ISSN: 1307-4474

EGE EĞİTİM DERGİSİ
EGE JOURNAL OF EDUCATION

21(1), 2020, 38 – 53

Student Retention in Graduate Education in Turkey: Role of Organizational Factors on the Degree Completion in Graduate Education

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Abstract

Graduate education leads students to follow a career in their expertise fields. In this respect, graduate education is attractive to students. However, in graduate education, there are several factors affecting the students' degree completion. This study aims to check the student attrition rates for master's and doctoral education and to investigate the role of organizational factors on the degree non-completion in graduate education. This study was designed as a correlational study using secondary data. The non-completion rate was the criterion variable, while the university type, the students per faculty member, and the articles published per faculty member were the predictors. Descriptive statistics and Simultaneous Multiple Regression Analysis were performed to achieve the purpose of the study. The findings of the current study showed that the student attrition rates for master's education were higher than those for doctoral education. Furthermore, the articles per faculty member predicted the non-completion both in master's and doctoral degree, while the university type predicted only the non-completion in master's degree. It was recommended that the performance of the academic staff should be taken into consideration to increase the degree completion rates.

Keywords

Higher education
Graduate education
Student retention
Degree non-completion
Student attrition

Article Info

Received
August 08, 2019
Accepted
May 08, 2020
Article Type
Research Paper

DOI: 10.12984/egeefd.603792

Türkiye'de Lisansüstü Eğitimde Öğrenciyi Okulda Tutma: Örgütsel Faktörlerin Lisansüstü Eğitim Mezuniyetindeki Rolü

Öz

Lisansüstü eğitim, kendi uzmanlık alanlarında bir kariyer takip etmeleri doğrultusunda öğrencileri yönlendirir. Bu bağlamda, lisansüstü eğitim öğrenciler için cezbedici olmaktadır. Fakat öğrencilerin lisansüstü eğitimi tamamlamamalarına sebep olan belli etkenler vardır. Bu çalışma, yüksek lisans ve doktora eğitimlerinde öğrencilerin mezuniyet durumlarını kontrol etmeyi ve lisansüstü eğitimde mezuniyet oranlarına etki eden örgütsel faktörleri araştırmayı amaçlamaktadır. Çalışma deseni ilişkisel tarama olup ikincil veri analizi yapılmıştır. Derece tamamlayamama oranı bağımlı değişken iken üniversite türü, öğretim üyesi başına düşen öğrenci sayısı ve öğretim üyesi başına düşen makale sayısı bağımsız değişkenlerdir. Çalışmanın amacını gerçekleştirmek için betimleyici istatistik ve eş zamanlı çoklu regresyon analizi kullanılmıştır. Çalışma bulguları yüksek lisans öğrenci kaybının doktora öğrenci kaybından yüksek olduğunu göstermiştir. Ayrıca, öğretim üyesi başına düşen makale sayısı hem yüksek lisans hem doktora tamamlamama oranını yordarken üniversite türü ise sadece yüksek lisans tamamlamama oranını yordamıştır. Tamamlama oranlarının artırılması için akademik personelin performansının hesaba katılması önerilmektedir.

Anahtar Sözcükler

Yükseköğretim
Lisansüstü eğitim
Öğrenciyi okulda tutma
Derece tamamlayamama
Öğrenci kaybı

Makale Hakkında

Gönderim Tarihi
08 Ağustos 2019
Kabul Tarrihi
08 Mayıs 2020
Makale Türü
Araştırma Makalesi

Cite: Ertem, H. Y. & Gökalp, G. (2020). Student retention in graduate education in Turkey: Role of organizational factors on the degree completion in graduate education. *Ege Journal of Education, 21*(1), 38-53. doi:10.12984/egeefd.603792

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Genişletilmiş Türkçe Özet

Giriş

Türkiye yükseköğretim sistemi, yükseköğretimin amacını üçlü bir sacayağına oturtmaktadır. Öğrencilerin birçok boyutta geliştirilmesi, devlete ve topluma katkılar sunulması ve bilimsel çalışmalar yürütülmesi genel amaçlar olarak sıralanabilir. Yükseköğretim kurumları genel olarak mesleki eğitime dayalı iki yıl süresi olan ön lisans programları, süresi en az dört yıl olan lisans programları ve lisans sonrası lisansüstü eğitim programları ile bu amacı gerçekleştirmeye hizmet etmektedir.

Yükseköğretimin en üst basamağı olan lisansüstü eğitim yüksek lisans ve doktora aşamalarını barındırmaktadır. Yükseköğretim Kurulunun (Council of Higher Education [CoHE] (2019) 2018-2019 veri setine göre Türkiye'de 394174 yüksek lisans, 96199 doktora öğrencisi kayıtlı durumdadır. Bu öğrencilerin bir kısmı eğitimlerini tamamlayarak bir lisansüstü derece edinirken öğrencilerin bir kısmı ise eğitimlerine devam etmemekte ve mezun olamamaktadır. Lisansüstü eğitimdeki bu gizli problem öğrenci kaybına neden olmakta ve mezuniyet oranları düşmektedir.

Öğrenci kaybı uluslararası alan yazında önemli bir yer tutmakta iken (Lovitts, 2001) Türkiye alan yazınında son yıllarda belirgin hale gelmeye başlamıştır. Önceki yıllardaki çalışmalar daha çok alt okul düzeylerindeki okul terkine (Bülbül, 2012; Özbaş, 2010; Şimşek, 2011), devamsızlık, altyapı problemi, burs sorunları, akademisyen yetersizliği ve aile sorumlulukları gibi lisansüstü eğitimdeki tek boyutlu problemlere (Çoruk, Çağatay ve Öztürk, 2016; Nayır, 2001; Sevinç, 2011) yoğunlaşmıştır. Bu çalışma, yüksek lisans ve doktora eğitimlerinde derece tamamlamama oranlarını kontrol etmeyi ve lisansüstü eğitimde derece tamamlamama oranlarına etki eden örgütsel faktörleri araştırmayı amaçlamaktadır.

Problem durumu ve alan yazındaki çalışmalar dikkate alındığında lisansüstü eğitimi tamamlamama durumunun incelenmesi araştırma boyutunda alan yazına önemli katkılar sunacaktır. Yükseköğretim yönetimi ile ilgili olarak öğrenci kaybı konusunun örgütsel faktörlerle ilişkilendirilmesi hem politika yapıcılara hem de yükseköğretim kurumları yöneticilerine stratejik planlarında ışık olabilecektir. Çalışma kuramsal açıdan değerlendirildiğinde Tinto (1975) ile başlayan örgüt odaklı süreçlerin günümüzde hangi formları içerdiğinin tartışılması üzerine katkılar sunacaktır.

Lovitts (2011) kişisel karakterlerden üniversitelerin yapısal niteliğine kadar birçok etkenden söz etmektedir. Üniversitenin devlet ya da vakıf üniversitesi olması (Chaney ve Farris, 1991), kurumun destek sağlaması ya da sağlamaması (DesJardins, Ahlburg ve McCall, 2002) ve bölüm (Gardner, 2009) örgütsel etkenlere örnek olarak gösterilebilir. Diğer taraftan, cinsiyet (Ferreira, 2003), akademik beceri (Kahn ve Nauta, 2001) ve psikolojik iyi-oluş (Napoli ve Wortman, 1998) kişisel etkenler olarak sıralanabilir.

Yöntem

Bu çalışma ilişkisel bir araştırmadır. İlişkisel çalışmalarda en ez iki değişken arasındaki ilişkiler incelenmekte olup çalışmada yordayıcı değişkenlerin bağımlı değişkenle olan ilişkisi araştırılacaktır. Yordayıcı değişkenler üniversite türü, öğretim üyesi başına düşen öğrenci sayısı ve öğretim üyesi başına düşen makale sayısı iken bağımlı değişken ise tamamlamama oranıdır. Bu çalışmada ikincil veri kullanılmıştır. Veri, Yükseköğretim Kurulundan (resmi yazı ile), Yükseköğretim Kurulunun açık erişimli web sitesinden ve Üniversitelerin Akademik Performanslarına Göre Sıralamasının (University Ranking by Academic Performance [URAP]) açık erişimli web sitesinden elde edilmiştir. Öğrenci kayıp oranları tablolama yöntemi ile betimsel olarak, örgütsel faktörler (üniversite türü, öğretim üyesi başına düşen öğrenci sayısı ve öğretim üyesi başına düşen makale sayısı) ve tamamlamama oranları arasındaki ilişki ise çoklu regresyon analizi ile çıkarımsal olarak incelenmiştir.

Bulgular

Araştırma sonuçlarına göre yüksek lisans öğrenci kayıp oranları (% 23.72, % 28.77, % 36.80, % 32.50 ve % 22.42*)* ve doktora öğrenci kayıp oranları (% 12.30, % 15.07, % 18.36, % 17.23 ve % 11.11) son üç döneme kadar artış eğiliminde iken son yıllarda düşüş eğilimine girmiştir. Her bir dönem için yüksek lisans öğrenci kayıp oranları doktora öğrenci kayıp oranlarının neredeyse iki katı düzeydedir. Çoklu regresyon analizi sonuçları öğretim üyesi başına düşen makale sayısının hem yüksek lisans hem doktora tamamlamama oranını yordadığını göstermiştir. Üniversite türü ise sadece yüksek lisans tamamlamama oranını yordamıştır. Öğretim üyesi başına düşen öğrenci sayısı ise anlamlı sonuçlar vermemiştir.

Tartışma ve Sonuç

Son beş yılın oranları dikkate alındığında yüksek lisans ve doktora öğrenci kayıplarının sırasıyla ortalama % 28 ve % 14 olduğu söylenebilir. Bu oranlar bilhassa Amerika Birleşik Devletleri yükseköğretimi ile kıyaslandığında düşük gibi görünse de yüksek lisansta dört öğrenciden birinin, doktorada ise yedi öğrenciden birinin kayıp edilmesi yükseköğretimin kalitesi için önemli bir sorundur. Son beş yılın öğrenci kayıp oranları incelendiğinde hem artış hem de azalış eğiliminin olduğu görülmektedir. Öğrenci kayıp oranları 2016-2017 yılında zirveyi görürken bu dönem itibariyle düşüşe geçmiştir. Öğrenci kayıp oranlarındaki yükselişin sebepleri daha çok ülke koşulları ile ilgilidir. Yüksek işsizlik oranları, sosyolojik etkiler ve askerlik görevini erteleme hakkı yüksek lisanstaki yüksek öğrenci kaybıyla ilişkili olabilir. Ayrıca uluslararası alan yazının da dikkat çektiği ilk yıl deneyimleri ile örgütsel bağlılık durumları da öğrenci kayıp oranlarını yükseltiyor olabilir. 2016-2017 yılı itibariyle düşüşün başlaması ise CoHE'nin 2016'da lisansüstü eğitimden atılmayı geri getirmesi ile açıklanabilir. Öğrenci kaybının yüksek lisansta doktoraya göre daha yüksek olması ise öğrencilerin lisans mezuniyet sonraki psikolojik halleri, doktora prestiji ve yüksek lisans başvuru koşullarındaki esneklik ile ilişkili olabilir.

Çalışmanın çıkarımsal istatistik ile ilgili en önemli sonucu öğretim üyesi başına düşen makale sayısının hem yüksek lisanstaki hem de doktoradaki tamamlamama oranlarında belirleyici olmasıdır. Bu sonuç, üniversitelerdeki akademik personelin performansı ile yakından ilgili olup alan yazınla paralel konumdadır. Yorke ve Thomas (2003) öğretim etkililiği, akademik destek ve kurumsal görünüşün öğrenci kalıcılığında rolü olduğunu bulmuştur. Benzer şekilde Shelton'un (2003) çalışması da fakülte desteğinin öğrenci sebatını artırdığını göstermiştir. Diğer önemli bir sonuç ise yüksek lisans tamamlamama oranlarının devlet üniversitelerinde daha yüksek olduğudur. Uluslararası alan yazınla uyumlu görünen bu durumun nedeni Türk hükûmetinin 2012 yılında üniversite öğrenim harçlarını kaldırmış olması olabilir. Vakıf üniversiteleri ise yüksek kayıt ücretleri talep ettiğinden öğrencilerin paralarını yakmayıp dönem uzatmamaları için eğitime daha sıkı tutulduğu söylenebilir.

Araştırmacılar ve uygulayıcılar için bu çalışmadan çıkartılabilecek belirli öneriler vardır. Bu çalışma ikincil veri kullandığı için sonuçlar ikincil veri ile sınırlıdır. Dolayısıyla araştırmacıların yeni çalışmaları birincil veri ile yürütmeleri tavsiye edilmektedir. Ayrıca, bu çalışmanın yordayıcıları bağımlı değişkende az veya orta düzeyde bir değişimi açıkladığı için benzer çalışmalar farklı örgütsel değişkenler ve kişisel değişkenlerle yapılabilir. Örneğin; bağlılık, iklim ve destek gibi örgütsel değişkenler ile öz saygı, aile ve not ortalaması gibi kişisel değişkenler kullanılabilir. Uygulayıcılar ise bu çalışmanın sonuçlarını öğrenci kaybı ve tamamlamama oranlarını minimize etmek için kullanabilir. Lisansüstü eğitim problemleri ile mücadele etmek ve lisansüstü eğitimin kalitesinin artırılması için sürdürülebilir stratejiler ortaya koyulabilir. Hiç kuşkusuz ki bu stratejilerin başında akademisyenlerin performansını artırmak gelmektedir. Bu bağlamda akademisyen yetiştirme ve akademik yükseltme süreçlerinde reformlar yapılabilir. Ayrıca, akademisyenlerin daha fazla yayın üretmesi doğrultusunda teşvik edilmesi gerekmektedir. Diğer taraftan öğrencilerin seçimi ile ilgili düzenlemeler yapmak da hem yüksek lisans hem de doktora için öğrenci kaybını azaltabilir. Devlet ve vakıf üniversitelerinin dinamikleri incelenerek farklılıklar ve benzerlikler iyi tespit edilmeli ve bu karakterler yükseköğretimin kalitesinin artırılması konusunda örnek alınabilmelidir. Son olarak, yükseköğretim kurumları ile hükûmet kuruluşları lisansüstü eğitimin sağlıklı yürümesi için eş güdüm içinde çalışmalıdır.

Introduction

The Turkish higher education system bases the purpose of higher education on three pillars. As the Council of Higher Education in Turkey (CoHE)) stated, the aim of higher education is to improve students' capability in many dimensions, to contribute to the state, and to conduct scientific studies. Definitely, the primary purpose focuses on training and improving students. The Turkish higher education system mainly consists of two-year vocational higher education (associate degree), 4-year vocational tertiary education, 5-year or 6-year medical education, and graduate education.

Master of Science (MS), Master of Arts (MA), and Doctor of Philosophy (PhD) are parts of graduate education in Turkey. The main purpose of graduate programs is to promote research activities which in the end allow individuals to improve themselves academically, socially, and professionally. Graduate education provides the opportunities like becoming a faculty member, following a career path, and earning more income. Kamer and Polat (2012) found that personal growth, seniority in occupation, and desire to become an academic were the primary reasons for the graduate education. Furthermore, the study by Erkılıç (2007) showed that the socio-economic reasons were more dominant on the desire for graduate education than the psycho-social reasons. There were 394174 MS/MA students and 96199 PhD students enrolled in the Turkish higher education system according to the 2018-2019 dataset of the CoHE. However, some of the students are the completers and hold a degree after their graduate education whereas some of them are the non-completers because they do not persist on completing their graduate education. They make a decision to leave and this process results in attrition, making the number of the students holding a degree decrease. As a result, the degree non-completion or student attrition problem has become more visible in Turkey.

Although the degree non-completion has been investigated frequently in the international literature (Lovitts, 2001), the studies in Turkey focus more on the limited contexts such as the dropout rates in grade levels (Bülbül, 2012; Özbaş, 2010; Şimşek, 2011) and the unidimensional problems such as attendance, infrastructure, scholarship, family responsibilities, and academic problems (Çoruk, Çağatay, & Öztürk, 2016; Karakütük & Özdemir, 2011; Nayır, 2001; Sevinç, 2011; Ünver, Bümen, & Başbay, 2010). On the other hand, there were few studies focusing on the degree completion in a closer way. The President of Gazi University gave an interview to Hürriyet Newspaper in 2015. He declared that Institution of Natural and Applied Sciences had 2878 active students and 3405 passive students according to 2015 data. The attrition rate corresponds to almost 55 % (Hürriyet, 2015). This attrition rate has given a warning to Gazi University, a popular university located in the capital city. Furthermore, in their study, Ertem and Gökalp (2016) conducted a document analysis by examining the attrition rates in graduate education. They found that three public universities in Ankara had the attrition rates of 42 %, 26 %, and 1 %; although these universities were among the top 10 universities of Turkey according to 2015 dataset of URAP (University Ranking by Academic Performance). Moreover, the results showed that the attrition rate was higher in MS and male students. Another dramatic conclusion was that the attrition rate for two universities was in an upward trend in last five years. This variation and upward trend in student attrition rates may be the warning signs to take a closer look at the effect of organizational factors on degree completion.

Student attrition was theorized in the second half of the 1900s. Spady (1970), Tinto (1975), and Bean (1971) developed a causal model for student attrition by referring to the suicide propositions of Durkheim (1961). According to the Suicide Theory of Durkheim (1961), suicide occurs when the individual cannot integrate with the fabric of society. By making an analogy with the suicide theory, it was asserted that students leave school when they cannot integrate with the social and academic system of college (Tinto, 1975). In Tinto's Student Integration Model, the interaction between the students and the social-academic systems of college influences the students' commitment and so they either stay in the system or make the decisions of voluntary dropout. On the other hand, Spady (1970) related the student attrition to the dropouts from higher education and concentrated on the interaction of university dynamics and resources with the dispositions, interests, attitudes, and skills of the students. Here, the university dynamics and resources are related to the expectations from the higher education components such as courses, faculty members, and peers. Bean (1980) defined the student attrition as a kind of pause in membership of student in a higher education institution. In addition, Bean (1983) linked the student attrition to the turnover in work organizations and explained the student attrition in a sequential process: some factors decrease the life satisfaction of the individual, this decrease increases the probability of the individual's intentions to leave the education, and the process results in dropout behavior.

There is a huge gap between the completers and non-completers in graduate education. The literature on student attrition shows that commitment and intention to leave are two of the most significant determinants of the student attrition in higher education (Bean, 1982; Davidson, Beck, & Milligan, 2009; Litalien & Guay, 2015; Pascarella & Terenzini, 1980; Tinto, 1975). Organizational commitment can be defined "as the extent to which employees are dedicated to their employing organizations and are willing to work on their behalf, and the likelihood that they will maintain membership" (Jex & Britt, 2008, p. 153). Mallette and Cabrera (1991)

examined the determinants of the decisions to withdrawal from institutions of higher education and found that the final institutional commitment differentiated the persistent students from the drop-outs while both final institutional commitment and goal commitment were found significant in explaining the differentiation between the persistent students and the transfers to other higher education institutions. In another study, Bennett (2003) investigated the factors affecting the undergraduate student dropout rates in a business department and found that the financial hardship had a direct effect on the dropout decisions and a moderating effect on the relationship between dropout and commitment. The study also showed that commitment was the predictor of staying in institution or quitting education. Davidson et al. (2009) investigated the factors predicting the student attrition and found that the institutional commitment was the best predictor.

The studies focusing on the student attrition relate the "intention to leave" to the student attrition. Cooke, Sims, and Peyrefitte (1999) conducted a research to examine the relationships among commitment, intention to leave, and student attrition in graduate education. It was found that the affective commitment (the term including university and goal commitment) and the intent to remain were predictors of attrition. Moreover, Cabrera, Nora, and Castaneda (1993) investigated the college persistence by testing a structural equation model about retention and found that the persistence intention had the strongest direct effect on the actual persistence. The study also revealed that the institutional commitment was the strongest predictor of the intention to persist. Furthermore, Bean (1982) developed a causal model for analyzing the student attrition and its predictors. The model showed that the intent to leave was the strongest predictor of dropout. Deriving from the cornerstone studies (Bentler & Speckart, 1981; Fishbein & Ajzen, 1974) which assumed a one-way causal sequence of attitude, intention, and behavior; all of these studies have proved empirically that there is a close link between the dropout behavior and the intention to leave.

Student attrition has certain causes which can be divided to two groups. Lovitts (2001) categorized them as the personal factors and the organizational factors. The first group includes the personal factors like demographic variables, individual characteristics, and psychosocial features. To name a few, gender (Ferreira, 2003), academic ability (Kahn & Nauta, 2001), and psychological well-being (Napoli & Wortman, 1998) are the personal factors linked to student attrition. On the other hand, there are some organizational factors causing student attrition. Focusing on the type of organization, Chaney and Farris (1991) calculated and compared the attrition rates for public and private universities. They found that the attrition rate of public universities was higher than that of the private ones. Also, Elgar (2003) found that the doctoral attrition rates were low for the natural & applied and life sciences whereas they were high for the arts & humanities and social sciences. It is possible to give more examples for the organizational causes. For instance, admission process (Ishitani, 2006), organizational support (DesJardins, Ahlburg, & McCall, 2002), department (Araque, Roldan, & Salguaero, 2009; Gardner, 2009; Golde, 2000) and attitudes of faculty (Lundquist, Spalding, & Landrum, 2002) are some other organizational factors. In addition to the causes, there are some negative consequences of student attrition. Xu (2014) emphasized the economic, social, and emotional costs of student attrition. Lovitts (2001) put emphasis on both personal and labor market consequences of PhD attrition. Personal consequences are related to the emotional and psychological reactions of the students. The students who leave PhD may face some self-esteem problems. The labor market consequences are related to the economic conditions including job acquisition, occupational and salary attainment, and career advancement.

Student attrition has been investigated frequently in the international literature. The studies in USA context (Crede & Borrego, 2014; Demetriou & Schmitz-Sciborski, 2011; Geisinger & Raman, 2013; Lovitts, 2001) focused on historical development, attrition rates, causes and consequences of attrition, ways to improve student retention, and demographics considerations (especially the race). In a more current report (American Psychological Association [APA], 2016), it was found that social science had an attrition rate of 18 % in master's degree in 2013, while the neuropsychology/biology subfield had an attrition rate of more than 12 % in doctorate. The studies in European context (Di Pietro & Cutillo, 2008; Smith & Naylor, 2001; Yorke & Longden, 2008) showed that the personal factors were more dominant on student attrition than the institutional factors. The Australian context (Adams, Banks, Davis, & Dickson, 2010; Grebennikov & Shah, 2012; Radloff, Coates, James, & Krause, 2011) were mostly related to the first-year experiences and designed to elaborate the reasons for attrition and to recommend retention strategies. The studies in Africa and Middle East (Aljohani, 2016; Herman, 2012) drew attention to the personal factors and the contextual factors like health, crime, and quality policies. On the other hand, the student attrition studies in Turkey are limited to some problems like the shortage in the number of academicians (Karakütük & Özdemir, 2011), the deficiency in number of PhD graduates (Çetinsaya, 2015), and the overgrowth of higher education population (Çelik & Gür, 2014). Also, these problems are the examples of some organizational factors affecting the Turkish higher education system negatively. In addition to these common problems, the graduate student-thesis advisor relations have an impact on student retention. Celik (2013) listed the advisors' contribution to students as personal, intellectual, academic, and professional contributions. Similarly, the study by Ünver (2005) revealed that the expectations of the students from their advisors were as follows: subject choice, research methods, and human relations. Tonbul

(2014) also noted the significance of advisory in terms of the quality of graduate education. Another institutional aspect may be the role of graduate schools on the quality of graduate education. Tonbul (2017) investigated the role of Graduate School of Social Sciences on the quality in graduate education and found that the students' expectations were related to the diversity in courses, protection of student rights, and career management; while the faculty members' expectations were related to the selecting the qualified candidates for the programs, supporting the students financially, and reorganizing the process of selecting an advisor. To sum up, it can be asserted that these types of organizational factors may be the determinants of student attrition.

Student attrition has been examined with different perspectives and terminologies. To name a few, college dropout (Tinto, 1975), student attrition (Bean, 1980), intentions to leave (Bean, 1982), college withdrawal (Pascarella & Chapman, 1983), degree non-completion (Johnes & Taylor, 1989), departure (Lovitts, 2001), and absenteeism (Moore, Armstrong, & Pearson, 2008) are the commonly used terms related to student attrition or degree non-completion. However, these terms are not synonymous; rather, they are closely related to each other. For example, the student attrition is based on the behavior output, whereas the intention to leave is not an actual behavior. Furthermore, the college dropout is related to the academic dismissal; but, the departure is mostly related to an individual decision to give up education. On the other hand, the student attrition rate is calculated in order to show that the student attrition is a serious problem. Moreover, the trend in student attrition rate may give a clue about the responsible parties for student attrition. Lovitts (2001) claimed that if the student attrition rate is in an upward trend, then the organization should be responsible for the student attrition problem, rather than the students. Apart from the student attrition rate, the studies examined the perceptions of university stakeholders about the causes of student attrition and asserted that the liability of student attrition may be attributed to either organizations or students (Gardner, 2009; Lovitts, 1996). In conclusion, there are different perspectives and approaches on student attrition.

The current study examined the degree non-completion from the lenses of Bio Ecological Theory of Bronfenbrenner (1977, 1986) and Attribution Theory (Weiner, 1972). The bio ecological theory emphasizes the interactions between person and environment. These interactions have a role in increasing the academic achievement, decreasing the psychological problems, and improving the social relations of individuals. The personal factors coming from the biological side of humans and the organizational factors coming from the ecological side of environment may have a role on degree completion. With respect to student attrition, the interaction between graduate student and organization may have an impact on the student persistence or the degree non-completion. This theory has five layers: microsystem, mesosystem, exosystem, macrosystem, and chronosystem. Exosystem and chronosystem are coherent with the aim of the current study. The third layer is the exosystem which focuses on the societal conditions such as parental conditions, media, organizational issues, and policies. When this layer is considered within the context of higher education, it can be asserted that the degree non-completion in higher education is affected by the higher education policies or organizational factors. The fifth and the last layer is the chronosystem which is related to the changes over time. The increases or decreases in the student attrition rates year by year may be both an example for this layer and an indicator for the sustainable higher education policies. On the other hand, the attribution theory focuses on the perceptions of individuals or institutions about how they bring causal explanations for their behaviors and actions. For the higher education process, the degree non-completion may be examined in terms of the differentiation between the individual and institutional causes. In other words, some people may attribute the non-completion to the individual factors like the lack of skill, whereas others to the institutional factors like the lack of qualified academic staff. In conclusion, the exosystem and chronosystem layers of the bio ecological theory and the institutional perspective of the attribution theory match up with the purpose of the current study.

The current study has a significance in terms of research, practice, and theory. In terms of research, the current study was the first attempt to investigate the graduate completion in a large scale in Turkey. Although the school drop-out was examined in the primary, middle, secondary, and post-secondary school levels; there were no studies on the graduate education. Therefore, this study is an important step to fill the literature gap in the graduate student attrition in the Turkish context. On the other hand, the current study can be evaluated as a springboard to investigate the degree-completion in graduate schools and programs.

In terms of practice, the results of the current study inform the educators and policy makers about the process and structure of graduate education. Therefore, they may develop strategies to reduce the student attrition and degree non-completion. If the attrition or non-completion decreases, then the quality may be increased in PhD education. Recently, PhD education has gained more importance. For example, the CoHE has put into effect the project *100/2000 PhD Scholarship*, a scholarship program for the PhD students, in order to increase the number of the students holding a PhD degree in certain fields. Furthermore, the CoHE has announced that the graduate students will be supported by the scholarship if they participate in the scientific research projects of universities (CoHE, 2017). Additionally, there is a plan to classify the universities as research university, teaching university, and regional development-oriented university. Saraç (2016), the head of CoHE, stated that the universities must

become different in terms of their mission and they must be specialized in their fields such as research, teaching, and regional development. A year later, in the opening ceremony of higher education, the President of Republic of Turkey declared the research universities as follows: Ankara University, Boğaziçi University, Erciyes University, Gazi University, Gebze Technical University, Hacettepe University, Istanbul University, Istanbul Technical University, Izmir Institute of Technology, and Middle East Technical University. In this respect, because the research universities focus on graduate education, the student attrition may be evaluated as an indicator and feedback mechanism for the research universities.

Finally, in terms of theory, the current study makes a contribution to the theories related to student attrition by underlining the role of organizational factors on degree completion. As Tinto (1975) emphasized the importance of institutional commitments, the current study showed that the organizational factors might be the determinants of degree non-completion. Moreover, Bio Ecological Theory asserts that development of an individual is affected by some factors which are stratified in layers like microsystem, mesosystem, exosystem, macrosystem, and chronosystem. The organizational factors and the changes over time in higher education are related to the exosystem and chronosystem, respectively.

The degree non-completion in the context of Turkey has been mostly investigated in a descriptive way and from personal perspectives. Therefore, there is a need for studies approaching the degree non-completion from an organizational perspective and in a multidimensional way. In this respect, the current study aims to check the non-completion rates in graduate education and examine the role of organizational factors on the graduate non-completion. More specifically, this study seeks answers for the following research questions.

- What are the student attrition rates for graduate education?
- How well do the number of students per faculty member, university type (public or private), and number of articles per faculty member predict the degree non-completion?

Method

Design of the Study

This research was designed as a correlational study. According to Gall, Gall, and Borg (2003), the purpose of a correlational study is to explore the relationships among variables. The predictor variables are the number of students per faculty member, university type (public or private), and number of articles per faculty member. The reason why these variables were selected is related to the dynamics of higher education. The number of students per faculty member and the number of articles per faculty member are evaluated as the quality indicators for higher education, while the university type is generally used a differentiation variable in the literature. The criterion variable of the current study is the non-completion rate in graduate education. The data related to the predictor variables were taken from archival data, while the data related to the criterion variable were calculated by using the archival data.

Data Collection Procedure

In the current study, secondary data were used. By considering the 2018-2019 ranking of the universities, 157 higher education institutions, which were ranked by URAP, were included in the study. These universities were classified as private and public. 109 of them were public universities, while the remaining 48 were private universities.

There were three main data sources in the current study. The first data source was the database of CoHE which was not open to public access. This dataset presents the statistics related to the institutions, units, students, and academicians. It is updated for each academic year. The number of active and passive students in graduate education was requested through a formal permission process. The CoHE sent the archival data of all universities for three academic terms. The active student refers to the registered students, whereas the passive student refers to those who do not renew their registration. The student attrition rate was calculated by dividing the number of the passive students by the total number of active and passive students. By using these figures, the first research question was answered. However, the students may not go on their education due to appointment or health problems even though they are enrolled in semester, and this should be considered as a limitation.

The second data source was the database of the CoHE which was open to public access. The data for the number of new entrants and graduates by semester and program level in graduate education were taken from the website of CoHE. Table 1 summarizes the number of students.

Table 1
Number of Students by Program and Semester[*]

Condition	Program	2016-2017	2017-2018	2018-2019
Number of new entrants	MS/MA	115423	131228	119956
	PhD	12458	16773	20262
Number of graduates	MS/MA	48683	67067	NA
	PhD	6045	7332	NA
Total number of students	MS/MA	480215	454673	394174
	PhD	91267	95100	96199

* The Council of Higher Education (2019)
NA: Non-available

The non-completion rate was calculated by using the formula reported by Johnes and Taylor (1989). The formula was adapted by considering the maximum education duration in Turkey, and the non-completion rates for MS/MA and the non-completion rates for PhD were calculated using the formulas below:

$$\frac{number\ of\ graduate\ entrants\ in\ year\ t - number\ of\ students\ who\ graduated\ by\ year\ t+3}{number\ of\ graduate\ entrants\ in\ year\ t} = \text{non-completion rate for MS/MA}$$

$$\frac{number\ of\ graduate\ entrants\ in\ year\ t - number\ of\ students\ who\ grauated\ by\ year\ t+6}{number\ of\ graduate\ entrants\ in\ year\ t} = \text{non-completion rate for PhD}$$

In the calculation of student attrition rate, the number of passive students was used. On the other hand, the non-completion rate was based on the number of non-completer students. The passive student was defined as the student who did not reregister for the semester, while the non-completer student was defined as the student who could not complete the graduate education before the maximum duration expired and could not get a degree. The maximum duration is three years for MS/MA, while it is six years for PhD In this regard, 2015 was chosen as the base year for the entrants to master's education; so, the graduation year was 2018. On the other hand, 2012 was chosen as the base year for the entrants to doctoral education; so, the graduation year was 2018. All the calculations for the degree non-completion were made by considering these entrance and graduation years.

The third data source was URAP, which assesses the academic performance of universities in Turkey and shares data based on certain criteria. URAP (2018) dataset was taken from its publicly accessible website. The number of students per faculty member and the number of articles per faculty member in 2018 were taken from the website of URAP. Moreover, the university type was formed by using the rankings of URAP. In order to answer the second research question, which examined the prediction of non-completion by the number of students per faculty member, university type (public or private), and the number of articles per faculty member, the researchers of the current utilized website of URAP.

Data Analysis

Secondary data were entered in SPSS 24 and Simultaneous Multiple Regression Analysis was performed with its assumptions. The reasons why this analysis method were chosen are as follows: i) the researchers believed that all predictors had an equal contribution to the outcome variable ii) the number of variables was manageable. As for the types of the variables, there should be a continuous variable or categorical variable with two levels (Field, 2009). The criterion variable was the graduate non-completion rate, which was a continuous variable. In addition, the number of students per faculty member and the number of articles per faculty member were the continuous predictor variables, while the university type was the categorical predictor variable with two levels (public or private). For the multiple regression analysis; the assumptions of normality of residuals, homoscedasticity, independence of errors, absence of multicollinearity, and influential observations were considered (Field, 2009).

The common way to provide reliability and validity of the study is the cross-check of the researchers by using triangulation. The figures were calculated using the same formulas by different researchers. These figures were compared in order to confirm the similarities and differences. In case a difference was detected, the calculations were repeated until similar results were found. On the other hand, the national and international reports and databases related to higher education were analyzed in order to determine which quality indicators were used. Moreover, the regulations and laws related to the graduate education in Turkey were investigated through document analysis to check the variables related to quality. The same reports, studies, and documents were analyzed by more than one researcher (different researchers). The quality indicators in university ranking were

also checked by considering other university ranking systems like Times Higher Education (THE) and Quacquarelli Symonds (QS).

Findings

The first research question was responded by calculating the student attrition rates. According to data from the CoHE, the student attrition rates for master's education were 23.72 %, 28.77 %, 36.80 %, 32.50 %, and 22.42 % for the 2014-2015, 2015-2016, 2016-2017, 2017-2018, and 2018-2019 academic years, respectively. For the doctoral education, the attrition rates were 12.30 %, 15.07 %, 18.36 %, 17.23 %, and 11.11 % for the 2014-2015, 2015-2016, 2016-2017, 2017-2018, and 2018-2019 academic years, respectively. The attrition rates were in an increasing trend in both MS/MA and PhD up until 2016-2017, whereas there was a decreasing trend thereafter. Moreover, the attrition rate in MS/MA was higher than that in PhD. Figure 1 depicts the attrition rates.

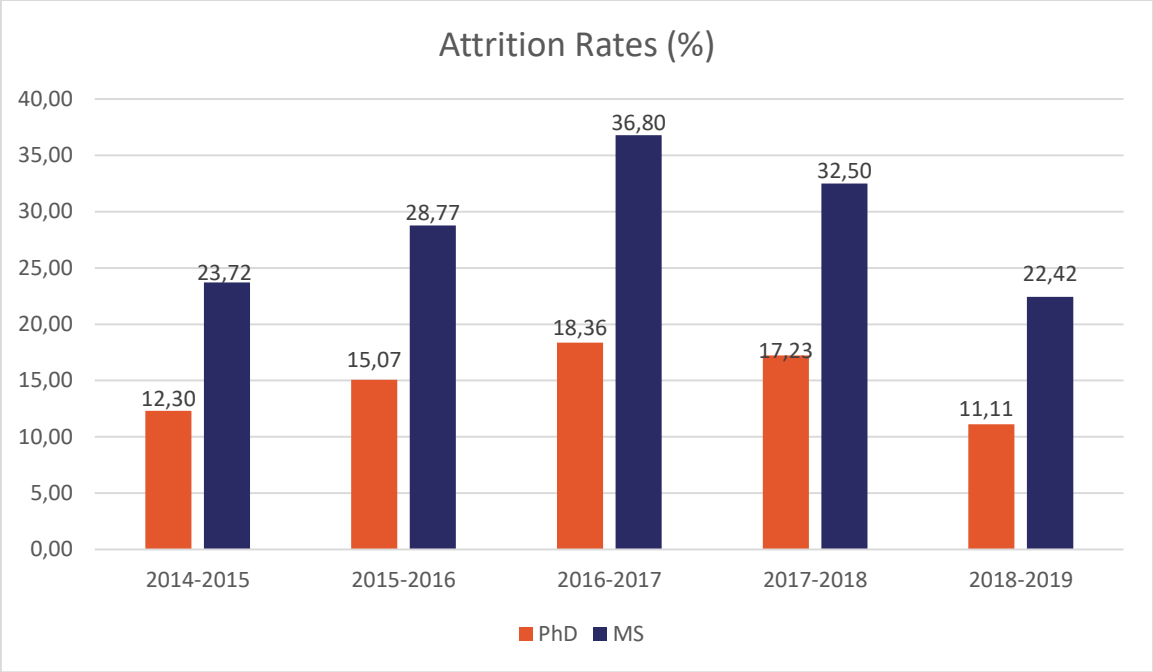

Figure 1. Attrition Rates

By considering the data on MS, the numbers of completer and non-completer students were calculated. However, the data of some universities were excluded since the difference between the number of entrants and graduates was smaller than zero due to the student transfer which was independent from the first entrance. Furthermore, the higher education institutions established after 2015 were also excluded since no data were available in that period. Ultimately, there were 132 cases and three variables. Their ratio was 44.0, which met the criterion of Stevens (2009) who stated there should be 15 observations per predictor to continue the analysis. The normality of residuals and homoscedasticity were checked by looking at histograms and scatterplots, respectively. These assumptions were almost met. The independence of errors was controlled by Durbin-Watson values. According to Durbin and Watson (1951), this value must be between 1.00 and 3.00 for the errors to be unrelated. This study had a Durbin-Watson value of 2.12; so, the independency of errors was ensured. The absence of multicollinearity was checked through Tolerance values and Variance Influence Factor (VIF). Myers (1990; as cited in Field, 2009) suggested that VIF value must be lower than 10, while Tolerance values must be larger than .10. The values calculated by SPSS 24.0 showed that while the Tolerance values ranged between .80 and .90., the VIF values ranged between 1.12 and 1.24. So, these Tolerance and VIF values confirmed the absence of multicollinearity. The influential observations were checked through Cook's distance. Cook and Weisber (1982; as cited in Field, 2009) suggested that Cook's distance (measure of the influence of case) must be smaller than 1. The Cook's distance in the current study ranged between 0 and .13; so, this criterion was also met. To sum up, the required assumptions were all met.

Following the assumption check, the simultaneous multiple regression analysis was performed. The model was significant [F (3, 128) = 7.86, p = .00; R^2 = .16] as it was summarized in Table 2. This model explained 16.3 % of the variance in the degree non-completion. It was a large effect size according to Cohen's (1992) standards. The most significant predictor was the university type (β = -.36, p < .05). Also, the number of articles per faculty member (β = -.30, p < .05) significantly predicted the degree non-completion. In order to check the unique

contribution of the predictors to the outcome variable, the squared semi-partial correlation coefficient was calculated. The university type explained 10 % of the variance in the non-completion, while the number of articles per faculty member explained 8 % of the variance in the non-completion. In conclusion, the simultaneous multiple regression analysis showed that the university type and the number of articles per faculty member predicted the graduate non-completion. The public universities and the universities having a lower number of articles per faculty member had a higher non-completion rates than the private universities and the universities having a higher number of articles per faculty member, respectively. The results were summarized in Table 2.

Table 2
Results of Multiple Regression Analysis for M.S/MA Non-Completion

Model	*B*	*β*	*t*	*p*	sr^2	R^2	*F*
Model (constant)	81.11		7.06	.00		.163	7.86
University type	-19.13	-.36	-3.83	.00	.10		
Students per faculty member	.00	.14	1.61	.10	.00		
Articles per faculty member	-.002	-.30	-3.31	.00	.08		

By considering the data on PhD, the numbers of completer and non-completer students were calculated. However, the data of some universities were excluded since the difference between the number of entrants and graduates was smaller than zero due to the student transfer which was independent from the first entrance. Furthermore, the higher education institutions established after 2012 were not included because there were no data in that period. Ultimately, there were 80 cases and three variables. Their ratio was 26.66 which was larger than 15 and met the criterion of Stevens (2009). The normality of residuals and homoscedasticity were checked by looking at histograms and scatterplots. These assumptions were almost met. The independence of errors was controlled by Durbin-Watson values. This study had a Durbin-Watson value of 1.88; so, the independency of errors was assumed since it was between 1.00 and 3.00 (Durbin & Watson, 1951). The absence of multicollinearity was checked through Tolerance values and Variance Influence Factor (VIF). The values calculated by SPSS 24.0 showed that while the Tolerance values ranged between .83 and .88, the VIF values ranged between 1.13 and 1.20. Therefore, these Tolerance and VIF values confirmed the absence of multicollinearity. The influential observations were checked through Cook's distance that had values between .00 and .21. Since the values were lower than 1.00, this criterion was also met. To sum up, the required assumptions were all met.

Following the assumption check, the simultaneous multiple regression analysis was performed. The model was not significant [F (3, 76) = 2.01, p = .12]. However, only the number of articles per faculty member (β = -.27, p < .05) explained a significant variance in the graduate non-completion. In order to check unique contribution of predictor, the squared semi-partial correlation coefficient was calculated and found as .06. Hence, the variable explained 6 % of the variance in the non-completion. According to Cohen's standards, this was a small effect size. In conclusion, the simultaneous multiple regression analysis showed that the number of articles per faculty member predicted the non-completion rate. In other words, the higher education institutions having a lower number of articles per faculty member had higher non-completion rates than those having a higher number of articles per faculty member. The results were summarized in Table 3.

Table 3
Results of Multiple Regression Analysis for PhD Non-Completion

Model	*B*	*β*	*t*	*p*	sr^2	R^2	*F*
Model (constant)	65.39		4.79	.00		.075	2.01
University type	-2.43	-.06	-.46	.65	.00		
Students per faculty member	-.00	-.07	-.56	.58	.00		
Articles per faculty member	-.00	-.27	-2.21	.03	.06		

Conclusion and Discussion

The results of the study showed that the attrition rate in master's education was higher than that in PhD education. The student attrition rates were about 28 % and 14 % for MS and PhD, respectively. This means that the student attrition in the master's education was twice as much as the student attrition in the doctoral education. These findings are compatible with the studies in the literature. Ertem and Gökalp (2016) investigated the

student attrition rates in the universities in Ankara and found that one of the universities had the attrition rates of 29.41 % and 17.32 % in MS and PhD, respectively. Furthermore, in his doctoral dissertation, Ertem (2018) examined the role of personal and organizational factors on the student attrition from graduate education and found that the research universities had the attrition rates of 30.28 % and 14.55 % on average in MS and PhD, respectively. The literature presents a similar picture with the findings of the current study.

An attrition rate of 15% in doctoral education may not be seen as problematic when it is compared to the U.S. where the universities have more serious attrition rates. Bair and Haworth (2004) carried out a meta-synthesis of doctoral dropouts and found that the attrition rates ranged between 31.4 % and 82 %. These high values underline the importance of the student attrition in doctoral education in the US. Therefore, this finding special to the Turkish context diverges from the US context. The difference between MS and PhD student attritions in Turkey may be explained by some contextual factors. The common contextual factor is related to the cultural structure. Turkish society is aware of social mobility within education; so, this makes people more persistent. The other factor is unemployment. The unemployment rate for the age group of 15-24 was 25.2 % (Turkish Statistical Association [TUİK], 2019). The students who cannot become a member of labor force may tend towards master of science. This situation reveals itself in two results. Firstly, the students do not persist on education and do not attend courses in spite of enrolment or registration. Secondly, the students get an MS degree and begin the PhD education with more motivation. However, the students in undergraduate level are not informed about MS education. Apart from the contextual factors, the admission processes in graduate education might have created this differentiation between MS and PhD In Turkey, the acceptance conditions for MS are more flexible and easier than those for PhD Moreover, the student quota for MS is higher than that for PhD These differences may increase the student attrition rate in MS On the other hand, some behaviors or attitudes like the organizational commitment and the academic and social integration may be the reasons for the low student attrition rate in PhD As the time passes, these positive attitudes toward education may increase. There are some studies indicating positive effect of commitment on school dropout (Bean, 1980; Bülbül, 2012). Furthermore, Lassibille and Gómez (2008) related the higher school dropout rates in the first years to the academic and social integration.

The current study revealed that there was an increasing trend in the attrition rate up until the 2016-2017 academic year. This result was in line with the result of the study by Ertem and Gökalp (2016) who found that two of the three universities in the study had an increasing student attrition rate. The increasing trend may be due to the macro-level policies in the higher education in Turkey. For example, the amnesty laws of the Turkish higher education system stipulate that the students who were dismissed from universities will be able to return. Therefore, the students may think that even if they leave the education, they will have a chance to come back in the future. Bülbül (2012) conducted a study and found that there was a relation between Amnesty Laws and school dropouts. Another macro-level policy, which is based on the heavy increase in the number of universities, may have an impact on the higher student attrition rates in recent years. According to dataset of CoHE (2019), Turkey had 70 universities in 2013, while the number of universities in Turkey has increased to 207 by 2019. Each city and large districts in Turkey have universities. Therefore, the opportunity for student mobility among universities might have increased the student attrition rates of universities in the last years. Moreover, the over-graduation from undergraduate education might cause the opening of new graduate programs. New programs without qualified advisors and academic staff may put barriers to the student retention. On the other side, there was a decreasing trend for both master's and doctoral education after the 2016-2017 academic year when the student attrition rate peaked. The reason for this decline may be explained with an implementation of CoHE. The Graduate Education and Teaching Regulation (2016) reinstated the dismissal from graduate education due to the non-completion of courses and thesis responsibilities within the anticipated time.

For the current study, the most important finding was that the number of articles per faculty member was found significant. This conclusion was related to the academic performance of faculty members, which means that the universities having more faculty members with qualified published articles may keep their students in both master's and doctoral education. This finding is relevant to other studies in the literature. Yorke and Thomas (2003) investigated the role of universities on the retention of students with lower socio-economic status. The authors found that the institutional factors like teaching effectiveness, academic support, and institutional habitus were related to the retention and persistence of the students. Similarly, the study by Gregerman, Lerner, von Hippel, Jonides, and Nagda (1998) showed that the student-faculty partnership in terms of research had an impact on the student retention. In another study, Shelton (2003) investigated the relationship between faculty support and student retention and pointed out that the students who perceived more faculty support were more likely to persist in education than those who perceived less faculty support.

The current study showed that the master's non-completion rates were higher in the public universities. Although it is impossible to compare the results of the current study with other studies in the Turkish literature due to the lack of studies investigating the student attrition, this finding is consistent with the other studies in the literature

(Ishitani, 2006; Mallette & Cabrera, 1991). The reason why the non-completion was found higher in the public universities may be related to the fees. Turkish government waived the tuition fees for the public universities in 2012 (Turkish Official Journal, 2012). Free education may demotivate students. On the other hand, the private universities continued to charge high amount of fees. These high fees may motivate the students to persist to get a degree in education or else the paid money will be wasted. In addition, Turkish society has a perception that getting a degree from private universities is easier because of money factor. Şenses (2007) criticized the private universities in that they provide a money-oriented education although they have some problems such as the lack of academicians and the infrastructure deficiency.

The number of students per faculty member was not found to have a significant effect on the student attrition rate although the studies conducted in Turkey (Bozan, 2012; Karakütük & Özdemir, 2011; Örer, 2011) emphasized that the lack of academician is an important problem in the higher education system of Turkey. In addition, the number of students per faculty member is in parallel to the number of students per advisor which is more coherent with the structure and process of graduate education. However, although these ratios were expected to be related to the student retention, the results were not significant. The reason why these organizational factors did not have a role on the student attrition rate may be explained with the personal reasons. The studies in Turkish literature underlined the importance of personal conditions in the school dropouts. To name a few, distance between school and home, having dependent children, financial problems, and family problems have an impact on the school dropouts (Bülbül, 2012; Çoruk et al., 2016; Karakütük, 1989). To sum up, the personal factors may have a stronger effect on the student attrition than the organizational factors in Turkish context.

The current study has some recommendations for both researchers and policy-makers. Since the analysis of the study is based on secondary data, the results are limited to these data. The researchers should conduct new studies by collecting first-hand data from non-persistent students. Furthermore, the significant predictors of the study explained small or moderate part of the variance in the criterion variable; so, the personal factors and the remaining organizational factors may explain a greater amount of variance in the student attrition. In other words, the fact that a small variance was explained in this study is a limitation; therefore, it is recommended that future research should focus on other relevant factors. For instance, researchers should consider other organizational factors such as organizational commitment and climate and the personal factors such as family and employment problems. On the other hand, the current study tried to show the big picture of student retention by working on general data. Therefore, future researchers may examine student retention by using the data of more specific units like graduate schools and programs.

Policy-makers should take precautions to prevent or minimize student attrition and degree non-completion. Moreover, they may develop sustainable strategies to deal with graduate problems and to increase the quality of graduate education. The core point lies in increasing the performance of academicians. Policy-makers should reorganize the training and assignment regulations for academicians in order to increase the effectiveness of graduate education. In addition, the administrators in higher education institutions should promote and encourage the academicians in order to increase their number of publications. Further, the student admission procedure should be rearranged in a way to decrease student attrition. On the other side, policy-makers should investigate the dynamics of public and private universities and should reveal whether the differences between them are realistic or illusional. Lastly, higher education institutions and other governmental organizations should work together in a coordinated way to prevent misuse of graduate education.

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