

Assessment of Essential Knowledge Components for Real Estate Project Developers in Thailand: An Exploratory Factor Analysis

Chunyarat Nititerapad^{1*}

¹*Faculty of Architecture and Planning, Thammasat University.*

¹*Research Unit in Project Development and Innovation in Real Estate Business, Thammasat University, Bangkok, Thailand.*

*Corresponding Author: chunyarat.n@ap.tu.ac.th

Citation: Nititerapad, C. (2025). Assessment of Essential Knowledge Components for Real Estate Project Developers in Thailand: An Exploratory Factor Analysis. *Journal of Cultural Analysis and Social Change*, 10(4), 105–118. <https://doi.org/10.64753/jcasc.v10i4.2783>

Published: December 4, 2025

ABSTRACT

This research aims to identify key knowledge areas for real estate project developers and create readiness assessment criteria for the Thai market. Data were gathered from 100 managerial-level personnel in real estate development firms in the Bangkok Metropolitan Area. After removing one outlier, 99 valid responses remained. EFA identified three distinct knowledge components: (1) Marketing and Finance Knowledge, including marketing, project budgeting, and managerial accounting. (2) Strategy and Risk Knowledge, covering strategic management and risk management. and (3) Legal Contracts, Investment, and Services Knowledge, involving contract preparation, investment data analysis, management, and project services. The results show that real estate developers in Thailand need skills across three key knowledge areas. These findings offer a framework for educational programs and professional development activities.

Keywords: Readiness Assessment, Project Development, Real Estate Project Developers, Essential Knowledge.

INTRODUCTION

The real estate sector accounts for 4.8% of Thailand's Gross Domestic Product (GDP), making it a substantial contributor to the country's overall economy. It contributes to financial circulation, job creation, and increased income, while being linked to multiple industries, including construction, building materials, financial institutions, electronics, furniture, and interior design. Real estate can be classified into three primary categories: residential, commercial, and industrial. Residential real estate accounts for approximately two-thirds of Thailand's total real estate industry value. (Klinchuancheun, 2022). According to business registration data from the Department of Business Development (2023), 76,488 new partnerships or companies were registered in 2022. This represents a 5% increase compared to 2021 and a 21% increase compared to 2020. Among the top three business types with the highest number of new registrations, general construction businesses led with 7,061 registrations (9%), followed by real estate businesses with 4,833 registrations (6%), and restaurant businesses with 3,014 registrations (4%). However, in the same year, 21,880 businesses ceased operations, with a total registered capital value of 127,048.39 million baht. Over the past five years, the trend of business closures remained consistent, with general construction businesses leading with 2,012 closures (9%), followed by real estate businesses with 1,023 closures (5%), and restaurant businesses with 623 closures (3%). This highlights that while real estate consistently ranks among the top three sectors for new business registrations, it also ranks among the top three for business closures. The rapid growth of the real estate sector has attracted many new entrants, particularly those with substantial capital from existing businesses and land assets. Key motivations include the potential for rapid financial success, the ability to

continually develop new projects, and opportunities to expand into related businesses, such as apartments and hotels (PlusTalk, 2017).

Despite its attractiveness, real estate is a complex industry characterized by its dual nature. It combines elements of production and service businesses, which differ significantly from businesses focused solely on production or service (Rattanaapreechavech, 2011). This complexity demands multidisciplinary knowledge and expertise (Peiser and Frej, 2007; Peca, 2009), encompassing fields such as engineering, architecture, construction technology, management, marketing, finance, valuation, and legal aspects. Moreover, new entrants to the real estate sector experience both success and failure, influenced by factors, namely investment capital, stakeholder needs and influences, communication and operations across project phases, understanding the impacts of various project stages, managing risks, planning, monitoring, and effective project control (Jongwannasiri, 2014).

In recent international literature, there is a growing emphasis on the evolving competency needs of real estate professionals in response to dynamic urban, economic, and technological shifts. For instance, Oladokun and Gbadegehin (2017) highlighted the importance of integrating soft skills alongside core technical knowledge for improved performance in real estate firms. Ntene, Azasu, and Owusu-Ansah (2020) discussed the strategic alignment of corporate real estate with business goals as a critical competency. Irfan, Adeel, and Malik (2023) identified market knowledge and investor protection as major determinants of investment performance in real estate sectors. These findings emphasize the global trend toward multidimensional readiness among real estate professionals, reinforcing the relevance of a structured readiness framework. Additionally, a broader review of international literature has been conducted to further support this study. Specifically, literature on real estate development skills by organizations such as the Urban Land Institute (ULI, 2020) and the Royal Institution of Chartered Surveyors (RICS, 2019), as well as relevant journals from property management, has been reviewed. The adaptive knowledge requirements, as highlighted by research from Cadman and Topping (2021) and Yau and Ho (2020), also support the varied knowledge categories identified in this study.

Most existing literature highlights the multidisciplinary and complex nature of real estate development; however, it is nonspecific about the specific knowledge components of developers. This research corrects that shortcoming by presenting a systematic approach based on subject matter interviews and quantitative data analysis. The findings are expected to benefit real estate developers by providing a framework for evaluating and enhancing their readiness to acquire the necessary knowledge for project development.

Research Framework

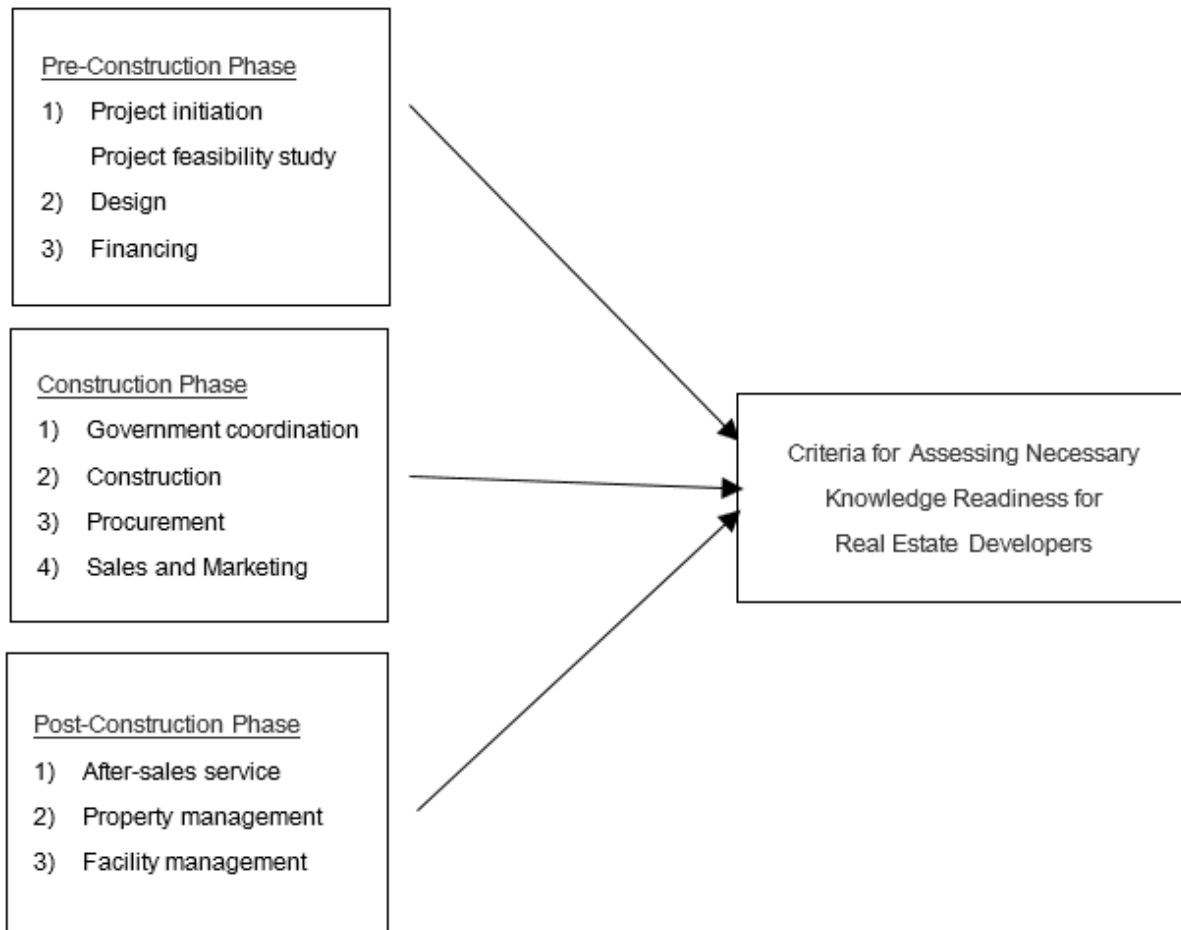


Figure 1. Conceptual Research Framework.

Research Methodology

This research examines the essential components of knowledge required for real estate project developers and establishes a framework for assessing their knowledge readiness across three key phases: Pre-Construction, Construction, and Post-Construction. The focus is specifically on residential real estate projects intended for outright sales. This research employed a mixed-method design. The qualitative phase began with a review of relevant literature and studies. Semi-structured interviews were conducted with five managerial-level personnel from residential real estate development companies in the Bangkok Metropolitan Area. The selection of these experts was based on a criterion-based approach, considering their knowledge, expertise, experience, and roles relevant to the study. Priority was given to information-rich cases, ensuring that the selected individuals could provide comprehensive and valuable insights. According to Chai Phothisita (2011), qualitative research does not prescribe a specific formula for determining the number of participants. However, the aim is to gather in-depth and holistic information from a small sample. Similarly, Cresswell (2009) suggests that qualitative interviews typically range between five and twenty-five participants. The qualitative data collected from the interviews were analyzed using content analysis to identify essential knowledge variables.

Upon identifying these variables, the quantitative phase involved distributing a structured questionnaire to 100 managerial-level personnel from residential real estate development companies in the Bangkok Metropolitan Area, with one respondent per company. The sample included both publicly listed companies and non-listed companies, with the latter required to have completed at least three residential real estate projects to ensure relevance and representativeness. Convenience sampling was employed to select the participants. The sample size was determined using Khazanie's (1996) formula for unknown population size and proportions, calculated as follows:

$$N = \frac{Z^2 \cdot p \cdot q}{e^2} = \frac{1.96^2 \cdot 0.10 \cdot 0.90}{4(0.10)^2} = 96.04$$

where N is the sample size
 Z is the z-score at the 0.05 significance level (1.96)
 e is the acceptable margin of error (0.10)

Descriptive statistics, such as mean scores, were calculated to analyze responses to a Likert-scale questionnaire. The interpretation of these scores was based on Best's (1977) methodology. Exploratory Factor Analysis (EFA) was employed to group the variables into meaningful components.

The EFA process included the following steps:

1. Outlier Detection: Outliers were identified and excluded if their Z-scores were below -3.00 or above 3.00, as 99% of data points in a normal distribution are expected to fall within three standard deviations of the mean (Chusri Wongratana, 2001).

2. Data Distribution Analysis: Skewness and kurtosis values were examined to ensure that they fell within the acceptable range of ± 1.00 . Data with positive skewness were corrected using logarithmic transformations, while negatively skewed data were adjusted using square root transformations. For data with extreme kurtosis, reciprocal transformations were applied (Hair, Anderson, Tatham, and Black, 1998).

3. Suitability for Factor Analysis: The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was calculated, with values greater than 0.50 indicating suitability for factor analysis (Kaiser, 1974). Bartlett's Test of Sphericity was used to verify significant correlations among variables.

4. Variable Extraction: Principal Component Analysis (PCA) was used to extract components based on the correlation matrix, with rotation performed using Varimax with Kaiser Normalization to simplify the interpretation of components. Components with Eigenvalues greater than one and factor loadings above 0.50 were retained. Each component was required to include at least two variables (Truong and McColl, 2011).

5. Naming of Components: The final components were named based on the grouped variables derived from the analysis.

RESEARCH FINDINGS

Identification of Essential Knowledge Variables for Real Estate Project Developers

The researcher identified the essential knowledge variables required for real estate project developers through interviews with five managerial-level personnel from residential real estate development companies listed on the Stock Exchange of Thailand and located in the Bangkok Metropolitan Area. The findings revealed that most of the experts interviewed were male, aged 45 to 59, and held master's degrees. All five experts held senior management positions within residential real estate development companies and had professional experience ranging from 12 to over 20 years in managing residential real estate projects. This aligns with the study's criteria for selecting qualified informants capable of providing valuable insights (Information-Rich Cases). The collected variables represent the essential knowledge required for real estate project developers, encompassing a comprehensive range of expertise for managing residential projects. These variables are summarized and presented in Table 1.

Table 1. Summary of Essential Knowledge Variables for Real Estate Developers Categorized by Development Phases.

Body of Knowledge	Real Estate Project Development Phases										
	Pre-Construction Phase				Construction Phase				Post-Construction Phase		
	Project Initiation	Feasibility Study	Design	Finance	Government Coordination	Construction	Procurement	Sales and Marketing	After-Sales Service	Property Management	Facility Management
Building control laws		●	●		●	●					
Consumer protection laws								●	●	●	●
Land allocation laws	●	●	●		●	●					
Land laws and Title deeds	●	●			●						
Urban planning laws	●	●	●		●						
Taxation laws		●			●			●			
Environmental laws	●	●	●		●	●				●	
Condominium laws	●	●	●		●	●		●			
Engineering design and drawing		●	●		●	●	●				●
Quality control			●			●	●		●		
Strategic management	●	●	●	●	●	●	●	●	●	●	●
Facility management			●								●
Business management	●	●	●	●	●	●	●	●	●	●	●
Innovation management			●			●		●	●	●	●
Investment data management and analysis	●	●	●	●		●	●	●	●	●	●
Project budgeting	●	●		●		●	●		●	●	●
Contract drafting	●		●	●	●	●	●	●			

Table 1. Continued.

Body of Knowledge	Real Estate Project Development Phases										
	Pre-Construction Phase				Construction Phase				Post-Construction Phase		
	Project Initiation	Feasibility Study	Design	Finance	Government Coordination	Construction	Procurement	Sales and Marketing	After-Sales Service	Property Management	Facility Management
Marketing	●	●	●					●			
Project services								●	●	●	●
Financial management		●		●		●	●	●	●	●	●
Construction management		●				●	●				
Sales management		●						●	●		
Risk management	●	●		●	●	●	●	●	●	●	●
Cost management		●				●	●				

Property/asset management										●	●
Human resource management	●	●	●	●	●	●	●	●	●	●	●
Corporate governance	●	●	●	●	●	●	●	●	●	●	●
Investment portfolio management										●	
Information system management							●	●	●		
Logistics management (transportation)						●	●				
Organizational management	●	●	●	●	●	●	●	●	●	●	●
Financial accounting	●	●		●			●	●	●	●	●
Managerial accounting	●	●		●			●	●	●	●	●
Construction cost estimation		●				●	●				
Property valuation	●	●									

Table 1. Continued.

Body of Knowledge	Real Estate Project Development Phases										
	Pre-Construction Phase				Construction Phase				Post-Construction Phase		
	Project Initiation	Feasibility Study	Design	Finance	Government Coordination	Construction	Procurement	Sales and Marketing	After-Sales Service	Property Management	Facility Management
Statistical data analysis		●						●			
Geological and Hydrological Analysis	●	●	●			●					
Organizational communication	●	●	●	●	●	●	●	●	●	●	●
Building a sanitation system design			●								●
Construction techniques			●			●					
Construction technology			●			●					
Building technology			●			●					●
Landscape architecture			●								
Material science			●			●	●				
Architecture			●			●					
Urban planning architecture			●			●					
Interior architecture			●			●					

From Table 1, the results of compiling the essential knowledge variables for real estate project developers, categorized by the stages of the real estate development process, are as follows:

1. Knowledge required for project initiation includes land allocation laws, land laws and title deeds, urban planning laws, environmental laws, condominium laws, strategic management, business management, investment data management and analysis, project budgeting, contract drafting, marketing, risk management, human resource management, corporate governance, organizational management, financial accounting, managerial accounting, property valuation, geological and hydrological analysis, and organizational communication.

2. Knowledge required for project feasibility study includes building control laws, land allocation laws, land laws and title deeds, urban planning laws, taxation laws, environmental laws, condominium laws, engineering drawing, strategic management, business management, investment data management and analysis, project budgeting, marketing, financial management, construction management, sales management, risk management, cost management, human resource management, corporate governance, organizational management, financial accounting, managerial accounting, construction cost estimation, property valuation, statistical data analysis, geological and hydrological analysis, and organizational communication.

3. Knowledge required for design includes building control laws, land allocation laws, urban planning laws, environmental laws, condominium laws, engineering drawing, quality control, strategic management, facility management, business management, innovation management, investment data management and analysis, contract drafting, marketing, human resource management, corporate governance, organizational management, geological and hydrological analysis, organizational communication, sanitation system design, construction techniques, construction technology, building technology, landscape architecture, material science, architecture, thai architecture, urban planning architecture, and interior architecture.

4. Knowledge required for financing includes strategic management, business management, investment data management and analysis, project budgeting, contract drafting, financial management, risk management, human resource management, corporate governance, organizational management, financial accounting, managerial accounting, and organizational communication.

5. Knowledge required for government coordination includes building control laws, land allocation laws, land laws and title deeds, urban planning laws, taxation laws, environmental laws, condominium laws, engineering drawing, strategic management, business management, contract drafting, risk management, human resource management, corporate governance, organizational management, and organizational communication.

6. Knowledge required for construction includes building control laws, land allocation laws, environmental laws, condominium laws, engineering drawing, quality control, strategic management, business management, innovation management, investment data management and analysis, project budgeting, contract drafting, financial management, construction management, risk management, cost management, human resource management, corporate governance, logistics (transportation) management, organizational management, construction cost estimation, geological and hydrological analysis, organizational communication, construction techniques, construction technology, building technology, material science, architecture, thai architecture, urban planning architecture, and interior architecture.

7. Knowledge required for procurement includes engineering drawing, strategic management, business management, investment data management and analysis, project budgeting, contract drafting, financial management, construction management, risk management, cost management, human resource management, corporate governance, information system management, logistics (transportation) management, organizational management, financial accounting, managerial accounting, construction cost estimation, organizational communication, and material science.

8. Knowledge required for sales and marketing includes consumer protection laws, taxation laws, condominium laws, strategic management, business management, innovation management, investment data management and analysis, contract drafting, marketing, project services, financial management, sales management, risk management, human resource management, corporate governance, information system management, organizational management, financial accounting, managerial accounting, statistical data analysis, and organizational communication.

9. Knowledge required for after-sales service includes consumer protection laws, quality control, strategic management, business management, innovation management, investment data management and analysis, project budgeting, project services, financial management, sales management, risk management, human resource management, corporate governance, information system management, organizational management, financial accounting, managerial accounting, and organizational communication.

10. Knowledge required for property management includes consumer protection laws, environmental laws, strategic management, business management, innovation management, investment data management and analysis, project budgeting, project services, financial management, risk management, property management, human

resource management, corporate governance, investment portfolio management, organizational management, financial accounting, managerial accounting, and organizational communication.

11. Knowledge required for facility management includes building control laws, engineering drawing, strategic management, facility management, business management, innovation management, investment data management and analysis, project budgeting, project services, financial management, risk management, property management, human resource management, corporate governance, organizational management, financial accounting, managerial accounting, organizational communication, sanitation system design, and building technology.

12. Knowledge outsourced or provided by external experts:

(1) Design knowledge which includes various laws such as building control laws, consumer protection laws, land allocation laws, land laws and title deeds, urban planning laws, taxation laws, environmental laws, and condominium laws, alongside design-related knowledge such as material science, sanitation system design, landscape architecture, architecture, thai architecture, urban planning architecture, and interior architecture.

(2) Construction knowledge, including geological and hydrological analysis, construction management, construction techniques, construction technology, and building technology.

(3) Sales management knowledge

(4) Property valuation knowledge

(5) Post-construction management knowledge, including facility management and property management.

Findings on the Components of Essential Knowledge for Real Estate Project Developers

The researcher collected data from 100 managerial-level personnel from residential real estate development companies located in the Bangkok Metropolitan Area. Each company was represented by a single respondent, encompassing both publicly listed and non-listed companies. For non-listed companies, the eligibility criteria required the completion of at least three residential real estate projects. Sampling was conducted using a convenience sampling method. Data analysis involved descriptive statistics, including frequency, percentage, and mean, as well as exploratory factor analysis (EFA). The majority of respondents were male (71.00%) and aged between 41 and 50 years (68.00%). Most had attained a master's degree as their highest educational qualification (91.00%) and had 5-15 years of experience managing residential real estate projects (77.00%).

The essential knowledge areas identified as of high to very high importance (mean scores between 3.41 and 5.00) comprised 35 components. These include:

- Business management
- Strategic management
- Organizational communication
- Organizational management
- Marketing
- Investment data management and analysis
- Financial management
- Cost management
- Sales management
- Human resource management
- Risk management
- Project budgeting
- Information system management
- Statistical data analysis
- Construction management
- Innovation management
- Corporate governance
- Project services
- Quality control
- Property management
- Financial accounting
- Managerial accounting
- Contract drafting
- Construction techniques
- Construction technology
- Urban planning laws

- Facility management
- Land laws and title deeds
- Material science
- Building technology
- Consumer protection laws
- Condominium laws
- Construction cost estimation
- Building control laws
- Land allocation laws

Development of the Knowledge Readiness Assessment Criteria for Real Estate Project Developers

The researcher developed knowledge-readiness assessment criteria for real estate project developers, focusing on knowledge areas identified as high to very high in importance (mean scores between 3.41 and 5.00). These were analyzed using Exploratory Factor Analysis (EFA) to group the criteria into meaningful components. Based on the analysis of the importance of each knowledge area, 35 assessment criteria were identified as highly significant for real estate project developers. These criteria were named as variables for the EFA process and are detailed in Table 2.

Table 2. Variable Names for Exploratory Factor Analysis (EFA).

Variable Code	Variable Name
V01	Business management
V02	Strategic management
V03	Organizational communication
V04	Organizational management
V05	Marketing
V06	Investment data management and analysis
V07	Financial management
V08	Cost management
V09	Sales management
V10	Human resource management
V11	Risk management
V12	Project budgeting
V13	Information system management
V14	Statistical data analysis
V15	Construction management
V16	Innovation management
V17	Corporate governance
V18	Project services
V19	Quality control
V20	Property management
V21	Financial accounting
V22	Managerial accounting
V23	Contract drafting
V24	Construction techniques
V25	Construction technology
V26	Urban planning laws
V27	Facility management
V28	Land laws and Title deeds
V29	Material science
V30	Building technology
V31	Consumer protection laws
V32	Condominium laws
V33	Construction cost estimation
V34	Building control laws
V35	Land allocation laws

The researcher identified outliers by examining scale data with Z-scores outside the range of -3.00 to 3.00, as 99% of normally distributed data falls within three standard deviations of the mean (Chusri Wongratana, 2001). One outlier was detected and removed, leaving a sample of 99 respondents.

The distribution of the 35 essential knowledge readiness assessment criteria for real estate project developers was then examined using skewness and kurtosis. Data with normal distribution were required to have skewness and kurtosis values within ± 2.00 . Transformations were applied to address deviations: a logarithmic transformation for positively skewed data, a square root transformation for negatively skewed data, and a reciprocal transformation for excessively kurtotic data (Hair, Anderson, Tatham, and Black, 1998).

Four variables were found to have non-normal distributions due to kurtosis values outside the range of ± 2.00 :

- Organizational Management (V4)
- Marketing (V5)
- Facility Management (V27)
- Land Allocation Laws (V35)

These variables were corrected using reciprocal transformation before proceeding to subsequent analysis. The suitability of the dataset for exploratory factor analysis was tested using the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy, which requires a value above 0.500 (Kaiser, 1974). Bartlett's Test of Sphericity was also performed to ensure that there were significant correlations among the variables for factor analysis. Results are detailed in Table 3.

Table 3. KMO (Kaiser-Meyer-Olkin) and Bartlett's Test Values.

Analysis	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.510
Bartlett's Test of Sphericity	Approx. Chi-Square df P-Value
	1135.099 595 0.000

Based on Table 3, the results of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity confirm the dataset's suitability for exploratory factor analysis. The KMO value of 0.510 exceeds the 0.500 threshold, indicating that the sample size is adequate for factor analysis. Additionally, Bartlett's Test of Sphericity yielded a P-Value of 0.000, demonstrating statistically significant correlations among the variables. This supports the appropriateness of using exploratory factor analysis (EFA).

The researcher employed Exploratory Factor Analysis (EFA) to address multicollinearity and examine the structural relationships among variables. This process aims to group highly correlated variables into meaningful components (Kalaya Wanichbancha, 2015). Before conducting the analysis, the researcher ensured the following preliminary conditions:

1. Variables selected for factor analysis must have continuous values and be measured on an interval or ratio scale.
2. The relationship between components and variables should be linear.

The researcher extracted variables using the Principal Component Analysis (PCA) method, analyzed them with a correlation matrix, and applied Varimax rotation with Kaiser Normalization to organize variables into appropriate components. The criteria for component selection included an Eigenvalue greater than 1 and a Factor Loading greater than 0.50 (Truong and McColl, 2011). The results of the EFA on the knowledge readiness assessment criteria for real estate project developers revealed 13 components. After examining the communalities (values greater than 0.50) and ensuring that each component contained at least two variables, the variables were grouped into three final components as presented in Tables 4 and 5.

Table 4. Results of Variable Grouping into Components After Factor Rotation.

Factor	Factor Loading		
	Component 1	Component 2	Component 3
Business management			
Strategic management		0.503	
Organizational communication			
Organizational management			
Marketing	-0.674		
Investment data management and analysis			0.511
Financial management			
Cost management			
Sales management			
Human resource management			
Risk management		-0.611	
Project budgeting	0.650		

Information system management			
Statistical data analysis			
Construction management			
Innovation management			
Corporate governance			
Project services			0.510
Quality control			
Property management			
Financial accounting			
Managerial accounting	0.595		
Contract drafting			0.588
Construction techniques			
Construction technology			
Urban planning laws			
Facility management			
Land laws and Title deeds			
Material science			
Building technology			
Consumer protection laws			
Condominium laws			
Construction cost estimation			
Building control laws			
Land allocation laws			

Table 5. Components Derived from Exploratory Factor Analysis (EFA).

Component	Observed Variables
1. Marketing and Finance	1.1 Marketing 1.2 Project Budgeting 1.3 Managerial Accounting
2. Strategy and Risk	2.1 Strategic Management 2.2 Risk Management
3. Contracts, Investment, and Services	3.1 Contract Drafting 3.2 Investment Data Management and Analysis 3.3 Project Services

Based on Table 5, the criteria for grouping variables into new components include an Eigenvalue greater than 1, each component containing at least two variables, and factor loadings greater than 0.50 (Truong and McColl, 2011). Using these criteria, the variables were grouped into three new components with the following names and variables:

1. Marketing and Finance Knowledge
 - Marketing
 - Project Budgeting
 - Managerial Accounting
2. Strategy and Risk Knowledge
 - Strategic Management
 - Risk Management
3. Contracts, Investment, and Services Knowledge
 - Contract Drafting
 - Investment Data Management and Analysis
 - Project Services

DISCUSSION

The essential knowledge for real estate project developers encompasses a wide range of disciplines due to the dual nature of the industry, which is both a production and a service business. The project development process encompasses numerous tasks and activities, including investment analysis, design, construction, sales, and property

management. Moreover, various stakeholders are involved, including organizational personnel, designers, material suppliers, contractors, and government officials. Each task or activity requires specific knowledge or external expertise from specialists, aligning with the findings of Niti Rattanapreechavech (2011), who highlighted the complexity of the real estate business. The integration of production and service elements distinguishes it from industries focused exclusively on either production or services.

Similarly, the findings align with those of Peiser and Frej (2007) and Peca (2009), who described real estate as a multidisciplinary field that requires expertise across diverse domains of science and art. This includes engineering, architecture, construction technology, management, marketing, finance, valuation, and legal aspects. The interdisciplinary nature of real estate emphasizes the need for developers to acquire or access a broad spectrum of knowledge to navigate the intricacies of project development effectively.

When considering the essential knowledge areas for real estate project developers that are rated as the most important (average score between 4.21–5.00), 13 knowledge areas are identified: business management, strategic management, organizational communication, organizational management, marketing, investment data management and analysis, financial management, cost management, sales management, human resource management, risk management, and project budgeting.

These knowledge areas are fundamental and essential for any business. Unlike specialized professional knowledge, such as architecture, engineering, or property valuation, these foundational areas cannot be easily outsourced to external knowledge sources or specialists.

The results of the Exploratory Factor Analysis (EFA) indicate that, based on the criteria for grouping variables into new components—specifically, each new component must have an Eigenvalue greater than 1, contain at least two variables, and each variable must have a Factor Loading greater than 0.50 (Truong and McColl, 2011)—the variables can be grouped into three new components. The new components and their respective variables are as follows:

1. **Marketing and Finance Knowledge** This component includes marketing, project budgeting, and managerial accounting. Marketing involves the organizational process of producing, delivering, and communicating the value of products or services to customers, as well as managing customer relationships in a way that benefits the organization and its stakeholders. Effective target market selection, customer acquisition, and retention depend on delivering superior value. Finance, as a vital business resource, ensures that organizations operate efficiently toward their goals, achieving wealth, maximum returns, and increased business value through optimal resource utilization. This aligns with Peeriya Gandhabutra (2016), who identified financial management and clear target market definition as key success factors for entrepreneurship. Similarly, Trin Maichim and Nuttawut Boonsri (2019) found that reliable project budgeting contributes significantly to the success of construction businesses. Pusan Jeerajui (2022) highlighted the importance of marketing knowledge, market analysis, project uniqueness, and customer-centric responses as core competencies for small-scale real estate developers.

2. **Strategy and Risk Knowledge** This component includes strategic management and risk management. The ever-changing business environment, marked by uncertainty, significantly impacts the ability to achieve business objectives. Real estate developers must adapt strategies and manage risks effectively to navigate changes, enhance business resilience, and achieve long-term sustainability. Peeriya Gandhabutra (2016) emphasized strategic planning as a critical factor for entrepreneurial success. Suphansut Sihatuanont and Pitak Siriwong (2018) stressed that entrepreneurs must anticipate and accept risks to sustain their businesses. Similarly, Sawangpong Saejung (2016) noted that entrepreneurs must face various risks and be prepared to accept them. They need to utilize all their capabilities to navigate risks and uncertainties, ensuring their businesses can continue operating despite challenges. Additionally, entrepreneurs should strive for profitability and business growth to achieve commercial returns that align with their established goals.

3. **Contracts, Investment, and Services Knowledge** This component includes contract drafting, investment data management and analysis, and project services. Contracts represent the legal obligations between organizations and their partners, while investment decisions involve analyzing comprehensive and meticulous data to maximize returns, particularly in real estate development, which requires substantial capital. Effective services create positive customer impressions. Peeriya Gandhabutra (2016) identified clear business selection, planning, goal setting, and high-quality products or services as factors driving business success. Trin Maichim and Nuttawut Boonsri (2019) highlighted strategic planning and customer-focused service responses as critical success factors in business operations.

The three components derived from the Exploratory Factor Analysis—Marketing and Finance, Strategy and Risk, and Contracts, Investment, and Services—are fundamental to business operations across all industries. These are not specialised professional skills that can be outsourced to external experts. Consequently, real estate

developers must acquire this knowledge as foundational skills for business success. However, it was benchmarked against international best practice. For instance, financial viability analysis and stakeholder management are recognised as fundamental competence areas by the ULI (2020) and are both reflected through our factors. Furthermore, risk and innovation management are common themes within international real estate competency frameworks (RICS, 2019).

RECOMMENDATIONS

1. Residential real estate developers and individuals interested in entering the industry should acquire comprehensive knowledge covering the essential areas required for developing residential real estate for sale. This foundational knowledge is crucial for achieving business success and includes the following:

1) Marketing and Finance Knowledge:

Comprising marketing, project budgeting, and managerial accounting, this knowledge enables organizations to effectively communicate the value of their products or services to customers and manage customer relationships efficiently. Additionally, it supports the achievement of wealth creation, maximum returns, and added business value, which are core objectives of business operations.

2) Strategy and Risk Knowledge:

Including strategic and risk management, this knowledge prepares developers to face and adapt to a constantly changing, rapidly shifting business environment. It ensures smooth business operations and long-term survival in the face of uncertainties and challenges.

3) Contracts, Investment, and Services Knowledge:

Comprising contract drafting, investment data management, and analysis, and project services, this knowledge ensures thorough and effective decision-making regarding legal obligations and commitments between organizations and stakeholders.

2. Future research should compare across different countries, particularly within ASEAN, and study the dynamics between knowledge readiness and success measures over time.

ACKNOWLEDGEMENTS:

The research was supported by a grant from the Faculty of Architecture and Planning, Thammasat, Contract No. TDS 11/2566

Thammasat Research Unit in Project Development and Innovation in Real Estate Business, Thammasat University.

REFERENCES

- Best, J. W. (1977). *Research in education* (3rd ed.). Prentice-Hall.
- Cadman, D., & Topping, R. (2021). *Real estate development: Principles and process* (5th ed.). Urban Land Institute.
- Chuechui, P. (2022). *A study of competencies affecting the staying in business of small real estate developers who develop non-subdivision housing projects* [Master's independent study, Thammasat University].
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Sage.
- Department of Business Development. (2023). *Business registration for December 2022 and the year 2022*. https://www.dbd.go.th/news_view.php?nid=469423473
- Hair, J., Anderson, R., Tatham, R. L., & Black, W. C. (1998). *Multivariate data analysis* (5th ed.). Prentice-Hall.
- Irfan, M., Adeel, R., & Malik, M. S. (2023). The impact of emotional finance, market knowledge, and investor protection on investment performance in stock and real estate markets. *SAGE Open*, 13(1), 1–18. <https://doi.org/10.1177/21582440231159895>
- Jongwannasiri, S. (2014). Reasons for projects failing. <https://trisacademy.wordpress.com/2014/02/27/ReasonsOfProjectsFail>
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39(1), 31–36. <https://doi.org/10.1007/BF02291575>
- Kantaputra, P. (2016). Factors for success in becoming a small and medium-sized business entrepreneur. *Western University Research Journal of Humanities and Social Science*, 2(1), 59–76.
- Khazanie, R. (1996). *Statistics in a world of applications* (4th ed.). Harper Collins.

- Klinchuanchun, P. (2022). Business/industry trends 2022–2024: Residential business in Bangkok and Metropolitan area. <https://www.krungsri.com/th/research/industry/industry-outlook/real-estate/housing-in-bmr/io/housing-in-bmr-22>
- Maichim, T., & Boonsri, N. (2019, August 5–6). Factors affecting the success of the construction business: A case study of a construction contractor in Phuket province. *2nd USO Conference*, Faculty of Humanities and Social Sciences, Songkhla Rajabhat University, Thailand.
- Ntene, T., Azasu, S., & Owusu-Ansah, A. (2020). Corporate real estate and corporate strategy alignment in South Africa. *Journal of Corporate Real Estate*, 22(3), 181–196. <https://doi.org/10.1108/JCRE-09-2019-0043>
- Oladokun, S. O., & Gbadegesin, T. (2017). Adequacy of core knowledge and soft skills in the performance of professional employees of real estate firms in Nigeria. *Property Management*, 35(2), 132–149. <https://doi.org/10.1108/PM-08-2016-0035>
- Peca, S. P. (2009). *Real estate development and investment: A comprehensive approach*. John Wiley & Sons.
- Peiser, R. B., & Frej, A. B. (2007). *Professional real estate development: The ULI guide to the business* (2nd ed.). Urban Land Institute.
- Phothisita, C. (2011). *The science and art of qualitative research* (5th ed.). Amarin Printing & Publishing.
- Plus Talk. (2017). New real estate companies build strengths, expand business in a highly competitive environment. <https://www.plus.co.th/article/PlusTalk-RealEstate-NewCompany-BuildStrengths-ExpandBusinessInHighlyCompetitiveEnvironment-1587>
- Rattanaprichavej, N. (2011). Innovation in the real estate business. *Journal of Architectural/ Planning Research and Studies (JARS)*, 8(2), 127–138.
- Sae-jung, S. (2016). *Factors affecting success of the franchise business of Thai noodle restaurants in Chon Buri province* [Master's thesis, Burapha University].
- Sihatulanont, S., & Siriwong, P. (2018). Environmental factor in supporting young entrepreneur: The case study of student Faculty of Management Science, Silpakorn University, Phetchaburi Information Technology Campus. *Veridian E-Journal, Silpakorn University*, 11(2), 1155–1168.
- Truong, Y., & McColl, R. (2011). Intrinsic motivations, self-esteem, and luxury goods consumption. *Journal of Retailing and Consumer Services*, 18(6), 555–561. <https://doi.org/10.1016/j.jretconser.2011.08.004>
- Urban Land Institute (ULI). (2020). *Real estate development: A practical guide for developers*. ULI.
- Vanichbuncha, K. (2015). *Using SPSS for Windows for data analysis* (27th ed.). Faculty of Commerce and Accountancy, Chulalongkorn University.
- Wongrattana, C. (2001). *Techniques for using statistics for research*. Srinakharinwirot University.
- Yau, Y., & Ho, D. C. W. (2020). Competency model for property development professionals: The case of Hong Kong. *Journal of Property Investment & Finance*, 38(1), 34–50. <https://doi.org/10.1108/JPIF-05-2019-0065>