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Curriculum Development And Feasibility Study Of The Program, Master Of Science In Construction Management

[1]Von Cyrell D.L. San Jose, [2]Michael L. Pascua, [3]Lyndon Sheridan P. Trinidad, [4]John Troy S. Borromeo, [5]Joshua P. Tejada
[1,2,3,4,5]College of Engineering of the University of Rizal System Morong Rizal, Philippines
1voncyrell.sanjose@urs.edu.ph, [2]michael.pascua@urs.edu.ph,
[3]Lyndon.trinidad@urs.edu.ph, [4]Johntroy.borromeo@urs.edu.ph, [5]Joshua.tejada@urs.edu.ph

Corresponding Author: Von Cyrell D.L. San Jose: voncyrell.sanjose@urs.edu.ph

Abstract
The construction industry plays a huge role in driving economic growth requiring skilled professionals who can manage projects effectively, control costs, and embrace sustainable building practices to meet evolving industry demands. Thus, this research examines the feasibility of offering a Master of Science in Construction Management (MSCM) at the University of Rizal System, Morong Campus. The research assesses market demand, faculty qualifications, infrastructure readiness, and alignment with Commission on Higher Education (CHED) standards. Data was collected from 50 professionals in the construction, design, and consultancy sectors using surveys, interviews, and documentary analysis. Research findings indicate that 96% of respondents are willing to pursue the program, with career advancement as the primary motivation. Moreover, 90% anticipate completing the MSCM will enhance their career trajectory. The faculty composition exceeds CHED's minimum qualifications, ensuring a high-quality academic experience. Existing facilities, including laboratories and classrooms, meet the required standards, supporting the program's viability. The study recommends refining the curriculum to emphasize high-demand courses such as Construction Project Management and Cost Management, integrating emerging industry trends like sustainability and digital modeling. The research recommends continued investments in faculty development and infrastructure to sustain the program's quality. The findings support the policy development of expanding graduate education in construction management, reinforcing its role in addressing industry demands in the Philippines.
Keywords: *Engineering Education, Construction Management, Career Advancement, Survey Analysis, Feasibility Study, Philippines*

INTRODUCTION

University of Rizal System (URS) has ten (10) different campuses and provides a variety of educational opportunities, specifically designed with the residents of the province in mind. Courses in the fields of engineering, education, science, and industrial technology may be found at the URS Morong campus, which has the largest population of the university's campuses. The university is envisioned as the leading university in human resource development, knowledge and technology generation and environmental stewardship. Its mission is committed to nurture and produce upright and competent graduates and empowered community through relevant and sustainable higher professional and technical instruction, research, extension, and production services.

Construction Engineering and Management is one of the fields of engineering for individuals who dream big and aspire to build large, and it focuses on the principles of construction and the fields around it. Construction engineering is not limited only to civil and structural works but also to electrical, electronics, mechanical, sanitary, and other fields of engineering.

When the Former President Rodrigo Roa Duterte began the Build Build Build program of his administration, the construction industry boom and become trend due the large number of projects the Department of Interior and Local Government (DILG) and Department of Public Works and Highways (DPWH) holds. Even the other departments such as the Department of Information and Communications Technology (DICT) and Department of Energy (DOE) were included in the trend due to the construction of new communication towers, power plants and the like. In line with these, the universities are to cope with the needs of the market. Recognizing this need, the URS Morong Campus - College of Engineering seeks to

explore the feasibility of offering a Master of Science in Construction Management (MSCM) program. Since its founding, the college had been offering Bachelor Science in Civil Engineering and the college had produced competent and knowledgeable graduates that had been successful in their chosen career. The college and the program even became the PRC's Top Performing University in sixth place.

In the recent CHED visit for COPC application, the Commission recommends the Civil Engineering Program to include Structural Engineering and Construction Engineering specialization. Therefore, the researchers believe that there is a need to offer a Master of Science in Construction Management. Thus, this study was conducted to identify the feasibility of offering the course.

Objectives

The objectives of the study are to develop a curriculum and to conduct a feasibility study in the offering Master of Science in Construction Management at University of Rizal System Morong Campus. Specifically, the study will determine the following:

- Profile of the prospective customer of the program MSCM in terms of Field of Specialization, gender, and residence;
- Program major courses in Construction Management according to the order of preference;
- Compare the CHED standards and the existing qualifications of faculty,
- Compare the CHED standards and the existing laboratory and physical facilities.

METHODOLOGY

Survey-questionnaire and documentary analysis were the tools used in gathering the needed information for this study. The proponents considered reading materials such as books, magazines, journals, theses, and the internet. Purposive sampling technique was used by the researchers due to the specific group of individuals needed answer the survey.

The questionnaire was derived from the related literatures and studies with the same objective of the study, a feasibility study. The questionnaire-checklist was subjected to content validation by the Engineering professors, the program head, and the Graduate Studies Dean and Language Critic (Dean of College of Education). After thorough review of the items and statements framed, suggestions and comments were given to the researcher. It was revised following the comments given by experts. The researchers personally distributed the questionnaires to the target respondents via google form and distributed online.

The researchers also seek help from the different organizations in Rizal related to construction management and engineering. Letters of request to conduct the survey was given to the president of different chapters of accredited organizations of their relative professions. The data were then tabulated, analyzed, and interpreted.

The descriptive method was used in this study, which included a survey-questionnaire and documentary analysis using mathematical and statistical methods. This method was used because the goal of this study is to describe an existing situation regarding the operation of offering a new program at the College in an analytical manner. Table 1 shows the distribution of responders based on their field of specialization, which provides insight into the professional backgrounds of potential MSCM program students.

Table 1 **Field of Specialization of Respondents**

Field of Specialization	No. of Respondents
Architecture	11
Civil Engineering	22
Computer Engineering	1
Electrical Engineering	11
Industrial Engineering	1
Mechanical Engineering	4
Total	**50**

The respondents of this study consisted of four (4) major professional organization chapters in Rizal province. United Architects of the Philippines – Rizal Chapter, Philippine Institute of Civil Engineers – Rizal Chapter, Institute of Integrated Electrical Engineers - Metro East Chapter, and Philippine Society Mechanical

Engineers Rizal Chapter. These organizations are the potential customer of the College. Most of the members of these organizations are University of Rizal System - Morong alumni from the College of Engineering.

RESULTS AND DISCUSSION

Table 2 shows the field of specialization of the respondents. A significant number of respondents, 22 out of 50, come from a civil engineering background. This is unsurprising given that construction management is closely aligned with civil engineering. Professionals in this field likely see a master's in construction management as a natural progression in their careers, offering them advanced skills in project planning, resource management, and leadership within the construction industry.

Table 2 **Frequency and Percentage Distribution of the Student-Respondents in terms of Field of Specialization, Gender, and Residence**

Field of Specialization	f	%
Architecture	11	22 %
Civil Engineering	22	44 %
Computer Engineering	1	2 %
Electrical Engineering	11	22 %
Industrial Engineering	1	2 %
Mechanical Engineering	4	8 %
Total	**50**	**100 %**
Gender		
Male	36	72 %
Female	14	28 %
Total	**50**	**100 %**
Residence		
Antipolo	8	16 %
Angono	3	6 %
Baras	1	2 %
Binangonan	3	6 %
Cardona	2	4 %
Cainta	3	6 %
Jalajala	4	8 %
Morong	4	8 %
Pililla	6	12 %
Rodriguez	0	0 %
San Mateo	0	0 %
Tanay	3	6 %
Taytay	3	6 %
Teresa	2	4 %
Outside Rizal	8	16 %
Total	**50**	**100 %**

Also shown in Table 2 is the gender of the respondents. Out of the 50 respondents, a clear majority, 36 individuals, are male, making up 72% of the group. This skew towards males is not surprising, given that construction management has traditionally been a male-dominated field. However, the presence of 14 female respondents, or 28%, is noteworthy. This is a promising indicator that interest among women in this field is growing. It suggests that the program at URS-Morong could play a pivotal role in promoting gender diversity within the construction sector. For instance, outreach and support initiatives tailored to female students could enhance their participation and success, making the field more inclusive.

Considering the residence, Antipolo, 16%, and nearby provinces in Rizal (16%) got the greatest number of respondents. The data also suggests shown in Table 2 when it comes to the residence of the respondents shows that URS-Morong isn't just the most well-known campus, but it also has the potential to attract students from a wider area. There is considerable interest not only from nearby towns but even from outside the province, making the program a magnet for aspiring construction managers across the region. This regional appeal is crucial because it means URS-Morong isn't just serving its immediate community. Instead, it has the opportunity to become a significant educational institution for those who want to pursue a career in construction management.

Table 3 **Frequency, Percentage and Rank Distribution of the Field of Work of the respondents**

Field of Work	f	%	Rank
Construction	23	46	1
Design/Consultancy	11	22	2
Operation and Management	8	16	3
Academe	4	8	4
Sales	2	4	5
Not Yet Employed	2	4	5
Total	**50**	**100**	

It can be gleaned from the Table 3 that in terms of order of Field of Work, Construction got the highest percentage of 46% followed by Design/Consultancy 22%, Operation and Management 16%, Academe with 8% and last in ranked are Sales and those who are not yet employed with 4% each.

The results show that the offering of the MSCM is indeed viable to the respondents especially to the construction and Design/Consultancy Industry. It connotes that some of the respondents in the other fields such as Operation and Management (O&M), Academe and Sales are willing to pursue their master's degree in construction management if it will be offered at URS Morong.

Figure 2 shows the will shows the willingness of the respondents to pursue the program. An overwhelming majority (96%) of the respondents expressed their willingness to pursue the MSCM program if it were offered. This indicates a high level of interest and potential demand for the course among the survey participants.

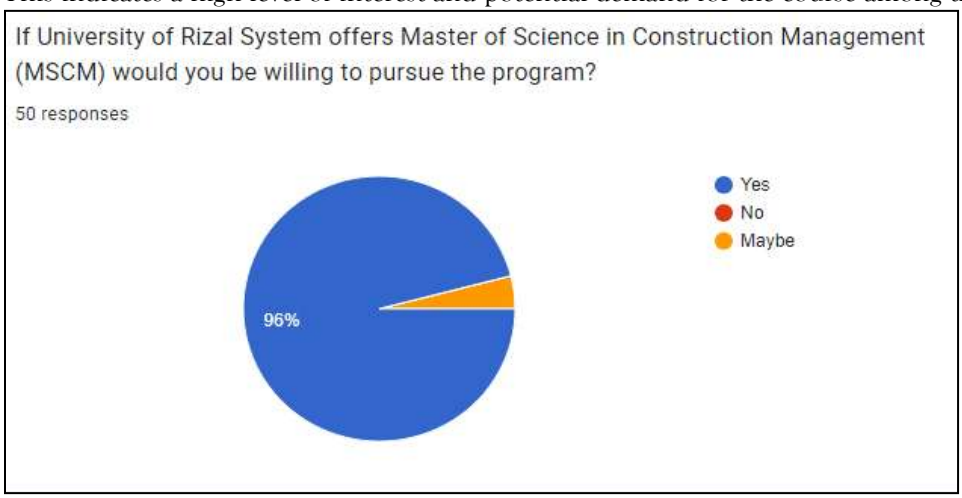

Figure 2 **Respondent's Willingness to Pursue MSCM**

Figure 3 shows the motivation of the respondents in pursuing the program. The primary motivations for pursuing the MSCM program are career-related, with 38% of respondents citing career considerations and 36% are motivated by the goal of completing a postgraduate program. Additionally, 22% aiming for employment advancement. Other motivations like financial considerations, helping others, and enjoyment of learning are present but less significant.

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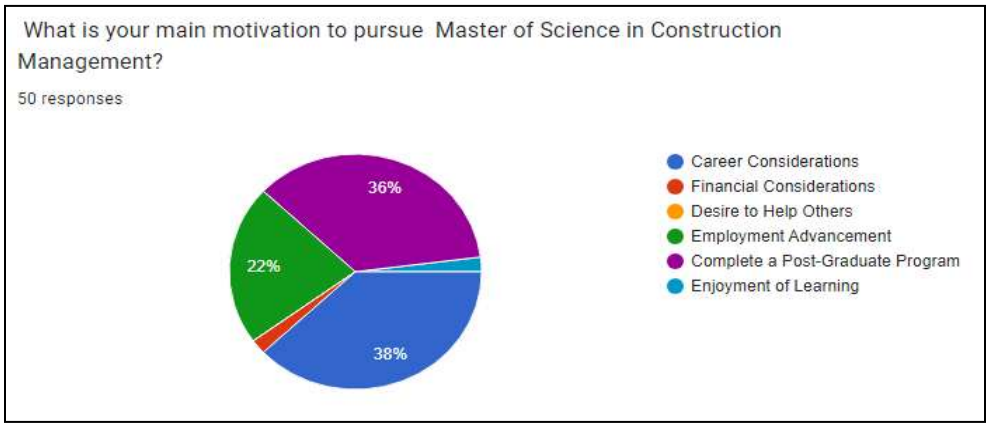

Figure 3 **Respondent's Motivation to Pursue MSCM**

Figure 4 shows the anticipation of the respondents to their career after they finished the program. Most of the respondents (90%) anticipate that pursuing the MSCM will lead to advancement in their current careers. This suggests that most participants view the program as a means to enhance their professional development and progress within their existing career paths.

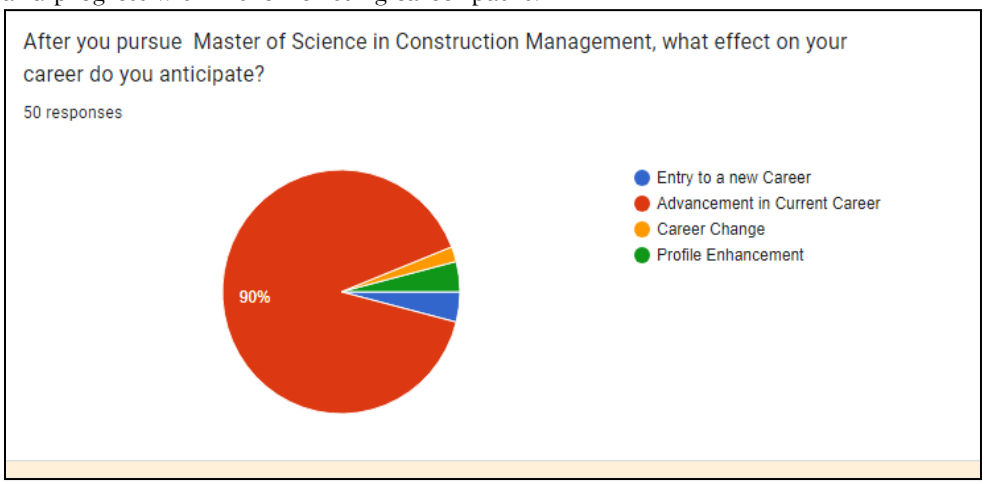

Figure 4 **Respondent's Anticipation in Pursuing MSCM**

This simply implies that MSCM is really a course that is regarded as one of the post-graduate programs that is still in demand. Moreover, with the turnout of the response of the respondents, it can be viewed that it is feasible for the course to be offered by the university.

Table 4 presents the frequency, percentage, and rank distribution of the program majors in Construction Management according to the order of preference.

Table 4 **Frequency, Percentage and Rank Distribution of the Program Majors in Construction Management According to the Order of Preference**

Major	f	%	Rank
Construction Project Management	40	27.39	1
Construction Cost Management	37	25.34	2
Construction Quality Management	19	13.01	3
Construction Scheduling and Resource Optimization	13	8.90	4
Construction Procurement Management	12	8.20	5
Construction Risk Management	12	8.20	5
Sustainability and BIM	10	6.80	6

Construction Safety Management	3	2.05	7
Total	**146**	**100**	

The respondents were asked to choose at least three (3) major courses that are relevant in their current field. It can be seen in Table 4 that Construction Project Management got the highest percentage of 27.39, followed by Construction Cost Management with 25.34 percentage, third is Construction Quality Management with 13.01 percentage, fourth is Construction Scheduling and Resource Optimization with 8.9 percentage, fifth are Construction Procurement Management and Construction Risk with 8.20, sixth is Sustainability and BIM with 6.80 percentage while Construction Safety Management ranked last with 2.05 percent.

The result shows that the respondents highly values project and cost management, with a solid appreciation for quality, scheduling, procurement, and risk management. There is a growing interest in sustainability and digital modeling, reflecting future trends. Safety management, although crucial, appears to attract fewer individuals, potentially indicating a need for greater emphasis or awareness in this critical area.

The reason why construction project management topped the survey simply implies how much value is placed on these courses. It's a major that promises not just a job, but a vital role in shaping our cities and communities. This simply reflects the industry's acknowledgment that without effective project managers, even the best plans can falter.

Table 5 presents the comparison of the CHED standards (CMO 15, s.2019) and the existing qualifications of the faculty.

Table 5 **Comparison of the CHED standards (CMO 15, s. 2019) and the Existing Qualifications of Faculty**

Criteria	**CHED Standards**	**URS-COENG Existing**
Faculty Composition And Qualifications of Faculty	There should be at least four (4) faculty members per program at all times.	8 Faculty Members are available
	For Thesis Track If there is a dearth in doctoral degree holders in the discipline, at least one (1) full-time faculty who has doctoral degree in the discipline and with published works in refereed journal/s or have produced publicly recognized creative and/or technology output;	Two (2) Full time Faculty has doctoral Degree (1 Mathematical Sciences, and 1 Educational Management)
	And at least three (3) full time faculty who are master's degree holders, but with doctoral units in the discipline and have at least one (1) publication in a refereed journal.	4 MSCM degree holders, 3 allied Master's degree holders and 3 ongoing doctoral degree in engineering management

Table 5 shows that the College has able and knowledgeable faculty that will compose the faculty who will handle Master of Science in Construction Management (MSCM) subjects. There are ten (10) existing faculty members with plantilla positions which exceed the required faculty composition based on the CHED standards. Moreover, on the subjects to be taught, 70% of the faculty composition are graduates of MSCM and allied courses.

On the qualification side, CHED only always requires at least four faculty members which the four (4) fulltime faculties must have a doctoral degree in the discipline and with published works in a refereed journal/s and/or have produced publicly recognized creative and/or technology outputs. If there is a dearth in doctoral degree holders in the discipline, at least one (1) full-time faculty who has doctoral degree in the discipline and with published works in refereed journal/s or have produced publicly recognized creative and/or technology output; and at least three (3) full time faculty who are master's degree holders, but with doctoral units in the discipline and have at least one (1) publication in a refereed journal.

The college exceeds its minimum requirement since one (1) of the full-time faculties has a Doctoral degree in Engineering; two (2) have an allied Doctoral Degree while the five of the faculty are graduates of Master of Science in Construction Management. On the other hand, all of them are faculty members who are graduates of Bachelor of Engineering and Architecture with Industry Experience in their related fields.

With this faculty composition and their corresponding qualifications, it can be observed that the existing faculty are qualified to teach and handle MSCM subjects. With their knowledge and skills in Construction Management, students will acquire skills and disciplines required for the MSCM course. It further connotes that the faculty mentioned above are pursuing post graduate studies which can enhance their teaching styles as well as manage the teaching learning process for the course.

Table 7 presents the Shop, laboratory, and the physical facilities.

Table 7 **Shop, Laboratory and Physical Facilities**

Criteria	**URS-CoEng Existing**
Classroom Requirements	Science and Technology Building Engineering Laboratory Center (ELC)
Laboratory Requirements	S&T Building Computer Laboratories Universal Testing Machine Laboratory Engineering Laboratory Center (ELC)
Audio Visual Facilities	Eulegio Amang Rodriguez Tanghalang Sining (EARTS) URSM Function Hall AVEC
Library	Campus Library University Library

In terms of the computer laboratory and physical facilities of the College, it can be stated that the College can offer MSCM since it conforms to the minimum requirements of CHED and research facilities. Likewise, the College expects at least twenty enrollees for the course. The 20 students per class will be the number of students in the academic subjects and major subjects, it will only be 20 per class to meet the 1:1 ratio. Also, each lecture room and laboratory room are equipped with projectors, televisions, and Interactive Whiteboards for a better teaching learning experience for the students. Likewise, the laboratory rooms are air conditioned with internet connections that can provide the students with easy access and convenient to them.

SUMMARY AND CONCLUSIONS

Based on a comprehensive feasibility study for offering a Master of Science in Construction Management (MSCM) program at the University of Rizal System Morong Campus, several key findings emerged.

The study surveyed 50 prospective students, primarily from civil engineering backgrounds, making up 44% of respondents, followed by architecture and electrical engineering, each representing 22%. The current fields of work for respondents revealed that 46% are in construction, 22% in design/consultancy, and 16% in operation and management. Majority of respondents were male (72%) The respondents were primarily from Antipolo and nearby municipalities, with some coming from outside Rizal.

Ninety Six percent (96 %) of respondents expressed their willingness to pursue the MSCM program, driven primarily by career advancement opportunities (38%) and the desire to complete a postgraduate degree (36%). Additionally, 90% anticipated that the program would lead to significant career advancement.

When it came to preferences for major courses, the result shows that the respondents highly values project and cost management, with a solid appreciation for quality, scheduling, procurement, and risk management. There is a growing interest in sustainability and digital modeling, reflecting future trends.

The university's faculty and facilities are well-positioned to support the MSCM program. The faculty exceeds the Commission on Higher Education (CHED) standards, with qualified members holding relevant doctoral and master's degrees. The physical facilities, including well-equipped laboratories and classrooms, meet the minimum requirements, ensuring a conducive learning environment for students.

Given these findings, it is concluded that the MSCM program is both viable and in demand. Therefore, it is recommended that the University of Rizal System Morong Campus proceed with offering the MSCM program. To enhance the program's success, targeted outreach programs should be implemented to attract more female students and promote gender diversity in the construction management field.

The curriculum should focus on highly preferred courses such as Construction Project Management and Construction Cost Management while incorporating emerging trends like sustainability and digital modeling. Continuous upgrades and maintenance of laboratory and classroom facilities are essential to provide an optimal learning environment.

Furthermore, providing additional support services such as career counseling, internships, and industry partnerships will help students transition into advanced roles post-graduation. Encouraging faculty to pursue further qualifications and participate in industry-relevant research will enhance their teaching capabilities and the program's credibility.

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