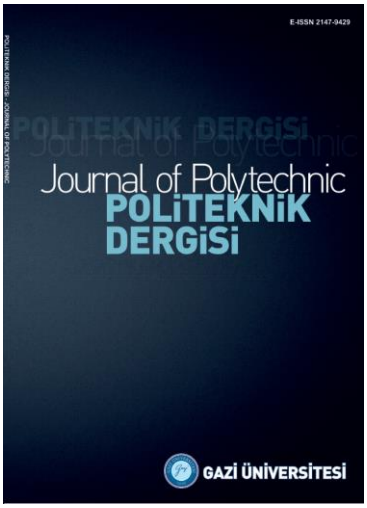

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Determination of the critical success criteria for public-private partnership (ppp) projects in Turkey

Türkiye'deki kamu-özel sektör işbirliği (KÖİ) projeleri için kritik başarı kriterlerinin belirlenmesi

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Determination of Critical Success Criteria for Public-Private Partnership (PPP) Projects in Turkey

Highlights

- *Determination of critical success criteria specifically for Turkish PPP projects*
- *Determination of the factors of critical success criteria conducting factor analysis*
- *Ranking the factors based on eigenvalues*
- *Exploring the differences in perspectives of the public and private sectors toward critical success criteria*

Graphical Abstract

Factor analysis shows that there exist four factors of critical success criteria for PPP projects conducted in Turkey. The most important factors are determined as project delivery and the project's contribution to the public's prosperity. Besides, the participants from the private and public sectors have significant perspective differences in quality of the project with meeting output specifications, reliable and quality public service, and reduced public sector administrative costs.

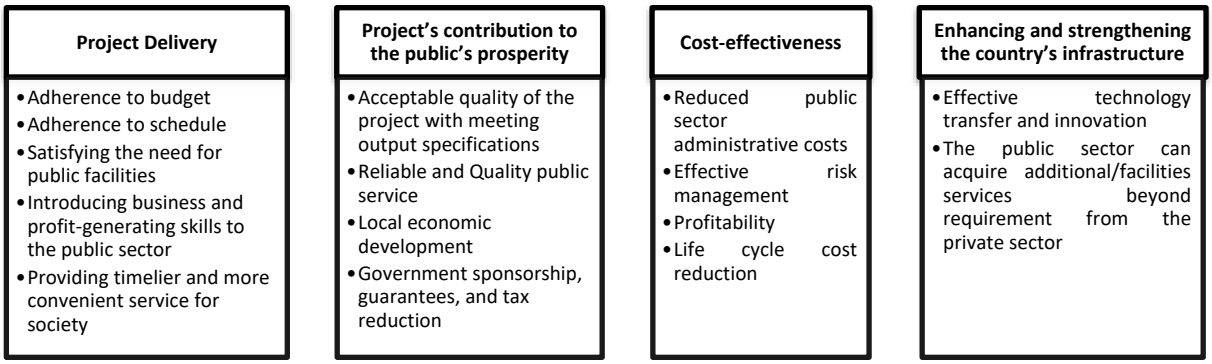

Figure. Factors of critical success criteria for PPP projects

Aim

The objectives of this research are (1) identifying the success criteria of the PPP projects, (2) determining the importance level of each success criteria for Turkey, (3) exploring differences in perspectives of the public and private sector toward the success criteria.

Design & Methodology

Firstly, 15 success criteria were extracted from the literature. Then, a questionnaire survey was designed to collect experts' opinions about the importance of these criteria. At the next steps, statistical analyses were conducted.

Originality

This is the first time the critical success criteria for Turkish PPP projects have been determined.

Findings

The factor analysis shows that the most important factors are project delivery and the project's contribution to the public's prosperity. Besides, the findings indicated that stakeholders have considerable disagreements on three criteria, namely quality of the project with meeting output specifications, reliable and quality public service, and reduced public sector administrative costs.

Conclusion

Consequently, investors of Turkish PPP projects should know that the Turkish PPP market has different expectations, and a special approach is required to carry out these projects.

Declaration of Ethical Standards

The authors of this article declare that the materials and methods used in this study do not require ethical committee permission and/or legal-special permission.

Türkiye'deki Kamu-Özel Sektör İşbirliği (KOİ) Projeleri İçin Kritik Başarı Faktörlerinin Belirlenmesi

Araştırma Makalesi / Research Article

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ÖZ

KÖİ konsepti son yıllarda gelişmiş ve gelişmekte olan ülkelerde mega altyapı projelerini inşa etmek için tercih edilmesine rağmen, bu projelerinin başarıları tartışma konusu olmaktadır. Özellikle Türkiye'de, bu projelerin ekonomik ve çevresel etkileri yoğun bir şekilde eleştiri konusu olmaktadır. Başarı kriterlerini ve bu başarı kriterlerinin önem seviyelerinin belirlemesi bu sorunların çözülmesinde anahtar rol oynamaktadır, çünkü proje ekipleri, bu projelerin hedeflerini açıkça bu bilgiler çerçevesinde ortaya çıkarabilmekte ve KÖİ projelerindeki tüm süreçler bu hedeflere ulaşabilmek için şekillendirilmektedir. KÖİ projelerinin kritik başarı kriterleri ile ilgili literatürde çalışmalar bulunmaktadır. Ancak bu çalışmaların hiçbiri Türkiye özelinde yürütülmemiştir. Başarı kriterlerinin ülkenin kültürel, ekonomik ve geleneksel yapılarına göre değiştiği göz önüne alındığında, Türkiye'de yapılan KÖİ projelerine özgü başarı kriterlerinin belirlenmesi bu projelerin başarılarını artıracağı rahatlıkla düşünülebilir. Buna ek olarak, başarı kriterleri farklı paydaşlar arasında da farklılıklar gösterebilmektedir ve bu farklılıkların bilinmemesi proje başarısını olumsuz etkileyebilmektedir. Bu nedenle, bu çalışmada kamu ve özel sektörün belirlenen kritik başarı kriterlerinin önem derecesi hakkındaki görüşlerindeki farklılıkların da ortaya çıkarılması hedeflenmiştir. İlk olarak literatür taraması yaparak 15 başarı kriteri belirlenmiştir. Ardından, uzmanların bu kriterlerin önemi hakkındaki görüşlerini toplamak için bir anket çalışması düzenlenmiştir. Anket çalışmasına 33 uzman katılmıştır. Anket çalışması ile toplanan veriler faktör analizi kullanılarak analiz edilmiş ve bu analiz sonunda 4 faktör belirlenmiştir. Son olarak, kamu ve özel sektör perspektiflerindeki farklılıkları araştırmak için Mann-Whitney U testi yapılmıştır. Faktör analizi, belirlenen faktörler içerisinde en önemli faktörlerin proje teslimi ve projenin halkın refahına katkısı olduğunu göstermektedir. Ayrıca, bulgular paydaşların üç kriter üzerinde önemli görüş ayrılıklarının olduğunu göstermektedir. Bunlar projenin kalitesi, güvenilir ve kaliteli kamu hizmeti ve son olarak kamu sektörünün idari maliyetlerinin azaltılmasıdır.

Anahtar Kelimeler: KOİ, faktör analizi, Türk inşaat endüstrisi, başarı kriterleri, Türk koi pazarı, proje başarısı.

Determination of the Critical Success Criteria for Public-Private Partnership (PPP) Projects in Turkey

ABSTRACT

Although the PPP concept is preferred for delivering mega-infrastructure projects in developed and developing countries in recent years, the success of these projects has been criticized. Especially, in Turkey, there are intensive criticisms about these project's success concerning economic and environmental aspects. Determining the success criteria and their importance levels are key to remedy these issues since project teams can identify the clear set of the objectives of these projects, and all processes in PPP projects can be performed for achieving these objectives. There are studies about the success criteria of PPP projects in the literature. However, none of these studies focuses on Turkey. Given the fact that success criteria vary concerning the country's cultural, economic, and traditional background, success criteria specific to Turkish PPP projects must be determined. Additionally, success criteria also vary among the different stakeholders, and unawareness of these differences puts the project success at risk. Thus, differences in perspectives of the public and private sectors were also investigated in this study. Firstly, 15 success criteria were extracted from the literature. Then, a questionnaire survey was organized to collect expert's opinion about the importance of these criteria. 33 experts participated in this questionnaire survey. The data collected through the questionnaire survey was analyzed by using factor analysis and 4 factors were determined at the end of this analysis. Finally, the Mann-Whitney U test was performed to investigate the differences in perspectives of the public and private sectors. The factor analysis shows that the most important factors are project delivery and the project's contribution to the public's prosperity. Besides, the findings indicated that stakeholders have considerable disagreements on three criteria, namely quality of the project with meeting output specifications, reliable and quality public service, and reduced public sector administrative costs.

Keywords: PPP, factor analysis, Turkish construction industry, success criteria, Turkish ppp market, project success.

1. INTRODUCTION

Delivery of the public infrastructures is usually a challenging task for governments. High construction costs, cost overruns, insufficient designs, operational inefficiencies, community dissatisfaction are among the examples of issues faced throughout the delivery of infrastructure systems [1]. Depending on the size of the infrastructure project, these issues might cause serious problems inside the community and put enormous

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pressure on public organizations. Therefore, alternative and more innovative delivery systems have been started to emerge to eliminate these issues. Public-Private-Partnership (PPP) is one of these innovative and modern ways of delivering public infrastructure projects. The main purpose of this delivery system is to exploit the financial and operational capabilities of the private sector to improve the overall efficiency of an asset throughout its life cycle [2]. In other words, PPP is a long-term agreement between the public and private sectors in which resources, responsibilities, and risks are shared to develop a public facility. Thus, this delivery system dictates the tight collaboration between the parties involved so that project could be delivered effectively and efficiently.

Exploiting the resources of the private sector and risk-sharing has made the PPP procurement system attractive for the public sector. Furthermore, when the contract is designed and implemented properly, public facilities are operated, maintained, and managed more efficiently compared to traditional delivery systems such as design-bid-build [3]. Besides, the PPP has led to unprecedented creativity and innovation in the projects [4], [5]. Consequently, PPP has gained popularity among governments in recent years. As a result of this, the total transaction value of the PPP projects carried out in the European market was reached to EUR 14.4 Billion as of 2017 [6]. PPP system has been also widely implemented in Turkey. Turkey's interest in the PPP concepts dates to the mid-1980s and the first law related to PPP enacted in 1994. Besides, a total of 210 PPP projects has been completed between 1986 and 2018, and 32 PPP projects are either under construction or have been contracted according to the 2018 Public-Private Partnership Report [7]. Furthermore, Turkey performed the largest PPP investment, namely the Istanbul Grand Airport, which is worth USD 35.6 Billion, in the world. Consequently, this means that Turkey has a considerable amount of experience in PPP Projects.

Although PPP projects are popular among all countries in recent years, all PPP projects cannot show the expected superior performance. Even, several PPP projects have failed due to the cost overruns and delays [8]. For instance, 52 PPP projects launched in the Philippines were suffered from delays [9]. Australia announced that 12% of its PPP projects experienced cost-overruns while 13% of them were completed behind the schedule [10], [11]. Besides, these bad results can lead to negative consequences to the economy of the country since the PPP concept is generally preferred in the construction of mega infrastructure projects. For instance, the termination of the East-West Link project resulted in a cost of $0.78 billion with the other undocumented effects on businesses and residents [12]. Capturing lessons from the previous PPP projects is the best way for improving the performance of the PPP projects. In other words, performances and success levels of the PPP projects should be monitored and measured, therefore the best practices from the successful projects can be revealed. Then, forthcoming projects can be shaped in the light of the learned lessons [13], [14].

Success criterion is proved to be an effective tool to measure the success level of a project. Success criteria can be defined as principles, standards, or requirements that are simply expectations of the stakeholders from a project [15]. Specifically, the projects which satisfy all expectations set by the stakeholders can be deemed as successful. To measure the success of PPP projects comprehensively, appropriate success criteria should be identified and described properly. Ill-defined success criteria lack to measure the success of the project even if all these criteria are satisfied. However, defining the success criteria is a difficult task since the definition of success is a subjective term. Naturally, each stakeholder has some success criteria specific to its expectations and requirements [16]. Especially, in PPP projects which involve many different stakeholders, defining the appropriate success criteria can be a challenging task, compared to the traditionally delivered projects. On the other hand, both public and private sector parties have substantial responsibilities from the beginning of the project to the end of the project's economic life, therefore, the collaboration between these parties is indispensable for the success of PPP projects. To enhance the effectiveness of the collaboration, firstly, project parties have to know each other's expectations from these projects [2], [17]. In other words, project parties should know what each party expects to obtain at the end of the PPP project. In this way, the project is going to be shaped by considering the expectations of all parties involved so that all parties are going to agree on that project is successful.

Similarly, expectations from a project can also vary from one country to another due to the differences in economic jurisdiction or country's perspective [18]. Although some success criteria might be universal and valid for all countries, there are also country-specific success criteria [19]. These specific success criteria should be determined by investors, consultants, financiers, and public officials.

Several authors focused on the success criteria of different countries such as Ghana and Hong Kong [19]. However, the success criteria for PPP projects conducted in Turkey have not been studied, yet. Besides, differences in perspectives of the stakeholders toward the success criteria of the PPP projects have not been explored for the Turkish PPP market. To fill this gap, the objectives of this research are (1) identifying the success criteria of the PPP projects, (2) determining the importance level of each success criteria for Turkey, (3) exploring differences in perspectives of the public and private sector toward the success criteria. This paper is organized as follows. In section 2, an in-depth literature review is presented. Section 3 describes the methodology adopted in this study. While section 4 introduces the discussion of findings, conclusions are presented in section 5.

2. LITERATURE REVIEW

2.1. The Use of Success Criteria in Construction Projects

In the construction projects, the iron triangle, namely time, cost, and quality, have been the most frequently used criteria to evaluate the success of construction projects [15], [20]. However, extensive use of these criteria has drawn criticism and the drawbacks of this approach have been discussed widely. For instance, Cserháti and Szabó [21] stated that these criteria mainly focus on profit rather than the implementation of the construction projects, therefore these criteria are insufficient to evaluate the success of construction projects. Another bottleneck of using conventional success criteria is that they measure the satisfaction of investors and overlook the satisfaction of external stakeholders [22], [23]. Thus, it is important to use subjective criteria with the iron triangle to evaluate the projects [24]. Therefore, the researches have started to propose new subjective success measures to evaluate today's complex projects comprehensively. For instance, Ahadzie et al. [25] emphasized the importance of environmental impact and customer satisfaction to measure the success of mass housing building projects in developing countries. On the other hand, Toor and Ogunlana [26] stated that a successful project should satisfy all stakeholders not only customers. Thus, they proposed the satisfaction of stakeholders as an important success criterion, and they asserted safety, effectiveness, efficient use of resources, and reduced conflicts as new subjective criteria. Westerveld [23] also pinpointed the importance of satisfaction of customers, the satisfaction of contracting partners, satisfaction of shareholders, and satisfaction of employees.

2.2. Studies Related to Success and Performance of PPP Projects

There are many studies aimed to determine success criteria for construction projects in the literature. However, most of these studies focus on traditionally delivered projects. Whereas, the PPP projects should be examined separately due to the substantial structural differences between PPP projects and traditionally delivered projects, such as the sharing of risks and responsibilities, their partnership structures and mutual objectives and goals [27], Thus, the question of "what are the critical criteria for measuring the success of PPP projects" is an emerging topic [28]. On the other hand, success criteria should not be confused with critical success factors. By the definition, these terms have substantial differences. CSFs are defined as "those few key areas of activity in which favourable results are necessary for a particular manager to reach his or her goals" [14], [29]. In this manner, success criteria are the objectives and CSFs are the ways of achieving these objectives. Thus, only studies focusing on the success criteria of PPP projects were taken within the scope of this literature review to reveal the success criteria used for the evaluation of PPP projects' success. Dixon et al. [30] conducted semi-structure interviews to highlight the differences between the perspectives of the different stakeholders toward the success criteria of PPP projects. The authors determined five success criteria and concluded that these success criteria vary according to the stakeholders. Zhang [31] used the "best value" approach to reveal the public clients' best value perspectives on the success of PPP projects, and he proposed 21 best value contributing factors. He collected data about these factors by conducting a questionnaire survey and ranked them in order of importance based on the mean significance index. Yuan et al. [16] proposed 15 performance objectives of PPP projects by conducting a literature review. Then, the authors calculated the relative importance of these objectives based on data collected via a questionnaire survey. Kušljić and Marenjak [32] proposed a tool that can be used to evaluate the success level of Croatian Private Finance Initiative projects. The empirical applicability of the tool was tested by conducting case studies. Similarly, Kušljić and Marenjak [33] proposed 20 success criteria by considering the characteristics of PPP/PFI projects, client's expectations from the projects and important project success measurement aspects. They conducted a factor analysis and determined five factors. These factors were named as service realization, public reputation, public contribution, political reputation, and project delivery, respectively. Rohman et al. [34] developed success criteria for toll road projects from the perspective of the community. The authors determined 15 success criteria focusing on the project's social benefits. Then, they performed a factor analysis on the data gathered through a questionnaire survey. Consequently, four significant factors were established as a measure of the overall success in toll road projects. Osei-Kyei et al. [28] proposed 15 success criteria derived from the literature. Then, the authors conducted a questionnaire survey for collecting data and ranked these criteria by calculating the mean significance index. Based on the findings, they grouped the success criteria into two groups, namely very critical and critical. Osei-Kyei and Chan [35] considered the same 15 success criteria and eliminated 6 success criteria whose normalized values are less than 0.50. Then, they grouped 9 remaining success criteria into 3 factors, namely local development and disputes reduction, profit, and cost and technical specifications. In another study, Osei-Kyei and Chan [36] considered 10 of 15 success criteria and eliminated 5 success criteria by considering the normalized values of the success criteria. They grouped these 10 success criteria into four unrelated categories, namely environmental impact, cost-effectiveness, quality of service and technical specifications, and long-term partnership. Lastly, Osei-Kyei and Chan [37] developed a practical tool to predict the success of PPP projects. The model examines the causal relationship between 32 CSFs and 15 success criteria for PPP projects. The model uses the regression analysis technique to make predictions. Later, the model is tested utilizing a questionnaire survey with experienced PPP experts.

Osei-Kyei and Chan [19] also proposed that success criteria may vary among countries due to the cultural, economic, political, and geographical differences. Thus, to figure out the differences between the developing country and developed country in terms of success criteria, they conducted a comparative analysis between Ghana and Hong-Kong. The top success criteria for Ghana were determined as profitability, meeting output specifications, and adherence to budget, while experts from Hong-Kong selected adherence to budget, adherence to time, effective risk management as top success criteria. In other words, the hypothesis proposed in this study was verified. Thus, international investors should be aware of the perspective differences between the countries on the success criteria. In other words, one size fits all approach harms the success of the projects. Osei-Kyei and Chan [38] conducted another study to compare and explore the public sector's view on PPP practices in Ghana and Hong Kong. Additionally, the authors determined 9 success criteria through semi-structured interviews with 10 PPP practitioners from both Ghana and Hong Kong. Another regional study was performed by Ahamd et al. [39]. The authors aimed to determine the success criteria for Malaysian PPP projects. However, the authors extract only 6 success criteria from the literature so that the study fails to evaluate all critical areas of PPP projects. Then, the authors performed a thematic analysis of the data collected through semi-structured questionnaire surveys.

The perspective differences between the stakeholders on the success criteria of PPP projects are also stated in the literature. For instance, Dixon et al. [30] revealed that the stakeholders have different objectives in PPP projects. Similarly, Yuan et al. [16] determined the top five objectives of four stakeholder groups, namely academia, private sector, public sector, and the general public, and they concluded that each group has different objectives to participate in PPP projects. Osei-Kyei and Chan [40] investigated perspectives of three different stakeholders, namely public, private, and academic toward the success criteria of PPP projects. Their results indicate that there are significant differences between the perspectives of the stakeholders.

The literature review given above shows that success criteria for Turkish PPP projects have not been determined, yet. Since the success criteria can vary among the countries, the studies specific to the countries should be conducted. Therefore, the most important success criteria in these countries can be determined, and these success criteria can be used to assess the success of PPP projects systematically. Also, the perspective differences between the stakeholders toward the success criteria of PPP projects were observed in the existing studies, and these differences can also be country specific. Therefore, these perspective differences between the stakeholders should be revealed.

3. METHODOLOGY

This research was undertaken to identify the most important success criteria for PPP projects performed in Turkey. Turkey was selected as the target country since there is no study investigating the success criteria of PPP projects for Turkey in the literature. Differences in perspectives of two stakeholders, namely the public and private sectors, about the success criteria of the PPP projects were also investigated in this study. These stakeholders were selected as the target groups since they are the main players of the PPP projects. All these steps followed in this study were illustrated in Figure 1. Correspondingly, an exploratory and qualitative methodology was performed in this study. Exploratory and qualitative methodology is the exploiting the knowledge from other sources. Literature reviews, case studies, questionnaire surveys, hierarchical clustering, and multidimensional analysis are among the examples of this methodology [41]–[43]. An in-depth literature review was conducted to extract the success criteria. Then, expert opinions were collected through a questionnaire survey. Finally, the Mann-Whitney U test and the factor analysis were performed to meet the objectives of this research.

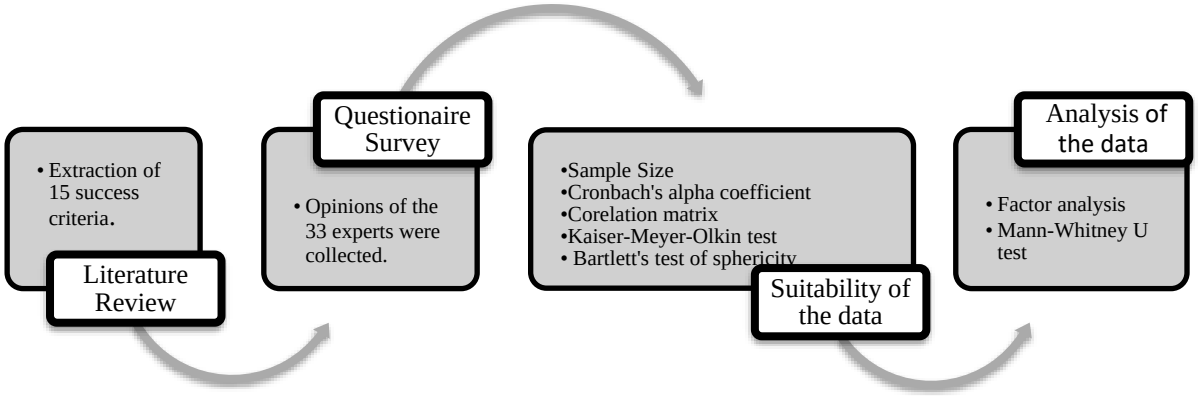

Figure 1. Research Methodology

3.1. Literature Review

At the initial stage of this study, success criteria were extracted from the literature via a comprehensive literature review. The studies, which proposed success criteria for PPP projects, were determined via google scholar and Scopus. Thus, a list of 15 success criteria shown in Table 1 was extracted from existing studies.

Table 1. Success criteria and their sources

Success Criteria	[31]	[44]	[40]	[19]	[16]	[45]
Acceptable quality of the project with meeting output specifications		X			X	
Reliable and Quality public service			X		X	
Adherence to budget		X	X	X	X	X
Adherence to schedule	X		X	X	X	X
Satisfying the need for public facilities			X	X	X	X
Providing timelier and more convenient service for society	X		X	X	X	X
Reduced public sector administrative costs	X		X	X	X	
Effective risk management	X		X	X	X	
Profitability			X	X	X	X
Local economic development	X		X	X	X	X
Effective technology transfer and innovation	X		X	X	X	X
Introducing business and profit-generating skills to the public sector					X	X
Life cycle cost reduction	X		X	X	X	
The public sector can acquire additional/facilities services beyond requirement from the private sector	X				X	
Government sponsorship, guarantees, and tax reduction					X	X

3.2 Questionnaire Survey

The questionnaire survey consists of two sections. The first section includes questions about the demographic structure of the experts and their companies. This information is vital to ensure that the backgrounds of the experts and their companies are appropriate for this study. In the second section, the experts were asked to rate the importance of each success criterion based on a 1-5 Likert scale (i.e., 5 = extremely important and 1= least important). The respondents from both the private and public sectors participated in this study. These respondents were selected rigorously since their competency (rather than sample size) directly affects the reliability of the results [46], [47]. Accordingly, five criteria were determined to assess the competency of the experts. Experts were obliged to satisfy the majority of these criteria (at least three of them) to participate in the questionnaire survey. The first criterion was having managerial experience in BOT projects. The reason for this lies in the fact that the experts having managerial backgrounds are expected to have full knowledge of all critical areas of the PPP projects so that they have a broader perspective. Secondly, experts working at either public agencies or main contractors were favoured for questionnaire surveys. In other words, experts working at sub-contractors were not fully considered convenient since they have limited knowledge and responsibility about PPP projects. Thirdly, the experts had to be the manager at different positions such as director and project manager. In this way, it is ensured that different views of the senior managers at different positions were also reflected in the questionnaire survey. Fourthly, having a minimum bachelor's degree was obligatory for the experts. This criterion was tremendously vital to evaluate the expert's educational and theoretical background. Finally, the experience level of the experts was vital to evaluate their competency. Favourably, it was expected that they have at least a medium level of experience in PPP projects. In total, 105 questionnaires were sent to experts via e-mails. 33 completed questionnaires were received -6 from the public sector and 27 from the private sector, which represents a response rate of 34.49%. The profiles of the respondents are shown in Table 2. According to Table 2, most of the respondents (90.90%) work in large companies. None of the respondents work in small companies. Besides, 96.96 % of the respondents' companies are highly experienced. Finally, the experience levels of most of these companies

in PPP projects are high (45.45%) and very high (42.42%). Due to the high complexity and resource demands of the PPP projects, these projects are generally carried out by high-experienced companies equipped with high technical and financial competences. Therefore, the fact that the participants work in large and experienced companies shows their convenience for this study.

The roles of the respondents are 51.51% directors, 21.21% administrative managers, 15.15% project managers, 6.06% site managers, and 6.06% field engineers. Also, the experience levels of the respondents in BOT projects are mostly medium (66.66%) and high (21.21%). Based on these findings, the respondents have appropriate experiences and roles in the company to reveal reliable conclusions about the success criteria of PPP projects

Table 2. Profiles of the respondents

		Count	Percent (%)
Parent Organization	Public agencies	6	18.18
	Contractor	27	81.81
Size of the Organizations	0-49 employees	0	0
	50-250 employees	2	6.06
	> 250 employees	31	90.90
Experience of respondents in PPP projects	Low	2	6.06
	Medium	22	66.66
	High	7	21.21
	Very High	2	6.06
Experience of Organization in the Construction Industry	Medium	1	3.03
	High	19	57.57
	Very High	13	39.39
Experience of Organization in PPP Projects	Low	2	6.06
	Medium	2	6.06
	High	15	45.45
	Very High	14	42.42
Role of Respondents	Director	17	51.51
	Administrative Manager	7	21.21
	Project Manager	5	15.15
	Site Manager	2	6.06
	Field Engineer	2	6.06

3.3. Consistency of survey data

Before performing analyses, the consistency of survey data should be checked by conducting a reliability analysis. The internal consistency of the collected data was assessed by Cronbach's alpha coefficient. This coefficient was calculated as 0.936 which is higher than 0.70 required for internal consistency [48]. Also, the item-total statistics table was examined to reveal whether the Cronbach's alpha coefficient will be improved or not if a particular item is deleted from the scale. The table represents that the removal of "Public sector can acquire additional/facilities services beyond requirement from the private sector" success criterion will lead to a small improvement in Cronbach's alpha coefficient as 0.937. However, the "corrected item-total correlation value" for this success criterion was calculated as 0.445 which can be considered as a high value to retain this success criterion since the minimum value for discarding the items is proposed as 0.2 [49]. Therefore, all success criteria were used in further analyses.

3.4. Factor Analysis

In factor analysis, the aim is to gather the variables that are related to each other into a factor. This reduces the number of variables so that the interpretation of the structure becomes easier. In other words, factor analysis is capable of simplifying complex structures [50]. Another important reason for choosing factor analysis is that this method has been used frequently to solve research problems whose mechanisms are similar to this study, such as Li et al. [45], Osei-Kyei, and Chan [35], and, Kušljić and Marenjak [33]. Factor analysis also shows the importance level of the variables. In this respect, factor analysis is a powerful method. Statistical Package for the Social Sciences (SPSS) software was used to perform the factor analysis. A five-steps factor analysis proposed by Williams et al. [51] was followed in this study. Firstly, the suitability of the data set was examined for factor analysis. The appropriateness of the sample size for conducting factor analysis was checked. Although there are different recommendations for the minimum sample size for factor analysis in the literature, Henson and Roberts [52] and Williams et al. [51] stated that it is not the correct approach to propose the exact number for sample size due to the complex dynamics of factor analysis, and they emphasized that factor analysis offers reliable results as long as communalities of each variable are greater than 0.6. Similarly, many authors pinpointed that the influence of sample size on the quality of solutions will decline when commonalities are greater than 0.6 [53]–[55]. In this study, the SPSS calculates the communalities of each variable as a result of factor analysis as shown in Table 3. The outputs of the factor analysis revealed that all calculated communalities are higher than 0.6. Therefore, the collected sample size was determined as suitable for factor analysis. Secondly, the factorability of the correlation matrix should be calculated and examined to assess the suitability of the data set. Williams et al. [51] argued that the correlation between the variables must be greater than ± 0.3. By checking the correlation matrix, correlations between the variables were determined as greater than the 0.3. The last two tests used for examining the suitability of the data set are Kaiser-Meyer-Olkin (KMO) and Barlett's test of sphericity which indicate the strength of the relationship among variables [51]. The KMO test is performed to assess the sufficiency of the sample size, while the Barlett's test shows whether factor analysis could be performed or not.

The KMO value for the collected data set was calculated as 0.824, which is considered as sufficient for performing the factor analysis since the KMO must be greater than 0.5 for satisfactory factor analysis to proceed [56]. Also, the significance value of Barlett's test was sufficiently small (0.000) which should be less than 0.05 to satisfy Barlett's test of sphericity [56]. Consequently, all test results show that this data set is suitable for factor analysis. The next step is determining the extraction method. In SPSS, principal components analysis and principal axis factoring are the widely used methods for extraction [51]. The principal components analysis was used in this study since this method provides reliable outputs when a theory or a model is not developed before performing the analysis [26]. In this study, the success criteria were determined from literature, however, since there is a limited number of studies about the success criteria of Turkish PPP projects, the interrelationships between these criteria cannot be established theoretically.

Table 3. Communalities of each success criterion

Success Criteria	*Communalities*
Acceptable quality of the project with meeting output specifications	0.920
Reliable and Quality public service	0.891
Adherence to budget	0.880
Adherence to schedule	0.847
Satisfying the need for public facilities	0.698
Providing timelier and more convenient service for society	0.804
Reduced public sector administrative costs	0.811
Effective risk management	0.770
Profitability	0.795
Local economic development	0.796
Effective technology transfer and innovation	0.660
Introducing business and profit-generating skills to the public sector	0.807
Life cycle cost reduction	0.764
The public sector can acquire additional/facilities services beyond requirement from the private sector	0.829
Government sponsorship, guarantees, and tax reduction	0.904

The third step is determining the criteria which assist in determining factor extraction. The Kaiser's criteria (eigenvalue >1) and scree plot were examined for determining the number of factors [56]. According to Table 4, the factor number was identified as 4 since the eigenvalue with five factors is 0.636 which is less than the threshold. The second analysis is the Scree test. In this test, the graph of eigenvalues versus the number of factors was plotted. Then, a straight line through the smaller eigenvalues was drawn. The point, where the debris or break occurs, indicates the number of factors. In this study, it was observed that breaking occurs in-between 4 factors and 5 factors. Consequently, the number of factors was determined as 4. Besides, Variance and cumulative variance, shown in Table 4, were examined to determine the percentage of the total variance explained by the factors. According to Table 4, the 4 factors can explain 81.183% of the total variance which is higher than the threshold of 50% [51]. Therefore, this shows that meaningful results were obtained at the end of the factor analysis.

The next step is the determination of the rotation method. Five different rotation methods exist in SPSS. The results of each rotation method were checked. However, it was noticed that the results had not varied concerning rotation methods. Thus, the orthogonal varimax method was selected since it is widely used among the researchers. The factor loadings show the correlation of the factor with the components. In other words, factor loadings show the contribution of a variable to its factor. Consequently, 4 factors, variables of each factor, and the loadings of the variables are shown in Table 5.

3.5. Mann-Whitney U test

There are different methods to examine the significant differences between the independent groups. The most widely used method is t-test, however, to perform a t-test, the data set should be normally distributed. To test the normality of each success criterion, the Shapiro-Wilk test was used, since this test is more appropriate for small sample sizes (<50 samples) [57]. The significance levels of each success criterion were calculated as lower than 0.05, then it was determined that the data significantly deviated from a normal distribution. Since the data set collected in this study was determined as non-normally distributed, the Mann-Whitney U test which is a nonparametric alternative to independent t-test could be used [58]. Also, there are four pre-requisites to perform the Mann-Whitney U test [58]. Firstly, the dependent should be measured at the ordinal or continuous level. The 5-point Likert scale is one of the examples of the ordinal variables, therefore this condition was satisfied. The second condition is that the independent variable should consist of two categorical and independent groups. Public and private sectors are the independent groups of this study. Therefore, this condition is also satisfied. Thirdly, the observations should be independent. Namely, each group must have different participants. The expert's participated in the questionnaire survey cannot work both in the private and public sector at the same time. Thus, it can be concluded that this condition is also satisfied. The last condition is that the data must not be normally distributed. As shown above, the data is not normally distributed. Consequently,

all pre-requisites were satisfied, therefore the Mann-Whitney U test could be used in investigating the differences in perspectives of the participants from public and private sectors on the importance level of success criteria of the PPP projects located in Turkey. The result of the analysis is shown in Table 6.

4. DISCUSSION OF FINDINGS

4.1. Factor Analysis

As a result of factor analysis, 4 factors were determined. The next step is the labeling of these factors. For this purpose, the studies mentioned in the literature part were revised. However, it should be stated that labeling of the factors is subjective; hence, other researchers may use different labels [35].

Table 4. Eigenvalues and rotation of sums of squared loadings

			Rotation of Sums of Squared Loadings		
	Factors	Eigenvalues	Total	% of Variance	Cumulative %
Selected Number of Factors	1	7.951	3.793	53.004	53.004
	2	1.576	3.226	10.505	63.509
	3	1.479	2.652	9.857	73.366
	4	1.173	2.506	7.817	81.183
	5	0.636	-	-	-
	6	0.528	-	-	-
	7	0.391	-	-	-

Table 5. Factor loadings of rotated component matrix

Success Criteria	Components			
	1	2	3	4
Acceptable quality of the project with meeting output specifications	.292	***.880***	.047	.240
Reliable and Quality public service	.359	***.848***	.173	-.115
Adherence to budget	***.867***	-.005	.272	.233
Adherence to schedule	***.830***	.263	.280	.098
Satisfying the need for public facilities	***.564***	.333	.005	.519
Providing timelier and more convenient service for society	***.804***	.321	.231	.034
Reduced public sector administrative costs	.165	.161	***.846***	-.204
Effective risk management	.189	.165	***.724***	.428
Profitability	.413	.212	***.736***	.196
Local economic development	.278	***.697***	.388	.287
Effective technology transfer and innovation	.373	.390	.256	***.551***
Introducing business and profit-generating skills to the public sector	***.649***	.257	.129	.550
Life cycle cost reduction	.512	.287	***.525***	.379
The public sector can acquire additional/facilities services beyond requirement from the private sector	.134	.080	.037	***.896***
Government sponsorship, guarantees, and tax reduction	-.143	***.746***	.351	.451

Key: Factor 1: Project delivery; Factor 2: Project's contribution to the public's prosperity; Factor 3: Cost-Effectiveness; Factor 4: Enhancing the service capacity and the technology level of the infrastructure systems. Italic and Bold values mean that this criterion was classified under the corresponding factor. For instance, "Reliable and Quality public service" is classified into the "Factor 2".

Table 6. Results of the Mann-Whitney U test

Success Criteria	Public Sec.		Private Sec.		p Valu
	Mean	Rank	Mean	Rank	
Acceptable quality of the project with meeting output specifications	4.83	1	4.12	1	0.02
Reliable and quality public service	4.67	2	3.44	13	0.01
Adherence to budget	3.67	12	3.89	2	0.55
Adherence to schedule	4.33	5	3.58	7	0.07
Satisfying the need for public facilities	3.67	13	3.56	8	0.91
Providing timelier and more convenient service for society	4.33	6	3.74	3	0.11
Reduced public sector administrative costs	4.17	9	3.33	15	0.02
Effective risk management	3.50	14	3.52	10	0.94
Profitability	4.33	7	3.56	9	0.05
Local economic development	4.50	3	3.74	4	0.09
Effective technology transfer and innovation	4.00	10	3.52	11	0.28
Introducing business and profit-generating skills to the public sector	4.00	11	3.70	5	0.59
Life cycle cost reduction	4.33	8	3.41	14	0.06
The public sector can acquire additional/facilities services beyond requirement from the private sector	3.00	15	3.52	12	0.1
Government sponsorship, guarantees, and tax reduction	4.50	4	3.63	6	0.05

Based on the literature review and the personal judgments of the researchers, these groups were named as project delivery, project's contribution to the public's prosperity, cost-effectiveness and enhancing and strengthening the country's infrastructure.

In factor analysis, interrelated variables (success criteria in this case) are determined and grouped into a factor. In other words, factors are the success criteria groups that consist of several success criteria. Thus, factors found in the study should not be confused with the critical success factors which are completely different terms. The main benefit of factor analysis in this study is that 15 critical success criteria can be represented by 4 success criteria factors. Namely, the success level of PPP projects can be evaluated by using these 4 success criteria factors. This, in turn, helps to simplify the success evaluation process of PPP projects.

4.1.1. Project Delivery (Factor 1)

The first factor consists of 5 success criteria and consists of 53.004% of the total variance. These criteria are "adherence to budget", "adherence to schedule", "satisfying the need for public facilities", "providing timelier and more convenient service for society", and "introducing business and profit-generating skills to the public".

All these success criteria are related to time, cost, and scope of the project which are considered as the traditional success criteria for delivering the projects successfully. Thus, this factor is labeled as project delivery. Kusljic and Marenjak [45] also called one of the identified factors as project delivery in their study. Due to the complexity of PPP projects, these projects can confront many problems, such as project delays, cost overruns, and high maintenance and operation costs [59]. Therefore, the PPP projects can be considered as successful, if they are completed on time, within the estimated budget, and achieving the targeted needs of the project.

Adherence to budget (0.867), adherence to schedule (0.830), and providing timelier and more convenient service for society (0.804) are the top three criteria for this factor. In PPP projects, the private sector is the investor of the project, in other words, these companies must provide the required finance to complete these projects. Turkish construction companies have limited financial resources compared to construction companies in developed countries [59]. Therefore, they must obtain external finance from banks and other financial institutions. Due to these limitations, private companies consider budget as an important constraint, and they want to finish these projects within the budget. Unfortunately, this is not an easy target in PPP projects, since the PPP projects are complex, and they involve complex and costly components [60]. Besides, completing PPP projects on time or before the schedule is another important success criterion for the companies since private companies can have more time for operating their projects. Besides, by completing the project before the schedule, the private companies can gain opportunities to recoup their investment costs earlier [28].

According to Osei-Kyei and Chan [19], the adherence to budget and adherence to schedule success criteria are placed at the third and fourth rank in Ghana, respectively. They also determined the ranks of these success criteria in Hong Kong, and these two success criteria are ranked first and second. Similarly, Yuan et al. [16] determined that these two success criteria are the third and fourth most important success criteria. Therefore, the other studies also revealed that these two parameters are crucial in the determination of the success of the PPP projects.

On the other hand, providing timelier and more convenient service for society success criteria has moderate level importance in these two studies. This result indicates that although there are some similarities between countries, the differences can also be observed.

4.1.2. Project's contribution to the public's prosperity (Factor 2)

This factor consists of 4 success criteria and accounts for 10.505% of the total variance. These criteria are "acceptable quality of the project with meeting output specifications", "reliable and quality public service", "local economic development", and "government sponsorship, guarantees, and tax reduction". All of these success criteria improve the public's prosperity. Firstly, society will have a high-quality facility and exploit from the good public service at the end of the project. Secondly, the local economic developments can lead to new employment opportunities which can also contribute to improvements in the public's prosperity [35]. Finally, the private construction companies in developing countries have limited resources, capabilities, and competences compared to the companies in developed countries, therefore they cannot participate in international megaprojects. However, in the PPP concept, these companies can earn government sponsorship, guarantees, and tax reduction, and these privileges can encourage these companies to participate in mega domestic projects which require high technology and technical capability. Thus, they can improve their capabilities and competencies and achieve competitive advantages over competitors from other countries. Eventually, these companies become important international competitors. As a part of the public, these companies do not only improve their prosperity but also the public's prosperity. Consequently, this factor is labeled as the project's contribution to the public's prosperity.

The acceptable quality of the project with meeting the output specifications is the highest factor loading (0.880) within this factor. Acceptable quality of the project helps to avoid conflicts and disputes by reducing the possibility of rework, mistakes, and omissions [61]. Besides, the deficiencies in quality may increase the operation and maintenance costs in the operation stage. Yuan et al. [16] also identified the acceptable quality of the project as the most important criterion. Similarly, in the study of Osei-Kyei and Chan [62], this success criterion is determined as the most important success criterion.

Reliable and quality public service obtained the second-highest factor loading (0.848). The satisfaction of the users/customers is crucial in the success of PPP projects [28]. Besides, the general public and users have the intention to abandon the services of public facilities when they are poorly delivered and unreliable [63]. For instance, there are two airports in Istanbul. If the service quality of the Istanbul grand airport is not at the desired level, the users would use another airport.

4.1.3. Cost-effectiveness (Factor 3)

This factor consists of 4 success criteria and consists of 9.857% of the total variance. These criteria are "reduced public sector administrative costs", "effective risk management", "profitability", and "life cycle cost reduction". All success criteria focus on the contribution of the project to cost management. Thus, this factor is named as cost-effectiveness. Similarly, Osei-Kyei and Chan [36] named one of the factors like cost-effectiveness, and their factor also consists of "reduced public sector administrative costs", "effective risk management", and "life cycle cost reduction".

The reduced public sector administrative costs obtained the highest factor loading (0.846). In essence, delivering infrastructure through the PPP concept is expected to reduce the administrative costs of the public sector [2]. This aspect of the PPP can even be seen as one of the main motivations of the governments in implementing this delivery system [2]. On the contrary, many PPP projects failed to satisfy this expectation, especially in Turkey. Annual working capacities during the first years of the PPP projects are often far below the estimated capacity so that the deficits are paid by the treasury [64]. This issue attracted the attention of Turkish taxpayers and eventually, both the public and private sectors exposed to enormous pressure from the taxpayers. Thus, reducing public sector administrative costs became the center of success evaluation of PPP projects in Turkey.

Effective risk management also obtained a considerable high factor loading (0.724). Effective risk management is described as an effective implementation of risk-sharing and transfer mechanisms [19]. One of the superior aspects of PPP implementation compared to traditional project delivery systems is to manage the emerging risks by the most adequate party. In Turkey, projects struggle due to the problems related to risk sharing [65], therefore the risks could not be shared effectively due to the lack of sufficient capability in the public sector [66]. Furthermore, other studies also pinpointed the importance of effective risk management in PPP projects [28].

4.1.4. Enhancing and strengthening the country's infrastructure (Factor 4)

This factor is formed by 2 success criteria and accounts for 7.817% in total variance. These success criteria are "effective technology transfer and innovation", and "public sector can acquire additional/facilities services beyond requirement from the private sector" with 0.551 and 0.896-factor loadings, respectively. All these success criteria aim to assess the project's ability to enhance and strengthen the country's infrastructure. Thus, this factor is labeled as "Enhancing and strengthening the country's infrastructure". Strong and efficient infrastructure is key to reinvigorate the economy. Investors are wary of investing in countries whose highways, railways, harbors, and airports are not at the desired level. Because infrastructure systems are directly related to business productivity and efficiency. Therefore, governments

prefer PPP projects to enhance and strengthen the country's infrastructure, even they overlook the potentially high costs of these projects due to the assumptions regarding the high benefits of delivering infrastructures [66].

4.2. Mann-Whitney U Test

Mann-Whitney U test was conducted to investigate the differences in perspectives of the public and private sectors toward the success criteria of Turkish PPP projects. The results of the analysis are shown in Table 6. P-values given for each success criteria are used to decide whether there are significant differences in perspectives of the public and private sectors for each criterion or not. The p-value less than 0.05 indicates that the public and private sectors have significant disagreements about the importance of a success criterion. The agreement level between these two stakeholder groups for a success criterion increases as the p-value of this criterion increases. Thus, it is seen from Table 6 that public and private sector representatives have significant disagreements about the importance of "Acceptable quality of the project with meeting output specifications" (p-value = 0.022), "Reliable and quality public service" (p-value = 0.012) and "Reduced public sector administrative costs" (p-value = 0.029).

"Acceptable quality of the project with meeting output specifications" has the mean values of 4.83 and 4.11 for the public and private sector representatives, respectively. For the public and private sector, this success criterion is the most important. However, the acceptable quality of the project is much more important for the public sector than the private sector. The reason for this difference can be that the public sector will operate the project after a long-term concession period, therefore public sector demands that the project is still operable after the concession period which is usually around 20 years in Turkey. However, this expectation can only be satisfied when a high degree of quality exists. On the other hand, the private sector will operate the project throughout the concession period which will start immediately after the completion of the project, therefore relatively less quality which can reduce the operation and maintenance costs in the short-term would be sufficient for the private sector. Although significant differences are observed between public and private sectors on this success criterion in this study, the other studies, such as Yuan et al. [16] and, Osei-Kyei and Chan [62] do not observe any significant differences between the stakeholders.

Reliable and quality public service has the mean values of 4.66 and 3.44 for the public and private sectors, respectively. The P-value of this success criterion is 0.012. In this context, it can be concluded that a significant difference exists between the two stakeholders of the PPP project. The public sector desired to maximize the public's benefit from the project as well as financial profit. Thus, the quality of the service is important criteria since it is strongly correlated with the benefit of the public. Besides, due to the high service quality, the users will be attracted, and they preferred to use these projects instead of their alternatives, therefore the public sector does not confront extra costs due to the guarantees. Although service quality is very important for attracting the users for gaining profit from these projects, the private sector does not consider this success criterion as one of the most important success criteria. The reason for this perception can be that the government guarantees in Turkey are enough to gain a good profit, therefore the private sector does not care about the attractiveness of the users. However, the studies in the literature, such as Yuan et al. [16] and, Osei-Kyie and Chan [62] do not reach the same conclusions about the differences in perspectives of the stakeholders.

Respondents from the private and public sectors have seen the importance level of reduced public sector administrative costs significantly different. Reduced public sector administrative costs have the mean values of 4.16 and 3.33 from the public and private sector representatives, respectively. The P-value of this success criterion is 0.029. PPP delivery system is preferred mainly because of the limited public funds by the public sector [2], and one of the advantages for the public sector is removing infrastructure costs from the public balance sheet [45], therefore one of the important success criteria of the public sector is reducing the public sector administrative costs. On the other hand, this is not an important criterion for the private sector since these costs are not related to their balance-sheets. Similarly, Yuan et al. [16] identified that the public and private sectors ranked this criterion differently, namely the public sector and private sector ranked this criterion third and twentieth, respectively. On the other hand, according to Osei-Kyei and Chan [62], this success criterion was ranked the same by the public and private sectors.

5. LIMITATIONS OF THE STUDY

Limitations such as bias, variance, timing exist in almost every study. This study also has several limitations which were elaborated as follows:

1. This study does not focus on specific PPP project types. Thus, the success criteria used in this study might vary based on project types. However, PPP projects have many similarities so that this issue is considered to have a limited effect on results. Nevertheless, this point is planned to be addressed in further studies.
2. Although the participants of the study were selected carefully by considering the five criteria, the number of the participants can be considered as a limitation of this study. However, since all participants are well experienced, we believe that the findings of this study can be used by the professionals in practice and by the researchers for developing new researches about the PPP projects.

6. CONCLUSIONS

In the last decade, PPP has become a popular project delivery system in Turkey. However, a considerable part of the society has criticized these project's success and deemed them as unsuccessful. To reveal the truthfulness of these criticisms, the success of these projects should be assessed appropriately, therefore a systematic approach should be developed. For that purpose, the success criteria of these projects should be identified, and their importance levels should be revealed. Besides, these success criteria are also important to reveal the objectives of these projects, and the processes are determined by considering these objectives.

In literature, there are many studies about the assessment of the success of construction projects, however, due to the structural differences, these studies can be inappropriate for the PPP projects. In other words, the studies specific to the PPP projects should be conducted. There is a plethora of studies about the success criteria of PPP projects in the literature, however, there are inconsistencies between these studies conducted in different countries, in other words, each country ranks these success criteria in a different order. Therefore, the success criteria should be determined as country specific. Unfortunately, there is no study specific to Turkey.

In the literature, some studies also investigated the stakeholders' perspectives on the success criteria since each stakeholder must understand the expectations of the other stakeholder to establish the collaboration. Thus, differences in perspectives of the public and private sectors were also investigated in this study.

Firstly, a literature review was conducted to extract success criteria from the literature. Only the studies focusing on the PPP project were considered. In this way, it is ensured that the extracted success criteria for PPP projects are verified by other studies. Consequently, 15 success criteria were extracted from the literature. Then, a questionnaire survey was organized to collect expert's opinion about the importance of these criteria. 33 experts participated in this questionnaire survey. The data collected through the questionnaire survey was analyzed by using factor analysis and 4 factors were determined at the end of this analysis. Finally, the Mann-Whitney U test was performed to investigate the perspective differences between the public and private sectors.

Project delivery was determined as the most important factor; therefore, these projects should be delivered on time, within the budget, and achieving the desired scope to declare them as successful. Compared to traditional construction activity, cost, time, and scope are still important success criteria in these projects. Another important factor is the project's contribution to the public's prosperity. The main objective of the infrastructure projects is to enhance the economic and social development of society. For instance, transportation projects can enhance business productivity, which in turn can boost economic development. Thus, contribution to the public's prosperity is vital for the success of PPP projects. Especially, in this factor, quality is considered as crucial by the public and private sectors, in other words, there is a relationship between the satisfying the desired quality and the success of the PPP projects. The main reason is that these projects are long term projects. After the construction, these projects will be operated for a long time by the private sector. After the completion of the concession period, these projects are transferred to the public sector and, then, they are operated by the public sector. Therefore, both of them demand an acceptable quality project, thus, many potential problems emerged due to the poor quality can be eliminated throughout the operation of these projects. The third most important factor is cost-effectiveness. The main advantage of the PPP model over the traditional delivery systems is that the capabilities of the private sector could be exploited so that the project could be carried out without the allocation of public funds. Namely, PPP projects expected to reduce the public's spending on the construction of this project. Thus, this factor is crucial in measuring the success level of PPP projects.

Although the findings of this study have some similarities with the studies conducted in different countries, there are also inconsistencies between the findings of this study and the other studies. Therefore, this study also reveals that the studies about the success criteria of PPP projects should be conducted country-specific, in other words, the success criteria should be investigated for each country to assess the success of a PPP project accurately.

Mann-Whitney U test showed that the public and private sectors have different perspectives on three success criteria. These success criteria are the acceptable quality of the project with meeting output specifications, reliable and quality public service, and reduced public sector administrative costs. Firstly, the respondents from both sectors agree that the acceptable quality of the project with meeting specifications is important. However, the public sector considers this criterion more important than the private sector. This reason for this conclusion can be that the private sector is less concerned about the quality since its operation period is earlier and shorter than the public sector. On the other hand, the public sector desires to be able to operate the project effectively even after the concession period. Thus, the public side pays the utmost attention to the quality of the project. Another success criterion that stakeholders have different perspectives is the reliable and quality public service. Service quality is an important criterion for both the public and private sectors. However, the public's benefit from the project lies at the center of the public sector. Besides, the reliable and quality public service can attract many users, this can eliminate the financial burdens of the public sector due to the guarantees. This situation is different in the private sector side. The private sector is aware that PPP projects need to offer a high quality of service to attract users. However, the service quality is not their focus since the government guarantees to ensure a minimum level of payment during the operation stage. Consequently,

stakeholders must know that both sides have different expectations from the PPP projects, and they should decide the deliverables of the projects by considering these differences. Otherwise, it would be impossible to implement a PPP model successfully.

Although this study aimed to determine the success criteria of Turkish PPP projects, the question of how success criteria vary concerning PPP models and project types remains unanswered. In further studies, the set of success criteria for specific PPP models, such as build operate transfer, build-own-operate, design-build-finance, etc., and PPP project types, such as hospital, highway, and airport, etc. can be proposed, and the findings of this study can be used as the first step for these studies.

Overall, several lessons learned were captured from this study. Firstly, respondents pay the utmost attention to the project's contribution to the prosperity of the public. Since success criteria are objectives of a project, this is promising to see that respondents from both sectors aim to improve the prosperity of the public. Thus, it might be claimed that PPP projects tend to have positive effects on the prosperity of the public at least in the short-term. Nevertheless, their long-term effects on the prosperity of the public should be investigated deeply since the perspective differences were observed between the public and private partners on the long-term priorities. Secondly, the results of this study showed that the quality of the project is crucial for both public and private sectors, unlike the traditionally procured projects where the most important success criterion is the cost of the project for the private sector participants. Thus, PPP projects are expected to have a high level of quality since both parties are aware of the importance of it. On the other hand, the Mann Whitney U test showed that perceptions of the public and private sectors vary to some extent. For instance, the service quality is more important for the public sector than in the private sector. Government guarantees are believed to be the main reason for this result. Since the private sector is aware that their revenue is guaranteed by the state treasury even if the facility is not preferred by users, they are not wary of the service quality as much as the public sector. Thus, the public parties must determine the amount of the government guarantees by performing deep analysis. Otherwise, the service quality of the project might be at risk. Finally, the results of this study are distinguished from other regional studies to some extent. Foreign investors of Turkish PPP projects should know that the Turkish PPP market has different expectations and a special approach is required to carry out these projects.

DECLARATION OF ETHICAL STANDARDS

The authors of this article declare that the materials and methods used in this study do not require ethical committee permission and/or legal-special permission.

AUTHORS' CONTRIBUTIONS

Ozan OKUDAN: Wrote the draft version of manuscript.

Cenk BUDAYAN: Conceptualized the manuscript, analyzed the survey data, and finessed the draft version of manuscript.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

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