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RESEARCH ARTICLE

Assessing Essential Knowledge Readiness for Real Estate Project Developers

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ABSTRACT

This research aims to study the components of essential knowledge required for real estate project developers and to develop criteria for assessing knowledge readiness for these developers. Data were collected from a sample of 100 managerial-level personnel from real estate development firms in the Bangkok Metropolitan Area (one respondent per company). After removing one outlier, 99 valid samples remained. Data analysis was conducted using exploratory factor analysis (EFA) with 35 variables. The study found that the assessment criteria (variables) can be grouped into three new components based on the EFA: 1) marketing and finance knowledge, which includes marketing, project budgeting, and managerial accounting, 2) strategy and risk knowledge, including strategic management and risk management, and 3) legal contracts, investment, and services knowledge, which includes contract preparation, investment data analysis and management, and project services.

INTRODUCTION

The real estate sector accounts for 4.8% of Thailand's Gross Domestic Product (GDP) making it a significant driver of the country's overall economy. It contributes to financial circulation, job creation, and increased income while being linked to multiple industries such as construction, building materials, financial institutions, electronics, furniture, and interior design. Real estate can be classified into three main categories which are residential, commercial, and industrial. Residential real estate accounts for approximately two-thirds of Thailand's total real estate industry value. (Klinchuanchun, 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% and 21% increase compared to 2021 and 2020, respectively. 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 with2,012

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 quick financial success, the ability to continuously 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 (Rattanaprichavej, 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).

To date, research on the essential knowledge required for real estate project developers is scarce. Therefore, this study aims to explore the components of knowledge essential for real estate developers and develop criteria for assessing their knowledge readiness. The findings are expected to benefit real estate developers by providing a framework to evaluate and enhance their readiness to acquire the necessary knowledge for project development.

MATERIALS AND METHODS

This study explores the components of essential 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 sale. The research employed a mixed-methodology approach, integrating both qualitative and quantitative methods.

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 Phothisita (2011), qualitative research does not prescribe a specific formula for determining the number of participants, but the aim is to gather in-depth and holistic information from a small sample. Similarly, Creswell (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. 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:

$$N = \frac{Z^2}{4e^2} = \frac{1.96^2}{4\,(0.10)^2} = \frac{96.04}{}$$

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 the responses to the questionnaire, which used a Likert scale. 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 (Wongrattana, 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 1 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.

RESULTS

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 the majority of the experts interviewed were male, aged between 45 and 59 years, and held master's degrees. All five experts were in senior management positions within residential real estate development companies and had professional experience ranging from 12 years 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 necessary 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	●	●		●		●	●		●	●	●

Table 1. Summary of essential knowledge variables for real estate developers categorized by development phases (con't)

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**
Contract drafting	●		●	●	●	●	●	●			
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	●	●		●			●	●	●	●	●

Table 1. Summary of essential knowledge variables for real estate developers categorized by development phases (con't)

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**
Managerial accounting	●	●		●			●	●	●	●	●
Construction cost estimation		●				●	●				
Property valuation	●	●									
Statistical data analysis		●						●			
Geological and Hydrological Analysis	●	●	●			●					
Organizational communication	●	●	●	●	●	●	●	●	●	●	●
Building 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:

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

Knowledge outsourced or provided by external experts:

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.

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

Sales management knowledge.

Property valuation knowledge.

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 senior executives from residential real estate development companies located in the Bangkok Metropolitan Area. Each company was represented by one respondent, including both publicly listed companies and non-listed companies. For non-listed companies, 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 being of high to very high importance (mean scores between 3.41 and 5.00) consisted of 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 by focusing on knowledge areas identified as being of high to very high 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, a total of 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

Table 2. Variable names for Exploratory Factor Analysis (EFA) (con't)

Variable Code	**Variable Name**
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 (Wongrattana, 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: logarithmic transformation for positively skewed data, square root transformation for negatively skewed data, and 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 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	1135.099
	df	595
	P-Value	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 suitability of the dataset for exploratory factor analysis. The KMO value of 0.510 exceeds the threshold of 0.500, 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 the issue of multicollinearity and examine the structural relationships among variables. This process aims to group highly correlated variables into meaningful components (Vanichbuncha, 2015).

Before conducting the analysis, the researcher ensured the following preliminary conditions:

(1) Variables selected for factor analysis must have continuous values and must be measured on an interval scale 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 3 final components as presented in Tables 4–5.

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			

Table 4. Results of variable grouping into components after factor rotation (con't)

Factor	Factor Loading		
	Component 1	**Component 2**	**Component 3**
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			

Table 4. Results of variable grouping into components after factor rotation (con't)

Factor	Factor Loading		
	Component 1	**Component 2**	**Component 3**
Condominium laws			
Construction cost estimation			
Building control laws			
Land allocation laws			

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

Component	Observed Variables
Marketing and Finance	Marketing Project Budgeting Managerial Accounting
Strategy and Risk	Strategic Management Risk Management
Contracts, Investment, and Services	Contract Drafting Investment Data Management and Analysis 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 as both a production and service business. The project development process involves numerous tasks and activities, such as 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 Rattanaprichavej (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 resonate with Peiser and Frej (2007) and Peca (2009), who described real estate as a multidisciplinary field requiring 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 type of 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:

Figure 2. Essential knowledge for real estate project developers

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 ways that benefit the organization and its stakeholders. Effective target market selection, customer acquisition, and retention through superior value delivery are critical. 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 Kantaputra (2016), who identified financial management and clear target market definition as key success factors for entrepreneurship. Similarly, Maichim and Boonsri (2019) found that reliable project budgeting contributes significantly to the success of construction businesses. Chuechui (2022) highlighted the importance of marketing knowledge, market analysis, project uniqueness, and customer-centric responses as core competencies for small-scale real estate developers. As well as Irfan, Adeel, and Malik (2023) found that market knowledge plays a significant role in ensuring superior investment performance in stock and real estate markets.

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. Kantaputra (2016) emphasized strategic planning as a critical factor for entrepreneurial success. Sihatulanont and Siriwong (2018) stressed that entrepreneurs must anticipate and accept risks to sustain their businesses. Similarly, Sae-jung (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. As well as Ntene, Azasu, and Owusu-Ansah (2020) suggest that suggest that the incorporation of corporate real estate strategy in the firms' corporate strategy formulation has the potential to enhance shareholder value firms.

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 partners, while investment decisions involve analyzing comprehensive and meticulous data to maximize returns, particularly as real estate development requires substantial capital. Effective services create positive customer impressions. Kantaputra (2016) identified clear business selection, planning, goal setting, and high-quality products or services as factors driving business success. Maichim and Boonsri (2019) highlighted strategic planning and customer-focused service responses as critical success factors in business operations. Ae well as Oladokun and Gbadegesin (2017) stated that professional employees in real estate firms are expected to deliver optimum service in order to give their firms a good competitive edge in the market.

CONCLUSION AND RECOMMENDATION

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 specialized professional skills that can be outsourced to external experts. Consequently, real estate developers must acquire these knowledge areas as foundational skills for achieving business success.

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 management and risk management, this knowledge prepares developers to face and adapt to the constantly changing and rapid shifts in the business environment. It ensures smooth business operations and long-term survival amidst 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.

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