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Panel Data Analysis for TR2 and TRC Regions in Turkey**

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Türkiye’de TR2 ve TRC Bölgeleri İçin Panel Veri Analizi***

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## Contribution of Public Libraries to Economic Development: Panel Data Analysis for TR2 and TRC Regions in Turkey

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### Abstract

When considered as a form of power from the past to the present, it is seen that the phenomena of land and capital, respectively, have affected the decision-making mechanism in the world. It can be stated that this evolution of management has continued with knowledge. Today, knowledge is power, and this power rules the economic structure of the world. Management is not a phenomenon that can be considered outside of economic relations. In this case, knowledge and economic development actually move together at much higher rates than anticipated. Today, although these two phenomena are observed on very advanced technological wars, the basis of the issue is based on the most local information centers – public libraries. Studies on public libraries have focused on librarianship as a field article. In order to add a more macro character to the field, the relationship between public libraries and economic growth, which is a macroeconomic variable, was analyzed in this study.

The relationship between knowledge and economic growth and development was investigated in this study. While examining this relationship, selected level regional groups in Turkey were used. Two different polar regions of Turkey, which are geographically and culturally different, were selected, and public libraries were discussed at the point of representing knowledge. In this case, the role of public libraries on economic development was explained.

The annual data for the period between 2015-2020 were used in the study. The data on the number of users, registered members, loan materials, library numbers, and book numbers related to public libraries were used to represent the independent variable of the study. The data covered all provinces included in the TR2 (Çanakkale, Balıkesir, Tekirdağ, Edirne, Kırklareli) and TRC (Gaziantep, Kilis, Adıyaman, Şanlıurfa, Diyarbakır, Mardin, Batman, Şırnak, Siirt) level regions. Per capita income, export figures, and the number of illiterate and unemployed people belonging to the provinces included in the TR2 and TRC regions were used to represent the dependent variable of the study.

In the study, three different models were established using the Panel Data Analysis method. Two of these established models were established for the TR2 region and one for the TRC region. As a result of these established models for TR2, it was seen that the Registered Member and User Number variables in the TR2 Level Region had a positive effect on economic development. In the model established for the TRC region, it was observed that the Registered Member and Book Number variables had a positive effect on economic development. In the light of the findings obtained from the study, it is necessary to include more supportive local policies that will increase the direct and indirect effects of public libraries on individuals and the economy.

**Keywords:** Knowledge economy, economic growth, public libraries, panel data analysis, Turkey.

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## Halk Kütüphanelerinin Ekonomik Gelişmeye Katkısı: Türkiye’de TR2 ve TRC Bölgeleri İçin Panel Veri Analizi

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### Öz

Geçmişten günümüze güç olarak ele alındığında toprak ve sermaye olgularının, sırasıyla dünyada karar alma mekanizmasına etki ettiği görülmektedir. Bu yönetim evriminin bilgi ile devam ettiği söylenebilir. Günümüzde bilgi güçtür ve bu güç dünyanın ekonomik yapısını yönetmektedir. Yönetim ekonomik ilişkiler dışında düşünülebilecek bir olgu değildir. Bu durumda bilgi ve ekonomik gelişim, tahmin edilenden çok daha yüksek oranda bir arada hareket etmektedirler. Günümüzde bu iki olgu çok ileri düzeydeki teknolojik savaşlar üzerinde gözlenirse de konunun temeli en yerel bilgi merkezleri olan halk kütüphanelerine dayanmaktadır. Halk kütüphanelerini konu edinen çalışmalar daha çok kütüphanecilik alanında yoğunlaşmıştır. Alana daha makro bir karakter katabilmek adına bu çalışmada halk kütüphaneleri ile makroekonomik bir değişken olan ekonomik büyüme ilişkisi ele alınmıştır.

Bu çalışmada temel olarak bilginin ekonomik büyüme ve gelişme ile ilişkisi araştırılmıştır. Bu ilişki incelenirken Türkiye’de seçilmiş düzey bölge grupları kullanılmıştır. Türkiye’nin coğrafi ve kültürel iki farklı kutup düzey bölgesi seçilerek bilgiyi temsilen halk kütüphaneleri ele alınmıştır. Bu durumda halk kütüphanelerinin ekonomik gelişme üzerindeki rolü açıklanmıştır.

Çalışmada 2015-2020 dönemine ait yıllık veriler kullanılmıştır. Çalışmanın bağımsız değişkenini temsilen halk kütüphaneleri ile ilgili kullanıcı sayıları, kayıtlı üye, ödünç materyal, kütüphane sayıları ve kitap sayıları oluşturmaktadır. Veriler TR2 (Çanakkale, Balıkesir, Tekirdağ, Edirne, Kırklareli) ve TRC (Gaziantep, Kilis, Adıyaman, Şanlıurfa, Diyarbakır, Mardin, Batman, Şırnak, Siirt) düzey bölgelerinin içerdiği bütün illeri kapsamaktadır. Çalışmanın bağımlı değişkenini temsilen TR2 ve TRC bölgelerinin içerdiği illere ait kişi başı gelir, ihracat rakamları ve okuma yazma bilmeyen işsiz sayıları oluşturmaktadır.

Çalışmada Panel Veri Analizi yöntemi kullanılarak üç farklı model oluşturulmuştur. Bu modellerin iki tanesi TR2 bölgesi için; bir tanesi de TRC bölgesi için kurgulanmıştır. TR2 bölgesi için oluşturulan modellerin sonucunda; TR2 Düzey Bölgesinde kayıtlı üye ve kullanıcı sayısı değişkenlerinin ekonomik gelişme üzerinde pozitif bir etkiye sahip olduğu görülmüştür. TRC bölgesi için kurgulanan modelde ise kayıtlı üye ve kitap sayısı değişkenlerinin ekonomik gelişme üzerinde pozitif bir etkiye sahip olduğu gözlenmiştir. Çalışmadan elde edilen bulgular ışığında, halk kütüphanelerinin bireyler ve ekonomi üzerindeki doğrudan ve dolaylı etkilerini arttıracak destekleyici yerel politikalara daha fazla yer vermek gerektiği söylenebilir.

**Anahtar sözcükler:** Bilgi ekonomisi, ekonomik büyüme, halk kütüphaneleri, panel veri analizi, Türkiye.

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## Introduction

Public libraries are local information centers that contain different types of information and that users can access easily. As a consequence of its ability to provide information, this situation positively affects the cultural and economic development of both individuals and various social groups. In this way, individuals with higher knowledge can take a better equipped position against labor demand. Being employed will increase the wage, which is the income of the labor factor, by activating the labor factor mechanism, which is one of the production factors. This indicates positive results in production, that is, in economic growth. Public libraries are centers that should be supported by the national economy as well as the local one. The reason for this is that the knowledge spreads under the leadership of libraries and that the transformation of this knowledge into a knowledge economy is associated not only with the local but also with the national economy (Soliman and Wei, 2016, p. 620).

Before discussing the economic projection of knowledge, it is necessary to focus on the concepts of knowledge and information. It is a common belief that the concepts of knowledge and information are used interchangeably, especially in Turkey. In fact, it would not be correct to limit this situation to Turkey. The basis of the use of the concepts of knowledge and information interchangeably is the translation of both concepts as knowledge when translating from English in the literature (Ipe, 2003, p. 340). It was stated in the study by Blackler (1995) that the concepts of knowledge and information were very different to be used interchangeably. In order to explain these two concepts, it is necessary to focus on a third and complex data concept. The concept of information is reached by using data in a formula. The efficient use of information for a specific purpose will also reveal knowledge (Jensen, 2005, p. 54). In the study conducted by Çapar (2005), while explaining the relationship between these three concepts, it was emphasized that information and data formed the basis of knowledge and that information should pass through a rational filter for this. The knowledge obtained in a rational way is located in every facet of life. The fact that the knowledge is an important element that affects the way of decision-making in life reveals that it also affects decisions related to the economy.

The knowledge economy has taken its place in the general flow of both the economy and life for many years. Considered with the historical process, the most important turning point regarding the knowledge economy is the invention of the steam engine. The effect of the steam engine on economic developments also reveals the relationship between the knowledge economy and the economy. In this case, taking the OECD (Organisation for Economic Co-operation and Development) as a reference, it can be pointed out that knowledge is the key to economy-oriented management (Tunç, 2015, p. 1). From this point of view, it is possible to mention a transformation in a dynamic structure. It can be stated that as a result of the transformation into a knowledge economy, the way for the economies of countries to break down economic taboos has been

paved. While a traditional production process was followed before the transformation, as a result of the information economy and the fluidity of information reaching more masses, a more mass production process has started. It is seen that traditional and new economic fundamentals also differ. While the basic building blocks of the traditional economy are labor, capital, energy, and central protection, the building blocks of the knowledge economy are knowledge, knowledge production, communication, and sharing of knowledge (Karadeniz, 2019, p. 19). In this case, it can be pointed out that a transformation has occurred in the components of economic structures. Ownership structure and excessive belonging-oriented principles seen in the traditional capitalist production approach have left their place to accessibility in the knowledge economy. It not only replaces the old economic components of knowledge, but also pioneers the establishment of more developed economic networks (Brinley, 2006, p. 4-6).

It will be possible to explain the transformation in the structures of economic components with the knowledge that affects the production process and its source. This transformation, which has spread to employment and production processes, had a structural impact on the economy as well. In particular, knowledge about turning to high value-added technological products is one of the factors that increase the competitiveness of economies in the world markets. Local facilities where knowledge is produced or existing knowledge is disseminated are therefore important for countries.

Libraries have a direct or indirect impact on the national economy. Before explaining these two effects, it should be known that public libraries in Turkey are managed by the central government. In this context, within the framework of the understanding of public librarianship, individuals benefit from the services offered by libraries free of charge and do not, therefore, consume their savings in this direction (Levin, 2006, p. 6-7; Tunç, 2015, p. 6).

Among the direct effects of libraries on the economy, there are also effects such as providing free research services, free internet network opportunities, and free quality database services. The individual has the opportunity to access all these direct contributions free of charge. In addition, public libraries help the individual to move to an advanced level in the context of time. When another economic activity, equivalent to the time gained during information access, is maintained, it will mean that this situation also affects the income of the individual.

The indirect effects of libraries on the economy have been handled positively and evaluated as a contribution to the economy. The indirect contributions of libraries can be considered in the context of developing individual knowledge and experience. Public libraries are an important factor in terms of increasing the literacy rate of individuals, helping individuals to obtain the knowledge and skills individuals need free of charge, and increasing their chances of being employed thanks to these skills. Meeting the technical information needs of currently employed individuals regarding their own

jobs will support the principle of continuity in production. Today, entrepreneurial policies of developing economies encourage individuals to start a business. Any information that an individual can gain from libraries about starting a business will indirectly contribute to the economy (Çalış, 2019, p. 41; Tunç, 2015, p. 10).

Public libraries contribute to regional and national economic development. In fact, the uneconomical contributions of public libraries are also enormous. This issue, which is also important in international integrations, was also put on the agenda in the process of Turkey's harmonization with the EU (Yılmaz, 2006, p. 66). Another contribution outside of the economy is the contribution in the cultural context. Public libraries are information centers that individuals of all ages can benefit from without paying any fee. This limitlessness positively affects regional cultural development (Keseroğlu, 2003, p. 32; Polat, 2010, p. 528; Karadeniz, 2019, p. 45-46).

Public libraries are considered as regional information centers, which shows that the economic and socio-cultural contributions of public libraries will primarily be effective in local geographies. At this point, the contributions of public libraries should be addressed at the regional level, and external factors, if any, should be revealed. It is possible to measure regional economic indicators with various parameters. The most obvious parameter of this is undoubtedly per capita income. In addition to income, unemployment rate is one of the important criteria. Considering that public libraries have direct and indirect contributions to the regional economy, the educational status and literacy status of individuals are also important in the evaluation.

Another issue that needs to be mentioned is interregional librarianship and the economic contribution of libraries. Variables such as per capita income, migration, literacy rate, and employment in national economies vary in terms of geographical superiority. Main determinants such as industry, proximity to the sea, border regions, and geographical differences between east and west are very effective on regional economic developments, and research can be reduced to regional levels.

The economic and socio-cultural contributions of public libraries discussed above constitute the necessity of carrying out this study and thus drawing attention to public libraries. In the study, regional interactions were discussed, two different geographical and developmental regions in Turkey were selected, and some variables measuring the economy and development were associated with these regions through public library data. In previous studies, it was seen that a relationship was established to cover the whole country or to deal with only one province within the country. Detailed information about this was given in the next sections of the study. The aim of this study was to deal with a regional interaction. Although different geographies and regions were selected, the effects of public libraries on the economy were tested. As a result of the interaction between the variables, the indirect contribution of public libraries to the economy was emphasized in the study.

In the study, the answer to the question "Do public libraries have an impact on economic development?" was sought. The variables whose effects were investigated in the study were limited to the number of users, registered members, loan materials, library numbers, and book numbers. However, in order to understand whether the expected effects of public libraries were seen or not, the variables of national income, the number of illiterate and unemployed people, and export figures were considered at the regional level, and economic development was limited to these variables.

### Purpose and Hypotheses of the Research

In the study, it was argued that the variables representing public libraries were related to macroeconomic indicators. In line with previous research on the subject, it was argued in the study that supportive public libraries and economic development had a positive relationship.

The hypothesis of the study is that there is a positive relationship from public library sub-components to economic development and growth sub-components. The CIPS statistics created for the overall panel were determined as in Equation (1). The hypotheses used in the study are as shown below:

$$CIPS = \frac{1}{N} \sum_{i=1}^N CADF_i \quad (1)$$

$H_0: p_i^* = 0$  for all  $i$

If  $H_0: p_i^* < 0, i = 1, \dots, N_1$  and if  $p_i^* = 0, i = N_1 + 1, N_1 + 2, \dots, N$

The aim of the study was to evaluate public libraries in different level group regions of Turkey and to interpret whether they contributed to economic growth or development. In this direction, the validity of the above hypotheses was tested by considering different polar regions representing the west and east of Turkey.

### Methods

In the study, different models were established by using the data of the variables over the years with the E-views econometric modeling program. First of all, the Time Series Analysis was desired to be applied, but the Panel Data Analysis was used in the study because the data of different regions would be used and the data explained in Turkey did not reach 30 series. Since the aim of the study was to make a regional evaluation covering more than one province, the most reliable method was chosen as the Panel Data Analysis.

The Panel Data Analysis can be performed by using data from different years and from at least 5 different countries (Greene, 1993: 464). In this study, the data belonging

to different years and different provinces and representing the TR and TRC Level Region groups were included in the analysis. The provinces, whose data were used in the study, were not chosen randomly, and they were examined according to the province grouping that showed similarity according to the economic activity levels of Turkey.

In the study, the following models were created and analyzed using the panel data method. Here,  $\beta_0$  is the constant parameter;  $\beta_1, 2, 3$  is the slope coefficients; and  $u$  is the error term.

**Model 1:**  $Income_{it} = \beta_0 + \beta_1 Export_{it} + \beta_2 Unemployed_{it} + \beta_3 User\ Number_{it} + \beta_4 Loan\ Material_{it} + \beta_4 Registered\ Member_{it} + u_{it}$

**Model 2:**  $Export_{it} = \beta_0 + \beta_1 User\ Number_{it} + \beta_2 Registered\ Member_{it} + u_{it}$

**Model 3:**  $Export_{it} = \beta_0 + \beta_1 Book\ Number_{it} + \beta_2 User\ Number_{it} + \beta_3 Registered\ Member_{it} + u_{it}$

In the study, 3 models were created for two groups. Model 1 and Model 2 were created for the TR2 Level Region, and Model 3 for the TRC Level Region.

The CIPS statistics created for the overall panel were determined as in Equation (1).

The hypothesis of the study is that there is a positive relationship from public library sub-components to economic development and growth sub-components. The hypotheses used in the study are as shown below.

$$CIPS = \frac{1}{N} \sum_{i=1}^N CADF_i \quad (1)$$

$H_0: p_i^* = 0$  for all  $i$

If  $H_0: p_i^* < 0, i = 1, \dots, N_1$  and if  $p_i^* = 0, i = N_1 + 1, N_1 + 2, \dots, N$

Here, CIPS statistics are used to test stationarity when cross-section dependence is dependent on only one factor. The hypotheses used are as shown above (Karanfil, 2016: p. 227-228).

The variation of the constant term between units or over time is explained by equations expressed as fixed effect models. For these models, the change of constant between units or separately over time is explained in the context of one-way models. However, if it is assumed that fixed effects change both between units and over time, bidirectional models are, then, created (Çetin and Ecevit, 2010, p. 72-173).

In the fixed-effect panel regression estimation, there are different constant terms for each cross-section. The slope coefficients are the same. Therefore, while slope coefficients do not change for time dimension and cross-section data, the models in which



the constant coefficient differs according to cross-section units are called fixed effects models. Here, the changes in cross-section units are explained by the difference in the constant term. There are two different models in the fixed effects model: one-way and two-way. In the one-way model, it is assumed that the constant term does not change either between cross-section data or between time data, while in the two-way model, the constant term does not change in both data. As in this study, one-way fixed unit effects model was used through the consideration of the difference between cross-sectional units. Therefore, the fixed effects model used was created as shown below (Baltagi, 2014: p. 14-15; Çemrek and Burhan 2014, p. 50).

$$Y_{it} = \beta_{0i} + \beta_{1i} X_{1it} + \beta_{2i} X_{2it} + \dots + \beta_{ki} X_{kit} + \epsilon_{it}$$

## Data

The annual data for the period between 2015-2020 were used in the study. The data of user numbers, registered members, loan materials, library numbers, and book numbers related to public libraries were used to represent the independent variable of the study. The data were obtained from the official database of the Turkish Statistical Institute and covered all the provinces included in the TR2 (Çanakkale, Balıkesir, Tekirdağ, Edirne, Kırklareli) and TRC (Gaziantep, Kilis, Adıyaman, Şanlıurfa, Diyarbakır, Mardin, Batman, Şırnak, Siirt) level regions. Per capita income, export figures, and the number of illiterate and unemployed persons belonging to the provinces included in the TR2 and TRC regions were used to represent the dependent variable of the study. The data related to per capita income and export, which were used to represent the dependent variable, were obtained from the official database of the Turkish Statistical Institute, and the number of illiterate and unemployed persons was compiled from the official reports of the Turkish Employment Agency.

## Findings

According to the CIPS test results, except for the User Number variable for Model 1 and Model 2, the main hypothesis was rejected for the panel as a whole. Therefore, it was seen that the series were stationary at level values. It was determined that the User Number variable became stationary as a result of the difference process.

**Table 1**

### Stationarity Results

Statistics	Income	Export	Unemployed	User Number	Loan Material	Registered Member	Critical Value
CIPS value	-3.14	-18.40	-3.02	-0.53	-3.70	-4.55	-2.97

Note: The critical value was determined based on the 1% significance value.

According to the panel regression estimation results, the R-square value was 0.99. According to the result of the F-statistic, the model was found to be significant as a whole.

**Table 2**

*Results of Fixed Effects Panel Regression Estimation (1)*

Variables	Coefficients	Probability values
<i>Constant</i>	12248.01	0.000
<i>Export</i>	0.001138	0.083
<i>Unemployed</i>	-0.281811	0.037
<i>User Number</i>	0.004437	0.031
<i>Loan Material</i>	-0.007849	0.026
<i>Registered Member</i>	-0.053595	0.000
R-square = 0.99		F-Probability = 0.000
Adjusted R-square = 0.98		

According to the results obtained in Table 2, while the Export and User Number variables had a positive effect on growth, the Unemployment, Loan Material, and Registered Member variables had a negative effect on growth.

As predicted in the study, not all of the variables used to represent public libraries were effective on economic development variables. The findings for Model 2 showed that the number of users, one of the variables representing public libraries, was effective on economic growth.

**Table 3**

*Results of Fixed Effects Panel Regression Estimation (2)*

Variables	Coefficients	Probability values
<i>Constant</i>	347011.4	0.000
<i>User Number</i>	0.453882	0.066
<i>Registered Member</i>	6.881389	0.000
R-square = 0.99		F-Probability = 0.000
Adjusted R-square = 0.98		

According to the panel regression estimation results in Model 2, the R-square value was 0.99. According to the result of the F-statistic, the model was found to be significant as a whole. According to the results obtained for the aforementioned model in Table 3, the Registered Member and User Number variables were found to have a positive effect on exports. In other words, a one-unit increase in these two variables positively affected the Export variable.

It is understood that the variables used to represent public libraries had an impact on economic development. Although the models and hypotheses established in the study helped to make a general comment by keeping all the variables in interaction, the findings showed that not all of the sub-components of the dependent and independent variables interacted with each other.

According to the stationarity results in Table 4 for Model 3, the basic hypothesis for the Export, User Number and Registered Member variables was not rejected. Therefore, it was determined that the series were not stationary in their level values, except for the Book Number variable. The Book Number variable, on the other hand, was found to be stationary at the level.

**Table 4**

*Stationarity Results*

Statistics	Export	User Number	Book Number	Registered Member	Critical Value
CIPS value	-2.26	-2.36	-6.49	-1.62	-2.97

Note: The critical value was determined based on the 1% significance value.

According to the panel regression estimation results for Model 3, the R-square value was 0.74. According to the result of the F-statistic, the model was found to be significant as a whole.

**Table 5**

*Results of Fixed Effects Panel Regression Estimation (3)*

Variables	Coefficients	Probability values
<i>Constant</i>	-376489.5	0.0475
<i>User Number</i>	-0.299461	0.0525
<i>Registered Member</i>	5.279977	0.0101
<i>Book Number</i>	2.691603	0.0691
R-square = 0.74	F-Probability = 0.000	
Adjusted R-square = 0.65		

According to the results in Table 5, it was seen that while the Registered Member and Book Number variables had a positive effect on exports, the User Number variable had a negative effect on exports. In this direction, a one-unit increase in the Registered Member and Book Number variables positively affected the export variable. It was also determined that a one-unit increase in the User Number variable affected the export variable negatively.

Considering Model 3 in the study, it is seen that the economic development variable, that is, the export variable, was affected in different ways from the determinants of the library variable. The number of users with a positive effect on Model 2 negatively affected the export component and therefore the economic development variable. However, the general judgment is that the sub-components of public libraries were positively related to the sub-components of economic development.

## Discussion

The knowledge economy has come a long way in the historical process and has the feature of being the focal point of economies and development and even the center of planning. Public libraries are one of the links at the beginning of the chain, as they are local information centers. The effects of public libraries or different types of libraries on the country's economy or the effects of different variables have been studied in the literature. However, examining the issue regionally is as important as dealing with the general economy of the country. In a study conducted by Tunç (2015), different variables and different types of libraries were discussed, and the importance of libraries in the country's economy and in catching up with the information age was emphasized.

In the study by Dalkıran (2014), public libraries were considered as the dependent variable and the relationship between education and public library was investigated. According to the results of the study, it was determined that there was a relationship between education and the change of public libraries in Turkey, which was felt more especially in certain periods, and that this relationship did not, however, show regularity and continuity.

The studies have focused on dealing with the economy in general. There are a limited number of studies covering the whole country in Turkey. Studies show that there is a relationship between public libraries and economic development. In the study conducted by Polat (2010), the contributions of public libraries were handled differently, not at the economic level but at the cultural level. Contrary to the literature, it did not specifically deal with the issue in Turkey, but at the regional level and on the basis of a single province. In that study, it was aimed to reveal the effects of public libraries in Siirt on cultural development. For this, the provinces in Turkey with different economic characteristics and the province of Siirt, which has lower economic characteristics, were compared, and it was revealed that the facilities of public libraries in Siirt were not behind compared to other provinces. The main purpose of including the study by Polat (2010) in this section shows that the study touches on a missing point rather than its relationship with the study. The cultural effects of public libraries, which is an issue that has not been studied much at the regional level in Turkey, were discussed instead of their economic effects. From this point of view, it was suggested that the economic effects of public libraries should also be emphasized in the study.

Although there are studies in two different groups in which public libraries are used as dependent and independent variables, studies in which public libraries are used as independent variables are more common in the literature. In addition, in order to reveal the more comprehensive relations of the study, it was aimed to reveal the relations of public libraries and their use with different social and economic variables. The following different variables and results also support the current study in that public libraries are considered as independent variables and positively affect different socio-economic variables.

Soliman and Wei (2016) examined the effects of economic development on public libraries by examining the interaction in the opposite direction. In the study, they revealed that there was a positive relationship between GDP and the budget allocated to libraries.

In one of the studies in which public libraries and their use were considered as dependent variables, Kronus (1973) treated public libraries as a dependent variable, and aimed to explain the variables that were effective in the use of public libraries, contrary to the majority in the literature. The study concluded that age, gender, and race did not have an independent effect on how often people used library resources. However, in the study, it was revealed that the qualifications that could develop in individuals as a result of the use of public libraries were not limited to some demographic characteristics. More widespread use of public libraries by individuals could expand their employment opportunities in line with the acquired qualifications.

The previous parts of the study focused on the fact that public libraries were the most local information center and had a direct or indirect economic impact. In this case, public libraries, which affect people's knowledge, equipment, and skills, have led to the need for individuals to gain more efficient employment opportunities and to address the implementation policies of public libraries followed in this direction. Ersoy and Yılmaz (2009) examined the lifelong learning tendencies of administrators employed in provincial public libraries and investigated the effects of provincial public libraries on this issue. According to the results of the study, it is not possible to say that a sufficient number of activities were organized within the scope of lifelong learning by the provincial public libraries. Ersoy and Yılmaz (2009) support the necessity of the suggestions put forward in the study with the results they reached.

In another study conducted by Karadeniz (2019), which supports the necessity of the suggestions put forward in the study (following policies that expand the more effective use of public libraries, whose economic effects are defended), the existing public library system in Turkey was evaluated, and a national public library strategy development model and proposal was created by using universal principles which were developed in relation to objectives in line with the parameters of the information society in Turkey's conditions and supported by action plans. In the study, it was understood that

there was a need for a national strategy on public libraries in Turkey in order to manage public libraries in a planned manner, to ensure efficient use of resources and development of libraries simultaneously and as a whole, and to raise awareness on public and senior decision makers.

In the study conducted by Liu (2004), the use of public library was considered as an independent variable and the relationship between public library use and economic growth was discussed. The study concluded that public libraries affected the regional economy in various ways. In the study, it was concluded that the policies implemented by local governments in this regard would affect the future of the country's economy. In this respect, the present study reached the same conclusion.

In the study conducted by Yılmaz (2010) on the knowledge economy where countries are the focus, Turkey's approach to the library institution in its Information Society Policy was evaluated. As a result of the research, it was understood that the library institution was not seen as an organic component in Turkey's Information Society Policy and that there was no holistic approach in the relevant policy that correctly perceived this institution in social, cultural and educational contexts.

In the study conducted by Çalıř (2019), the importance of the social innovation approach in public libraries, unlike the economic and indirect effects of public libraries, was emphasized, and the awareness and tendencies of the stakeholders who cooperated in the activities carried out in this direction were explained. In the research, it was understood that the stakeholders were enthusiastic about cooperation and sustainability of cooperation. It was observed that the scope of the cooperation was aimed at providing social contribution, including the social innovation approach.

In the study conducted by Akay (2019), the provinces in Turkey with similar characteristics in library use were determined and the relationship between the human development of the provinces was examined. According to the results of the analysis applied in the study, it was seen that the library use of the provinces and the human development index were not parallel, and that the other provinces were, however, also at a low level in terms of library use, except for řanlıurfa, which had a low level of human development.

Öztemiz and Tekindal (2020) aimed to investigate the relationship between public libraries and gross domestic product for Turkey with VAR causality analysis. They reached results that supported the study. According study, GDP was found to be affected when there was a change in the number of library users. According to result, a change in GDP was also found to have a significant effect on the number of library users in Turkey between 2001 and 2017

In the study by Yılmaz (1991), it was aimed to reveal the relationship between public libraries and the change in economic structure in Turkey. One of the results revealed

in the study was that the economic development changed according to the years and that public libraries also developed according to the years to the same extent. In other words, public libraries developed in direct proportion to the economic conjuncture. Positive developments in the economy triggered the number of users in the public library.

The most basic phenomenon discussed and frequently emphasized in this study is that public libraries and economic indicators are often in a coordinated and sometimes causal relationship, as Yılmaz (1991) and Öztemiz and Tekindal (2020) discussed in their studies.

In this study, different models were established by using different sub-components of public libraries and different sub-components of economic growth and development. In this context, a positive relationship was expected from library subcomponents to economy subcomponents. Although the findings obtained in the study showed that the relations between the sub-components were generally in the expected extent and direction, some sub-component relations were also observed in the study that did not meet the expectations. For example, while the number of registered members was in an expected relationship on exports and affected economic growth positively, the number of users did not show the same relationship, proving that the same relationship was not observed in all sub-components of the study. In this case, it would be a more beneficial policy to try to increase the number of users in public libraries.

In this study, the relationship between public libraries and economic variables was studied by comparing two regions with different levels of development. In this study, it was concluded that the public library variables interacted with the economic development for the provinces located in the TR2 and TRC regions, and that the interaction was positive in support of the studies in the literature.

## **Conclusion**

The result of different studies on public libraries and economic developments is that both variables interact with each other. It is also seen that the economic development triggers library expenditures and that changes in library variables affect the economic development in the right proportion.

In the light of the results obtained in the study, it can be stated that the results in the literature are supported. The fact that the study was carried out at the regional level in Turkey reveals the importance of the study in the context of evaluating the indirect economic effects of public libraries and not being studied much in the literature. The study focused on the importance of public libraries and their contribution to economic development, and the policies aimed at solving the problem stated in the study will be examined in the recommendations section.

In the study, three different models were established using the Panel Data Analysis method. Two of the established models were established for the TR2 region and one for the TRC region. As a result of the established models, it was seen that the Registered Member and User Number variables in the TR2 Level Region had a positive effect on economic development. In the model established for the TRC region, it was observed that the Registered Member and Book Number variables had a positive effect on economic development.

The discussion and conclusion sections in this study complement each other. In parallel with the ones mentioned in the literature, public libraries have a positive effect on economic and cultural development. Studies conducted specifically in Turkey or studies conducted at the provincial level in Turkey also support the general opinion. In the study, it was concluded that public libraries had direct and indirect contributions to the economy in the TR2 and TRC level regions.

It is no longer sufficient to evaluate the success of national economies only in the context of quantitative growth, in other words, the increase in production. When the development factor is considered, structural transformations are needed in both quantitative and qualitative terms. This requirement observed in national economies has made the transformation of even the most local production approach inevitable.

In the study, the data belonging to the public libraries of the provinces located in completely different geographical regions were selected, and their economic determinants were correlated. These two-level regions in Turkey showed that there was a need for policies to be supported since public libraries make economic contributions. At this point, the number of public libraries should be increased. Thus, the number of individuals who can participate in the economy, that is, employment, will increase.

In addition, among the direct economic contributions of public libraries, there is free provision of services such as internet, access to correct information, and working environment due to its local center status. In this case, sufficient budget should be allocated in order to improve the physical facilities of public libraries and to maintain their currency.

In the study, an evaluation was carried out specific to two level regions in Turkey. In future studies, comparisons of all level regions in Turkey can be performed or the subject can be handled throughout Turkey with an empirical application. In this case, a more explanatory judgment can be made for Turkey by starting from the regional level on the economic effects of public libraries. In order to achieve this, three different models were established with different city groups, geographical indications, and development levels. However, this study is not sufficient to make a comparison between Turkey and different country groups. In future studies, the relationship between different country groups and the contribution of Turkish public libraries to economic development can be discussed with another modeling.



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There is no conflict of interest.

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### Author Contributions

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

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### References

- Akay Ö. (2019). Türkiye’de halk kütüphanesi kullanımının panel veri kümeleme analizi ile incelenmesi. *OPUS Uluslararası Toplum Araştırmaları Dergisi*, 9(10) 17, 1076-1099.
- Baltagi, B. H. (2014). *Econometric analysis of panel data*. 5. edition. John Wiley & Sons Ltd.
- Blackler, F. (1995). Knowledge, knowledge work and organizations: An overview and interpretation. *Organization Studies*, 16(6), 1021-1046.
- Brinkley, I. (2006). *Defining the knowledge economy*. The Work Foundation. [http://www.observatorioabaco.es/biblioteca/docs/98\\_TWF\\_2006.pdf](http://www.observatorioabaco.es/biblioteca/docs/98_TWF_2006.pdf)
- Çalış E. (2019). *Türkiye’de halk kutuphanelerinin sosyal yenilikçi girişimlerinde ileri adım: işbirliğinin rolü* [Yayımlanmamış yüksek lisans tezi]. Ankara Üniversitesi.
- Çapar, B. (2005). Bilgi yönetimi. Ed. Çoşkun Can Aktan ve İstiklal Y. Vural. *Bilgi çağı bilgi yönetimi ve bilgi sistemleri* içinde. (s. 175-195). Çizgi Kitabevi.
- Çemrek, F., & Emin, B. (2014). *Petrol tüketiminin ekonomik büyüme üzerindeki panel very analizi ile incelenmesi: Avrupa Birliği ülkeleri ve Türkiye örneği*. *Uluslararası Alanya İşletme Fakültesi Dergisi*, 6(3), 47-58.
- Cetin, M., & Ecevit, E. (2010). Sağlık harcamalarının ekonomik büyüme üzerindeki etkisi: OECD ülkeleri üzerine bir panel regresyon analizi. *Doğuş Üniversitesi Dergisi*, 11(2), 166-182.
- Dalkıran, Ö. (2014). Türkiye’de eğitim–halk kütüphanesi ilişkisi. *Bilgi Dünyası*, 15(2), 439-462.
- Ersoy, A., & Yılmaz, B. (2009). Yaşam boyu öğrenme ve Türkiye’de halk kütüphaneleri. *Türk Kütüphaneciliği*, 23(4), 803-834.
- Greene, H. William, (1993). *Econometric analysis*. McMillan, New York.
- Ipe, M. (2003). Knowledge sharing in organizations: a conceptual framework. *Human Research Development Review* 2 (4), 337–359.

- Jensen, P. E. (2005). A Contextual theory of learning and the learning organization. *Knowledge and Process Management*, 12 (1), 53–64.
- Karadeniz Ş. (2019). *Türkiye'deki halk kütüphanesi sisteminin değerlendirilmesi ve bir ulusal halk kütüphanesi stratejisi önerisi*. Yayınlanmamış doktora tezi. Hacettepe Üniversitesi.
- Karanfil, M. (2016). *Ar-Ge harcamalarının orta gelir tuzağı üzerine etkisi: Avrupa Birliği ve Türkiye için panel veri analizi*. *Journal of Life Economics*, 10, 219-234.
- Keseroglu, S. H. (2003). Halk kütüphanesi: Çocuklar ve okullarla ilişkisi: Bilgi toplumuna doğru halk kütüphaneleri. Ed. Bülent Yılmaz. *PULMAN-XT Türkiye Ulusal Toplantısı Sonuç Raporu, 16-19 Kasım 2002, Ankara* içinde (s. 32-37).
- Kronus, C. (1973). Patterns of adult library use: a regression and path analysis. *Adult Education Quarterly*, 23(2), 115-131.
- Levin, D., F. (2006). *Southwestern Ohio's Return from investment*. Ohio: Economic Benefits of Public Libraries. <https://static1.squarespace.com/static/5bf6023eec4eb7871ad7f98e/t/5bf82a2fc2241d501f4285b/1542990385731/SW+Library+Econ+Benefits+Study+June+22+2006.pdf>
- Liu, L. (2004). The contribution of public libraries to countries' economic productivity: A path analysis. *Library Review*, 53(9), 435-441.
- Oztemiz, S., & Tekindal, M. A. (2020). Estimation of GDP from public library usage: Turkey sample. *Library Management*, 41, 4/5, 153-171.
- Polat C. (2010). *Kültürel kalkınmada halk kütüphanelerinin önemi ve Bitlis'te halk kütüphaneleri: Karşılaştırmalı bir analiz*. *Uluslararası Sosyal Araştırmalar Dergisi*, 3 (10), Winter.
- Skelly, L. (2014). *The public library's contribution to economic growth and development: A path analysis*. University of KwaZulu-Natal, Pietermaritzburg.
- Tunç K. S. (2015). Kütüphanelerin ülke ekonomisi üzerindeki rolü. *Akademia Sosyal Bilimler Dergisi*, 1(1), 1-17.
- Yılmaz, B. (2006). Avrupa Birliği sürecinde Türk halk kütüphaneleri: Nicel bir değerlendirme. *Türk Kütüphaneciliği*, 20(1), 61-84.
- Yılmaz, B. (2010). Türkiye'nin bilgi toplumu politikasında kütüphane kurumuna yaklaşım. *Bilgi Dünyası*, 11(2), 263-289.
- Yılmaz B. (1991). Türkiyede ekonomi- halk kütüphaneleri ilişkisi, *Türk Kütüphaneciliği*, 3, 122-131.