecting the decision-making process for choosing accommodations, (2) to analyze consumer behavior and preferences, (3) to evaluate the importance of different factors in choosing accommodations, and (4) to assess the suitability of implementing digital technology for the development of an intelligent access control system. The findings indicate that, for Objective 1, the most significant factors influencing the decision to choose residential accommodations are: 1. Safety ($\bar{x}$ = 4.65), 2. Convenient location for commuting ($\bar{x}$ = 4.59), and 3. Good management ($\bar{x}$ = 4.45). For Objective 2, analyzing consumer behavior and preferences, it was found that the most important factors are: 1. Safety ($\bar{x}$ = 4.60), 2. Convenient location for commuting ($\bar{x}$ = 4.57), and 3. Good management ($\bar{x}$ = 4.50). Regarding Objective 3, the study revealed that safety remains the most important factor ($\bar{x}$ = 4.59), followed by rental price ($\bar{x}$ = 4.44) and location ($\bar{x}$ = 4.41). For Objective 4, assessing the compatibility of digital technologies for developing an intelligent access control system, experts agreed at the highest level for each module contributing to the efficiency of the system, as follows: Data Module with the ability to handle increased data as the system scales ($\bar{x}$ = 4.73), Face Recognition Module with real-time facial recognition accuracy ($\bar{x}$ = 4.73), Visitor Management System (VMS) Module capable of controlling visitor access accurately by area and time ($\bar{x}$ = 4.73), AI Chatbot Module providing real-time response ($\bar{x}$ = 4.53), AI Output Module capable of rapid and accurate event notifications ($\bar{x}$ = 4.73), and Evaluation and Improvement Module capable of recording and analyzing evaluation results ($\bar{x}$ = 4.67). Experts emphasized the importance of every module in the intelligent access control system for SME residential complexes. These findings highlight the significance of developing solutions using digital technology, particularly in safety, to meet the needs of residents and support the development of smart cities that emphasize safety and sustainable convenience.

Keyword: Factors Influencing the Decision to Choose Rental Rooms, Dormitories, Apartment, Technology Digital Solution, Smart city

I. INTRODUCTION

Currently, Thailand is progressing towards sustainable development in line with the 20-Year National Strategic Plan (2018-2037) [1], which emphasizes improving the safety and quality of life of its citizens. The choice of residential accommodations is a key factor that significantly impacts people's quality of life. Therefore, studying and analyzing the factors that influence the decision to choose rented rooms, dormitories, and apartments is crucial for developing solutions that effectively meet consumer needs. The 13th National Economic and Social Development Plan (2023-2027) [2] outlines strategies for enhancing safety and developing smart cities that emphasize safety, convenience, and sustainable living. The development of residential accommodations that cater to public needs in terms of safety, suitable location, and a conducive environment plays a vital role in achieving these goals. Choosing residential accommodations is an important decision for various consumer groups, such as working individuals, students, and families, each with unique accommodation requirements that align with their diverse lifestyles. Selecting a location that provides access to essential amenities such as educational institutions, workplaces, and healthcare centers is thus a critical factor in this decision. Furthermore, the development of an efficient public transportation system also contributes significantly to the convenience of residents, thereby fostering the development of sustainable communities in line with smart city development initiatives.

This study aims to analyze the factors influencing the decision to choose residential accommodations and develop solutions using digital technology to enhance the quality of life and safety of residents. The focus is on identifying the factors that influence the choice of rented rooms, dormitories, and apartments to leverage digital technology in solving problems and improving living standards. This development aligns with the Digital Economy Promotion Master Plan Phase 2 (2023-2027) [2] and the goals of smart city development [3], which emphasize using digital technologies and innovations for economic and social development. The significance of this research lies in developing strategies that align with the goals of the National Strategic Plan and national development plans to ensure safety and improve the quality of life of all citizens sustainably. The development of digital solutions can also be applied to monitor and manage residential safety, such as facial recognition systems, motion detection systems, and access control systems. These technologies help reduce the risk of unwanted incidents and significantly increase residents' confidence. Adopting these technologies is consistent with smart city development, which focuses on the use of technology for efficient management and enhancing the safety of daily life

for citizens.

II. RELATED RESEARCH AND THEORIES

The Consumer Decision-Making Theory and Sustainability Theory serve as the foundation for analyzing consumer behavior, focusing on how consumers understand and consider sustainability criteria in their decision-making for residential products. This study emphasizes the consumer's role in promoting sustainable development in the construction industry [4]. Research on factors affecting accommodation choices draws on theories of consumer behavior and satisfaction to understand the key elements that influence the selection of various housing types, such as rental rooms, dormitories, and apartments. Studies have shown that essential factors include rental price, location, security, and amenities, which strongly impact consumers' decisions in choosing accommodations. The Extended Theory of Planned Behavior has also been applied to examine factors influencing real estate investment intentions. Additional factors, such as risk tolerance and property value perception, have expanded this analysis to cover more complex decision-making [5]. Moreover, research on digital technology, such as AI and IoT, has demonstrated potential for enhancing building management and security systems. These technologies can be applied to develop intrusion prevention systems, which further support smart building management [6], effectively addressing residents' needs for safety, convenience, and efficient management. For example, a study on accommodation preferences among employees in Inthara Industrial Estate, Sing Buri, aimed to identify the most influential factors in choosing dormitories. Results showed that location was the top priority, followed by rental price and service quality [7]. Research on factors influencing apartment rental loyalty identified trust in service and service quality as key factors, with renters more likely to continue leasing if satisfied with the quality and safety of the services [8]. Additionally, studies on service marketing mix factors affecting room rental decisions in Pathum Thani Province indicated that process and physical evidence had the highest influence, especially in terms of convenience, speed of service, cleanliness, and safety [9]. Another study on first-year university students' apartment rental decisions at Bansomdejchaopraya University used the 7Ps Marketing Model (Product, Price, Place, Promotion, People, Process, Physical Evidence) for analysis. It found that the most significant factors were personnel and service process, with students valuing quality of service, politeness, and promptness. Location and reasonable price were also crucial considerations in accommodation selection [10]. Weerakit and Ruchirat (2024) explored sustainability factors in the apartment business and developed a marketing approach called "APARTMENT," which includes nine core components focusing on livability, safety, clear service standards, and environmentally friendly management [11]. Research abroad has shown that financial and convenience factors, such as location and amenities, influence students' rental accommodation choices, as seen in a study on ITERA students in Lampung, Indonesia [12]. Other studies suggest that location and service quality significantly impact customer satisfaction in rental decisions, with convenient location and quality service playing vital roles in increasing customer satisfaction, while rental price perception had no significant effect [13]. In Malaysia, studies on the housing decisions of young adults in Klang Valley revealed that the most important factors included physical environment, such as cleanliness and safety, location, house prices, financial considerations, and demographic factors, all influencing the ability of young adults to decide on buying or renting a home [14]. Research on the rental housing market in Hanoi, Vietnam, highlighted diverse demands, such as affordable accommodation for migrant workers and students, high-quality housing for expatriates, and family-oriented housing. This analysis underscores the need for supply options that match varied target groups [15]. Research on public housing in Singapore highlights the success in providing sustainable housing, largely due to strong government support, with a focus on home ownership and the development of facilities to enhance the quality of life for residents in public housing [16]. However, this has also led to couples delaying or opting not to have children. In response, the government has implemented measures to encourage couples to have children through special privileges in accessing public housing, such as reduced housing prices or relaxed rental rights [17]. In some cases, pricing and marketing promotions are critical factors, especially for online bookings, with special promotions, discount coupons, and free cancellation options significantly increasing consumer interest and encouraging online booking of accommodations. [18]. With these varying needs, advanced technologies are now able to develop solutions to meet residents' demands and enhance their quality of life. One such technology is real-time facial recognition [19][20], which can utilize well-known facial detection techniques such as YOLO (You Only Look Once) [21-23] or Haar Cascades, RCNN, and FasterCNN [24-26], allowing for fast and accurate face detection. The system matches the detected faces with an existing facial database [27], which can be compared with the Visitor Management System (VMS) Module [28]. This module manages visitor information and access, ensuring proper control and monitoring of unauthorized entries. Furthermore, these solutions can store data on a cloud system to ensure security and scalability for future expansions.

III. RESEARCH FRAMEWORK

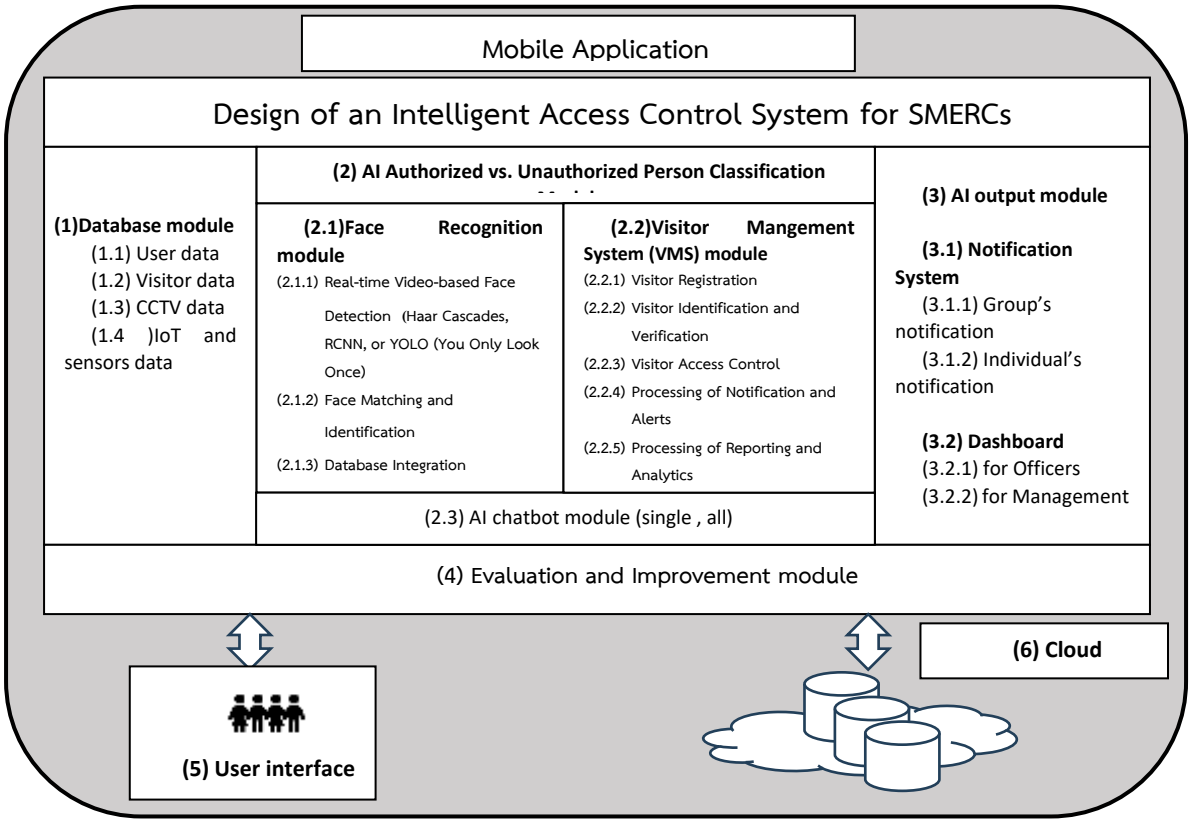
The researcher conducted a survey based on four objectives: 1) to study the factors affecting the decision to choose residential accommodations at present, 2) to analyze consumer behavior and preferences in choosing residential accommodations, 3) to evaluate the importance of factors influencing the choice of accommodations, and 4) to assess the compatibility of technologies used to develop digital safety solutions. The study reviewed both domestic and international research to identify relevant factors that were used to formulate the survey. The areas of study were divided into three regions: 1. Bangkok, 2. Suburbs (Nonthaburi, Pathum Thani, Samut Sakhon, Samut Songkhram, Samut Prakan), and 3. Other regions. The statistical methods used for data analysis included

percentages, mean, and standard deviation (S.D.). The survey was conducted online through social media channels, targeting groups such as business owners, tenants, and those seeking accommodations.

Additionally, the researcher proposed a conceptual framework for an Intelligent Access Control system for SME Residential Complexes (IAC for SMERCs) to study the alignment between the identified factors and accommodation selection, as well as to assess the feasibility of developing digital solutions for quality of life enhancement. The system design (Figure 1) consists of the following modules,

Database Module: This module is a crucial part of the system responsible for storing security-related data for residential buildings, including 1.1 User Data: Stores user information, such as names, passwords, and access rights, to verify identity and manage guest information. 1.2 Visitor Data: Records the entry and exit of visitors, including their purpose and registration details [28]. 1.3 CCTV Data: Stores images and videos from surveillance cameras for incident investigation [27]. 1.4 IoT Device and Sensor Data: Logs data from devices such as motion sensors and environmental sensors [27].

AI Authorized vs. Unauthorized Person Classification Module: This module is responsible for detecting and classifying individuals using facial recognition [20], a key process for verifying and authorizing individuals to access different areas of the residential complex, potentially with travel tracking capabilities. The details of the technology used in this module include 2.1 Face Recognition Module: Uses facial recognition to identify individuals and grant access accurately to building areas. This includes Real-time Face Detection, which uses YOLO or Haar Cascades techniques to detect faces in real-time video; Face Matching and Identification, which matches faces with the database to identify and verify individuals; and Database Integration, which links authorized facial data for quick access permissions [19][20]. 2.2 Visitor Management System (VMS): Manages visitor access and controls permissions securely, including Visitor Registration, which registers visitors with basic information and generates a temporary QR code; Visitor Identification and Verification, which verifies visitors using facial recognition, ID cards, or QR codes; Visitor Access Control, which assigns access rights based on area and time, monitored with BLE; Processing of Notification and Alerts, which provides instant alerts in case of abnormal access or intrusion; Reporting and Analytics, which collects and analyzes access data for safety evaluation; and Prediction and Pre-Alert, which issues advance warnings when there is a potential risk from unknown individuals [28]. 3. AI Chatbot Module: Provides instant responses via an AI Chatbot, which answers inquiries and delivers information to residents or visitors individually or as a group. 3.1 AI Output Module: Processes and alerts information for immediate response to events, including an alert system and dashboard. 3.2 Notification System: Sends automatic notifications upon detecting



Picture 1 Design of an Intelligent Access Control System for SME Residential Complexes (IAC for SMERCs)

abnormalities, categorized into Group notifications, which alert groups of personnel during emergencies such as fires, and Individual notifications, which notify specific individuals via app or SMS for particular incidents. 4. Evaluation and Improvement Module: Continuously evaluates and improves the performance of the intelligent access control system to enhance accuracy and responsiveness to situations using simulations and evaluation software [29]. The results of the study are used to design and develop digital solutions that meet the needs and ensure that the technology used is aligned for optimal system performance.

IV. STUDY RESULTS

The researcher collected complete responses that could be used for analysis, with a total of 405 respondents. These respondents were divided into three groups: 38 respondents (9.4%) were building administrators/owners/staff, 331 respondents (81.7%) were customers/building users, and 36 respondents (8.9%) were individuals currently seeking accommodations. The responses were also categorized by the location of the buildings as follows: 1) Bangkok, with 167 respondents (41.2%), 2) Suburban areas, with 109 respondents (26.9%), and 3) Other regions, with 129 respondents (31.9%). The total number of respondents was 405, and the key factors were analyzed as shown in the following table.

Table 1: Assessment of Factors Influencing the Decision to Choose Rental Rooms, Dormitories, and Apartments

	Assessment list	$\bar{X}$	S.D.	Result
1	Factors affecting the current decision-making process			
	1.1 Rental price	4.36	0.79	Strongly
	1.2 Convenient location	4.59	0.63	Strongly
	1.3 Security system	**4.65**	**0.61**	**Strongly**
	1.4 Room size and layout	4.21	0.75	Strongly
	1.5 Facilities	4.05	0.90	High
	1.6 Good management	4.45	0.71	Strongly
	1.7 Sufficient parking	4.28	0.84	Strongly
	1.8 Cleanliness and Good environment	4.31	0.70	Strongly
	1.9 Shops and restaurants	4.26	0.77	Strongly
	1.10 Good transportation	4.25	0.86	Strongly
2	Analyze consumer behavior and preferences in selecting residential accommodation			
	2.1 Convenient location	4.57	0.67	Strongly
	2.2 Security system	**4.60**	**0.67**	**Strongly**
	2.3 Cleanliness and Good environment	4.41	0.68	Strongly
	2.4 Good management	4.50	0.74	Strongly
	2.5 Room size and layout	4.10	0.91	High
	2.6 Self-renovate	3.87	1.05	High
	2.7 Sufficient parking	4.32	0.83	Strongly
	2.8 Flexibility in rental	4.19	0.89	High
	2.9 Shops and restaurants	4.26	0.82	Strongly
	2.10 Communal areas	3.86	1.08	High
	2.11 Rental price	4.46	0.79	Strongly
3	Evaluate the importance of factors in choosing accommodation			
	1.1 Rental price	4.44	0.77	Strongly
	1.2 Security system	**4.59**	**0.63**	**Strongly**
	1.3 Convenient location	4.41	0.76	Strongly
	1.4 Room size and layout	3.88	0.86	High
	1.5 Facilities	4.00	0.84	High
	1.6 Cleanliness and Good environment	4.11	0.72	High
	1.7 Sufficient parking	4.00	0.95	High
	1.8 Flexibility in rental	3.89	0.88	High
	1.9 Quiet and noise-free	4.15	0.78	High
	1.10 Good management	4.15	0.78	High

The data from the table can be summarized as follows.

1ST OBJECTIVE, Factors affecting the current decision-making process Based on current real-life conditions, the three most important objectives identified are 1. Security, which is the most significant factor ($\bar{x}$ = 4.65), 2. Convenient location ($\bar{x}$ = 4.59) 3. Cleanliness and Good environment ($\bar{x}$ = 4.51). 2nd OBJECTIVE Analyze consumer behavior and preferences in selecting residential accommodation. The top three most important factors identified are 1. Security ($\bar{x}$ = 4.60) 2. Convenient Location ($\bar{x}$ = 4.57) 3. Good environment ($\bar{x}$ = 4.51). Evaluation of the Importance of Each Factor in 3RD OBJECTIVE Evaluate the importance of factors in choosing accommodation. The three most significant factors identified are 1. Security System, which is the most important factor ($\bar{x}$ = 4.59,) 2. Rental Price ($\bar{x}$ = 4.44) 3. Convenient Location ($\bar{x}$ = 4.41).

Across all three assessment areas, it is consistently concluded that security is the primary factor respondents consider most important when selecting accommodation. This aligns with previous studies indicating that a modern and efficient security system plays a significant role in enhancing tenant confidence and satisfaction [6][8][10][17]. Convenience in commuting is also consistently rated as an important secondary factor, with prior research confirming that a good location offering ease of access to various destinations has a substantial influence on accommodation decisions [7][9][11].

Moving forward, the analysis will focus on the four key factors of 1. Security, 2. Location, 3. Attentiveness, and 4. Rental Price, categorized by respondent type, as follows.

Table 2: Evaluation Results by Aspect, Categorized by Management/Building Owners/Staff Group.

Objectives	Security	Convenient location	Attentiveness	Rental Price
1. Factors Affecting the Decision to Choose Accommodation	4.63)0.54(	4.47)0.65(	4.32)0.62(	4.24)0.79(
2. Importance of Each Factor in Decision -	4.50)0.51(	4.50)0.69(	4.39)0.64(	4.34)0.75(

Making Accommodation				
3. Evaluate the importance of factors in choosing accommodation	4.66)0.48(	4.47)0.83(	4.16)0.79(	4.50)0.73(

REMARK The mean values ($\bar{x}$) and the numbers in parentheses represent the standard deviation (S.D.).

From the table, it can be summarized that within the management group, the following factors were identified in order of importance. 1) Factors Affecting the Decision to Choose Accommodation: 1.Security ($\bar{x}$ = 4.63) 2. Location and Commuting Convenience ($\bar{x}$ = 4.47) 3. Good Management and Attentiveness ($\bar{x}$ = 4.32) 4. Rental Price ($\bar{x}$ = 4.24). 2) Analysis of Consumer Behavior and Preferences: The most significant factors identified are: 1.Security ($\bar{x}$ = 4.50) 2. Location and Commuting Convenience ($\bar{x}$ = 4.50) 3. Good Management and Attentiveness ($\bar{x}$ = 4.39) 4. Rental Price ($\bar{x}$ = 4.34). 3) Evaluation of the Importance of Each Factor: The top factors in order of importance are: 1. Security ($\bar{x}$ = 4.66) 2.Rental Price ($\bar{x}$ = 4.50) 3. Location and Commuting Convenience ($\bar{x}$ = 4.47) 4. Good Management and Attentiveness ($\bar{x}$ = 4.16).

Table 3: Evaluation Results by Aspect, Categorized by Customers Group.

Objectives	Security	Convenient location	Good Management	Rental Price
1. Factors Affecting the Decision to Choose Accommodation	4.64)0.63(	4.59)0.64(	4.48)0.72(	4.38)0.78(
2. Importance of Each Factor in Decision - Making Accommodation	4.61)0.69(	4.57)0.68(	4.51)0.76(	4.49)0.79(
3. Evaluate the importance of factors in choosing accommodation	4.59)0.64(	4.38)0.77(	4.18)0.80(	4.44)0.77(

REMARK The mean values ($\bar{x}$) and the numbers in parentheses represent the standard deviation (S.D.).

From the table, it can be summarized that within the customer/building user group, the following factors were identified in order of importance: 1. Security ($\bar{x}$ = 4.64) 2. Location and Commuting Convenience ($\bar{x}$ = 4.59) 3. Good Management and Attentiveness ($\bar{x}$ = 4.48) 4. Rental Price ($\bar{x}$ = 4.38). The analysis of consumer behavior and preferences showed that the most significant factors identified are 1. Security ($\bar{x}$ = 4.61) 2. Location and Commuting Convenience ($\bar{x}$ = 4.57) 3. Good Management and Attentiveness ($\bar{x}$ = 4.51,) 4. Rental Price ($\bar{x}$ = 4.49). The evaluation of the importance of each factor revealed that the top factors in order of importance are 1. Security ($\bar{x}$ = 4.59) 2. Rental Price ($\bar{x}$ = 4.44) 3. Location and Commuting Convenience ($\bar{x}$ = 4.38) 4. Good Management and Attentiveness ($\bar{x}$ = 4.18). There was a slight change in the ranking order of factors regarding the importance of rental price.

Table 4: Evaluation Results by Aspect, Categorized by Group of Individuals Currently Seeking Accommodation Group.

Objectives	Security	Convenient location	Good Management	Rental Price
4. Factors Affecting the Decision to Choose Accommodation	4.72)0.51(	4.67)0.59(	4.42)0.69(	4.31)0.89(
5. Importance of Each Factor in Decision - Making Accommodation	4.67)0.59(	4.67)0.53(	4.44)0.66(	4.39)0.96(
6. Evaluate the importance of factors in choosing accommodation	4.53)0.70(	4.61)0.55(	3.94)0.65(	4.38)0.92(

REMARK The mean values ($\bar{x}$) and the numbers in parentheses represent the standard deviation (S.D.).

From the table, it can be summarized that within the group of individuals currently seeking accommodation, the following factors were identified in order of importance: 1) Factors Affecting the Decision to Choose Accommodation: The most important factors are 1. Security ($\bar{x}$ = 4.72) 2. Location and Commuting Convenience ($\bar{x}$ = 4.67) 3. Good Management and Attentiveness ($\bar{x}$ = 4.42) and 4. Rental Price ($\bar{x}$ = 4.31). For the 2nd Objective, Analysis of Consumer Behavior and Preferences, the most significant factors are 1. Security ($\bar{x}$ = 4.65), which is equally important as Location and Commuting Convenience ($\bar{x}$ = 4.68) 3. Good Management and Attentiveness ($\bar{x}$ = 4.44) and 4. Rental Price ($\bar{x}$ = 4.33). In the 3rd Objective, Evaluation of the Importance of Each Factor, the most important factors are 1. Location and Commuting Convenience ($\bar{x}$ = 4.61) 2. Security ($\bar{x}$ = 4.53) 3. Rental Price ($\bar{x}$ = 4.38) and 4. Good Management and Attentiveness ($\bar{x}$ = 3.94). There was a slight change in the ranking order due to individuals seeking accommodation placing greater importance on location and commuting convenience.

Assessment list	$\bar{X}$	S.D.	Result
1. Suitability of Technology in the Data Module			
1. 1User Data Storage System to Ensures data security.	4.33	0.62	Strongly
1. 2 CCTV Data and IoT and Sensors Data: Can be stored and accessed efficiently.	4.33	0.49	Strongly
1.3 Visitor Data Management System can store and retrieve data for accurate and timely	4.40	0.51	Strongly

Assessment list	$\bar{X}$	S.D.	Result
identification and verification.			
1. 4Data Module can handle increased data as the system expands.	4.73	0.46	Strongly
2. Suitability of Technology in the Face Recognition Module			
2. 1The real-time face detection system has high accuracy in identifying faces.	4.73	0.46	Strongly
2. 2The technology used for face matching ensures precise identification.	4.53	0.52	Strongly
2. 3The processing speed of the real-time face detection system is without delay.	4.60	0.51	Strongly
2. 4The system ensures secure storage of user facial data and prevents unauthorized access.	4.60	0.51	Strongly
3. Suitability of Technology in the Visitor Management			
3. 1 The visitor registration system can record basic information and create identity verification.	4.67	0.49	Strongly
3. 2Visitor Access Control can assign access permissions.	4.73	0.46	Strongly
3.3 The notification and pre-alert system is accurate.	4.60	0.51	Strongly
3. 4Visitor data processing (Reporting and Analytics) can collect and analyze visitor data to enhance security.	4.60	0.51	Strongly
4 .Suitability of Technology in the AI Chatbot Module			
4.1 The AI Chatbot can provide accurate information and respond to user inquiries effectively.	4.47	0.52	Strongly
4.2 The AI Chatbot system can deliver real-time responses without delay.	4.53	0.52	Strongly
4.3 The AI Chatbot has the ability to learn from conversational data to improve its responses.	4.60	0.51	Strongly
4.4 The AI Chatbot system can support both one-on-one (single) and group (all) interactions.	4.60	0.51	Strongly
5 .Suitability of Technology in the AI Output Module			
5.1 The Notification System can quickly and accurately send alerts in case of abnormal events.	4.73	0.46	Strongly
5.2 The Dashboard displays information in an easy-to-understand manner, helping administrators to effectively monitor situations and make decisions.	4.53	0.52	Strongly
5.3 The AI Output system can customize notifications to suit different users.	4.53	0.52	Strongly
5.4 The AI system has the ability to process data in a way that helps administrators plan additional security measures.	4.47	0.52	Strongly
6. Suitability of Technology in the Evaluation and			
6.1 The platform's performance evaluation system is accurate and comprehensive.	4.53	0.52	Strongly
6.2 The improvement and testing processes are fast and efficient.	4.60	0.51	Strongly
6.3 The system can record and analyze evaluation results at each stage for improvement.	4.67	0.49	Strongly
6.4 Scenario Simulation can effectively identify weaknesses in the system and suggest improvements.	4.60	0.51	Strongly

According to Table 5, the researcher consulted 15 digital technology experts to evaluate the consistency and suitability of technologies across six aspects: 1. Data Module, 2. AI Output Module, 3. Visitor Management System Module, 4. AI Chatbot Module, 5. AI Output Module, and 6. Evaluation and Improvement Module. The assessment of various modules of the Intelligent Access Control system revealed the most critical factors that enhance the efficiency of each module. In the Data Module, the most important factor is the ability to handle increased data as the system scales ($\bar{x}$ = 4.73), enabling the system to manage large data sets quickly and securely. In the Face Recognition Module, real-time facial recognition accuracy ($\bar{x}$ = 4.73) is the key factor, allowing the system to accurately identify users and prevent unauthorized access. For the Visitor Management System (VMS) Module, the ability to control visitor access ($\bar{x}$ = 4.73) ensures accurate access permissions by area and time, thereby enhancing building security. In the AI Chatbot Module, the most critical factor is real-time response service ($\bar{x}$ = 4.53), which helps users receive prompt and relevant responses. Additionally, the AI Chatbot can provide both one-on-one and group services. The most important factor for the AI Output Module is the notification system, which can quickly and accurately send alerts ($\bar{x}$ = 4.73), enabling administrators to respond to incidents immediately. For the Evaluation and Improvement Module, the most significant factor is the ability to record and analyze evaluation results at each stage ($\bar{x}$ = 4.67), supporting continuous system improvement. In conclusion, digital technology experts recognized the utmost importance of every module within the Intelligent Access Control system for SME Residential Complexes (IAC for SMERCs), and recommended designing and developing the system following the proposed guidelines.

V. CONCLUSION

The study and analysis of factors influencing the decision to choose rented rooms, dormitories, and apartments found that the factors affecting consumer decisions are consistent with previous studies. The most important factor is safety, as consumers highly value having a modern and effective security system [6][10][17], which makes them feel confident and secure in their living environment. A convenient location for commuting to workplaces or educational institutions is another factor influencing the decision to choose accommodations [7][9][11]. Consumers view a convenient location as reducing the hassle of commuting and enhancing their quality of life. Additionally, rental price is another important factor [8][14][16]; reasonable and cost-effective pricing directly impacts the decision to choose accommodations, allowing consumers to plan their expenses effectively. Care and management from accommodation administrators also play a key role in creating satisfaction among residents [15][17], as do peace and a good environment, which help consumers make confident accommodation choices [12][13][15]. From analyzing these factors, it can be concluded that developing digital solutions, such as AI and IoT, has the potential to support effective accommodation management and security [6][17][18]. The conceptual framework of the intelligent access control system, along with other security technologies, will help enhance both safety and convenience in living environments and improve accommodation management efficiency. This will create a suitable and sustainable living environment for the future through the use of digital technology [6][15][18].

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