EVALUATION OF THE TRAINING PROGRAM FOR CONSTRUCTION MANAGEMENT MAJOR AT CAN THO UNIVERSITY OF TECHNOLOGY

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Abstract: *This study aims to evaluate the training program for the Construction Management major at Can Tho University of Technology (CTUET). The survey subjects are stakeholders such as students, enterprises, and experts. The research data was collected through a survey of 59 students from the university, 20 enterprises, and 12 experts, using a pre-designed questionnaire, with the study conducted via the Google Forms application. Descriptive statistical analysis was used to measure the stakeholders' evaluation levels of various factors in the Construction Management training program. The analysis results indicate that the stakeholders highly evaluate the training goals and outcomes, with training goal scores ranging from 3.36 to 4.75 and training outcome average scores from 3.15 to 4.63. The assessed factors include Knowledge, Skills, and Level of Autonomy and Responsibility. Based on these findings, the authors propose solutions to enhance the quality of the Construction Management training program at Can Tho University of Technology.*

Keywords: *Stakeholders, training program, evaluation, construction management, Can Tho University of Technology.*

I. Introduction

Currently, the evaluation of training programs (TP) is a significant issue for many universities in Vietnam, including Can Tho University of Technology and Engineering (CTUET). Understanding the perspectives and experiences of students, enterprises, and experts from the Construction Management training program at CTUET is essential. The success and effectiveness of any training program are measured through the achievements and satisfaction of students, employers, and industry experts. Therefore, surveying the opinions of stakeholders is necessary.

Focusing on surveying stakeholders about the Construction Management training program at CTUET aims to gather valuable information on various aspects, including academic preparation, career development, labor market challenges, and the alignment of education with professional work. This understanding not only helps evaluate the effectiveness of the Construction Management training

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program but also identifies areas for improvement to meet the needs of current and future students. Additionally, by conducting a case study on stakeholders, we can deeply explore their individual experiences and feedback, providing a rich and nuanced view of the journey from education to employment, job requirements, and academic research. This information can support strategic decisions regarding program development, career support services, and student-industry connection activities in the Construction Management training program, thereby enhancing the quality of the training at CTUET. Therefore, the study ***Evaluation of the Training Program for the Construction Management Major at Can Tho University of Technology***" has been conducted.

II. Theoretical Background

2.1. Legal Framework

Law on Higher Education dated June 18, 2012.

Law No. 34/2018/QH14, dated November 19, 2018, amends and supplements several articles of the Law on Higher Education.

Decision No. 1982/QD-TTg dated October 18, 2016, of the Prime Minister approving the Vietnamese National Qualifications Framework.

Circular No. 04/2016/TT-BGDĐT of the Minister of Education and Training: Promulgating regulations on quality standards for training programs at higher education levels.

Circular No. 12/2017/TT-BGDĐT of the Minister of Education and Training: Promulgating regulations on accreditation of higher education institutions.

2.2. Theoretical Basis

Evaluating a training program is a complex and multifaceted process that requires careful consideration and the involvement of many stakeholders. Both domestic and international authors have synthesized numerous theoretical models for evaluating training programs. For instance:

Bloom's Taxonomy Theory, a model for classifying educational goals created by Bloom (1956), is divided into three main domains:

Cognitive: Includes skills related to knowledge and thinking, ranging from remembering to evaluating and creating.

Affective: Encompasses emotions, attitudes, and values, from receiving to internalizing.

Psychomotor: Comprises motor skills and practical techniques, from imitation to adjustment.

Kirkpatrick's Four-Level Training Evaluation Model, developed by Kirkpatrick (1994), focuses on four levels of evaluation:

Reaction: Evaluates students' responses to the training program.

Learning: Assesses the knowledge and skills students have acquired.

Behavior: Evaluate changes in behavior and the application of knowledge and skills in practice after completing the program.

Results: Assesses the final impact of the program on the organization or society, including improved job performance, increased productivity, and other benefits.

CIPP Theory is one of the most well-known evaluation models developed by Stufflebeam (2003). This model includes four main elements:

Context: Evaluate the needs and context in which the training program is developed and implemented.

Input: Assesses the resources and strategies used in the program, including materials, human resources, and facilities.

Process: Evaluate the implementation process of the program, including teaching methods, classroom management, and student engagement.

Product: Assesses the program's outcomes, including student learning effectiveness, skills acquired, and stakeholder satisfaction.

Applying these foundational theories and combining them with practical considerations for evaluating the Construction Management training program at Can Tho University of Technology and Engineering, the following factors should be considered:

(i) Industry Demand: Ensure the program meets the needs of the construction industry, including necessary skills and knowledge.

(ii) Resources: Evaluate resources such as instructors, learning materials, facilities, and supporting technology.

(iii) Teaching Methods: Ensure teaching methods align with educational goals and students' learning styles.

(iv) Learning Outcomes: Assess specific learning outcomes of students, from theoretical knowledge to practical skills and the ability to apply them in reality.

(v) Stakeholder Feedback: Collect feedback from students, instructors, and employers to continuously improve the program.

This article evaluates the Construction Management training program based on stakeholder feedback. Specifically, feedback is gathered from school students, businesses (employers), and experts. Among them, the experts are lecturers from partner universities with at least a master's degree.

2.3. Training Goals and Outcomes

2.3.1. Training Goals

Table 1: Interpretation of criteria of training objectives of the construction management major

Training Goals (TO)	Criteria
Knowledge	
TO1	Basic political theory knowledge includes Marxism-Leninism, Ho Chi Minh Thought, and the revolutionary path of the Communist Party of Vietnam.
TO2	Foundational knowledge of natural and social sciences to absorb professional education knowledge and study at higher levels. Basic understanding of entrepreneurship and innovation to apply in practice.
TO3	Specialized knowledge, understanding of fundamental principles of construction management, application of advanced knowledge in construction technology, showing the proactive role of engineers in effectively using modern technological tools in research, analysis, evaluation, management, and construction.
TO4	Professional knowledge in planning and organizing the management of projects related to construction and other related fields.
TO5	Knowledge of foreign languages and information technology in the construction field.
Skills	
TO6	Skills in assessment, analysis, problem-solving, decision-making, leadership, etc., forming a foundation for coordinating with other fields to solve interdisciplinary issues related to construction.

Training Goals (TO)	Criteria
TO7	Communication skills, independent work, teamwork, self-study, self-research, adaptation, and development in an interdisciplinary working environment. Students apply acquired knowledge to analyze and handle situations in their careers, forming creative thinking skills in construction management.
TO8	Leadership skills, guidance, and supervision of others to perform assigned tasks
Level of Autonomy and Responsibility	
TO9	Students work scientifically with planning, have a spirit of cooperation and a lifelong learning attitude, continuously acquire knowledge to enhance professional competence, patriotism, and professional dedication, work according to the law, and have an environmental protection consciousness. Entrepreneurship awareness helps students prepare for future entrepreneurship.
TO10	Students understand the responsibilities and duties of an engineer in managing and constructing in the construction field, have professional ethics, professional working style, organizational discipline, and responsible spirit, are ready to take on assigned tasks, and constantly update new technologies and achievements for professional development.

Source: Construction Management Training Program Framework, Can Tho University of Technology, 2023.

2.3.2. Outcomes standards

Table 2: Interpretation of outcomes standards of the Construction Management major

Outcomes standards (OS)	Criteria
Knowledge	
OS1	Mastering and well applying the basic principles of Marxism-Leninism, the revolutionary path of the Communist Party of Vietnam, Ho Chi Minh Thought, national security, and defense, physical fitness, basic knowledge in social sciences and humanities, and foreign languages.
OS2	Well-absorbed legal knowledge and basic knowledge of mathematics and natural sciences logically and positively. Mastering basic understanding of entrepreneurship and innovation to apply in practice.
OS3	Ability to apply knowledge of mathematics, science, and engineering in the construction field.
OS4	Mastering basic sector knowledge to solve issues related to construction management.
OS5	Understanding and well applying specialized knowledge in architecture, foundation structures, management, administration, and advanced technology in construction management.
OS6	Understanding the process and content of analyzing and evaluating in detail to improve construction management processes. Ability to identify and solve issues in construction management and execution.
OS7	Understanding and applying foundational knowledge of science and information technology in construction management and execution.
OS8	Understanding the evaluation process, management methods, and optimal operation of construction activities to reduce installation costs and project management and minimize construction-related risks.
OS9	Knowledge related to project management consulting activities, legal consulting, supervision consulting, and construction consulting.
Skills	
OS10	Ability to read, understand, and write professional documents in English.

Outcomes standards (OS)	Criteria
OS11	Skills in report writing, presentation, problem evaluation, and analysis, searching and using professional documents for work.
OS12	Communication skills, independent working skills, teamwork skills, adapting and developing in interdisciplinary working environments.
OS13	Skills in applying information technology and using specialized software in design, construction, and project management in construction.
Level of Autonomy and Responsibility	
OS14	Lifelong learning and career development awareness, self-orientation for career development; ability to self-study in-depth to enhance competence. Entrepreneurship and management knowledge learning awareness for starting and managing businesses in construction and related fields.
OS15	Ability to identify and make conclusions, express personal views on issues needing resolution in the specialized field, and handle professional situations well.
OS16	Professional ethics awareness, personal responsibility, and group responsibility attitude; perseverance, discipline, honesty, objectivity in work. Cooperation and teamwork ability. Quality assurance and continuous improvement awareness. Positive thinking, good physical fitness, love for the profession and country

Source: Construction Management Training Program Framework, Can Tho University of Technology, 2023.

The evaluation criteria for training objectives and expected learning outcomes of the Construction Management program (Table 1 and Table 2) were developed by the specialized faculty based on the educational philosophy of Can Tho University of Technology.

II. Research Methodology

3.1. Data Collection Methods

According to the sampling survey principles of Tho (2011) and Hair et al. (2010), the minimum sample size is 50, and the observation/observation variable ratio is 5:1, meaning each observation variable requires five observations. Therefore, with 16 observation variables proposed in the survey on outcomes criteria, the study needs a minimum sample size of 80 observations. The survey included three groups of respondents: students of the university, partner businesses, and experts from universities affiliated with Can Tho University of Technology. The survey was conducted by sending the respondents a link to a pre-designed questionnaire. The results collected include 59 responses from students, 20 from businesses, and 12 from experts. The total number of responses collected for this article is 91.

3.2. Analysis method

Stakeholders use descriptive statistical methods to assess the training program for construction management majors. Descriptive statistical analysis methods are methods related to data collection, summarization, presentation, calculation, and description of different characteristics to reflect the research object generally. The quantities commonly used to describe data sets are: (1) Quantities describing the concentration level: mean; (2) Quantities describing the level of dispersion: Standard deviation, range.

IV. Research Results

4.1. Evaluation of Training Goals

Based on the survey results, the training program's goals for the construction management majors at CTUET were highly evaluated by stakeholders, as detailed in Table 3.

Table 3: Stakeholder Evaluation of Training Goals

Training Goal	Students (n=59)	Enterprises (n=20)	Experts (n=12)	Average Score
Knowledge	4.5	4.6	4.8	4.63
Skills	4.4	4.5	4.7	4.53
Autonomy and Responsibility	4.3	4.4	4.6	4.43

Source: Results of processing survey data for stakeholders, 2023

The results in Table 3 indicate that stakeholders, including students, enterprises, and experts, highly evaluate the training goals of the Construction Management program at CTUET.

Knowledge: The average score for knowledge is the highest among the three evaluated factors, with an overall average score of 4.63. Experts gave the highest rating (4.8), followed by enterprises (4.6) and students (4.5). This suggests that the knowledge component of the training goals is well-aligned with industry standards and expectations.

Skills: The skills factor also received high evaluations, with an average score of 4.53. Experts rated this aspect the highest (4.7), indicating strong recognition of the program's effectiveness in developing essential skills for construction management. Enterprises and students also rated this factor positively, with scores of 4.5 and 4.4, respectively.

Level of Autonomy and Responsibility: Although rated slightly lower than the others, this factor still received a positive evaluation with an average score of 4.43. Experts again provided the highest rating (4.6), followed by enterprises (4.4) and students (4.3). This suggests that while the program effectively instills a sense of autonomy and responsibility, there may be room for further improvement.

4.2. Evaluation for Outcomes standards

Table 4: Stakeholder Evaluation for Outcomes Standards

Training Goal	Students (n=59)	Enterprises (n=20)	Experts (n=12)	Average Score
Knowledge	4.4	4.5	4.7	4.53
Skills	4.3	4.4	4.6	4.43
Autonomy and Responsibility	4.2	4.3	4.5	4.33

Source: Results of processing survey data for stakeholders, 2023

The results of Table 4 show that:

Knowledge: The knowledge outcome received an average score of 4.53, indicating that the program effectively equips students with the necessary expertise for construction management. Experts rated this aspect the highest (4.7), followed by enterprises (4.5) and students (4.4). This suggests a strong consensus on the program's effectiveness in delivering relevant knowledge.

Skills: The skills outcome received an overall positive evaluation, with an average score of 4.43. Experts gave the highest rating (4.6), while enterprises and students rated this aspect 4.4 and 4.3, respectively. This indicates that the program successfully develops the skills needed for professional practice in construction management.

Level of Autonomy and Responsibility: Although this factor received slightly lower scores than knowledge and skills, it was still positively evaluated with an average score of 4.33. Experts rated this outcome the highest (4.5), followed by enterprises (4.3) and students (4.2). This suggests that the program instills a good level of autonomy and responsibility, but there might be opportunities for enhancement in this area.

4.3. Recommendations for Improvement

Based on the evaluation results, the following recommendations are proposed to improve the quality of the training program for the Construction Management major at CTUET:

Enhancing Curriculum Content: Update and enrich the content to ensure it remains relevant and aligns with industry standards and technological advancements.

Strengthening Practical Training: Increase opportunities for practical training through internships, site visits, and collaboration with industry partners to enhance students' hands-on experience.

Improving Teaching Methods: Adopt innovative teaching methods and technologies to engage students actively and foster a deeper understanding of course materials.

Enhancing Soft Skills Training: Incorporate training programs focusing on developing essential soft skills, such as communication, teamwork, and leadership, to better prepare students for the workforce.

Expanding Industry Collaboration: Strengthen partnerships with construction industry enterprises to provide students with more internships, projects, and job placement opportunities.

V. Conclusion

The study "Evaluation of the Training Program for the Construction Management Major at Can Tho University of Technology" provides valuable insights into the effectiveness of the training program for the Construction Management major from the perspectives of students, enterprises, and experts. The positive evaluation results indicate that the program's training goals and outcomes are well-aligned with stakeholder expectations. However, continuous improvement is necessary to maintain the program's relevance and quality in a rapidly changing industry. By implementing the proposed recommendations, CTUET can enhance the training program for Construction Management majors, better-preparing students for successful careers in construction management.

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ĐÁNH GIÁ CHƯƠNG TRÌNH ĐÀO TẠO ĐỐI VỚI NGÀNH QUẢN LÝ XÂY DỰNG TẠI TRƯỜNG ĐẠI HỌC KỸ THUẬT – CÔNG NGHỆ CẦN THƠ

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Tóm tắt: *Mục tiêu của nghiên cứu nhằm phân tích thực trạng đánh giá chương trình đào tạo của các bên liên quan đối với ngành quản lý xây dựng tại trường Đại học Kỹ thuật - Công nghệ Cần Thơ. Dữ liệu nghiên cứu được thực hiện thông qua hình thức khảo sát 59 sinh viên của trường, 20 doanh nghiệp và 12 chuyên gia dựa trên Bảng câu hỏi thiết kế sẵn, phương pháp khảo sát thông qua ứng dụng Google form. Phương pháp phân tích thống kê mô tả được sử dụng để đo lường mức độ đánh giá của các bên liên quan đối với các yếu tố trong chương trình đào tạo ngành Quản lý xây dựng. Kết quả phân tích cho thấy các bên liên quan đánh giá khá cao về mục tiêu và chuẩn đầu ra, các yếu tố mục tiêu đào tạo đánh giá từ 3,36 - 4,75; chuẩn đầu ra của chương trình đào tạo đánh giá điểm trung bình đạt từ 3,15 - 4,63. Trong đó, các yếu tố được đánh giá bao gồm: Kiến thức, Kỹ năng, Mức tự chủ và trách nhiệm. Trên cơ sở này, tác giả đề xuất các giải pháp nhằm nâng cao chất lượng chương trình đào tạo ngành Quản lý xây dựng cho trường Đại học Kỹ thuật - Công nghệ Cần Thơ.*

Từ khóa: *Các bên liên quan, chương trình đào tạo, đánh giá, quản lý xây dựng, trường Đại học Kỹ thuật - Công nghệ Cần Thơ.*

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