MINISTRY OF EDUCATION AND TRAINING   MINISTRY OF CONSTRUCTION

HANOI ARCHITECTURAL UNIVERSITY

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BUI VIET THI

MANAGEMENT OF IMPLEMENTATION PROGRESS FOR URBAN DEVELOPMENT INVESTMENT PROJECTS IN BINH DUONG PROVINCE

DOCTORAL DISSERTATION SUMMARY
FIELD OF STUDY: URBAN MANAGEMENT AND CONSTRUCTION

Hanoi, 2024

Work completed at: **Hanoi Architectural University**

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The dissertation will be defended at the University-level Dissertation Evaluation Committee at Ha Noi Architectural University

On the ....day of ...., 2024

The dissertation can be accessed at:
Hanoi Architectural University Library - National Library

INTRODUCTION

1. Reason for writting

In recent years, the construction industry in Vietnam has experienced rapid development, attracting significant investments from both domestic and international enterprises. A myriad of new projects such as shopping centers, high-end apartments, low-income housing, townhouses, and new urban areas have emerged not only in major cities but also rapidly expanded in Binh Duong province. As a province with strengths in industrial development, urban development investment projects (UDIPs) have garnered significant attention from governmental authorities. However, the majority of these projects experience delays, posing challenges for management agencies and failing to ensure the rights of users, thereby impacting the interests of investors, socioeconomic development, and urban residents' lives.

While there have been studies on various related aspects, there is still a lack of comprehensive research, from theory to practical assessment and proposals for improving management of implementation progress in UDIPs. Therefore, to enhance the efficiency of management of implementation progress in UDIPs in Binh Duong, the author has chosen the topic "***Management of implementation progress for urban development investment projects in Binh Duong Province***" for the doctoral dissertation.

2. Research Target, Objectives, and Tasks

a. Research Target: To propose solutions for improving management of implementation progress in UDIPs economically and efficiently, aiming to increase the benefits of all parties involved, enhance investment efficiency in Bing Duong province, and ensure the interest of the people.

b. Research Objectives: General objective is identify influencing factors, assessment criteria, and the current status of progress management in implementing UDIPs in Binh Duong province, thereby proposing progress management solutions for UDIPs to increase the benefits of the state, investors, and the residents. Specific objectives include: (i) Surveying and analyzing factors affecting progress management; identifying key factors affecting delays of projects; (ii) Proposing solutions related to management of implementation progress for UDIPs; (iii) Proposing funding solutions related to management of implementation progress for UDIPs; (iv) Proposing methods to determine economic efficiency/damage when implementing UDIPs.

c. Research Tasks: (i) Overview of management of implementation progress in UDIPs; (ii) Synthesize, supplement, and refine the scientific basis of management of implementation progress in UDIPs; (iii) Investigate and assess the current status of management of implementation progress in UDIPs; (iv) Analyze and evaluate the current status of management of implementation progress in UDIPs; (v) Propose management of implementation progress solutions for UDIPs.

3. Research subject and scope

Research subject: Management of implementation progress in UDIPs in Binh Duong Province, including influencing factors and proposed solutions.

Research scope:

- Content: Analyze the current status and influencing factors of progress management; propose progress management solutions for UDIPs in Binh Duong.

- Time frame: From 2017 to 2022, with a vision to 2030.

- Geographic scope: Binh Duong Province.

4. Research Approach and Framework

a. Research Approach: Clarify the theoretical basis of management of implementation progress in UDIPs, analyze and evaluate the current status of management of implementation progress in UDIPs in Binh Duong Province, identify limitations and weaknesses, analyze the causes of these limitations and weaknesses. Based on the analysis results, propose solutions to improve management of implementation progress for UDIPs.

b. Research Framework: The author proposes four steps: (i) Identify the reasons, objectives, and content of the research issue; (ii) Review previous studies (internationally and in Vietnam) to identify gaps and issues for in-depth research and the research sequence; (iii) Study scientific, practical, legal, and research subject matters to design measurement scales and research models; (iv) Apply research methods to conduct research according to the proposed measurement scales and research models.

5. Achievements of the Dissertation

a. Scientific Contributions: (i) Established a theoretical framework for management of implementation progress in UDIPs; (ii) Identified the theoretical framework of factors influencing the delayed investment progress in urban areas; (iii) Clearly identified and quantified factors affecting the delay in UDIPs in Binh Duong.

b. Practical Contributions: (i) Identified existing shortcomings and limitations in management of implementation progress for UDIPs; (ii) Analyzed deficiencies in the financial management mechanism in the research area leading to delays in UDIPs; (iii) Proposed progress management solutions for UDIPs to save costs, enhance efficiency, increase benefits for investors, contribute to national economic development, and ensure the interests of local residents.

Expected Results of the Research: Progress management solutions for UDIPs in Binh Duong Province ensuring the interests of the state, investors, and residents.

6. Research Methodology

a. Theoretical Research Method: The dissertation utilizes analytical and synthetic methods.

b. Practical Research Method: The dissertation employs survey and expert methods.

c. Qualitative Research Method: Interviews with experts and scientists.

d. Quantitative Research Method: Through multiple regression analysis, applied to various models, using dummy variables to identify and analyze factors influencing the progress of UDIPs.

7. New Contributions of the Dissertation

The dissertation has identified the factors influencing the progress of UDIPs, determining 05 groups of factors affecting the management of implementation progress for UDIPs in Binh Duong.

1. Identifying the current state of management in UDIPs generally and progress management in typical UDIPs within the territory of Binh Duong province.

2. Propose 03 general solutions for managing the progress of UDIPs in Binh Duong province.

3. Proposing 05 specific solutions for progress management in implementing urban development investment projects in Binh Duong province.

4. Proposing methods to determine the economic efficiency/damage when implementing UPIDs exceeding or delaying the schedule.

8. Dissertation Structure

In addition to the introduction, conclusion, and recommendations, the dissertation consists of 04 chapters:

Chapter 1: Overview of relevant research works related to the thesis topic

Chapter 2: Theoretical basis of management of implementation progress in UDIPs.

Chapter 3: Analysis of management of implementation progress in UDIPs in Binh Duong province.

Chapter 4: Progress management solutions for UDIPs in Binh Duong province

CHAPTER 1. OVERVIEW OF RELEVANT RESEARCH WORKS RELATED TO THE THESIS TOPIC

1.1. Overview of research works in Vietnam and abroad

1.1.1 Synthesis of studies on the progress of implementation of urban development projects (UDPs) and UDIPs

1.1.1.1. Theoretical studies on the progress of implementation of UDPs

The research scholar has studied 10 scientific publications (09 foreign publications and 01 domestic publication) related to project implementation progress. The theoretical research on project management includes: Working schedule, Gantt chart, Flowchart, Network diagram; Critical Path Method, PERT, Microsoft Project, Primavera, and some studies applying project management methods of PMI related to project implementation progress.

1.1.1.2. Theoretical studies on risks in management of implementation progress for UDIPs:

The research scholar has studied 06 scientific publications (04 foreign publications and 02 domestic publications) related to project implementation progress.

Overall, the documents in 1.1.1 focus mainly on the general knowledge and theories about progress and cost; identifying factors influencing progress or both progress and

cost. These studies only analyze influencing factors and rank them to help overcome delays and cost overruns

1.1.2. Studies on factors affecting the progress of implementation of UDPs and UDIPs

1.1.2.1. Studies on factors affecting the progress of implementation of UDPs:

The research scholar has studied 21 scientific publications (15 foreign publications and 06 domestic publications) related to project implementation progress.

1.1.2.2. Studies on factors affecting the progress of implementation of UDIPs:

The research scholar has studied 09 scientific publications (05 foreign publications and 04 domestic publications) related to factors affecting the progress of implementation of UDIPs.

Overall, through the general research, it is evident that identifying the key factors affecting the construction progress of UDIPs is still very limited. Determining the losses when projects are delayed has not been clarified, and establishing a logical framework for project management in UDIPs in Vietnam has not been addressed.

1.2. Identifying gaps and issues requiring in-depth research

1.2.1. Observations drawn from the overview of related research

In addition to being influenced by regular construction projects, UDIPs are affected by characteristics of urban development. A comprehensive study on management of implementation progress in UDIPs, done economically and efficiently to increase the benefits for all stakeholders, enhance investment efficiency in Binh Duong, and ensure the interests of residents in the project area is urgently needed.

1.2.2. Identifying research gaps

The research scholar identifies research gaps including: Building a logical framework in each stage of the project has not been emphasized; Management of implementation progress and the use of management tools have not been deeply studied in UDIPs; Research on factors influencing and damages for each type of project when delayed has not been deeply studied.

In summary, research on management of implementation progress in UDIPs is essential and urgent.

1.2.3. Identifying issues requiring in-depth research

The research scholar recognizes that the topic must clarify the following research issues:

- Scientific aspects: (i) Identifying the theoretical framework of influencing factors; (ii) Quantifying influencing factors; (iii) Determining damages due to delays.

- Practical aspects: (i) Identifying existing issues, limitations, and causes; (ii) Analyzing flaws in the management mechanism leading to delays in UDIPs; (iii) Proposing progress management solutions for UDIP projects.

1.3. Research sequence of the thesis

Step 1: Identifying the content, purpose, and urgency of the research issue;

Step 2: Reviewing relevant previous studies;

Step 3: Theoretical and practical research and proposing a research model;

Step 4: Applying research methods to conduct the study.

1.4. Experience in Urban Development Project Management

1.4.1. Experience in managing UDIPs in developed countries through PPP

The research scholar studies the experiences of countries such as the United States, Canada, Australia, Japan, South Korea, Singapore, etc., on urban development planning divided into separate regions. In addition, advanced project management tools are applied and contribute significantly to management of implementation progress in UDIPs.

1.4.2. Experience in managing UDIPs in developing countries

The research scholar studies the experiences of countries such as Thailand, Vietnam, China, Myanmar, South Africa, Indonesia, Malaysia, India, etc., and finds that for effective progress management in UDIPs, good general planning must be implemented, integrated with licensing procedures, and land clearance must be emphasized. Coordination in infrastructure, application of advanced construction technology, proficient use of project management tools, finance, human resources, etc., are key factors in management of implementation progress for UDIPs.

1.4.3. Lessons learned for Binh Duong

The research scholar draws lessons for Binh Duong including: (i) Strategic planning and proactive PPP project development planning; (ii) Policy and legal framework; (iii) State apparatus organization; (iv) State support for PPP projects; (v) Selection conditions for projects implemented under PPP form; (vi) Compatibility of project output services with project clients; (vii) Risk-sharing mechanism; (viii) Factors affecting the success of PPP projects.

CHAPTER 2. THEORETICAL BASIS ON PROJECT MANAGEMENT OF URBAN DEVELOPMENT INVESTMENT PROJECTS

2.1. Urban development, urban development investment, and project management of UDIPs

2.1.1. Relevant concepts

The research scholar has presented concepts regarding: Delay in progress, Construction Investment Projects, Urban Development Investment Projects, Construction Investment Projects in urban areas, Urban areas, Urban districts, Investors, Investment projects, UDIPs, and Implementation progress of Construction Investment Projects.

2.1.2. Characteristics of UDIP

The research scholar has outlined the fundamental characteristics of UDIP as follows: (i) Projects with large total investment, extended implementation period, and passing through multiple stages; (ii) Projects are influenced and constrained by various

resources such as finances, legal procedures, labor, materials; (iii) Projects are executed in an uncertain work environment with numerous complex issues, variable boundary conditions; (iv) Projects often undergo significant changes in project implementation time, investment scale, project finances.

2.1.3. Methods of implementing UDIP

In this thesis, the research scholar divides UDIP into two main groups, including UDIP using state budget funding and UDIP using 100% private capital

2.1.4. Content and types of UDIP

2.1.4.1. Content of UDIP: (i) Project description accompanied by 8 main contents; (ii) Basic design documents of the project; (iii) Urban design documents and miniature models of the project implementation area; (iv) Component project documents; (v) Contents of coordination between the Investor and the local authorities.

2.1.4.2. Types of UDIP: The research scholar presents types of UDIP including upgrading and renovating projects and new construction projects.

2.1.5. Management and subjects of UDIP management

2.1.5.1. UDIP Management: Presenting the concept, purpose of UDIP management to control the time, cost, and quality of project works.

2.1.5.2. Subjects of UDIP Management: The research scholar divides into two main subject groups: (i) Group of subjects participating in UDIP management including state management levels and Investors; (ii) Group of contractors implementing the project including general contractors, main construction contractors, subcontractors, and consulting services.

2.1.6. Content of UDIP management

1) UDIP: is the Construction Investment Project within the urban development area, including Urban Construction Investment Projects (UCIP) and Construction Investment Projects within urban areas.

2) The content of UDIP management includes: Overall project planning; Project scope management; Time management; Cost management; Project quality management; Project human resource management; Project information management; Project risk management; Project contract management.

2.1.7. Management of UDIP implementation

Managing the implementation plan of UDIP involves setting general project objectives, specific tasks, implementation organization methods, and using various methods to monitor project implementation.

2.1.8. Factors affecting UDIP management activities

The research scholar identifies the main factors influencing UDIP management activities including:

2.1.8.1. Main causes of delays: Lack of information; Weak management, supervision, and control; Inadequate management skills; Delayed decision-making;

Lack of skilled labor, experience; Low motivation; Too many responsibilities; Inappropriate management structure; Weak organizational structure.

2.1.8.2. Other causes of delays: (i) Accidents, (ii) Technical and managerial factors, (iii) Government policies

2.1.9. Evaluation criteria for UDIP management activities

UDIP management activities are evaluated based on fundamental criteria including: (i) Investment efficiency; (ii) Human resources, finances; (iii) Project quality; (iv) Project time, cost; (v) Customer needs; (vi) Project implementation progress.

2.2. Study of impacts and influencing factors on the progress of UDIPs

2.2.1. Theoretical framework on the progress of UDIPs

The progress of urban development investment projects is closely linked to the following activities and bases: Proposal for investment approval, decision approval, land allocation decision, and related legal documents; Forms of contracts (consultancy, design, supervision, appraisal...); Technical design documents, technical standards, labor norms, materials, machinery and equipment, construction technology, construction technical measures; geological, hydrological, transportation characteristics, completion and handover deadlines.

2.2.2. Impacts and influencing factors on the progress of UDIPs

The research scholar has synthesized the impacts and influencing factors on the progress of urban development investment projects, including: (i) Changes in hidden costs, unresolved financial tool payments; (ii) Low-quality work relationships, subcontractors' low commitment to work quality, incomplete detailed technical specifications; (iii) Financial weaknesses of contractors, low pricing, lack of time and cost reserves (see specific details in section 2.1.8.1); (iv) Lack of local material supply; (v) Complex project approval processes.

Other impacting factors include: (i) Auxiliary costs for major stages; (ii) Urban planning zoning issues, lack of rationality; (iii) Policy changes; (iii) Poor geological and topographical surveys; (iv) Financial management with many risks; (v) Natural disasters, epidemics... also significantly affect the progress of urban development investment projects.

2.2.3. Analysis of impacts and influencing factors on the progress of UDIPs using quantitative and regression methods

To study the factors affecting the implementation progress of urban development investment projects in Binh Duong, the research scholar selected 5 typical projects out of 27 projects, regardless of scale and type, implemented during the period 2017 - 2021, randomly chosen from the archives of the Binh Duong Provincial Department of Finance. These projects include the An Dien Ben Cat Commercial Urban Area, Minh Tan Secondary School in Dau Tieng District, Phu Hoa Phu Loi Inter-District Health

Station in Thu Dau Mot City, Dau Tieng District Committee Road, and 4B Road in Dau Tieng District

2.3. Practical basis for UDIP management from the situation in Southeast Vietnam and recommendations for Binh Duong

2.3.1. Practical aspects of UDIP management in Southeast Vietnam

UDIP management in Southeast Vietnam until 2023 still faces various challenges that need to be addressed: (i) Comprehensive project planning, specific time management lacking; (ii) Quality management of construction projects, projects not meeting quality standards; (iii) Poor coordination of human resources among stakeholders; (iv) Information management lacking continuity across projects; (v) Contract management requiring attention from contractor selection to contract negotiation; (vi) Project cost management paying adequate attention to cost categories and unit prices for each expense; (vii) Risk management needing identification of project risks and quantification of occurrence levels.

(Source: Do Ngoc Hoan, Southern Institute of Urban and Rural Planning - Ministry of Construction).

2.3.2. Lessons in urban development management from the situation in Ho Chi Minh city

In Ho Chi Minh City, urban restructuring are part of urban development planning. Therefore, urban restructuring tasks such as relocating and reorganizing the lives of people living along canals and streams; renovating and constructing new apartments to replace old, dilapidated ones; upgrading and restructuring existing residential areas and building and developing new, synchronous, civilized, modern urban areas will continue to be regular tasks for districts and departments

2.3.3. Urban development management lessons for Binh Duong

In implementing the Restructuring and Urban Development Action Program, several new solutions suitable for the practical situation of Binh Duong have been introduced. These include the conversion of land use functions and purposes for small-sized Grade D apartment buildings, selecting developers to construct new apartment buildings to replace old ones (Grade B, C, D) through urban restructuring, expanding new urban areas near the city center to reduce population density in the urban center, improving and upgrading infrastructure to connect and synchronize with adjacent urban areas, and emphasizing administrative reform to enhance the effectiveness and efficiency of state management.

2.4. Legal basis for UDIP management

2.4.1. Legal policies on urban development and urban development investment

2.4.1.1. Investment procedures for UDIPs

2.4.1.2. Identification of investors in UDIPs: For some UDIPs (group A scale and above), a Prime Minister's investment approval decision is required.

2.4.1.3. Scale of UDIPs: There are inconsistencies in project scales when preparing feasibility study reports.

2.4.2. Legal Policies on UDIPs

Legal policies on UDIPs management detail certain contents regarding form of contractor selection for UDIPs management follows: Determining the form of DIPs management; Organizing and operating specialized/sectoral DIPs Management Boards; Regulations on the DIP Board for a project; Regulations on the investor organizing project management; Regulations on hiring consultants for DIPs management.

2.5. Establishing measurement scales and research models

2.5.1. Research data template amd scale

2.5.1.1. Research Data Template: In the research scholar's model, the number of observed variables p is 5 variable groups, and the sample size according to Hair J.F.Jr will be n $\geq$ 50 + 8×5 = 90. The research scholar sent >250 survey questionnaires to experts, resulting in 250 valid questionnaires (Summarized in Appendix 1), thus meeting statistical requirements for sample size in statistics, regression, and model testing.

2.5.1.2. Establishing scale: The factors causing delays in urban development projects in this study are divided into 05 groups: (i) Factors related to investors (CĐT) - 9 variables; (ii) Factors related to contractors (NT) - 9 variables; (iii) Factors related to consultants (TV) - 7 variables; (iv) External impact factors (NV) - 3 variables; (v) Legal instability factors (PL) - 4 variables.

The scale for factors causing delays in urban development projects in this study includes 05 components and 32 observed variables. The scale is developed in the form of a Likert unidirectional scale from 1 to 5.

To measure the factors causing delays in urban development projects in this dissertation with 05 components and 32 observed variables, the research scholar conducted a delay survey based on three basic criteria: (i) Status of delays in urban development projects; (ii) Impact of factors on delay status; (iii) Factors to be improved in a positive direction to limit delays (or including both delays and budget overruns)

2.5.2. Regression and model testing in the scale

In the dissertation, the research scholar uses SPSS software. After encoding and cleaning the data, it will be subjected to descriptive statistical analysis, evaluation of the reliability of scales, exploratory factor analysis, and regression analysis.

2.5.3. Proposed Research Model

The preliminary research model comprises 05 groups of factors including: Factors related to project owners, contractors, consultants, peripheral factors, and legal aspects as illustrated in Figure 2.2.

Figure 2.2.
Preliminary research model
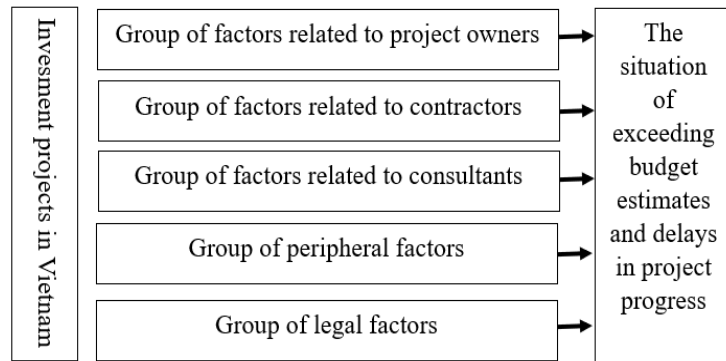
CHAPTER 3. ANALYSIS OF THE CURRENT SITUATION OF URBAN DEVELOPMENT PROJECTS IMPLEMENTATION IN BINH DUONG

3.1. Overview of urban development projects implementation in Binh Duong

3.1.1. Introduction to Binh Duong and UDIPs in this province

Binh Duong has 1 first-class urban area (Thu Dau Mot City), 1 second-class urban area (Di An City), 3 third-class urban areas (Thuan An, Ben Cat, and Tan Uyen), and 5 fifth-class urban areas (Dau Tieng Town, Phuoc Vinh, Lai Uyen, Tan Thanh, Tan Binh).

3.1.1.2. UDIPs in Binh Duong province: Some urban area projects include: Dai Nam residential area project, Phu Hong Thinh residential area, My Phuoc 4, Cau Do residential area, Phuc Dat urban area, An Dien, Ecolake residential area, High-end Habitat Thuận An City apartment complex, Eco Xuan Thuận An residential area, urban areas developed by Becamex, etc. Some typical infrastructure construction projects within urban areas such as Minh Tan Secondary School in Dau Tieng District, Phu Hoa Phu Loi inter-district health station in Thu Dau Mot City, Dau Tieng District Party Committee office road, 4B road in Dau Tieng District are selected by research scholar as the basis for calculation in the research model.

3.1.2. Selection of urban development investors in Binh Duong province

Status of selecting UDIP investors in Binh Duong: The selection of investors can be either by appointment or through extensive bidding activities.

3.2. Analysis of the current situation of UDIP management in Binh Duong province

3.2.1. Status of organizing management and supervision of implementation

The organization of management for each urban area project is arranged according to its own management regulations by the project owner of each urban area. Project owners of urban areas with sufficient conditions and capacity may establish their own project management board.

3.2.2. Establishment, appraisal, approval, and selection of projects

3.2.2.1. Establishment, appraisal, and approval of urban development projects in Binh Duong:

The process of establishing, appraising, and approving urban development projects in Binh Duong requires Project Owners to follow these steps: Project owner recognition;

Registration of investment projects according to the urban development project process; Seeking opinions from relevant authorities; Land clearance and compensation; Urban planning; Project owner prepare the urban development project process for submission to the competent authority for approval; Urban planning announcement; Approval of investment principles; Infrastructure design; Technical design; Before commencing the project, infrastructure connection and land transfer procedures must be completed.

3.2.2.2. Selection of UDIPs: The selection process of UDIPs in Binh Duong is often delayed due to suboptimal selection methods, thereby prolonging the selection process. Research scholar proposes selecting several typical projects in Binh Duong Province, including: Designing 24-story and 18-story apartment buildings; Designing 6-story and 4-story social housing; Synthesizing and selecting reasonable design options.

b. Method of selecting design and construction alternatives for urban projects:

- Alternative 1: Selecting based on the economic and technical criteria set by the state.

- Alternative 2: Selecting based on comprehensive criteria for each type of project.

3.2.3. Status of Selecting Urban Development Investors

Selecting UDIP investors in Binh Duong faces many difficulties, and many cases experience delays.

3.2.3.1. Selection of Urban Area Investors: The selection of urban area investors in Binh Duong complies with the regulations of the law;

3.2.3.2. For development investment projects within urban areas: For projects using state budget funds, the investor decides on the investment and has the right to select the project owner, usually based on the expertise of the sectors or assigned to the project management board to act as the Project Owner.

3.2.4. Status of UDIP Contract Management

3.2.4.1. Regulations on UDIP Contract Management in Binh Duong: Project owners are allowed to use standardized contract forms for managing contracts in each contract phase, but must ensure the following objectives after implementing UDIP contracts in Binh Duong urban areas.

3.2.4.2. For UDIP contract management for projects using state budget funds in Binh Duong: Project owners rely on legal normative documents and state regulations for guidance

3.2.5. Status of implementing UDIP quality management

The viewpoint of implementing UDIP quality management in Binh Duong is the top concern of project owners in project implementation.

3.3. Analysis of the implementation of typical UDIP quality management in Binh Duong province

3.3.1. Status of quality management of residential area development projects and urban transportation infrastructure projects

3.3.1.1. Status of quality management of urban residential area development projects: Many projects are behind schedule compared to the investment plan due to

various underlying reasons. However, the main reasons are legal procedures and the weak capacity of project owners.

3.3.1.2. Status of quality management of urban transportation infrastructure projects: Taking proactive steps in developing urban transportation systems, creating distinct differences, taking the initiative in attracting investment, and economic development. In 2022, Binh Duong Province identified a focus on public investment, concentrating resources on key transportation projects of the province. Specifically, with foreign-related transportation projects, connecting regions.

3.3.1.3. Status of coordinated development of transportation infrastructure with urban technical infrastructure: In the 2021-2025 period, Binh Duong focuses on mobilizing resources for investment, gradually overcoming traffic congestion on key traffic routes.

3.3.1.4. Status of quality management in developing houses to meet people's needs: The management of construction of urban area houses still faces difficulties and obstacles, with unauthorized and illegal construction that cannot be completely resolved.

3.3.2. Research on the progress of implementing some UDIPs in urban areas in Binh Duong province

3.3.2.1. Scientific basis for researching the progress of implementing UDIPs:

Research scholar evaluates the impact on investment efficiency and business profits when projects are delayed based on contracts, estimates, and progress of some actual UDIPs in Binh Duong. Research scholar evaluates investment efficiency for civil construction projects and infrastructure projects according to formula 3.1:

$$NPV = CF_0 + \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + ... + \frac{CF_n}{(1+r)^n} = \sum_{t=0}^{n} \frac{CF_t}{(1+r)^t} \tag{3.1}$$

In which: CF_0 is the initial cost of the project; CF_t is the net cash flow in year/month t; r is the rate of return or discount rate (%)

At the same time, the research scholar also evaluates the Cost-Benefit Ratio (CBR) for civil and transportation infrastructure projects using the ratio of benefits to costs according to formula 3.2	$B/C = \frac{PV(B)}{PV(C)} = PI$	(3.2)
Where: PI is the profit index; PV(B) is the profit value, calculated by formula 3.3:	$PV(B) = \sum_{t=0}^{n} \frac{CiFt}{(1+r)^t}$	(3.3)
PV(C) is the cost value, calculated by formula 3.4:	$PV(C) = \sum_{t=0}^{n} \frac{CoFt}{(1+r)^t}$	(3.4)

CiFt is the cash inflow; CoFt is the cash outflow; r is the rate of return or discount rate (%)

If PI > 1, the investment will be accepted, and vice versa if PI < 1, the investment will not be accepted.

3.3.2.2. Study on the progress of implementing UDIPs for schools: The research scholar evaluates the investment efficiency for two civil projects: Minh Tan Secondary

School - Dau Tieng District.

3.3.2.3. Study on the progress of implementing UDIPs for healthcare facilities: Phu Hoa Phu Loi inter-district health station, the research scholar obtained results in Appendix PL3.4

3.3.2.4. Study on the progress of implementing UDIPs for transportation projects:

The research scholar evaluates the investment efficiency for 02 projects: District Party Committee road and 4B road - Dau Tieng District. The results obtained by the research scholar in Appendix PL3.4 are as follows:

a. For District Party Committee Road - Dau Tieng District: The research scholar obtained results in Table PL3.12; Table PL3.13; Table PL3.14; Figure PL3.4.

b. For 4B Road - Dau Tieng District: The research scholar obtained results in Table PL3.15; Table PL3.16; Table PL3.17; Figure PL3.5.

General comments:

- According to Tables PL3.6, PL3.9, PL3.12, and PL3.15, if the schedule is met, NPV > 0, and the investment will be profitable. If the schedule is delayed, the investment efficiency NPV will gradually decrease as detailed in Figures PL3.2, PL3.4, and PL3.5. This investment efficiency decreases due to the contractor's penalties over time and the additional costs of management, machinery, material price fluctuations, and labor. Thus, Minh Tan Secondary School project will incur a capital loss if delayed by 56 days, Phu Hoa Phu Loi inter-district health station will incur a delay of 119 days, District Party Committee road will incur a delay of 56 days, and 4B road will incur a delay of 82 days.

- As shown in Figures PL3.2, PL3.3, PL3.4, and PL3.5 (in Appendix PL3.3), the research scholar observes that investment efficiency significantly decreases when the project is delayed due to contractor errors compared to delays caused by project owner factors.

- On Tables PL3.6, PL3.9, PL3.12, PL3.15 (in Appendix PL3.3), it is shown that penalty costs under the contract are fixed and cannot be changed, with the possibility to change management costs, machinery, and material price fluctuations. Therefore, a reasonable construction plan and measures will minimize risks and enhance project quality, bringing benefits to the project owner.

3.3.3. Results of researching the current situation of implementing progress management in research models

Based on the calculated data from actual projects, it is evident that the longer the delay in project progress, the lower the investment efficiency when implementing the project. Enterprises engaging in UDIPs need to carefully consider important factors causing project delays, especially contractor errors. These factors result in significant cost overruns. It is necessary to minimize risks to improve project quality and benefit the project owner. Issues related to construction plans and measures, design, payment, and low-skilled labor are factors causing delays. These errors will prolong the timeline, affecting project costs and quality. Depending on the specific characteristics of each project, there will be differences in NPV values. If the delay time ranges from 15-39% of the total time for civil projects and from 8-39% of the total time for transportation projects, the contractor will incur losses. If the project is delayed due to factors

belonging to the project owner or delayed land acquisition, the NPV value will slightly decrease over time. However, these projects have complex construction conditions and difficulties due to the impact of land acquisition work. This leads to delays compared to civil projects. Delays due to contractor errors will significantly reduce investment efficiency compared to other factors from the project owner.

3.4. Analysis of factors affecting the implementation progress of typical UDIPs in Binh Duong province

The research scholar addresses qualitative and quantitative research, model construction, scale development, sampling, and descriptive statistics, Cronbach's Alpha coefficient testing, exploratory factor analysis, linear regression model testing, to discuss research results, and finally applies typical UDIP research on schedule-delayed and schedule-overrun projects in Binh Duong province.

3.4.1. Study on qualitative factors affecting implementation progress

After consulting the opinions of some (20) out of 250 experts, including scientists and university lecturer related to UDIP implementation progress, research scholar found that qualitative research indicated some factors influencing project implementation progress relatively similar to previous studies by some authors both domestically and internationally. Specifically: (i) Factors related to project owners, (ii) Factors related to consultants, (iii) Factors related to contractors, (iv) Peripheral factors: Specific factors affecting UDIP schedule delays in Vietnam recommended by experts to be included in the scale in quantitative research are: Factors related to project owners; Factors related to consultants; Factors related to contractors; Other factors; etc.

Comments: The presentation above guides research scholar that the survey subjects need to be more diversified (planned > 250) to adequately represent the research objects in terms of methodology, sample, location, time, etc. Through qualitative research, the "Research model" will be selected; hence, the "scale" of factors influencing the implementation progress of UDIP projects for Binh Duong province specifically will be developed.

3.4.2. Study on quantitative research and research model

Hình 3.3. Research model of factors influencing project implementation progress
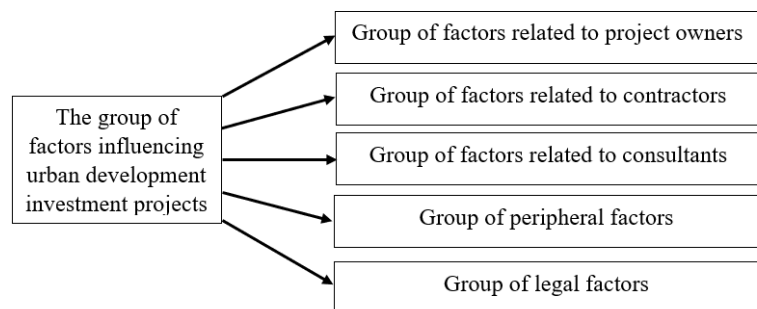
The purpose of quantitative research is to synthesize data from survey forms collected by research scholar from experts, check the correlation of factor groups influencing project implementation progress in statistical form.

3.4.3. Determination of scales of factors influencing UDIP project implementation progress

The scales of factors influencing UDIP implementation progress are based on qualitative research suitable for conditions in Vietnam and Binh Duong. The groups of factors influencing UDIP project implementation progress in the thesis are divided into 05 groups, measured by observed variables coded:

Group of factors related to project owners (CDT): 9 variables, codes CDT1-CDT9;

Group of factors related to contractors (NT): 9 variables, codes NT1-NT9;

Group of factors related to consultants (TV): 7 variables, codes TV1-TV7;

Group of peripheral factors (NV): 3 variables, codes NV1-NV3;

Group of legal factors (PL): 4 variables, codes PL1-PL4;

3.4.4. Sampling and sample descriptive statistics

3.4.4.1 Sampling selection and implementation:

a. Research sample selection: 250 samples (equivalent to 250 survey questionnaires).

b. Implementation of research samples: Through direct/indirect interviews with experts. The questionnaire includes 36 questions, including 09 questions about the impact of project owners, 09 questions about the impact of contractors, 07 questions about the impact of consultants, 03 questions about the impact of peripheral factors, 04 questions about the impact of legal policies on UDIP implementation progress

3.4.4.2. Sample descriptive statistics:

a. Survey results are presented in Appendix 1 including:

- List of "Research Samples" at PL1.1.

- Survey data research results at PL1.2.

- Descriptive statistics of survey results of candidates participating in interviews at PL1.2.1.

- Descriptive statistics of survey results of factors influencing UDIP implementation progress at PL1.2.2.

- Descriptive statistics of survey results on the frequency of project delays at PL1.2.3.

b. Descriptive statistics of factors influencing survey results: (i) Internal factor group includes: Factors related to project owners, factors related to contractors, factors related to consultants; (ii) External factor group includes: Factors related to policy factors and factors related to peripheral factors.

- For project owners: research scholar calculates the average non-influence rate from CĐT1 to CĐT9 as 5.47%, with influence as 94.53%.

- For contractors: research scholar calculates the average non-influence rate from NT1 to NT9 as 6.18%, with influence as 93.82%.

- For consultants: research scholar calculates the average non-influence rate from TV1 to TV7 as 3.83%, with influence as 96.17%.

Thus, the entities that directly influence UDIP progress in urban development are consultants, followed by contractors and project owners

3.4.4.3. Cronbach's Alpha coefficient testing:

Research scholar uses SPSS 22 software to test the model in the scale.

a. Testing results for scales related to Project Owners: After eliminating variables for the second time, Cronbach's Alpha coefficient increased from 0.682 to 0.854.

b. Testing results for scales related to Contractors: After eliminating variables for the second time, Cronbach's Alpha coefficient increased from 0.727 to 0.859.

c. Testing results for scales related to Consultants: After eliminating variables for the second time, the Cronbach's Alpha coefficient for the scale is 0.833, > 0.6, indicating reliability.

d. Testing results for scales related to Peripheral Factors: The Cronbach's Alpha coefficient for the scale is 0.708, > 0.6, indicating reliability.

e. Testing results for scales related to Legal Factors: The Cronbach's Alpha coefficient for the scale is 0.744, > 0.6, indicating reliability.

f. Testing results for scales related to Schedule Overrun/Delay: From the Cronbach's Alpha coefficient testing results of independent and dependent variables, after eliminating inappropriate observed variables, all observed variables have a total correlation coefficient greater than 0.3, confirming the reliability of the scales of factors and their use for Exploratory Factor Analysis (EFA) analysis.

3.4.4.4. Exploratory Factor Analysis (EFA)

The results of EFA show that there are 03 groups of factors discovered with the following testing parameters: (i) Cumulative Eigenvalues coefficient = 61.282%, (ii) Significance level of Barlett test = 0.000, (iii) Factor loading standard.

The results of EFA show the following: F_NT (Factor representing the weak capability of contractors in project implementation) representing observed variables: NT1 đến NT5; F_CDT (Factor representing the weak capability of project owners in project management) representing observed variables: CDT1; CDT2; CDT3; CDT4; CDT6; F_TV (Factor representing the weak capability of consultants) representing observed variables: TV1 đến TV5; F_PL (Factor representing legal issues) representing observed variables: PL1 đến PL4; F_NV (Factor representing peripheral factors) representing observed variables: NV1; NV2; NV3; CDT5.

Table 3.4. Table of Exploratory Factor Analysis (EFA)

Rotated Component Matrixa					
	Component				
	1	2	3	4	5
NT5	0.889				
NT6	0.839				
NT4	0.761				
NT1	0.711				
NT3	0.697				
NT2	0.592				
CDT4		0.807			
CDT1		0.770			
CDT6		0.748			
CDT3		0.743			
CDT2		0.721			
TV4			0.785		
TV5			0.776		
TV2			0.735		
TV3			0.720		

Rotated Component Matrixa					
	Component				
	1	2	3	4	5
TV1			0.709		
PL2				0.779	
PL1				0.755	
PL3				0.736	
PL4				0.626	
NV1					0.735
NV2					0.721
NV3					0.711
CDT5					0.545

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

3.4.4.5. Linear Regression model testing:

a. Regression analysis:

Step 1: Construct correlation chart between variables

Table 3.5. Correlation chart between correlated factor variables

Correlated Factor		Y	F_NT	F_CDT	F_NV	F_TV	F_PL
Y	Pearson's Correlation	1	0.190	0.598	0.328	0.601	0.694
	Sig. (1-tailed)		0.003	0.000	0.000	0.000	0.000
	Observations	250	250	250	250	250	250
F_NT	Pearson's Correlation	0.190	1	0.240	0.459	0.032	0.070
	Sig. (1-tailed)	0.003		0.000	0.000	0.617	0.270
	Observations	250	250	250	250	250	250
F_CDT	Pearson's Correlation	0.598	0.240	1	0.425	0.375	0.243
	Sig. (1-tailed)	0.000	0.000		0.000	0.000	0.000
	Observations	250	250	250	250	250	250
F_NV	Pearson's Correlation	0.328	0.459	0.425	1	0.182	0.111
	Sig. (1-tailed)	0.000	0.000	0.000		0.004	0.079
	Observations	250	250	250	250	250	250
F_TV	Pearson's Correlation	0.601	0.032	0.375	0.182	1	0.390
	Sig. (1-tailed)	0.000	0.617	0.000	0.004		0.000
	Observations	250	250	250	250	250	250
F_PL	Pearson's Correlation	0.694	0.070	0.243	0.111	0.390	1
	Sig. (1-tailed)	0.000	0.270	0.000	0.079	0.000	
	Observations	250	250	250	250	250	250
Note: The correlation is significant at the 0.01 level (2-tailed)							

Based on the computed correlation coefficient results, it is concluded that the independent variables F1, F2, F3, F4, F5 are positively correlated with the dependent variable Y.

Step 2: Multiple regression model

Table 3.6: Multiple regression results

Model	R	R2	R2 Adjusted	Standard Error of Estimate	Durbin-Watson Statistic
	0.859	0.737	0.732	0.32384	1.699

Model		K1	Standard Error	K2	t-value	Sig. value	Multicollinearity	
							Tolerance	VIF
1	Constant	-0.438	0.169		-2.591	0.010	0.780	1.282
	F_NT	0.030	0.031	0.035	0.950	0.343	0.715	1.398
	F_CDT	0.283	0.032	0.343	8.842	0.000	0.757	1.321
	F_TV	0.231	0.033	0.265	7.037	0.000	0.835	1.197
	F_PL	0.473	0.034	0.498	13.870	0.000	0.681	1.468
	F_NV	0.059	0.038	0.063	1.577	0.116	0.780	1.282

Note:

- R2 (Multiple Correlation Coefficient) indicates the closeness of the relationship between the dependent variable Y and the independent variables XK.

- K1: Unstandardized coefficient; K2: Standardized coefficient; Z: Zero order.

- Independent variables XK include: F_NT; F_CDT; F_TV; F_PL; F_NV

- Dependent variable: Schedule Overrun/Delay (Y).

Conclusion: The independent variables can explain 73.2% of the variance in the dependent variable, which is the schedule overrun/delay. All independent variables have a positive effect on the dependent variable.

From the regression coefficients, the standardized regression equation is constructed as follows:

$$Y = 0.283*F\_CDT + 0.231*TV + 0.473*PL + \varepsilon$$

According to the regression equation, the schedule overrun/delay depends most on the legal factor (PL), followed by the project owner (F-CDT), and the consultant (TV); the remaining factors (ε) such as contractors and peripheral factors have less influence.

b. Model fitness test:

Table 3.7. Anova test

Model		Sum of Squares	D_f	Mean Square	F Value	Sig. Value
1	Regression	71.867	5	14.373	137.057	0.000
	Residuals	25.589	244	0.105		

	Total	97.456	249			

The significance value of the F-test is0.000 < 0.05, therefore, the regression model is appropriate. The project owner, consultant, and legal factors indeed affect the implementation progress of urban development projects.

CHAPTER 4. SOLUTIONS FOR IMPLEMENTING URBAN DEVELOPMENT PROJECTS IN BINH DUONG PROVINCE

4.1. Investment orientation for urban development and proposed support solutions for implementing UDIPs in Binh Duong

4.2. Proposed general solutions for implementing UDIPs

4.2.2.3. In the management field of Construction Contractors: Strict regulations on the capacity of contractors, regarding personnel, machinery and equipment, finances.

4.2.3. Building a logical framework for implementing UDIPs

4.2.1. Solutions related to capacity

4.2.1.1. For Urban Government at all levels

4.2.1.2. For Investors: Solutions regarding organizational structure, capital, personnel, and technical solutions.

4.2.1.3. For consulting units: Regarding the capacity of contractors to meet the conditions according to Bidding Law, Decree 63, Decree 15...

4.2.2. Solutions related to risks

4.2.2.1. In the field of survey and design: Solutions regarding the quality of surveying work, geological and topographic surveys, hydrological surveys according to national standards. Site sampling must be witnessed by relevant parties, laboratories must meet the conditions, and personnel must have the right expertise. Solutions to limit volume, cost, and schedule deviations. Design firms need to assign specialized, experienced personnel and closely coordinate with other units. Design vertification units need to arrange manpower rationally to implement projects.

4.2.2.2. In the management field of the Project owner: UDIPs often have large scales and long project durations, requiring the establishment of a capital management department, understanding the total investment of the project, evaluating the economic market situation, evaluating the project investment efficiency before implementation; project owners must find design vertification units with sufficient qualifications and capacity to check design documents; the project owner's management board must arrange experienced personnel in various fields; establish a department specializing in legal procedures related to the project; the project management board needs to provide guidance for selecting competent supervisory units and assign personnel to closely monitor personnel arrangements and project progress; project owners or project

management boards organize bidding or competitive tendering to select capable contractors at reasonable prices; hold monthly meetings to evaluate actual progress of contractors; establish regulations on labor safety to reduce occupational accident risks during construction phases.
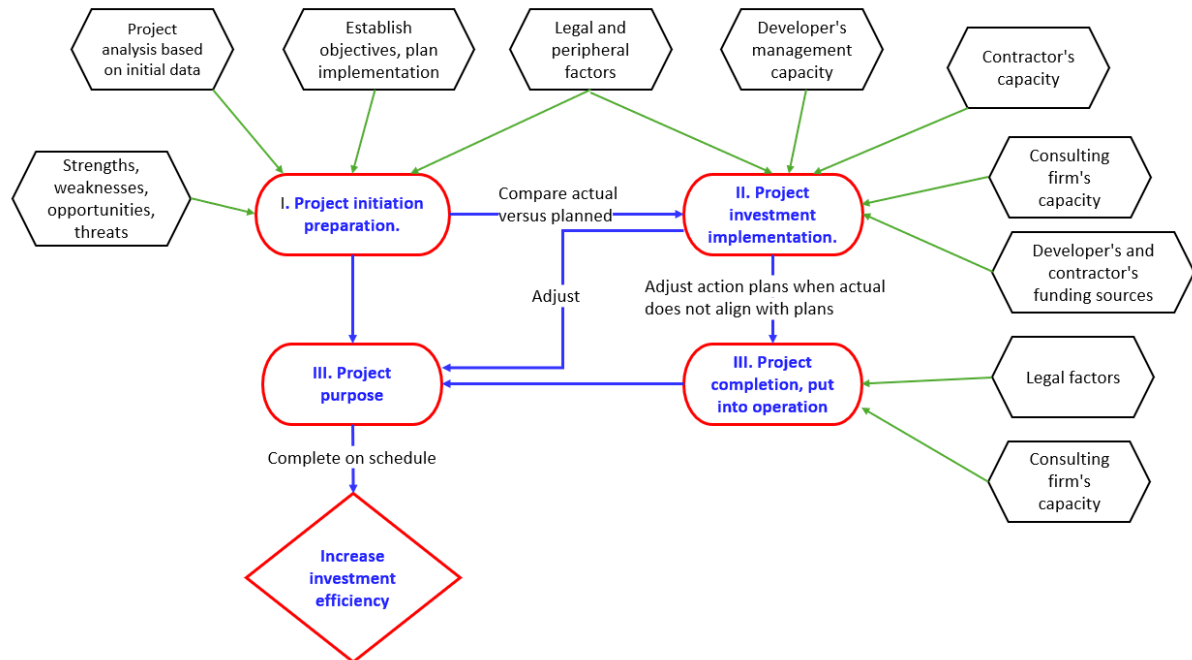

Figure 4.3. Logical framework for implementing UDIPs

4.3. Proposed specific solutions for implementing urban development UDIPs in the study area

4.3.1. Proposed specific solutions for capital

4.3.1.1. For investment decision-makers: Investment decision-makers need to organize monthly meetings to monitor progress and fund disbursement for each project, issue directives to expedite appraisal, approve capital plans, select contractors, appraise bidding documents, and invite bids, hold accountable and discipline the heads of Developer units for delays in progress and fund disbursement.

4.3.1.2. For investors: Must have deep expertise, understand project realities, have reasonable compensation plans for land clearance, send personnel for training, focus on cost control for high gross profits of each project.

4.3.1.3. For contractors: Contractors need to maintain good activity ratios and liquidity. Financial leverage and profit are related, thoroughly understand the project's capital sources, control costs, propose actions to expedite progress, enhance project efficiency, improve the personnel of the Estimation and Work Planning Department, closely coordinate between the office and the project management at the construction

site, prepare cash flows for each project, update weekly, monthly, limit expenditures exceeding the awarded bid budget.

4.3.2. Proposed specific solutions during project implementation

4.3.2.1. Specific solutions of the project owner during the investment preparation phase:

Market research on project implementation needs, collection of project-related data, study of investment necessity, investment scale, product competitiveness, consideration of investment capital sources and investment forms, conducting surveys and selecting construction locations, establishing UDIPs, project legal procedures, geological and topographic surveys, meteorological surveys, analysis of collected data, and preliminary design proposals.

4.3.2.2. Specific solutions during the investment implementation phase:

a. Legal solutions: Registering project investments following UDIP procedures, having compensation plans, preparing and approving detailed planning 1/500, establishing basic designs, implementing capital deposits, completing land transfer procedures and land use purpose changes, technical designs, project commencement, completion procedures, and handing over infrastructure to local authorities.

b. Capacity solutions for Investors: Enhancing the capacity of project owners: training, refresher courses (by level, by management task group) mandatory for unit leaders assigned as project owners, assisting units of the project owner, and individuals participating in the project management board; establishing specialized teams in each field; preparing capital sources to implement projects including land compensation costs, resettlement support, document preparation costs, project approval costs, construction costs, management costs, completion costs.

c. Capacity solutions for construction contractors and consultants: Need to study relevant legal documents, cases where contractors lack capacity may need to form joint ventures with other units to implement projects, strengthen relationships with project owners and related parties.

4.3.3. State and local policy regime solutions:

The state clearly directs local urban development planning, calls for investment from enterprises in various forms; creates available land funds; acts as a bridge between project-investing enterprises and local residents; limits the opinions of interagency bodies; improves legal procedures; supports interest rates for urban investment enterprises; simple procedures; tax incentives; risk-sharing with enterprises when projects are delayed while finding the best support solutions for enterprises; support policies for technology transfer, training to improve management capacity.

4.3.4. Solutions for applying project progress management software for UDIP implementation:

Propose to choose the CPM diagram method for simple, short-term projects and choose the MS planning method (Microsoft Project/Primavera or use 5D BIM) for large, complex projects with extended durations.

4.3.5. Proposed methods to determine economic efficiency/damage when implementing UDIPs ahead of or behind schedule

The economic efficiency resulting from ahead-of-schedule UDIP implementation (H) is calculated as follows:

$$H = H_1 + H_2 \qquad (4.1)$$

4.3.5.1. Determining economic efficiency when implementing UDIPs ahead of schedule:

Represented in diagrams as follows:
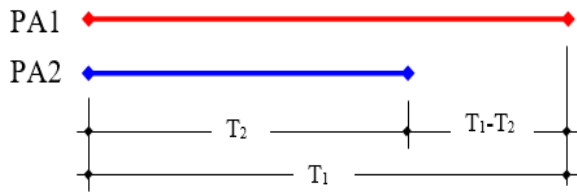
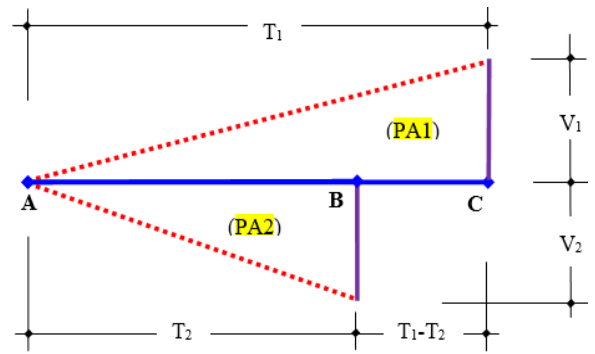**Figure 4.4a.** *The timing and duration of project implementation*

Figure 4.4b. *The project timeline and investment distribution chart*

Options 1, 2 (PA1, PA2): Represent the investment capital (V1, V2) and approved project implementation time (T1, T2); ahead-of-schedule T1 - T2 days.

Suppose investment capital is evenly distributed over time (the distribution line is a straight line).

a. Determine economic efficiency resulting from less capital accumulation (H1):

Let H_1^I and H_1^{II} be the damage caused by capital accumulation of PA1 and PA2, and the damage value due to unit capital accumulation is E (in reality, this value is often taken as the bank loan interest rate). It follows:

$$H_1^I = E\frac{1}{2}V_1T_1 \text{ and } H_1^{II} = E\frac{1}{2}V_2T_2 \qquad (4.2)$$

- If there are no changes in volume and capital, V_1 will equal V_2, it follows:

$$H_1 = \frac{1}{2}EV_1(T_1 - T_2) \text{ or } H_1 = \frac{1}{2}EV_2(T_1 - T_2) \quad (4.2a)$$

- If there are changes in volume and capital, then:

$$H_1 = \frac{1}{2}E(V_1T_1 - V_2T_2) \qquad (4.2b)$$

b. Determine the economic efficiency of option 2 realized from B-C (H2):

The economic efficiency coefficient ≈ the damage value due to unit capital accumulation is E = interest rate of borrowing..

$H_2 = E \times V_2 \times (T_1 - T_2)$ (4.3) và hiệu quả kinh tế mang lại là: $H = H_1 + H_2$

4.3.5.2. Determining economic damage when implementing UDIPs behind schedule:
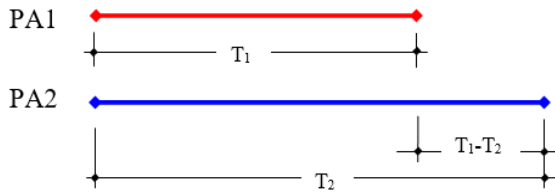
Represented in diagrams as follows:

***Figure 4.5a**. The timing and duration of project implementation*
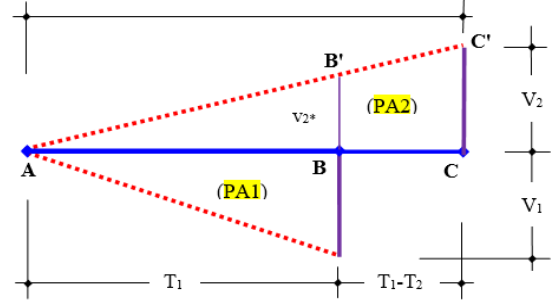

***Figure 4.5b.** The project timeline and investment distribution chart*

Options 1, 2 (PA1, PA2): Represent the investment capital (V1, V2) and approved project implementation time (T1, T2); delayed T1 - T2 days.

a. Determine the damage caused by more capital accumulation (H1):

Let H1I and H1II be the damage caused by capital accumulation of PA1 and PA2 as above.

It follows: $H_1^I = E\frac{1}{2}V_1T_1$ and $H_1^{II} = E\frac{1}{2}V_2T_2$ (4.4); $H_1 = \frac{1}{2}E$ $(V_1T_1 - V_2T_2)$ (4.5)

The value of H_1 is always < 0 because $T_2 > T_1$ and $V_1 \leq V_2$.

b. Determine the economic damage of option 2 due to delayed effectiveness from B-C (H2):

- Suppose by time B (project completion), but PA2 only achieves v2* within V2 capital. So H2 in this period represents the damage of PA2 compared to PA1:

$$H_2 = E \times v_{2*} \times (T_1 - T_2) \quad (4.6)$$

where: $v_{2*} / V_2 = T_1 / T_2$ or $v_{2*} = V_2 (T_1 / T_2)$; in which: $H_2 < 0$ because $(T_1 - T_2)$ is always < 0.

Economic damage due to delay is: $H = H_1 + H_2$

CONCLUSION – RECOMMENDATIONS

Conclusion

The dissertation " Management of implementation progress for Urban Development Investment Projects in Binh Duong Province " has achieved the research objectives by addressing the following research questions:

Firstly, regarding the general objective:

The dissertation has identified qualitative and quantitative influencing factors, evaluation criteria, and the current status of project management in implementing UDIPs in Binh Duong province, including the management status of residential area development projects and urban infrastructure projects, as well as the progress of certain development investment projects in urban areas. These studies provide the basis for proposing project management solutions for implementing UDIPs.

Secondly, regarding specific objectives:

- Through 250 valid survey questionnaires, the dissertation has identified 05 main groups of factors influencing project delays. By using SPSS 22 software combined with exploratory factor analysis (EFA) and multiple regression analysis to test the model on the measurement scale and evaluate the current status of UDIPs. Consequently, it has identified the main factors influencing project delays in Binh Duong.

- Proposed solutions related to capacity, risks, and constructing a logical framework for project management in implementing UDIPs in Binh Duong.

- The dissertation proposes specific solutions regarding capital, specific solutions during project implementation, state and local policy regime solutions, and the application of software in project management for implementing UDIPs.

- The dissertation proposes a method to determine economic efficiency/damage when implementing UDIPs ahead of or behind schedule in Binh Duong.

Recommendation

Firstly, recommendations to management authorities:

- Recommendations to the State: (i) Provide clear guidance on local urban planning, encourage diversified investment from enterprises; (ii) Create land funds, facilitate construction permits for enterprises in a transparent manner, and encourage investment through land use rights auctions; (iii) Provide interest rate support for enterprises investing in urban areas; tax incentives to encourage participation and risk-sharing with enterprises when projects are delayed, provide the best support solutions for enterprises; (iv) Issue specific guidance documents related to urban development investment..

- Recommendations to local authorities: (i) Act as a bridge between project-investing enterprises and local residents; (ii) Limit written opinions from interagency bodies that consume investors' time. Meetings should be organized directly with relevant departments to provide input on project-related issues; (iii) Improve legal procedures, avoid frequent changes in a short period, simplify project evaluation and approval procedures; (iv) Apply modern management technology by using specialized software in project management and assessing project damage when delayed (such as: VietPM software; Base work+; Jira Software; 5D BIM or project management with Microsoft Project/Primavera).

Secondly, recommendations for further research:

The dissertation has demonstrated that project delays affect investment efficiency for specific projects in Binh Duong but has not provided specific formulas or typical project types for these projects. It is necessary to further research: (i) Gross profit for enterprises investing in urban development projects; simultaneously, research comprehensively on the impact of project progress on construction investment costs within the project; (ii) The impact of advanced construction techniques on project progress; quality materials that are easy to use in accelerating the progress of urban development projects.

LIST OF PUBLISHED SCIENTIFIC WORKS
RELATED TO THE DISSERTATION TOPIC

1. Bui Viet Thi, et al (2023), *Viewpoints on managing the implementation progress of urban investment projects in Binh Duong province.* Journal of Construction, February 2023. **ISSN: 0866-8762.**

2. Bui Viet Thi, et al (2023), *Unraveling the Factors and Implications of Delays in Urban Development Projects: A Case Study of Binh Duong Province, Vietnam.* Journal of Modern Project Management **ISSN: 2317-3963**, JMPM-Jan-2023-594.

3. Bui Viet Thi, et al (2023), *Factors affecting the delay of urban development investment projects: A case of Vietnam.* International Journal of Innovative Research and Scientific Studies **ISSN: 2617-6548**, IJIRSS-April-2023-495.

4. Bui Viet Thi (2023), *Analysis and selection of effective design options from an economic perspective for an urban area project in Binh Duong province.* Journal of Construction, July 2023. **ISSN: 0866-8762**.

5. Bui Viet Thi (2024), *Research factors affecting the implementation progress of urban development investment projects in Binh Duong province.* Journal of Construction, April 2024. **ISSN: 0866-8762**.