



A Review of Postgraduate Programmes for Project and Construction Management Education

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Abstract

This paper aims to examine the past and present conditions, update them, and investigate postgraduate programmes in project and construction management in Turkey and the Turkish Republic of Northern Cyprus. It also serves as a reference for researchers on this subject. Although comparable research has been done in Turkey, the Turkish Republic of Northern Cyprus was included in the study because there hasn't been any research done there. In order to accomplish this, the second section provided a historical overview of the history of project and construction management. Project and construction management postgraduate programmes were investigated and researched in the third section. The current state of postgraduate programmes in project and construction management was described in the fourth section. Seventeen common headings were established in order to compare the information in the postgraduate programmes. Information for each postgraduate programme was specified under the common headings, and charts based on this information were created. Postgraduate programmes in project and construction management were assessed in the fifth section, and the results were presented.

Keywords: Project, construction, management, postgraduate, education.

Proje ve Yapım Yönetimi Lisansüstü Programlarına İlişkin Bir İnceleme Çalışması

Öz

Bu çalışma, Türkiye'deki ve Kuzey Kıbrıs Türk Cumhuriyeti'ndeki proje ve yapım yönetimi alanındaki lisansüstü programların geçmiş ve mevcut durumlarını incelemeyi, güncellemeyi ve araştırmayı amaçlamaktadır. Ayrıca bu konudaki araştırmacılar için bir referans niteliği taşımaktadır. Türkiye'de benzer araştırmalar yapılmış olmasına rağmen, Kuzey Kıbrıs Türk Cumhuriyeti'nde herhangi bir araştırma yapılmadığı için çalışmaya dahil edilmiştir. Çalışmanın ikinci bölümünde, proje ve yapım yönetiminin tarihçesine ilişkin genel bir bakış sunulmuştur. Üçüncü bölümde, proje ve yapım yönetimi lisansüstü programları incelenmiş ve araştırılmıştır. Dördüncü bölümde, proje ve yapım yönetimi lisansüstü programlarının mevcut durumu açıklanmıştır. Lisansüstü programlarındaki bilgileri karşılaştırmak için on yedi ortak başlık belirlenmiştir. Her bir lisansüstü programına ait bilgiler ortak başlıklar altında tanımlanmış ve bu bilgilere dayalı grafikler hazırlanmıştır. Beşinci bölümde ise proje ve yapım yönetimi lisansüstü programları değerlendirilmiş ve sonuçlarına yer verilmiştir.

Anahtar kelimeler: Proje, yapım, yönetim, lisansüstü, eğitim.

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1. Introduction

Turkey has become a country that is constantly developing, and its needs are increasing in parallel with its development. One of the most important factors affecting this development is construction. The construction sector is in a position to create demand for goods and services produced by more than 200 sub-sectors. For Turkey, this effect shows that the construction sector is the "Locomotive of the Economy" (INTES, 2022). In the last 30 years, Turkish construction companies have come a long way in overseas contracting services. Thus, Turkish construction companies have become a sought-after brand in the international labor market and have become one of the world's largest construction companies with their entrepreneurial structures and risk-taking abilities by using their trained manpower and technical know-how in the sector.

ENR magazine, one of the most important publications in the field of contracting services, regularly publishes a list of the world's largest construction companies based on the total value of the projects undertaken within a year. According to ENR magazine in December 2022, 38 Turkish construction companies were among the top 100 construction companies. In the general list of the world's 250 largest construction companies, Turkey ranks second with 55 construction companies after the People's Republic of China, which ranks first with 75 construction companies. The United States of America ranked third with 36 construction companies (ENR, 2022). As of July 2022, 44.6 percent of the projects undertaken by Turkish construction companies were in the CIS (Commonwealth of Independent States) region, 26.9 percent in the Middle East region, 18.8 percent in the Africa region, 6.9 percent in the Europe and America region, and 3 percent in the Asia Pacific region. This shows that Turkish construction companies have great prestige in the neighboring and surrounding countries (INTES, 2022).

In order for Turkey to take part in the construction markets of developed countries abroad, Turkish construction companies should be institutionalized, R&D studies should be given more importance, and projects using new technologies should be realized. This growth target can only be achieved through investments in education and technical training in the construction sector. In order for Turkish construction companies to effectively enter the markets of target countries, it is possible to establish a systematic project and construction management support system that responds to every new need of the construction sector, equipped with qualified personnel who are stronger in theory and experience (Aydın, 2022a, 2022b, 2022c, 2024). Examining and researching the programmes providing project and construction management education abroad, comparing them with the programmes in Turkey, examining the successful programmes academically and technically, and incorporating them into the programmes in Turkey will increase the success of our construction sector at the international level. For this purpose, it is necessary to establish an infrastructure for the existing programmes in Turkey that provide project and construction management education. The aim of project and construction management education is:

- To have in-depth knowledge in the subject area of project and construction management,
- To be able to use the techniques and tools in the field of project and construction management,
- To educate professional people and researchers who gain problem-solving, decision-making, and leadership skills in the field of project and construction management.

In this study, it is aimed to investigate the postgraduate programmes operating in the field of project and construction management in Turkey and TRNC until 2022, to update and/or develop the programmes, to evaluate the past and current situation, and to be a guiding study for researchers working in the field. Although similar studies have been carried out in Turkey, since there is no study for the TRNC, it was included in the scope of the study. For this purpose, the historical development of project and construction management is explained in chapter 2. In chapter 3, postgraduate programmes operating in the field of project and construction management are analyzed. In chapter 4, the current status of project and construction management postgraduate programmes is given. In order to compare the information about the postgraduate programmes, 17 common headings were

identified. Under the common headings, information for each postgraduate programme was detailed, and tables were prepared based on this information. In chapter 5, project and production management postgraduate programmes are evaluated, and the results of the study are given.

2. History of Project and Construction Management

The first project and construction management training started in 1905 at the Technical University of Munich in the chair of tunnel construction and construction management. Planning was needed to solve the problems encountered in the construction of tunnels in the Alps, and solutions were offered through this training (Arditi, 1984). In parallel with this, the inability to establish military facilities in a short time due to unfavorable terrain and climatic conditions during World War II and the difficult construction conditions encountered in the Pacific Ocean brought the need for planning for construction to the forefront (Sorgu, 1997).

Before 1950, the concept of planning started to be addressed in developed countries; computer-aided planning was developed in the 1960s; after 1970, issues such as environment and economy gained importance in addition to planning (Arditi & Polat, 2010). In the 1980s, project management started to be considered a management style; after 1990, project and construction management became an indispensable subject of education (Ariođlu, Gnay, Erku, & Uygur, 1991). With the development of technology in the 2000s, project and construction management education has evolved and changed; education programmes that train project and construction managers have started to take place not only at the master's and doctoral level but also in undergraduate programmes (Acıkara, Kazaz, & Ulubeyli, 2017). Today, project and construction management education in education programmes is being updated and developed according to the needs of the construction sector (Birgnl, Dikmen, zorhon, & Iřık, 2007).

2.1. The development of project and construction management in Turkey and the TRNC throughout history

Developments in the field of project and construction management in Turkey have been different and slower than in the rest of the world. In 1967, METU, under the leadership of Prof. Dr. V. Dođan Sorgu, started to provide education in the field of construction strategies; however, this initiative was later ended (Koraltan & Dikbas, 2002). Similarly, in 1976, it was decided to establish a construction engineering department at METU in order to train construction managers different from civil engineers; however, this was not realized (Arditi, 1984; Arditi & Polat, 2010). Attempts were limited, and even today, except for postgraduate programmes, undergraduate programmes providing project and construction management education have not been offered (Sorgu, 1999).

In Turkey, in 1975, the first project and construction management education were included in the undergraduate programme courses of ITU Faculty of Architecture, Department of Architecture; and it continues to this day (Istanbul Technical University, 2022). After 2000, overseas contracting services have gained importance and the need for Turkish construction companies to work with foreign partners has increased (Akgul, Ozorhon, Dikmen, & Birgonul, 2017). In today's conditions, the managerial skills of construction companies have become an important source of competition as well as their technical skills. Project and construction management education has made significant contributions to the provision of the human resources profile required by the construction sector by covering topics such as management, economics, law, sociopolitics and technology (Birgnl et al., 2007). After the year 2000, the discipline of project and construction management in Turkey slowly started to be established; it moved from the planning level to the implementation level (z, 2001). In 2000, a research project was carried out under the direction of Assoc. Prof. Dr. Murat ıracı in order to evaluate and develop the ITU FBE Building Construction Management Postgraduate Programme, now called Project and Construction Management (Aydemir, 2000). This project was aimed at evaluating the current situation and development trends (needs, expectations, and problems) in construction management teaching and developing a new construction management programme. With this study, the number of postgraduate programmes providing education in the field of project and construction management increased from 3 to 10 with the study published in 2012 (Sertyeřilifık,

Dikbaş, & Giritli, 2012). In this study, similar education programmes in project and production management in the world between 2000 and 2012 were examined; the opinions of graduates and students about the existing programmes were determined and evaluated.

As of 2010, the Project and Construction Management Congress (PYYK) is organized every two years in different universities in Turkey and TRNC. In the 1st PYYK, hosted by METU in 2010, all researchers working in the field of project and construction management came together, and a road map was prepared for Turkey in line with the views of the participants (Middle East Technical University, 2010). The 2nd PYYK was organized at Izmir Institute of Technology in 2012. In the 2nd PYYK, research findings and sectoral experiences were shared by researchers and practitioners; the development axis and potential of the studies in the field of project and construction management for Turkey were determined (Izmir Institute of Technology, 2012). The 3rd PYYK was held in Antalya and hosted by Akdeniz University in 2014. The congress aimed to bring together academics working in the field of project and construction management with professionals in public and private sector organizations to share current research findings in this field and exchange information for the future (Akdeniz University, 2014). The 4th PYYK was organized in Eskisehir in 2016 and hosted by Anadolu University. The congress, which brought together all researchers working in the field of project and construction management, aimed to create an academic platform where researchers could discuss their ideas and studies and develop new communication networks (Anadolu University, 2016).

As of 2018, PYYK is organized as an international conference under the name of the International Project and Construction Management Conference (IPCMC). The 5th IPCMC was organized by the Cyprus International University in Kyrenia in 2018. In the congress, researchers in the field of project and construction management and experts in the architecture, engineering, and construction sectors came together to discuss current research findings and results, and sectoral experiences were shared (Cyprus International University, 2018). Although the 6th PYYK was planned to be held face-to-face by Istanbul Technical University in Istanbul in 2020, it was organized as a virtual (virtual attendance) congress due to the COVID-19 pandemic. Well-known people from academia and the construction industry were invited to the congress to share their experiences and knowledge. At the congress, future collaborations were established between invited researchers and construction industry professionals to share existing knowledge and develop new solutions to the challenges of the construction industry (Istanbul Technical University, 2020). Finally, the 7th PYYK was hosted by Yıldız Technical University in Istanbul in 2022. In the congress, interdisciplinary integration and international cooperation between academics in the field of project and construction management and professionals of the construction industry were ensured; research findings, experiences, and expectations were shared (Yıldız Technical University, 2022). These developments in the field of project and construction management have increased Turkey's ability to have more influence in the international construction industry (Bayhan & Karaca, 2020).

3. Material and Method

In this study, postgraduate programmes active in the subject area of project and construction management and similar subject areas in Turkey and TRNC as of 1 December 2022, were investigated. The search for postgraduate programmes at universities in Turkey and TRNC was conducted with the current "Postgraduate Degree Search Engine" approved by the Council of Higher Education (YÖK) (Search Engine, 2022). All postgraduate programmes in the field of project and construction management were examined depending on the university, institute, and department to which they are affiliated. Within the scope of the study, 16 postgraduate programmes operating in the field of project and construction management were accessed. The list of postgraduate programmes in the field of project and construction management is shown in Figure 1 with the short names used in the study. Apart from the 16 listed postgraduate programmes, there are also some postgraduate programmes operating under programme names such as architecture, civil engineering, engineering management, etc. that include courses in the subject area of project and construction management. However, only the postgraduate programmes operating in the field of project and construction management were examined within the scope of the study.

Postgraduate Programme Name	Short Name
1. Beykent Üniversitesi Tasarım ve Yapım Yönetimi Yüksek Lisans Programı <i>Beykent University Design and Construction Management Postgraduate Programme</i>	BÜ-TYY-T
2. Doğu Akdeniz Üniversitesi İnşaat Teknolojisi ve Yönetimi (Tezsiz) Yüksek Lisans Programı <i>Eastern Mediterranean University Construction Technology and Management (Non-Thesis) Postgraduate Programme</i>	DAÜ-İTY-T"
3. Girne Amerikan Üniversitesi Yapı Yönetimi Yüksek Lisans Programı <i>Girne American University Building Management Postgraduate Programme</i>	GAÜ-YY-T
4. İstanbul Bilgi Üniversitesi Yapım Yönetimi (Tezsiz) Yüksek Lisans Programı <i>İstanbul Bilgi University Construction Management (Non-Thesis) Postgraduate Programme</i>	İBÜ-YY-T"
5. İstanbul Kültür Üniversitesi Proje Yönetimi (Tezsiz) Yüksek Lisans Programı <i>İstanbul Kültür University Project Management (Non-Thesis) Postgraduate Programme</i>	İKÜ-PY-T"
6. İstanbul Kültür Üniversitesi Proje Yönetimi Yüksek Lisans Programı <i>İstanbul Kültür University Project Management Postgraduate Programme</i>	İKÜ-PY-T
7. İstanbul Kültür Üniversitesi Yapım Yönetimi ve Teknolojisi Yüksek Lisans Programı <i>İstanbul Kültür University Construction Management and Technology Postgraduate Programme</i>	İKÜ-YYT-T
8. İstanbul Teknik Üniversitesi İnşaat Projeleri Yönetimi (Tezsiz) Yüksek Lisans Programı <i>İstanbul Technical University Construction Project Management (Non-Thesis) Postgraduate Programme</i>	İTÜ-İPY-T"
9. İstanbul Teknik Üniversitesi İnşaat Yönetiminde Bilişim (Tezsiz) Yüksek Lisans Programı <i>İstanbul Technical University IT in Construction Management (Non-Thesis) Postgraduate Programme</i>	İTÜ-İYB-T"
10. İstanbul Teknik Üniversitesi Proje ve Yapım Yönetimi Yüksek Lisans Programı <i>İstanbul Technical University Project and Construction Management Postgraduate Programme</i>	İTÜ-PYY-T
11. İstanbul Teknik Üniversitesi Yapı İşletmesi Yüksek Lisans Programı <i>İstanbul Technical University Construction Management Postgraduate Programme</i>	İTÜ-Yİ-T
12. Lefke Avrupa Üniversitesi Şantiye Yönetimi (Tezsiz) Yüksek Lisans Programı <i>European University of Lefke Site Management (Non-Thesis) Postgraduate Programme</i>	LAÜ-ŞY-T"
13. Lefke Avrupa Üniversitesi Şantiye Yönetimi Yüksek Lisans Programı <i>European University of Lefke Site Management Postgraduate Programme</i>	LAÜ-ŞY-T
14. Mimar Sinan Güzel Sanatlar Üniversitesi Yapım Proje Yönetimi Yüksek Lisans Programı <i>Mimar Sinan Fine Arts University Construction Project Management Postgraduate Programme</i>	MSGÜ-YPY-T
15. Yıldız Teknik Üniversitesi Konut Üretimi ve Yapım Yönetimi Yüksek Lisans Programı <i>Yıldız Technical University Housing Production and Construction Management Postgraduate Programme</i>	YTÜ-KÜYY-T
16. Yıldız Teknik Üniversitesi Yapı İşletmesi (İnşaat Proje Yönetimi) (Tezsiz) Yüksek Lisans Programı <i>Yıldız Technical University Construction Management (Non-Thesis) Postgraduate Programme</i>	YTÜ-Yİ-T"
T: Postgraduate programme with thesis	
T": Postgraduate programme without thesis	

Figure 1. The list of postgraduate programmes

4. Research Findings

In order to compare the information from 16 postgraduate programmes, 17 common headings were determined. Information for each postgraduate programme was analyzed in detail under the common headings. Figure 2, Figure 3, Figure 4, Figure 5, Figure 6, Figure 7, Figure 8, Figure 9, Figure 10, Figure 11, Figure 12, Figure 13, Figure 14, Figure 15, Figure 16, Figure 17, and Figure 18 were prepared based on this information. The information obtained from the websites of the postgraduate programmes and the contacts in the contact information were used in the examination. Apart from the websites of the programmes, the institute, department, graduate education, and education regulations were included; information other than these was not taken into consideration. The common headings are listed below in the following order:

- The distribution of the postgraduate programmes according to programme names (Figure 2),
- The distribution of the postgraduate programmes according to thesis and/or non-thesis (Figure 3),
- The distribution of the postgraduate programmes according to country names and city names (Figure 4),
- The distribution of postgraduate programme names according to words contained in the programme names (Figure 5),

- The distribution of the postgraduate programmes according to programme durations (Figure 6),
- The distribution of the postgraduate programmes according to total credits required for graduation (Figure 7),
- The distribution of the postgraduate programmes according to enrollment and acceptance requirements (Figure 8),
- The distribution of the postgraduate programmes according to profession areas and profession names (Figure 9),
- The distribution of the postgraduate programmes according to education languages (Figure 10),
- The distribution of the postgraduate programmes according to minimum graduation average requirements (Figure 11),
- The distribution of the postgraduate programmes according to institute names and department names (Figure 12),
- The distribution of the postgraduate programmes according to university types (Figure 13),
- The distribution of the postgraduate programmes according to course numbers and course credits (Figure 14),
- The distribution of the postgraduate programmes according to course types (Figure 15),
- The distribution of the postgraduate programmes according to education times (Figure 16),
- The distribution of the postgraduate programmes according to quota numbers (Figure 17),
- The distribution of the postgraduate programmes according to academic staff numbers (Figure 18).

Name of the University	Postgraduate Programme Name	Thesis / Non-Thesis	Number of the Programme
Beykent University	Design and Construction Management	Thesis	1
Eastern Mediterranean University	Construction Technology and Management	Non-Thesis	1
Girne American University	Building Management	Thesis	1
Istanbul Bilgi University	Construction Management	Non-Thesis	1
Istanbul Kultur University	Project Management	Non-Thesis	2
Istanbul Kultur University	Project Management	Thesis	
Istanbul Kultur University	Construction Management and Technology	Thesis	1
Istanbul Technical University	Construction Project Management	Non-Thesis	1
Istanbul Technical University	Informatics in Construction Management	Non-Thesis	1
Istanbul Technical University	Project and Construction Management	Thesis	1
European University of Lefke	Site Management	Non-Thesis	2
European University of Lefke	Site Management	Thesis	
Mimar Sinan Fine Arts University	Construction Project Management	Thesis	1
Yildiz Technical University	Housing Production and Construction Management	Thesis	1
Istanbul Technical University	Construction Management	Thesis	2
Yildiz Technical University	Construction Management	Non-Thesis	
Total			16

Figure 2. The distribution of the postgraduate programmes according to programme names

Thesis, Non-Thesis and Thesis/Non-Thesis Postgraduate Programme	Number of the Programme
Thesis Postgraduate Programme	9
Non-Thesis Postgraduate Programme	7
Total	16
Thesis/Non-Thesis Postgraduate Programme	2

Figure 3. The distribution of the postgraduate programmes according to thesis and/or non-thesis

City Name	Number of the Programme	Country Name	Number of the Programme
Istanbul	12	Turkey	12
Famagusta	1	Turkish Republic of Northern Cyprus	4
Kyrenia	1		
Lefke	2		
Total	16	Total	16

Figure 4. The distribution of the postgraduate programmes according to country names and city names

Word Contained in the Programme	Design	Construction	Management	Construction	Technology	Building	Project	Informatics	Business	Construction Site	Housing	Production
Design and Construction Management	X	X	X									
Construction Technology and Management			X	X	X							
Building Management			X			X						
Construction Management		X	X									
Project Management			X				X					
Project Management			X				X					
Construction Management and Technology		X	X		X							
Construction Project Management			X	X			X					
Informatics in Construction Management			X	X				X				
Project and Construction Management		X	X				X					
Construction Management						X			X			
Site Management			X							X		
Site Management			X							X		
Construction Project Management		X	X				X					
Housing Production and Construction Management		X	X								X	X
Construction Management						X			X			
Total	1	6	14	3	2	3	5	1	2	2	1	1

Figure 5. The distribution of postgraduate programme names according to words contained in the programme names

Programme Duration (Term)	Programme Duration (Year)	Number of the Programme
2 Periods - 4 Periods	1 Year - 2 Years	1
3 Period	1.5 years	2
3 Periods - 6 Periods	1.5 Years - 3 Years	3
4 Period	2 Years	10
Total		16
Average 4 Semesters / 2 Years		

Figure 6. The distribution of the postgraduate programmes according to programme durations

Thesis Postgraduate Programme	Number of the Programme	Non-Thesis Postgraduate Programme	Number of the Programme
21 Credits / 7 Courses + Seminar + Thesis	4	30 Credits / 10 Courses + Term Project	4
24 Credits / 8 Courses + Seminar + Thesis	3	36 Credits / 12 Courses + Term Project	1
30 Credits / 10 Courses + Seminar + Thesis	1	42 Credits / 14 Courses	1
30 Credits / 11 Courses + Seminar + Thesis	1	42 Credits / 14 Courses + Term Project + Seminar	1
Total	9	Total	7
Average: 21 Credits / 7 Courses + Seminar + Thesis		Average: 30 Credits / 10 Courses + Term Project	

Figure 7. The distribution of the postgraduate programmes according to the total credits required for graduation

Name of the Postgraduate Programme	ALES Min. Grade (Numerical)	YDS	YÖKDİL	IELTS	TOEFL IBT	4.00	100	Undergraduate Diploma	Portfolio	CV (Personal Information)	Number of Reference Letters	Letter of Intent	Work Experience (Years)	Interview	
		Foreign Language Minimum Grade (English)					Undergraduate Min. Grade Transcript								
BÜ-TYY-T	55	X				*		+	-	-	-	-	-	-	+
DAÜ-İTY-T"	X	65	65	6,5	80	2,50	65	+	+	+	3	+	-	+	
GAÜ-YY-T	55	65	65	6,0	80	2,25	60	+	-	+	3	-	-	+	
İBÜ-YY-T"	X	60	60	-	72	*		+	-	+	-	+	-	+	
İKÜ-PY-T"	55	55	55	-	65	*		+	-	-	-	-	-	+	
İKÜ-PY-T	55	55	55	-	65	*		+	-	-	-	-	-	+	
İKÜ-YYT-T	55	55	55	-	65	*		+	-	-	-	-	-	+	
İTÜ-İPY-T"	60	65	65	6,0	65	2,50	65	+	-	-	-	+	-	+	
İTÜ-İYB-T"	55	65	65	6,0	70	*		+	-	-	2	+	-	+	
İTÜ-PYY-T	65	65	65	6,0	70	2,70	70	+	+	+	2	+	-	+	
İTÜ-Yİ-T	70	65	65	6,0	70	2,50	65	+	-	-	2	+	-	+	
LAÜ-ŞY-T"	55	65	65	-	-	2,00	55	+	+	+	+	+	-	+	
LAÜ-ŞY-T	55	65	65	-	-	2,00	55	+	+	+	+	+	-	+	
MSGÜ-YPY-T	55	60	60	6,00	72	*		+	+	+	1	+	-	+	
YTÜ-KÜYY-T	55	50	50	5,5	60	3,00	75	+	+	+	2	+	-	+	
YTÜ-Yİ-T"	55	50	50	5,5	60	2,30	60	+	-	+	-	-	-	+	
Average	57	60	60	5,94	69	2,42	63	+	-	+	1	+	-	+	

Symbols Used in the Table:
The minimum and higher exam grade and score required for postgraduate programmes are stated above.
(X): Not required by the relevant graduate programmes.
(-): Not specified by the respective Postgraduate programmes.
(*): Required by the relevant graduate programmes. However, the undergraduate grade is not specified.
(+): Required by the relevant graduate programmes. However, no details are specified.

Figure 8. The distribution of the postgraduate programmes according to enrollment and acceptance requirements

Profession Area	Number	Profession Name	Number
Engineering Area	6	Civil Engineering	14
Architecture Area	8	Mechanical Engineering	8
		Industrial Engineering	7
		Electrical Engineering	7
		Architecture	15
		City, Region and Planning	9
		Interior Architecture	8
		Landscape Architecture	8
		Economy	1
		Business	3
		Management Engineering	2
Total	14	Total	82

Figure 9. The distribution of the postgraduate programmes according to profession areas and profession names

Education Language	Number of the Programme
Turkish	4
English	7
Turkish-English	5
Total	16

Figure 10. The distribution of the postgraduate programmes according to education languages

Minimum Graduation GPA (in 4.00 system)	Number of the Programme
Minimum 3.00	10
Minimum 2.80	1
Minimum 2.70	3
Minimum 2.50	2
Total	16
Mean: 2,90 (=2,86)	

Figure 11. The distribution of the postgraduate programmes according to minimum graduation average requirements

Institute Name	Number	Department Name	Number
Science	11	Structural Engineering	1
Science and Technology	1	Construction Project Management	1
Informatics	1	Architecture	3
Postgraduate Education	3	Civil Engineering	4
		Construction Management	1
Total	16	Total	10

Figure 12. The distribution of the postgraduate programmes according to institute names and department names

University Name	Number of the Programme	Type of the University	Number of the University
Beykent	1	Private	6
Eastern Mediterranean	1		
Girne American	1		
Istanbul Bilgi	1		
Istanbul Culture	3		
Lefke Europe	2		
Total	9		
University Name	Number of the Programme	Type of the University	Number of the University
Istanbul Technical	4	Public	3
Mimar Sinan Fine Arts	1		
Yildiz Technical	2		
Total	7	Total	9

Figure 13. The distribution of the postgraduate programmes according to university types

Name of the Postgraduate Programme	Number of English Courses	Number of Turkish Courses	Number of Elective Courses	Number of Compulsory Courses	Total Number of Courses	Total Course Credit
BÜ-TYY-T		18	11	7	18	48
DAÜ-İTY-T"	17		10	7	17	48
GAÜ-YY-T	17		11	6	17	45
İBÜ-YY-T"	16		15	1	16	45
İKÜ-PY-T		17	15	1	17	45
İKÜ-PY-T"		16	15	2	16	45
İKÜ-YYT-T		30	26	4	30	84
İTÜ-İPY-T"	5	18	16	7	23	66
İTÜ-İYB-T"	25		15	10	25	75
İTÜ-PYY-T	5	14	12	7	19	51
İTÜ-Yİ-T	7	10	9	8	17	45
LAÜ-ŞY-T	37		28	8	37	105
LAÜ-ŞY-T"	36		29	8	36	105
MSGÜ-YPY-T	9		6	3	9	21
YTÜ-KÜYY-T		21	13	8	21	54
YTÜ-Yİ-T"		30	18	12	30	76
General Total	174	174	249	99	348	958
Average	17	19	16	6	22	60

Figure 14. The distribution of the postgraduate programmes according to course numbers and course credits

Type of the Course	Number							
Number of Compulsory Courses	74							
Thesis Study	9							
Term Project	6							
Seminar	10							
Total Number of Compulsory Courses	99							
Minimum Number of Elective Courses	79							
Total Number of Elective Courses	249							
Total Minimum Number of Courses	178							
Total Number of General Courses (Number of Compulsory Courses + Total Number of Elective Courses)							348 (99 + 249)	

Name of the Postgraduate Programme	Compulsory					Elective		Total Minimum Number of Courses
	Number of Compulsory Courses	Thesis Study	Term Project	Seminar	Total Number of Compulsory Courses	Minimum Number of Elective Courses	Total Number of Elective Courses	
BÜ-TYY-T	5	+		+	7	3	11	10
GAÜ-YY-T	4	+		+	6	3	11	9
İKÜ-PY-T		+		+	2	7	15	9
İKÜ-YYT-T	2	+		+	4	5	26	9
İTÜ-PYY-T	5	+		+	7	5	12	12
İTÜ-Yİ-T	6	+		+	8	2	9	10
LAÜ-ŞY-T	6	+		+	8	2	29	10
MSGÜ-YPY-T	1	+		+	3	6	6	9
YTÜ-KÜYY-T	6	+		+	8	5	13	13
Total	35	9	0	9	53	38	132	91
Average (Thesis)	4	1	0	1	6	4	15	10
DAÜ-İTY-T"	6		+		7	4	10	11
İBÜ-YY-T"			+		1	10	15	11
İKÜ-PY-T"			+		1	10	15	11
İTÜ-İPY-T"	6		+		7	6	16	13
İTÜ-İYB-T"	10				10	4	15	14
LAÜ-ŞY-T"	7		+		8	3	28	11
YTÜ-Yİ-T"	10		+	+	12	4	18	16
Total	39	0	6	1	46	41	117	87
Average (Non-Thesis)	8		1	1	7	6	17	12
General Total	74	9	6	10	99	79	249	178
Overall Average	5	1	0	1	6	5	16	11

Symbols Used in the Table:
Total Number of Compulsory Courses: Number of Compulsory Courses + Thesis + Term Project + Seminar
Total Number of Courses: Total Number of Compulsory Courses + Minimum Number of Elective Courses (The number of courses required for graduation.)
Total Number of Elective Courses: It shows the total number of elective courses of the postgraduate programme.
Minimum Number of Elective Courses: It shows the number of compulsory elective courses from the total number of elective courses.
(+): Accepted by the relevant graduate programmes. Numerical value is 1.

Figure 15. The distribution of the postgraduate programmes according to course types

Education Time for the Postgraduate Programme	Number of the Programme
Day	4
Night (2nd Education)	3
Day / Night	9
Total	16

Figure 16. The distribution of the postgraduate programmes according to education times

Name of the Postgraduate Programme	Number of Quota
BÜ-TYY-T	-
DAÜ-İTY-T"	-
GAÜ-YY-T	-
İBÜ-YY-T"	50
İKÜ-PY-T"	-
İKÜ-PY-T	-
İKÜ-YYT-T	-
İTÜ-İPY-T"	30
İTÜ-İYB-T"	30
İTÜ-PYY-T	16
İTÜ-Yİ-T	15
LAÜ-ŞY-T"	-
LAÜ-ŞY-T	-
MSGÜ-YPY-T	5
YTÜ-KÜYY-T	10
YTÜ-Yİ-T"	50 (minimum)
Average: 26	

Figure 17. The distribution of the postgraduate programmes according to quota numbers

Number of Academic Staff of the Programme	Number of the Programme
Academic Staff Number 13	1
Academic Staff Number 12	2
Academic Staff Number 11	1
Academic Staff Number 10	3
Academic Staff Number 9	2
Academic Staff Number 7	2
Academic Staff Number 5	2
Academic Staff Number 3	3
Total	16

Figure 18. The distribution of the postgraduate programmes according to academic staff numbers

5. Conclusion and Suggestions

The results of the study were evaluated according to the common headings, and the current status of project and construction management postgraduate programmes in Turkey and TRNC was presented. Postgraduate programmes are named with 13 different programme names. It is observed that Project Management, Construction Site Management, and Construction Management are the most frequently used postgraduate programme names. The Management word is used 14 times in all programme names. Of the 16 postgraduate programmes, 9 are with thesis and 7 are non-thesis master's programmes. Among the programmes, two postgraduate programmes offer both thesis and non-thesis options. In Turkey, 12 postgraduate programmes are conducted only in Istanbul. In the TRNC, there are 1 postgraduate programme in Famagusta and Kyrenia and 2 postgraduate programmes in Lefke.

The duration of postgraduate programmes varies between 2–6 semesters and 1–3 years. 10 postgraduate programmes were completed in 4 semesters and 2 years. There is a "Seminar + Thesis" course in all thesis postgraduate programmes. Minimum 4 courses and maximum 7 courses, minimum 21 credits and maximum 30 credits are required. In most of the non-thesis postgraduate programmes, there is a "Course + Term Project" course. A minimum of 10 courses and a maximum of 14 courses, a minimum of 30 credits and a maximum of 42 credits should be taken.

Considering the enrollment and acceptance requirements of postgraduate programmes, it is seen that the average ALES numerical exam grade is 55 and above, the average English language exam grade is 65 and above, and the average undergraduate graduation grade (in a 4-scale system) is 2.50 and above. Postgraduate programmes are provided in English and Turkish. 7 postgraduate programmes are taught in English, 5 postgraduate programmes are taught in Turkish-English (70%-30%), and 4 postgraduate programmes are offered in Turkish.

Day, night, and day/night options are available for postgraduate programmes. There is a second education programme in night options. 5 postgraduate programmes give education during the day, 3 postgraduate programmes offer education during the night, and 8 postgraduate programmes teach during the day or night. It is seen that the undergraduate graduates who can apply to postgraduate programmes are mostly in architecture, civil engineering, urban, regional and planning. 8 postgraduate programmes can be applied by architecture undergraduates, and 6 postgraduate programmes can be applied by engineering undergraduates.

Postgraduate programmes are affiliated with the Institute of Science, the Institute of Science and Technology, the Institute of Informatics, and the Institute of Postgraduate Education. The related departments of the programmes are Construction Engineering, Construction Project Management, Architecture, Civil Engineering and Construction Management. Most of the programmes are affiliated with the Institute of Natural and Applied Sciences and the Department of Civil Engineering. In 7 postgraduate programmes, the maximum quota is 50, the minimum quota is 5, and the average quota is 26. The average graduation grade for postgraduate programmes is a maximum of 3,00, a minimum of 2,50, and an average of 2,90. The postgraduate programmes at Yildiz Technical University have the lowest average graduation grade.

Postgraduate programmes are given by 9 universities. Of the 7 postgraduate programmes in public universities, 4 are offered by Istanbul Technical University, and of the 9 postgraduate programmes in private universities, 3 are offered by Istanbul Kultur University. The total number of academicians in the 16 postgraduate programmes is 129. According to the academic staff of the postgraduate programmes, the highest number of academicians is in the Istanbul Bilgi University with 13 academicians; the lowest number of academicians is in the European University of Lefke with 3 academicians.

The maximum number of courses in postgraduate programmes is 37, the minimum is 9, and the average is 22. Course credits are a maximum of 105, a minimum of 21, and an average of 60. The number of courses in English is a maximum of 37, a minimum of 5, and an average of 17. The number of courses in Turkish is a maximum of 30, a minimum of 10, and an average of 19. The number of courses in thesis postgraduate programmes is a maximum of 37, a minimum of 9, and an average of 21. The number of courses in non-thesis postgraduate programmes is a maximum of 36, a minimum of 16, and an average of 23. The number of elective courses is a maximum of 29, a minimum of 6, and an average of 16. The number of compulsory courses is a maximum of 12, a minimum of 1, and an average of 6. The master's programmes with the highest number of courses are European University of Lefke, Istanbul Kultur University, and Yildiz Technical University. Istanbul Kultur University offers the lowest number of postgraduate courses among its programmes. Istanbul Technical University provides the most course options and course credit for its postgraduate programmes.

The comparison graph in Figure 19 was prepared with the results of the evaluation. The thesis and non-thesis postgraduate programmes in Turkey and the TRNC were compared in Figure 19. The average values in the comparison graph were designed according to the country (TRNC, Turkey) and thesis/non-thesis for the new postgraduate programme planned to be opened in the subject area of project and construction management. According to Figure 19, the postgraduate programmes with above-average values are listed below. These are:

- Istanbul Technical University Construction Project Management (Non-Thesis) Postgraduate Programme,
- Istanbul Technical University IT in Construction Management (Non-Thesis) Postgraduate Programme,
- Istanbul Technical University Project and Construction Management Postgraduate Programme,
- Yildiz Technical University Construction Management (Non-Thesis) Master's Postgraduate Programme.

Postgraduate Programme with and without Thesis by Country	
TRNC	1
Thesis	1
Non-Thesis	1
Turkey	12
Thesis	7
Non-Thesis	5
Total	11
Famagusta	1
Kyrenia	1
Istanbul	12
Lefke	2
Public	7
Private	9
English	7
Turkish	4
Turkish-English	5
Night (2nd Education)	3
Day	4
Day / Night	9
Average Number of Academic Staff	8
Average Number of Graduation (in 4.00 system)	2,87
Average Number of Semester	4
Average Number of Year	2
Average Number of Quota	26
Informatics	1
Science	11
Science and Technology	1
Postgraduate Education	3
Civil Engineering	4
Construction Project Management	1
Architecture	3
Construction Management	1
Average ALES Exam Grade (Numerical)	57
Average YÖKDİL Foreign Language Score (English)	60
Average 4.00 Undergraduate Grade (Transcript)	2,42
Undergraduate Diploma	16
Portfolio	6
CV (Personal Information)	9
Number of Reference Letters	9
Letter of Intent	10
Interview	16

Figure 19. The comparison graph (the distribution of postgraduate programmes in Turkey and TRNC according to 17 common headings)

Postgraduate Programme with and without Thesis by Country			
	TRNC	Turkey	Total
	4	10	14
Civil Engineering	2	5	7
Electrical Engineering	2	1	3
Mechanical Engineering	2	6	8
Industrial Engineering	2	5	7
Engineering	2	4	6
Architecture	4	11	15
City, Region and Planning	2	7	9
Interior Architecture	2	6	8
Landscape Architecture	2	6	8
Architecture	2	6	8
Economy		1	1
Business		3	3
Management Engineering		2	2
Other			
Total	41	137	178
Average (Compulsory)	10	11	11
Total	105	351	456
Average (Compulsory)	26	29	29
Total	107	241	348
Average	27	20	22
Total	303	655	958
Average	76	55	60
Total	78	171	249
Average	20	14	16
Total	29	70	99
Average	7	6	6
Total	107	67	174
Average	27	11	17
Total		174	174
Average		19	19

Figure 19 (continued). The comparison graph (the distribution of postgraduate programmes in Turkey and TRNC according to 17 common headings)

It is seen that the postgraduate programmes of Istanbul Technical University are in the majority, and their contents are sufficient. These programmes are ideally qualified to serve as a reference for the structure and content of new postgraduate programmes that are expected to be opened in the field

of project and construction management. According to Figure 19, the postgraduate programmes with below-average values are listed below. These are:

- Beykent University Design and Construction Management Postgraduate Programme,
- Istanbul Kultur University Project Management (Non-Thesis) Postgraduate Programme,
- Istanbul Kultur University Project Management Postgraduate Programme,
- Mimar Sinan Fine Arts University Construction Project Management Postgraduate Programme.

The total credits, enrollment and acceptance requirements, quota numbers, graduation average requirements, course numbers, and academic staff numbers required for the completion of these programmes are low and need to be improved compared to other programmes. In general, the contents of postgraduate programmes have average values. It is seen that the highest values are found in postgraduate programmes in Turkey, while postgraduate programmes in the TRNC have average values. While 4 postgraduate programmes in TRNC are offered in 3 different cities, 12 postgraduate programmes in Turkey are given only in Istanbul. It is essential to offer new postgraduate programmes in the field of project and construction management in metropolitan cities in Turkey, such as Ankara and Izmir.

Within the scope of the study, the postgraduate programmes operating in the field of project and production management in the world were not examined, and the main characteristics of the postgraduate programmes with different aims and content could not be determined. Therefore, the related programmes were not compared with the postgraduate programmes in Turkey and TRNC. The evaluation of postgraduate programmes in Turkey and TRNC was based solely on information accessible on their respective websites. Field research could not be performed to determine the opinions, expectations, recommendations, and suggestions of the graduates and students about the postgraduate programmes. It is expected that the evaluations will be a guide and a reference for the assessment of the project and construction management postgraduate programmes in Turkey and TRNC according to the past periods, their improvement for the future periods, and the postgraduate programmes that are planned to be opened.

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