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Are Children a Normal Good or an Inferior Good? A Critique to the Neoclassical Theory

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ARTICLE INFO	ABSTRACT
	This study analyzes the neoclassical theory on the demand for children. Neoclassical theory assumes that child demand is not different from a commodity demand. The neoclassical theory takes child demand in the utility function, like any other commodities. But, the demand for children is different from things which increase our utility; such as car, refrigerator, elevator, and other goods and services, whose price is determined in the market through its sellers and buyers. However, demand for children is determined by socio-cultural things. It is certain that there is a relationship between economic growth and child rearing. For example, economic growth raises the cost of children due the time spent on child care becoming more valuable. But it cannot be called "child demand is an inferior good".

Çocuklar Normal Mal Mıdır, Yoksa Düşük Mal Mıdır? Neoklasik Teoriye Bir Eleştiri

MAKALE BİLGİSİ	ÖZ
	Bu çalışma neoklasik teoriyi çocuk talebi üzerine analiz etmektedir. Neoklasik teori çocuk talebinin herhangi bir mal talebinden farksız olduğunu varsaymaktadır. Bu bakış açısından hareketle çocuk talebi, diğer tüm mallar gibi, fayda fonksiyonu içerisine dahil edilir. Ne var ki çocuk talebi faydamızı artıran araba, buzdolabı, asansör ve diğer mal ve hizmetlerden farklıdır, zira bu tür malların fiyatları piyasada satıcılar ve alıcılar tarafından belirlenir. Çocuk talebi ise sosyo-kültürel gerçeklikler tarafından tayin edilir. Ekonomik büyüme ve çocuk yetiştirme arasında bir ilişki olduğu muhakkaktır. Örneğin, iktisadi büyümeyle birlikte çocuğa ayrılan vakit daha değerli hale geldiği için çocuk maliyetini de artırmıştır. Yine de bu sonuç çocuk talebinin bir düşük mal olduğunu göstermez.

1.Introduction

This study aims to raise awareness that the tools of neo-classical approach cannot be implemented in each field. According to Neo-classical approach, the determination of goods, outputs, and income

distributions in markets is based on supply and demand conditions. Supply and demand together determine equilibrium price and quantity. If all other things being equal, the higher the price of a good, the less people will demand that goods. Also, neo-classical economics rest on rational choice theory, in which individuals strive utility maximization with constrained income; firms struggle to realize profit maximization with given production costs, and people act independently on the basis of full and relevant information. In neo-classical theory, there is a certain justification of any act of firms or individuals; for example, a firm's layoff decisions are based on a balance between the benefits of laying off an additional worker and the costs associated with this behavior. From the neo-classical point of view, there is rationality behind the decision of a student who has to work and thus cannot regularly attend to the class and thus passes with a low grade. Like firms' layoff decision, a student's nonattendance to class is based on rationality. A theory which assumes that a student's nonattendance decision is based on a balance between the benefits of working in a job and the costs associated with that action will be a neo-classical theory. Thus, rationality can be defined as all means to achieve ends.

Caplan (2006) expresses that in modern neoclassical economics, rationality includes responsiveness to incentives. From this point of view, everything is normal and rational to achieve the goal. Why do suicide bombers commit a crime even they know that they will surely die? Can we say that terrorists are not rational? Caplan, in his defense of the rational choice model, relies on responsiveness to incentives and makes logical and forceful explanations. For rational expectations, Caplan admits that terrorists have some rather irrational beliefs, but attempts to defend rational expectations by claiming that individuals form their irrational beliefs rationally. There is no doubt that Caplan does not have any idea about what Holy book says: "if a person whoever kills an innocent, it is as if he has killed all mankind; and whoever saves a person, it is as if he has saved all mankind."

This study emphasizes that some human behavior may not be explained in the context of the framework of neoclassical economics because all the results of human actions cannot be calculated precisely, meaning that benefits and costs of all human actions cannot be determined as explained above. Thus, Caplan's interpretation of the suicide bomber is not true, because God reveals that the one who kills an innocent person will not go to heaven and it is assumed that he kills all humanity. Calculating benefit and cost is not always possible and not rational as well. However, there are studies in the literature that explain the behavior of some human actions; for example, fertility in consumer theory. Gary Becker (1960) and Leibenstein (1974) have the pioneering works in the area of microeconomic theory of fertility. These economists applied microeconomic tools in order to understand fertility behavior and demand for children. The basic question is that whether the decline in child demand is a result of income growth or from an increase in the absolute or relative cost of children. If we claim that the demand for children has fallen as a result of the increase in income, we also accept that the demand for children is different from normal goods demand, that is, it is inferior goods.

Studies that examine household behavior generally take into account expenditure and savings of households, factors which determine household expenditure and savings or factors that determine investments. However, this study analyzes the household's demand for children. The emphasis is that the demand for children is strictly different from that of goods and services.

It is a fact that child demand and fertility rate have been declined, but this fact does not mean that child demand and goods demand have the same law and rules. With the increase in the level of education, the increase in the age of marriage has caused people to have fewer children. When this situation is expressed in terms of the microeconomic context, the fertility rate has decreased with the increase in the relative cost of children and result in an appropriate adjustment in decreasing child demand.

For the last 50 years, many demographers have expected that industrialization would decrease fertility rates, thus family sizes fell with industrialization. Graph 1 shows that fertility rates are falling steadily since 1960. Also, Graph 2 shows GDP per capita with current US dollars has increased regularly, except for certain years, such as currency crises and depression years. According to this explanation, the following hypothesis can be set up:

If it is assumed that all other things being constant, the more a country has higher GDP, the lower the fertility rate she has.

This hypothesis ignores some assumptions; for example, it does not consider increasing the number of years that women are in school delays marriage, which in turn reduces the time duration that women are exposed to the possibility of conception. Also, women's labor participation has been increased with education and the age of marriage has risen compared to previous years; for example, In Turkey, the age of marriage is 31 for men, while the age of marriage for women is 28. In the 1960s, it is a normal result that fertility was high when the age of marriage was 15 for women and 18 for men. In addition to change in marriage age and duration of education, contraception and necessity of birth control increased with education. All these changes have caused women to have fewer children. What should be noted here is that women have fewer children than they desire. That is, as the level of income increases, the hypothesis that fewer children are demanded can be evaluated as being correct without examining other factors, but the decline in fertility and decrease in child demand depend on increase in education level and the delay of marriages, meaning less demand for children is as a result of demographic and social change in society.

Dixon- Mueller (1993) suggests that women's participation in the labor market has given women a new identity and economic power. Thus, the dependence of women on men and children has been reduced. Dixon-Mueller concludes that women's level of education and women's labor participation, together with other commonly considered socioeconomic variables, including percentage of married couples using contraception, are important in quantifying the variation in total fertility rate.

Thus, can we make the following hypothesis?

Industrialization has reduced the demand for children.

There are two facts: The first is that the industrialization reduces demand for children, and the second is that children do not become inferior goods with increase in income. As the hypothesis implies, the increase in the level of education of women and the increase in their participation in the labor market lead to a decrease in the dependence of them on men and children. Industrialization and economic growth raise the cost of children due the time spent on child care becoming more valuable. This may not be true in the whole country. For example, rural fertility can be higher because the cost of rearing when children contribute work to maintaining the farm is lower than in the city.

Turkey is considered as one of the emerging economy for several decades. Recently, we witnessed that Turkey has elevated its status to an emerging power. Thus, it is important to see changes in fertility rates and GDP in Turkey. Graph 1shows that fertility rates in Turkey have been significantly decreasing since 1960s. On the other hand, as shown in graph 2, GDP per capita in Turkey with current US dollar has been increasing since 1960s.
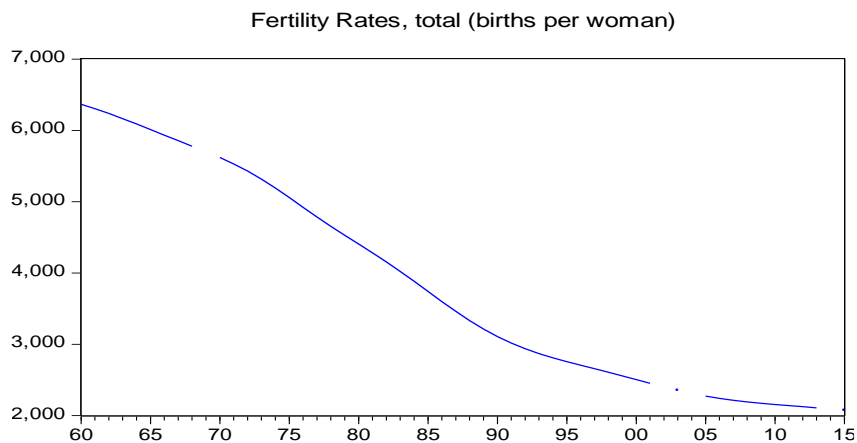
Graph 1. Fertility Rate in Turkey. (Source: Author's own elaboration using WDI data).

GDP per capita current US $
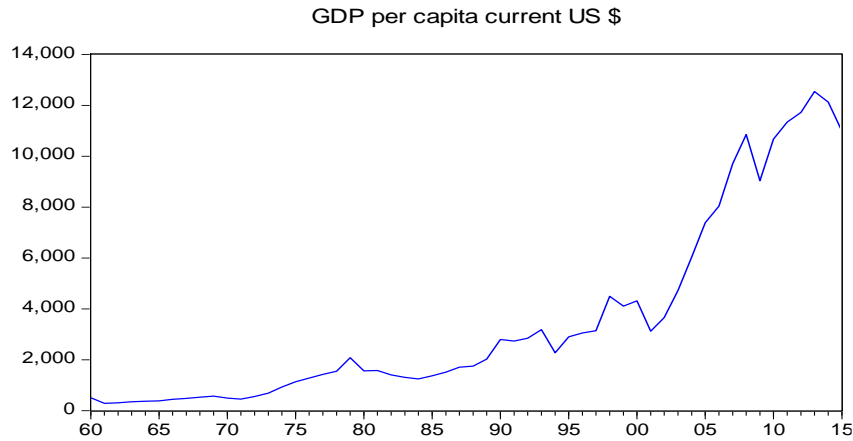
Figure 2. GDP per capita in Turkey with current US $. (Source: Author's own elaboration using WDI data).

Since the decline of the fertility rate started in France earlier than other countries, France has been selected to represent the relationship between population growth and GDP in developed countries. The reason for choosing France is the increase in fertility rate due to the longstanding family policies implemented in recent years. Thus, France stands out from many European countries because of its relatively high and stable fertility.

With the economic development of France and the rise in income levels, birth rates and population growth rates have slowed down significantly since 1975. French government has begun to take measures to increase birth rates in order to prevent the negative consequences of this situation. Posters that families should have more children could be seen almost all over the country at that time. In addition to these incentives, the French government allowed the migration of foreign workers from other countries, especially Algeria, Morocco and Tunisia, in order to meet the labor needs.

Graph 3 and 4 show the fertility rate and the per capita income in France, respectively. In France as well, the fertility rate steadily declined from 1960 to 1995. But, per capita income has continuously increased, except during periods of crisis. We can also make interpretation what we did for Turkey to France. Although the child demand seems to have fallen with the increase in income, behind this, there are some factors which are mentioned above such as the increase in education level, the delay of marriage and the increase of women's participation in the labor market.

Fertility rates, total (births per woman)
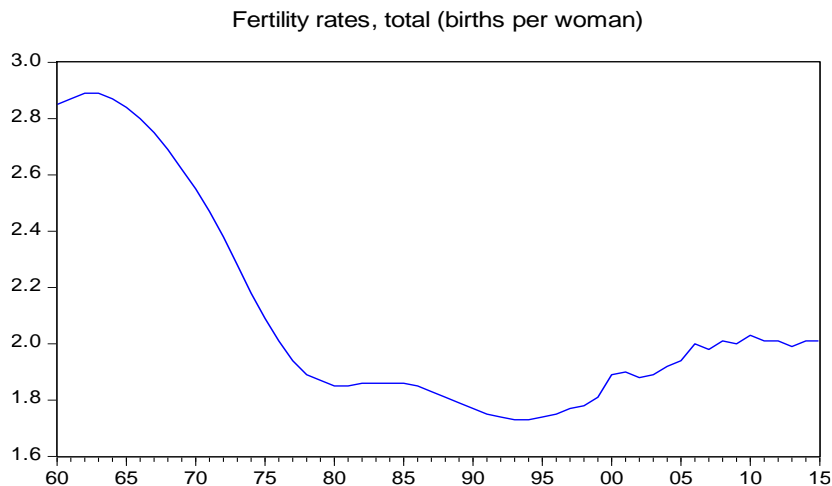
Graph 3. Fertility rate in France. (Source: Author's own elaboration using WDI data).

GDP per capita current US $
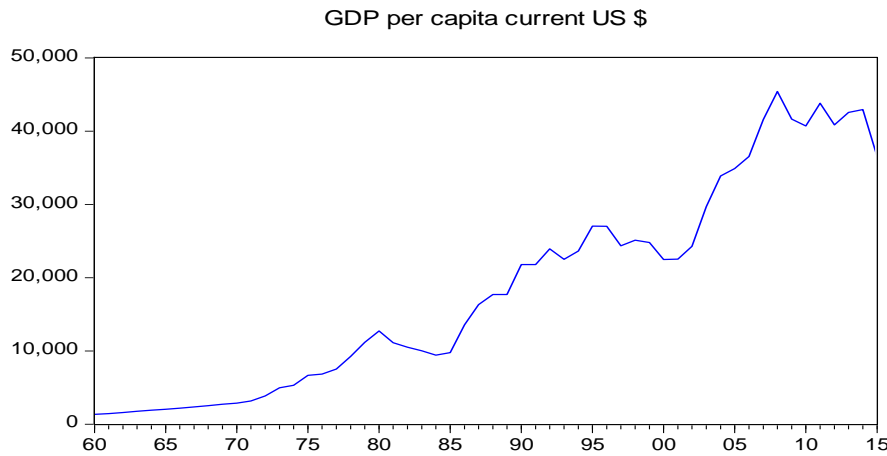
Graph 4. GDP per capita with current US $ for France. (Source: Author's own elaboration using WDI data).

The explicit application of micro-economic methods to the analysis of child demand began in the late 1950s and early 1960s when Leibenstein, Okun, Becker and others attempted to explain the effect of the level of income and economic development on a family's child demand (Cochrane, 1975).

An answer to what factors determine the number of children people will demand is given by Gary Becker who places family-size goals in the framework of economic theory by treating children as a consumption good analogous to cars, houses, and refrigerators (Blake, 1968).

Using the term 'the economic approach' to human behavior, Gary Becker and other neo-classical economists forcefully argue that economic efficiency determines household behavior.[2] They assume that household seeks to maximize exogenously given joint utility functions, like any firm behavior to maximize its profit, and they hypothesize that differences in household behavior represents efficient responses to differences in prices and incomes which households face (Folbre, 1984). As it is known that the theory of the firm assumes a profit maximization objective. Similarly, the theory of the consumer effectively assumes utility maximization, with many restrictions on what provides utility. Neoclassical economics focuses on prices, outputs, and income distributions in markets determined by demand and supply.

According to Becker and other neoclassical economists, there must be a relationship between child demand and income or standards of living. They state that as the rate of return to human capital and education level increase, the cost of rearing children goes up. On the other hand, the opportunity cost of mother's time goes up as higher wages draw women out of the household into labor market, and finally increase the cost of children. Therefore, the demand for children decreases and fertility level gradually adjust as wages paid to women increase.

Also, in an article named 'Child Endowments, and Quantity and Quality of Children', Gary Becker and Nigel Tomes (1976) include social interactions and special relation between quantity and quality of children. And, Becker and Tomes conclude that large increase in expenditures on children would reduce the demand for them because the cost of each child is directly related to the expenditure on each child.

In sum, it can be concluded that neoclassical theory states a negative relationship between the quality of children and their size in the family since after a point, which shows the optimum child demand, demand for children decreases.

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[2] It is known that the primary goal of neo-classical economics is to provide efficient allocation of scarce resources.

2. Model

In this section, a child demand model will be created by using neoclassical tools. As it is known, the concept of marginal change has an important meaning in neoclassical theory. Therefore, neoclassical economists have been described as marginalists for a long time.

Since the neoclassical theory treats children as a commodity which is bought and sold and they also have a price, children can be included in the utility function.

$$U_i = u(C, X_i, Y, L)$$

where U_i is utility of person i, C is demand for children, X_i demand for X commodity, Y is income for i, and L is leisure.

$$Y = wW$$

where w is wage rate, and W is working hours.

$$Y = P_i X_i + P_c C$$

where P_i is the average price of commodities consumed by i.

$T = W + L + C$. Where T is time spent on working, leisure, and on children.

In these conditions, what does determine child demand?

For this purpose, we need to reorganize the utility function and to get the derivative of the utility function according to the child. Our aim is to find out how individual i's utility changes when his/her child demand changes?

$$U_i = u\left(C, \ \frac{Y - P_c C}{P_i}, P_i X_i + P_c C, T - W - C\right)$$

To find the ideal child demand, it needs to be taken derivatives with respect to child and equal those derivatives to zero.

$$\partial U / \partial C = \partial U / \partial C + \partial U / \partial X_i \left(-P_c / P_i\right) + \partial U / \partial Y \left(P_c\right) + \partial U / \partial L \left(-1\right) = 0$$

According to this model, child demand is a function of child price[3] (P_c), commodity price (P_i), income (Y), and leisure (L). This demand function can be expressed as followed:

$$C^* = f(P_c, P_i, Y, L)$$

Now, suppose that consumer i's wage rate increases. How does demand for children affected from this increasing in wage rates?

In economic theory, income is a sole determinant to decide a good is a normal or an inferior one because an inferior good is a good that is bought in smaller quantities as an individual's income rises. According to this definition, if children were normal goods, then their parents would demand more children when they get richer. Thus, how the changes in wages and incomes affect child demand is important. Therefore, only the effect of income change on child demand has been considered in the model.

$$U_i = u\left(C, \ \frac{wW - PcC}{P_i}, \ wW, T - C - \frac{Y}{w}\right)$$

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[3] The price of the child includes all expenses incurred to the child and the time allocated to him or her.

$$\partial U / \partial C = \partial U / \partial C + \partial U / \partial X_i \left(-P_c / P_i \right) + \partial U / \partial Y \left(Pc \right) + \partial U / \partial L \left(-1 \right) = 0 \equiv H$$

If the equation above is called as H, the implicit function theorem can be used to answer the question.

$$\frac{\partial C^*}{\partial w} = -\frac{\partial H / \partial w}{\partial H / \partial C^*}$$

As it has been seen above, the implicit function consists of two parts, namely the numerator and the denominator.

The numerator:

$$\frac{\partial H}{\partial w} = \frac{\partial^2 U}{\partial C \partial X}\left(\frac{W}{P_i}\right) + \frac{\partial^2 U}{\partial C \partial Y}W + \frac{\partial^2 U}{\partial X^2}\left(\frac{W}{P_i}\right)\left(-\frac{P_c}{P_i}\right) + \frac{\partial^2 U}{\partial Y^2}W\left(P_c\right)$$

Sign: (+)   (+)   (-)   (-)   (+)

The sign of the numerator is positive.

Now, the denominator can be found as followed.

$$\frac{\partial H}{\partial C} = \frac{\partial^2 U}{\partial C^2} + \frac{\partial^2 U}{\partial C \partial X}\left(-\frac{P_c}{P_i}\right) + \frac{\partial^2 U}{\partial C \partial L}(-1) + \frac{\partial^2 U}{\partial X^2}\left(-\frac{P_c}{P_i}\right)^2 + \frac{\partial^2 U}{\partial X \partial L}\left(-\frac{P_c}{P_i}\right) + \frac{\partial^2 U}{\partial L^2}(-1)(-1) \, \text{Sign:} \qquad ?$$

+   -   -   -   +   +   -   -   +

The main problem is to determine the sign of $\partial^2 U / \partial C^2$ because the sign of the second derivative is ambiguous. If the second derivative of the utility function with respect to child demand is negative, the sign of the denominator will be negative and this means that there is a positive association between income and child demand. Thus, the derivative of child demand with respect to income has been found positive. On the other hand, this result is completely different from the graph showing the increase in income and the increase in population. Again, if the sign of $\partial^2 U / \partial C^2$ is accepted as positive, result will be indeterminate.

$$\frac{\partial C^*}{\partial w} = -\frac{\partial H / \partial w}{\partial H / \partial C^*} = -\frac{+}{-}$$

If it is accepted that the quality of children will be decreased as the number of children increase, the sign of the second derivative will be negative, it means that after a point, it will be less to have children as it is in the consumption of goods and services. Who determines that point? This is a crucial question. When you decide to have another child, nobody can say anything about whether utility from children will be decreased because of this new born, on the other hand, nobody can measure the quality of your children. Therefore, we cannot mention about the equilibrium of child demand since children are not a commodity whose values are determined by demand and supply conditions. The answer of the question of how many children people will have is related to socio-cultural things.

Neoclassic economists, Lucas (1988) and Romer (1990) introduced the human capital formation as an engine of growth. According to these authors, the stock of human capital determines long term economic growth. Therefore, I expect that developing countries should focus on to increase educated labor force and should increase the demand for children because the probability of genius children will increase as the number of children increases. Thus, when I think from Lucas and Romer's perspective, child demand should increase contrary to other neoclassic economists, like Becker and others, to obtain a sustainable growth. Also, when we consider 'the endogenous growth model' introduced by Lucas (1988) and Romer (1994), we can understand why less developed regions should have rapid population growth than developed ones, but it is not true that poor countries are rational and thus they have higher fertility rate.

Unlike the explanations of neo-classical economists, it is possible to express why the poor countries in real life as having more children as follows:

There are multiple reasons why less developed countries have higher fertility rate. For example, in a primarily agricultural or herding society, children represent family's wealth (they're low-cost workers who can do simple tasks). Also, children provide old-age security in societies where they're expected to look after their parents. In countries where infant mortality are high, parents do not expect that all of their children will survive, thus they are more likely to have children than they really want.

3. Conclusion

The neoclassical theory takes child demand in the utility function, like any other commodities. But, the demand for children is different from things which increase our utility; such as car, refrigerator, elevator, and other goods and services, whose price is determined in the market through its sellers and buyers. However, demand for children is determined by socio-cultural things. In addition to these explanations, the neoclassic theory shows a contradiction to new growth theories, which emphasize human capital in order to increase long term growth rates, explained by Romer and Lucas. In Lucas and Romer's model, there is no any explanation about returns to human capital will decrease as child demand increases. Therefore, I can conclude that human being is a dominant factor to create value, and we cannot take child demand in a utility function like any commodity and services.

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Financial Distress Of Adults: A Survey In Eskişehir, Turkey[*]

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ARTICLE INFO	ABSTRACT
	As financial well-being is considered to be one of the most important factors which may affect the level of financial satisfaction and consequently the level of life satisfaction, financial distress has emerged as an important subject of research. We measure the variables of financial distress, financial management behavior and money attitude for adults with a survey conducted on a sample of households living in Eskişehir, Turkey and attempt to model the interrelationships between these variables using Structural Equation Models. The results of the model reveal that High Level of Financial Distress is associated positively with Risky Financial Management Behavior and negatively with Investment Oriented Financial Management Behavior. Moreover, Money Oriented Financial Attitude and Investment Oriented Financial Management Behavior are positively correlated. According to the findings, married adults seem to be the most financially satisfied group, whereas single adults seem to be the least financially satisfied group. Yet, interestingly, they are the least financially distressed group as well. Divorced adults, on the other hand, seem to be the most financially distressed group. Middle aged adults seem to overview their financial position more often than young adults. Both young and middle aged women seem to overview their financial position more often than men. Women tend to save more on a regular basis compared to men. Similarly, young adults tend to save more on a regular basis.

Yetişkinlerde Finansal Sıkıntı: Türkiye, Eskişehir'de Bir Anket Uygulaması

MAKALE BİLGİSİ	ÖZ
	Finansal sağlık, finansal memnuniyeti ve ve bunun sonucunda yaşam memnuniyetini etkileyebilecek en önemli faktörlerden biri olarak kabul edildiğinden, finansal sıkıntı önemli bir araştırma konusu olarak ortaya çıkmıştır. Çalışmada, Türkiye'nin Eskişehir kentinde yaşayan hane halklarını temsil eden bir örneklem üzerinde anket uygulanarak; Finansal Sıkıntı, Finansal Yönetim Davranışı, Paraya Karşı Tutum değişkenleri ölçülmüş ve bu değişkenler arasındaki ilişkiler Yapısal Eşitlik Modelleri ile modellenmeye çalışılmıştır. Modelin sonuçlarına göre, yüksek derecedeki finansal sıkıntı, riskli finansal yönetim davranışı ile pozitif, yatırım odaklı finansal yönetim davranışı ile negatif ilişki göstermektedir. Ayrıca, para odaklı finansal tutum ve yatırım odaklı finansal yönetim davranışı birbirleriyle pozitif ilişki göstermektedir. Bulgulara göre, evli yetişkinler finansal yönden en yüksek memnuniyete sahipken, bekar yetişkinler finansal yönden en düşük memnuiyete sahip görünmektedir. Ancak, ilginç şekilde, bekar yetişkin grubu aynı zamanda en az finansal sıkıntı yaşayan gruptur. Öte yandan, boşanmış yetişkinler, en fazla finansal sıkıntı yaşayan gruptur. Orta yaşlı yetişkinler, gençlere göre finansal durumlarını daha fazla gözden geçirmektedir. Hem genç, hem orta yaşlı kadınlar, erkeklere göre finansal durumlarını daha fazla gözden geçirmektedir. Kadınlar, erkeklere göre daha fazla düzenli tasarruf yapma eğilimindedir. Benzer şekilde, genç yetişkinler daha fazla düzenli tasarruf yapma eğilimindedir.

1. Introduction

Starting from the 1990's and especially from 2000 and on, social scientists have started to be more interested in personal finance issues such as financial satisfaction and personal financial management. As long as individuals exhibit responsible financial behavior, they tend to feel more comfortable about their financial position and more satisfied with it. As a result, their life satisfaction tends to increase. In this regard, financial behavior and financial wellness has evolved as significant topics of research on the personal finance agenda.

As emphasized by various scholars, financial wellness is among the most important factors, which may influence financial satisfaction and accordingly life satisfaction (Xiao and others. 2014, p. 12; Shim and others, 2009, p.719 , Porter and Garman 1993, p.160). Financial wellness of individuals and households depends mostly on the decisions taken in the fields of spending, saving, investment and borrowing (Xiao and others, 2009, p.66 ; Dowling and others, 2009, p.10 ; Joo and Grable, 2004, p.45). Individuals who are not able to manage their personal financial issues tend to be more vulnerable to financial problems and distress. In this respect, some studies provide evidence for the relationship between the level of personal debt and personal financial behavior (Santos and Abreu, 2013, p.26; Lusardi and Tufano 2009, p. 24).

The meaning people attach to money and their fundamental perceptions and beliefs about money determines their money attitude. Within the framework of Theory of Planned Behavior, money attitude is reflected on personal financial management behavior and habits (Xiao, 2008). Taking into consideration the effects of personal financial management decisions on financial distress, determinants of financial behavior have been explored by various studies. Money attitude has been suggested as one of the most important factors, which may impact how individuals behave in cash management, credit management, financial planning matters (Parrota and Johnson,1998).

The purpose of the study is to measure the variables of financial distress, financial management behavior and attitude towards money (money attitude) for adults in Turkey and model the

interrelationships between these variables and demographic variables using Structural Equation Models.

2. Literature

Positive financial behaviors contribute to financial satisfaction and financial satisfaction in turn contributes to life satisfaction (Xiao et al., 2009). Financial well-being is also related to academic success, as well as psychological and physical health (Shim and others, 2009). Individuals who exhibit better financial behaviors tend to have lower levels of financial stress, and therefore, higher levels of financial satisfaction. (Joo and Grable, 2009, p.39).

According to Gutter et al. (2011) financial well-being is significantly related to budgeting, saving, risky credit card behaviors, and compulsive buying. Financial management practices, money attitudes, and financial problems are found to predict financial satisfaction (Dowling and others, 2009, p.10).

Financial attitude and financial knowledge significantly positive relate to financial management behaviors (Mien and Thao, 2015, p.12). Money attitudes and Financial Knowledge have a significant positive impact on the personal financial management behavior of young adults, and financial knowledge has a positive moderating impact on the relationship of money attitudes and personal financial management behavior (Qamar and others, 2015, p. 305). Likewise, according to JBR (2014, p. 78) the more positive financial attitudes the better the financial management practices and sound financial management practices adopted are related to higher satisfaction with financial status.

Money is perceived as a symbol of success and as one of the tools to gain power and respect in a myriad of cultures. Money has the power to affect the prosperity, financial wellness or financial distress by generating financial comfort or financial problems. Hence, money attitude is among the variables which may determine financial distress and financial satisfaction (Dowling and others, 2009, p.10; Tatzel 2002, p.122; Wilhelm and others, 1993; Godwin and Carroll, 1986). Considering the relationships identified in the literature between financial distress, financial behavior and money attitude we build a theoretical model as exhibited below to investigate how these latent variables are interrelated.

3. Methodology

SEM consists of two components, a measurement model and a structural model. The measurement model assesses latent (unobserved) variables as linear functions of indicators (observed variables). The structural model shows the direction and strengths of the relationships of the latent variables. A typical structural equations model is defined:

$$\eta = B\eta + \Gamma\xi + \zeta \tag{1}$$

where η is a column vector of *m* endogenous variables, ξ is a column vector of *n* exogenous variables, B is a matrix *(m×m)* of coefficients associated with the direct effects of endogenous variable on another endogenous variable, Γ is a matrix *(m× n)* of coefficients associated with the direct effects of exogenous variable on another endogenous variable, and ζ is a column vector of error terms associated with endogenous variables. Φ represents the covariance matrix *(n×n)* of exogenous variable ξ.

The measurement equations relating the latent variables to the measurement variables are

$$y = \Lambda_y \eta + \varepsilon \tag{2}$$

$$x = \Lambda_x \xi + \delta \tag{3}$$

$y_{(p×1)}$ and $x_{(q×1)}$ are the column vectors of *p* measured endogenous variables, and q measured exogenous variables, respectively. Λ_y and Λ_x are the corresponding factor loading(λ_{ij}) matrices. ε and δ are the error terms related to the measured variables and are uncorrelated. In the proposed model, there are three endogenous variables (m = 2) and two exogenous variables (n = 2).

In this study, Financial Distress, Financial Management Behavior and Money Attitude was measured by a questionnaire. Financial Distress was measured by items adapted from the Financial Wellness Scale developed by Prawitz et al. (2006). Financial Management Behavior was measured by items adapted from the Financial Management Behavior Scale developed by Parrotta and Johnson (1998). Money attitude was measured by items adapted from the Attitude Towards Money Scale developed by Lima and Teo (1997). The items utilized were translated into Turkish and modified by expert opinions before the pilot study.

The target population of the survey consists of female and male adults aged 18-69, from socio-economic groups of A, B, C1, C2, D ve E. The sampling method employed is random quota sampling. A pilot study was conducted with a sample of 100 people in 6 districts of Eskişehir in 2016, during which people were surveyed face to face. The sample was constructed according to predetermined quotas with respect to age, gender and socio-economic status (SES). After dropping a survey item related to financial management behavior, all items related to the measured variables provided a high level of reliability. (Cronbach Alpha of FD is 0.868; Cronbach Alpha of FB is 0.805; Cronbach Alpha of ATM is 0.985). Survey questions were revised after the pilot study and it was conducted to 700 people in 6 districts of Eskişehir face to face.

We measured the latent variables of financial distress, financial management behavior and money attitude for adults using survey data and attempted to model the interrelationships between these variables using Structural Equation Models (SEM). SEM is a widely used statistical methodology in social, behavioral, economic and other sciences to explore interrelationships among latent constructs, which are measured by a set of observed indicators. It is a multi-variable statistical technique which uses a linear approach in order to resolve complex theoretical structures containing intangible facts (Yılmaz & Çelik, 2009). SEM consists of two components, a measurement model and a structural model. The measurement model assesses latent (unobserved) variables as linear functions of indicators (observed variables). The structural model shows the direction and strengths of the relationships of the latent variables. We utilize Confirmatory Factor Analysis (CFA) in order to determine whether the measurement model containing each sub-dimension are significant. Maximum Likelihood method is used to predict the structural parameters. We employ Lisrel 9.1 to conduct factor analysis and to build Structural Equation Models.

4. Findings

The sample size of the study can be considered "good" based on the KMO value (KMO=0.712). 50.4 per cent of the participants in the survey were female while 49.6 per cent were male. Age frequencies and SES frequencies are shown in the tables below.

Table 1. Age Frequencies

Age	Frequency	%
18-24	116	16.6
25-34	142	20.3
35-44	133	19.0
45-54	123	17.6
55-64	90	13.0
65 and over	95	13.6
Total	**700**	**100.0**

Table 2. SES Frequencies

SES	Frequency	%
A	24	3.4
B	48	6.9
C1	166	23.7
C2	226	32.3
D	154	22.0
E	82	11,7
Total	**700**	**100.0**

Data analysis included 615 questionnaires, since 85 questionnaires were excluded due to incorrect or missing information. As a result of the factor rotations, we constructed 4 factors, which explained 66.054 per cent of the variations.

Factor B2 (High Level of Financial Distress) was measured by the following items:

B.4: How often do you worry about affording your normal monthly expenses?

B.6: How often do you have difficulty making ends meet?

Factor D (Money Oriented Financial Attitude) was measured by the following items:

D.2 : Money earns the respect of people to you.

D.4 : Easy earned money is spent unconsciously.

D.5 : Money is the most important thing in my life.

Factor C2 (Risky Financial Management Behavior) was measured by the following items:

C.1: I make a monthly expense budget. (This item was reverse coded)

C.3: I calculate my income and expenditures. (This item was reverse coded)

C.4: I overview my spending habits. (This item was reverse coded)

C.5: Sometimes I pay interest on my credit card debt as I pay my debt late.

C.8: I often spend more money than I have.

C.9: I usually pay a portion of my credit debt rather than all of it.

Factor C3 (Investment Oriented Financial Management Behavior) was measured by the following items:

C.16 : I overview my financial position on a regular basis.

C.17 : I make savings on a regular basis.

C.18 : I make investments on a regular basis.

Factors B2, C2, VE C3 were measured by a 5-point Likert Scale of 1. Never/ 5. Always whereas Factor D was measured by 5-point Likert Scale of 1. I definitely disagree /5. I definitely agree).

Proposed research model is represented in the figure below. In the proposed model, latent variables B2 corresponds to High FD, D corresponds to Money Oriented Financial Attitude and C2 corresponds to Risky FMB while C3 corresponds to Investment Oriented FMB.
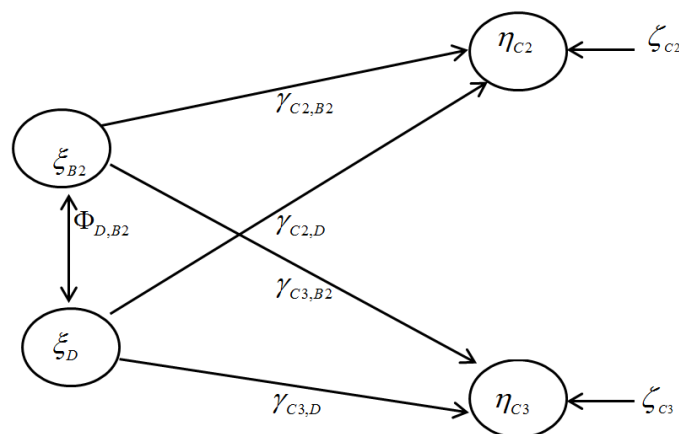
Figure 1. Proposed research model

The symbols in Fig. 1 are defined below.

ξ_{B2} : High Level of Financial Distress,

ξ_D : Money Oriented Financial Attitude,

η_{C2} : Risky Financial Management Behavior,

η_{C3} : Investment Oriented Financial Management Behavior,

$\Phi_{D,B2}$: Correlation between Financial Distress and Money-Oriented Financial Attitude,

$\gamma_{C2,B2}$: The direct impact of High Level of Financial Distress on Risky Financial Management Behavior,

$\gamma_{C3,B2}$: The direct impact of High Level of Financial Distress on Investment Oriented Financial Management Behavior,

$\gamma_{C2,D}$: The direct impact of Money-Oriented Financial Attitude on Risky Financial Management Behavior,

$\gamma_{C3,D}$: The direct impact of Money-Oriented Financial Attitude on Investment Oriented Financial Management Behavior,
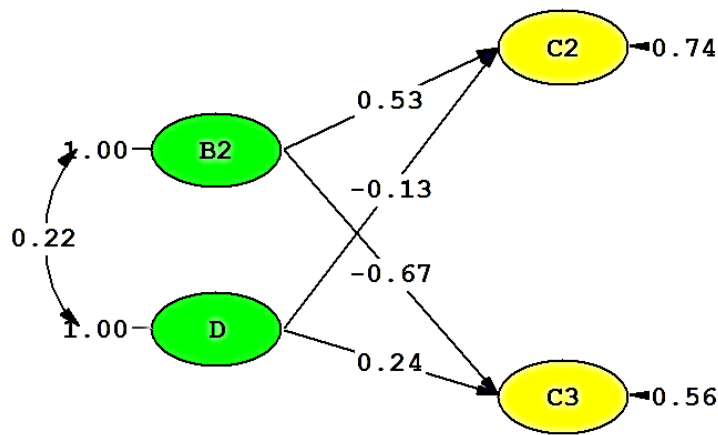
Chi-Square=340.19, df=72, P-value=0.00000, RMSEA=0.078

Figure 2. Research Model

The results of the model reveal that as the High Level of Financial Distress increases by 1 unit, Risky Financial Management Behavior tends to increase by 0.53 units. On the other hand, as the High Level of Financial Distress increases by 1 unit, Investment Oriented Financial Management Behavior tends to decrease by 0.67 units. As the Money-Oriented Financial Attitude increases by 1 unit, Investment Oriented Financial Management Behavior tends to increase by 0.24 units. Further, one can say that there is a positive relation between Money Oriented Financial Attitude and High Level of Financial Distress, as the correlation coefficient between these factors are 0.22.

Specified SEM can be laid out in the form of matrices as shown below, based on Equations 4 and 5.

$$\begin{bmatrix} \eta_{B2} \\ \eta_D \end{bmatrix} = \begin{bmatrix} \gamma_{C2,B2} & \gamma_{C2,D} \\ \gamma_{C3,B2} & \gamma_{C3,D} \end{bmatrix} \begin{bmatrix} \xi_{B2} \\ \xi_D \end{bmatrix} + \begin{bmatrix} \zeta_{C2} \\ \zeta_{C3} \end{bmatrix} \tag{4}$$

$$\eta_{C2} = \gamma_{C2,B2}\xi_{B2} + \gamma_{C2,D}\xi_D + \zeta_{C2} = \quad 0.53^{**}\xi_{B2} - 0.13^*\xi_D + 0.74 \qquad ; R^2 = 0.26$$

$$\eta_{C3} = \gamma_{C3,B2}\xi_{B2} + \gamma_{C3,D}\xi_D + \zeta_{C3} = -0.67^{***}\xi_{B2} + 0.24^{***}\xi_D + 0.56 \qquad ; R^2 = 0.44 \tag{5}$$

* : Not significant; ** p<0.05; p<0.01

Fit measures of the model are calculated as RMSEA=0.078 (Root-mean-square error approximation), Root Mean Square Residual (RMR) = 0.045, Standardized RMR = 0.066, CFI=0.94 (Comparative Fit Index), GFI= 0.96 and Adjusted Goodness of Fit Index (AGFI) = 0.95 (Goodness-of-fit). RMSEA, RMR and SRMR value equal to 0.05 or less reflects a perfect fit, values under 0.10 indicate an acceptable fit, while those above 0.10 indicate a bad fit. Other fitness criteria are between 0 and 1 and this means that closeness to 1 shows a better fit of the model (Jöreskog and Sörbom, 2001). When all fitness criteria are considered, it is evident that our proposed model is valid.

Regarding, financial distress, 35 per cent of married respondents indicated that they are financially satisfied whereas only 17 percent of single respondents indicated that they are financially satisfied. The chi square test ($p < 0.05$) implies that there is a significant relationship between B.2 and gender.

Regarding money attitude, men tend to associate money with respect more than women as 44 percent of the male respondents indicated that they agree with the statement "money earns the respect of people to you", while 39 percent of the male respondents indicated that they agree with that statement. The chi square test ($p < 0.05$) implies that there is a significant relationship between D.2 and gender.

Regarding financial management behavior, 69 per cent of divorced respondents indicated that they often or always pay interest on their credit card debt as they pay their debt late, whereas only 26 percent of the married respondents indicated that they often or always pay interest on their credit card debt as they pay their debt late. The chi square test ($p < 0.05$) implies that there is a significant relationship between C.5 and gender. Moreover, 64 per cent of women overview their financial position often or always whereas 55 percent of men overview their financial often or always. The chi square test ($p < 0.05$) implies that there is a significant relationship between C.16 and gender. Last but not least, 74 per cent of women save on a regular basis whereas 63 percent of men save on a regular basis. The chi square test ($p < 0.05$) implies that there is a significant relationship between C.17 and gender. Cross Tabulation table of "I overview my financial position." (C.16) according to age and gender as well as Cross Tabulation table of "I save on a regular basis" (C.17) according to age and gender is shown in the tables below.

Table 3. Cross Tabulation of "I overview my financial position." (C.16) according to age and gender

Age			C.16 Never	Seldom	Sometimes	Often	Always	Total
18-24	Gender	Female	0	2	12	29	6	49
		Male	1	4	10	20	4	39
	Total		1	6	22	49	10	88
25-34	Gender	Female		7	17	27	13	64
		Male		10	15	32	8	65
	Toplam			17	32	59	21	129
35-44	Gender	Female	0	5	13	18	7	43
		Male	2	12	20	38	5	77
	Total		2	17	33	56	12	120
45-54	Gender	Female		8	21	25	6	60
		Male		11	22	21	3	57
	Total			19	43	46	9	117
55-64	Gender	Female		4	10	21	13	48
		Male		5	11	17	2	35
	Total			9	21	38	15	83
65 and over	Gender	Female		4	6	25	6	41
		Male		6	10	17	4	37
	Total			10	16	42	10	78
Total	Gender	Female	0	30	79	145	51	305
		Male	3	48	88	145	26	310
	Total		3	78	167	290	77	615

Around 20 per cent of women aged 25-34 always overview their financial position while only 12 per cent of men in the same age group always overview their financial position.   Around 51 per cent of women aged 45-54 always overview their financial position while only 42 per cent of men in he same age group always overview their financial position.

Table 4. Cross Tabulation of "I save on a regular basis" (C.17) according to age and gender

Age				C.17					Total
			Never	Seldom	Sometimes	Often	Always		
18-24	Gender	Female		3	8	30	8		49
		Male		3	11	2	5		39
	Total			6	19	050	13		88
25-34	Gender	Female	1	3	6	43	11		64
		Male	0	4	16	36	9		65
	Total			7	22	79	20		129
35-44	Gender	Female	1	3	10	22	7		43
		Male	0	6	21	43	7		77
	Total			9	31	65	14		120
45-54	Gender	Female		5	16	32	7		60
		Male		7	19	26	5		57
	Total			12	35	58	12		117
55-64	Gender	Female		3	10	20	15		48
		Male		3	8	20	4		35
	Total			6	18	40	19		83
65 and over	Gender	Female		1	8	24	8		41
		Male		2	13	15	7		37
	Total			3	21	39	15		78
Total	Gender	Female	2	18	58	171	56		305
		Male	0	25	88	160	37		310
	Total			43	146	331	93		615

Around 84 per cent of women aged 25-34 often or always save on a regular basis while 69 percent of men in the same age group always or often save on a regular basis. Around 65 per cent of women aged 45-54 always or often save on a regular basis while 54 per cent of men in the same age group always overview their financial position.

5. Conclusion

In this study, we measure the variables of financial distress, financial management behavior and money attitude for adults and model the interrelationships between these variables and demographic variables using Structural Equation Models based on a survey which was conducted on a sample of households living in Eskişehir, Turkey.

The results of the model reveal that High Level of Financial Distress is associated positively with Risky Financial Management Behavior and negatively with Investment Oriented Financial Management Behavior. According to the findings of the study, married adults seem to be the most financially satisfied group, whereas single adults seem to be the least financially satisfied group. Yet, interestingly, they are the least financially distressed group as well. Divorced adults, on the other hand, seem to be the most financially distressed group. However, divorced adults are the group of adults who set themselves financial goals and make plans to achieve these goals. The findings also reveal that men tend to associate money with respect more than women, as 44 percent of the male respondents indicated that they agree with the statement "money earns the respect of people to you", while 39 percent of the female respondents indicated that they agree with that statement.

Regarding financial management behavior habits, middle aged adults and women tend to exhibit more responsible behavior. Middle aged adults seem to overview their financial position more often

than young adults. Both young and middle aged women seem to overview their financial position more often than men. Women tend to save more on a regular basis compared to men. Similarly, young adults tend to save more on a regular basis.

As the SEM model implies, decreasing financial distress of adults in general can induce less risky and more investment oriented financial management behavior. Providing adults with more financial education help diminish financial distress. Considering that divorced adults seem to be more vulnerable to financial distress and the tendency of this group to exhibit risky behavior when it comes to personal financial management (69 per cent of divorced respondents indicated that they often or always pay interest on their credit card debt as they pay their debt late), they should be given special attention. The tendency of this group to set financial goals and to make plans imply that their responsible financial behavior can be improved, and financial distress can be decreased by providing financial counselling. Moreover, considering more responsible behavior of young female adults (overviewing financial position and saving on a regular basis), this group of adults should be encouraged to channel their savings into investments. The results imply that as Money-Oriented Financial Attitude increases, Investment Oriented Financial Management Behavior tends to increase. Focusing more on young female adults to strengthen money oriented attitude by offering them financial education at early stages of life can empower them with the motivation and skills to save and invest more.

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TOPSIS Yönteminde Maliyet ve Karlılık Oranlarının Kullanılmasıyla Finansal Performansın Ölçümü: Ana Metal Sanayi Sektöründen Bir Şirket Örneği[*]

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MAKALE BİLGİSİ	ÖZ
    Anahtar Kelimeler: Çok Ölçütlü Karar Verme, TOPSIS, Maliyet ve Karlılık Oranları, Finansal Performans Değerleme, Demir Çelik	Çok ölçütlü karar verme yöntemlerinden birisi olan TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) yöntemi işletmelerin finansal performansının ölçümünde yaygın kullanılan yöntemlerden birisidir. TOPSIS yönteminin temelinde en düşük maliyetli, en yüksek fayda sağlayan seçenek optimum seçenektir. TOPSIS yönteminde kullanılacak finansal oranların, performansı ölçülecek işletmelere göre isabetli seçilmesi yapılacak analizin başarısını olumlu etkilemektedir. Üretim işletmelerinde, TOPSIS yöntemi ile yapılan finansal performans analizinde mali tablolardan elde edilen maliyet ve karlılık oranlarının kullanılması, yöntemin özüne oldukça uygun düşmektedir. Bu çalışmanın amacı, üretim işletmelerinde TOPSIS yöntemi ile yapılacak finansal performans analizinde maliyet ve karlılık oranlarının başarısını test etmektir. Bu doğrultuda, Borsa İstanbul Ana Metal Sanayi Endeksine kote olan bir şirketin başarısı yıllara göre hesaplanmış ve elde edilen sonuçların doğruluğu ve altındaki ekonomik nedenler incelenmiştir. 2008 ile 2017 yılları arasındaki maliyet ve karlılık oranlarına göre 2008 yılı en başarılı yıl iken 2015 yılı en az başarılı yıl olarak tespit edilmiştir. Analiz sonucunda elde edilen bulgular temel analiz sonuçları ile doğrulanmakla birlikte sektörde yaşanan ulusal ve uluslararası gelişmeler analizin sonuçlarını desteklemektedir. Sonuç olarak yapılan çalışmada kullanılan maliyet ve karlılık oranları TOPSIS yöntemi ile isabetli sonuçlar ortaya koymuştur.

Measurement of Financial Performance by Using Cost and Profitability Ratios in TOPSIS Method: The Case of a Company in the Iron and Steel Industry

ARTICLE INFO	ABSTRACT
	TOPSIS method which is one of the multi-criteria decision-making methods, is one of the most widely used methods in measuring the financial performance of enterprises. In the TOPSIS method, the most cost-effective, the highest-benefit option is the optimal option. For accurate selection of financial ratios to be used in the TOPSIS method, the features of the enterprise whose performance is to be measured should be considered and such a selection process has a positive effect on the success of the analysis. The use of the cost and profitability ratios, obtained from financial statements, in the financial performance analysis carried out with the TOPSIS method in production enterprises is quite appropriate to the essence of the method. The aim of this study is to test the success of cost and profitability ratios in the financial performance analysis which will be carried out with the TOPSIS method in production enterprises. Accordingly, the success of a company listed in the Istanbul Stock Exchange Basic Metal Industry Index was calculated by years and the accuracy of the obtained results and the economic reasons underneath were examined. According to the cost and profitability ratios between 2008 and 2017, 2008 was the most successful year and 2015 was the least successful year. Although the findings of the analysis are confirmed by the results of the fundamental analysis, national and international developments in the sector support the results of the analysis. As a result, the use of cost and profitability ratios with the TOPSIS method in the study revealed accurate results.

1. Giriş

Küresel rekabet ortamında yaşanan ekonomik, sosyal ve kültürel alandaki değişim, gelişim ve dönüşümler, siyasi sınırların önemini yitirdiği ve ekonomik bölgelerin önem kazandığı dünya pazarını oluşturmuştur. Ortaya çıkan küresel anlamdaki bu pazar kavramı, işletmeleri dünya çapındaki rakiplerini ve gelişmeleri dikkate alarak karar vermeye zorlamaktadır (Uslu, 1985, s. 19). Dolayısıyla işletmeler küresel rekabet ortamında hayatta kalabilmek ve daha iyi bir konuma gelebilmek hatta bunu sürdürebilir olarak sağlamak için stratejik planlamaları esnasında performanslarını geleceğe ışık tutabilecek şekilde değerlendirmelidirler (Bakırcı vd., 2014, s. 9-19). Bu bağlamda işletmelerde yapılan performans değerlendirmelerini dikkate alarak karar verme konumunda olan yöneticiler, alacakları kararlarda rasyonel davranış sergilemelidir. Yöneticilerin, rasyonel hareket etmeleri adına alacakları kararlarda; etkin, verimli ve tutumlu olmaları gerekmektedir. Karar almada etkinlik; karar vericinin doğru kararı vermesini, verimlilik; verilen kararın fiilen gerçekleşme düzeyini, tutumluluk ise; verilen kararın uygun zamanda ve makul maliyette gerçekleştirilmesini ifade etmektedir. Rasyonel karar vermek için öncelikle karar vericinin doğru kararı alması sağlanmalıdır. Bu amaç doğrultusunda, alınacak kararların objektif ve bilimsel temellere dayandırılması alınacak kararların rasyonellik düzeyini artıracaktır.

İşletme düzeyinde ya da sektör bazında yapılacak olan finansal değerlendirmeler, işletmelerde karar alıcı konumunda olan yöneticiler açısından önem taşımakla birlikte finansal bilgi kullanıcıları açısından da önem arz etmektedir (Peker, 1988, s. 16). Diğer bir anlatımla, işletme yöneticileri tarafından alınacak rasyonel kararlar tüm çıkar gruplarının yararına olacaktır. Dolayısıyla dinamik ekonomik koşulların geçerli olduğu küresel piyasalarda, finansal performans değerlendirmesi gerek işletme bazında gerekse sektör bazında zorunlu hale gelmiştir (Bakırcı vd., 2014, s. 9-19). İşletme adına alınacak kararlarda bilimsel yöntemlerden yararlanılarak; objektif değerlendirme sonuçlarıyla alınacak olan kararlar desteklenmeli, bu sayede karşılaşılması muhtemel olan riskler ve oluşabilecek kayıpların minimuma indirilmesi sağlanarak rasyonel kararların alınmasına katkı sağlanmalıdır

(Akyüz vd., 2011, s. 73-92). Bu bağlamda, çok ölçütlü karar verme teknikleri, farklı alternatif karar kriterlere ve ağırlıklara göre optimum sonucu elde etmeyi amaçlaması noktasında, işletme yöneticilerinin finansal değerlendirmelerle rasyonel kararlar almasını sağlamak amacıyla, karar aracı olarak kullanılabilmektedir (Akbulut ve Rençber, 2015, s. 117-136). Bu çalışma, üretim işletmelerinde TOPSIS yöntemi ile yapılacak finansal performans analizinde maliyet ve karlılık oranlarının başarısını test etmeyi amaçlamaktadır.

TOPSIS yöntemi, işletmelerin finansal performans ölçümünde yaygın olarak kullanılan yöntemlerden birisidir. TOPSIS yönteminin özünde, en düşük maliyetli, en yüksek fayda sağlayacak seçenek optimum olarak kabul edilmektedir. Yapılacak analizde kullanılacak finansal oranların, performansı ölçülecek işletmelere göre isabetli seçilmesi yapılacak analizin başarısını olumlu etkileyecektir. Özellikle TOPSIS yöntemi ile üretim işletmelerinin finansal performansı analiz edilirken maliyet ve karlılık oranlarının kullanılması, yöntemin özüne uygun düşmektedir. Finansal performans analizlerinde kullanılan finansal oranlar kullanım amaçlarına göre değişim göstermekle birlikte TOPSIS yönteminin doğasında olan maliyet minimizasyonu ve fayda maksimizasyonunu yansıtmakta yetersiz kalabilmektedir (Sakarya ve Akkuş, 2015, s. 109-123). Bu noktada, çalışmada kullanılan "maliyet ve karlılık oranları" sayesinde, TOPSIS yöntemiyle daha başarılı sonuçlar elde edilebileceği düşünülmektedir. Bununla birlikte literatürdeki çalışmalar incelendiğinde TOPSIS yöntemini kullanarak, sadece maliyet ve karlılık performansının değerlendirildiği çalışma yok denecek kadar azdır. Bu bağlamda çalışmanın, alanda yapılacak çalışmalara katkı sağlayacağı düşünülmektedir.

2. Literatür özeti

1981 yılında Hwang ve Yoon tarafından oluşturulan TOPSIS yöntemi; işletmelerin karar verme sürecine katkı sağlamaktadır. TOPSIS yöntemi işletmelerin performanslarının ölçümünde birçok sektörde gerek ulusal gerekse uluslararası çalışmalarda, kullanılmaktadır. Bu çerçevede işletme performanslarının TOPSIS yöntemiyle değerlendirildiği yurtiçinde gerçekleştirilen çalışmalardan bazıları aşağıda özetlenmiştir:

Yurdakul ve İç (2003), 1998 ile 2001 döneminde Borsa İstanbul'a kote olan beş büyük otomotiv sanayi şirketinin finansal performansını TOPSIS yöntemiyle analiz etmişlerdir. Her yıl için elde edilen performans puanıyla, ilgili şirketin hisse senedinin o yıl ki değeri karşılaştırılmıştır. Elde edilen bulgular sonucunda, ilgili şirketlerin finansal performansları ile hisse senedi değerleri arasında büyük ölçüde uyum olduğunu saptamışlardır.

Demireli (2010), çalışmasında ulusal olarak hizmet sunan kamu bankalarının finansal performans ölçümünü TOPSIS yöntemi ile yapmıştır. 2001 ile 2007 yılları arasında kamu bankalarına ait finansal oranların kullanıldığı çalışma sonucunda ilgili kamu bankalarının küresel ve yerel finansal krizlerden etkilendikleri, finansal performans puanlarının yıllar itibariyle gelişmelere bağlı olarak dalgalanmalar gösterdiği ve ilgili dönemde bankacılık sektöründe göze çarpan iyileşmenin yaşanmadığı sonucuna varmıştır.

Dumanoğlu (2010), tarafından yapılan çalışmada Borsa İstanbul'da işlem görmekte olan on beş çimento firmasının finansal performansı TOPSIS yöntemi ile analiz edilmiştir. 2004 ile 2009 yılları arasında ilgili şirketlerin finansal tablolarından elde edilen oranlar, TOPSIS yöntemi ile puanlara dönüştürülmüş ve elde edilen performans sonuçlarının değerlemesi ve karşılaştırılması yapılmıştır.

Dumanoğlu ve Ergül (2010), çalışmalarında Borsa İstanbul'da işlem görmekte olan on bir adet teknoloji firmasının finansal performans ölçümünü TOPSIS yöntemini kullanarak yapmışlardır. İlgili şirketlerin 2006 ile 2009 yılları arasındaki finansal oranlarının kullanıldığı analiz neticesinde, elde edilen bulgular temel analiz sonuçları ile örtüşmektedir.

Çonkar vd. (2011), tarafından yapılan çalışmada Borsa İstanbul kurumsal yönetim endeksinde işlem gören şirketlerin finansal performanslarıyla kurumsal yönetim notları arasındaki ilişki araştırılmıştır. 2007 ve 2008 yılları için şirketlerin finansal oranları TOPSIS yöntemi yardımıyla başarı puanlarına dönüştürülerek, bu puanlarla, ilgili şirketlerin kurumsal yönetim notları arasında ilişki olup olmadığı araştırılmıştır. Yapılan değerlendirmelerin sonucunda kurumsal yönetim notları ile finansal performans puanları arasında anlamlı bir ilişki bulunamamıştır.

Uygurtürk ve Korkmaz (2012), çalışmalarında Borsa İstanbul'a kote olan on üç ana metal sanayi şirketinin finansal performansını TOPSIS yöntemi ile analiz etmişlerdir. İlgili şirketlerin 2006 ile 2010 yıllarına ait finansal oranları kullanılarak, hesaplanan performans puanlarına göre işletmeleri sıralamışlardır. Ana metal sanayi sektöründe faaliyette bulunan bu şirketlerin ilgili dönemde performanslarında dalgalanmalar olduğu saptanmıştır.

Türkmen ve Çağıl (2012), tarafından yapılan çalışmada Borsa İstanbul bilişim endeksine kote olan on iki adet şirketin finansal performansı, TOPSIS yöntemi ile analiz edilmiştir. 2007-2010 dönemi için hesaplanan finansal oranlar TOPSIS yöntemiyle puanlara dönüştürülerek şirketlerin finansal performans derecelendirmeleri yapılmıştır.

Ergül (2014), çalışmasında Borsa İstanbul'a kote olan turizm ortaklıklarının finansal performanslarının ölçümünü ELECTRE ve TOPSIS yöntemi ile yapmış, elde edilen bulguları karşılaştırmalı olarak analiz etmiştir. 2005-2012 yıllarına ait finansal oranların kullanıldığı çalışmada ELECTRE ve TOPSIS yöntemlerinin karar vermeyi sağlayan başarılı yöntemler olduğu belirlenmiştir.

Kahveci ve Turna (2016), çalışmalarında Borsa İstanbul'a kote olan turizm ortaklıklarının finansal performans ölçümünü TOPSIS yöntemi ile yapmışlardır. 2010-2015 yıllarına ait finansal oranlar kullanılarak hesaplanan finansal performans puanlarına göre şirketler bir sıralamaya tabi tutulmuş ve sektörde faaliyet gösteren şirketlerin performans puanlarının belirlenmesinde etkili olan öncelikli finansal oranlar belirlenmiştir.

Bayramoğlu ve Başarır (2016), çalışmalarında Borsa İstanbul'a kote olan altı adet sigorta ortaklığının finansal oranlarını kullanarak TOPSIS yöntemi ile finansal performans değerlendirmesini yapmışlardır. 2011 ile 2014 yıllarına ait finansal oranların kullanıldığı çalışmada dört ortaklığın, farklı düzeylerde olmakla birlikte, finansal açıdan başarılı olduğunu; iki sigorta şirketinin ise başarısız olduğunu saptamışlardır.

Orçun ve Eren (2017), çalışmalarında Borsa İstanbul'a kote olan teknoloji ortaklıklarının finansal performans ölçümünü TOPSIS yöntemini kullanarak yapmışlardır. 2010 ile 2015 yılları için elde edilen finansal performans sıralaması ile borsa getiri sıralamaları karşılaştırılmış ve herhangi bir anlamlı ilişki tespit edilememiştir.

Metin vd. (2017), çalışmalarında Borsa İstanbul'a kote olan on bir adet enerji şirketinin finansal performansını TOPSIS ve MOORA yöntemleri ile analiz etmişlerdir. 2010-2015 yılları arasındaki finansal oranların kullanıldığı çalışmada, TOPSIS ve MOORA yöntemlerinin sonuçlarının değişkenlik gösterdiği ve sadece üç firmanın finansal performans sıralamasının aynı çıktığı belirlenmiştir. Bununla birlikte, tüm yıllarda en iyi ve en kötü finansal performans gösteren tek bir şirketin olmadığını belirlemişlerdir.

Yurtdışında işletme performansının TOPSIS yöntemi ile analiz edildiği çeşitli çalışmalar mevcuttur. Feng ve Wang (2000), yaptıkları çalışmada, Tayvan'da faaliyet gösteren beş havayolu şirketinin finansal göstergelerini kullanarak belirlenen yirmi iki adet değişkene göre şirketlerin performans düzeyini TOPSIS yöntemiyle incelemişlerdir. Çalışmanın sonucunda havayolu şirketlerinin performanslarının değerlendirilmesinde finansal göstergelerin finansal olmayan göstergelere göre daha etkili olduğunu belirlemişlerdir.

Aliakbarzadeh ve Tabriz (2014), yaptıkları çalışmada, faizsiz kredi fonunun piyasadaki performansını ölçmeyi amaçlamışlardır. Çalışmada 2013-2014 yılları arasında Tose Asr Shomal adlı faizsiz kredi fonunun piyasadaki performansını TOPSIS yöntemiyle analiz etmişlerdir. Yapılan TOPSIS analizinin devamında fonun performansını ölçmek için anket uygulaması da yapmışlardır. Anket uygulamasında hem finansal hem de finansal olmayan veriler birlikte kullanılmıştır. Daha sonra anket sonuçlarıyla, Bulanık AHP ve TOPSIS yöntemleri birlikte kullanılarak performans ölçümünü gerçekleştirmişlerdir. Çalışmanın sonucunda finansal kriterlerin finansal olmayan kriterlere göre daha fazla öneme sahip olduğunu belirlemişlerdir.

Mandic vd. (2014), yaptıkları çalışmada, 2005-2010 yılları arasında Sırbistan Bankacılık sektöründe faaliyet göstermekte olan bankaları analiz etmişlerdir. Çalışmada kriterlerin ağırlıklandırılması için Fuzzy AHP kullanıldıktan sonra bankaların performanslarının ölçümü ve sıralaması işlemi için TOPSIS yöntemi kullanılmıştır. Yapılan performans ölçümünde performans

ölçütü olarak; sermaye, portföy değerleri, kaynaklar, likit aktifleri, nakit kıymetler, net faiz geliri, esas faaliyet net geliri, vergi öncesi kar değişkenleri kullanılmıştır. Çalışmanın sonucunda, Banca Intesa adlı bankanın en iyi performans değerine sahip olduğu belirlenmiştir.

Behbamzadeh vd. (2015), yaptıkları çalışmada İran'da faaliyet gösteren bankaların hizmet kalitesini bulanık AHP ve TOPSIS yöntemleriyle analiz etmişlerdir. Çalışmada banka müşterilerinin hizmet kalitesi ile ilgili görüşleri anket uygulaması yöntemiyle elde edilmiştir. Çalışmanın sonucunda bankaların servis kalitesine göre sıralaması yapılmıştır.

3. TOPSIS yöntemi

TOPSIS yöntemi, ilk olarak 1981 yılında Hwang ve Yoon tarafından geliştirilmiştir. Bu yöntemde tüm alternatiflerin pozitif ve negatif ideal çözüme olan uzaklıkları hesaplanmaktadır. Yöntemin temelini seçilen alternatifin, pozitif ideal çözüme en yakın ve negatif ideal çözüme en uzak mesafede olması oluşturmaktadır (Chen, 2000, s. 1-2). Diğer bir ifadeyle pozitif ideal çözüme en yakın mesafede bulunan alternatif aynı zamanda da negatif ideal çözüme en uzak alternatif olacaktır. TOPSIS yöntemi, pozitif ideal çözüme en yakın olan alternatifi en iyi alternatif olarak kabul etmektedir (Tong vd., 2004, s. 436; Cheng vd., 2002, s. 983).TOPSIS yönteminde sayısal değerlerle ifade edilen kritik değerler ve kritik önem ağırlıkları belirlenerek işlem yapılır (Shanian ve Savadogo, 2006, s. 3). Pozitif ideal çözüm; oluşan faydanın en yüksek veya maliyetin en düşük olduğu çözüm noktası olmakta iken, negatif ideal çözüm; faydanın en düşük veya maliyetin en yüksek olduğu çözüm noktasını ifade etmektedir. O halde TOPSIS yöntemine göre yapılacak finansal performans analizinde; minimum maliyeti ve maksimum faydayı sağlayacak çözüm, alternatifler arasından seçilir ve bu amaca uygun olarak alternatifler arasında performans sıralaması yapılır (Özdemir, 2015, s. 134).

TOPSIS yöntemi, belirli sayıdaki alternatifler arasında en iyi olan alternatifin seçimini sağlamak amacıyla geliştirilmiş, daha sonra ise farklı alanlardaki birçok konuda çok ölçütlü karar verme problemlerini çözebilmek için adapte edilerek yaygın kullanım alanına sahip olmuştur (Özdemir ve Seçme, 2009, s. 83). TOPSIS yöntemi altı adımdan oluşan bir hesaplama sürecini içermektedir. Bu hesaplama sürecinin ayrıntıları aşağıda yer almaktadır (Dumanoğlu ve Ergül, 2010, s. 105-107):

Adım 1: Karar Matrisinin Oluşturulması

Karar matrisi; satırlarında sıralanması istenen alternatiflerin, sütunlarında ise sıralama işleminin yapılmasında kullanılacak olan kriterlerin yazılması sayesinde elde edilir. N ölçekli m alternatifli karar matrisi mxn tipinde bir matristen oluşmaktadır. Karar matrisini, A ile gösterildiğini kabul ederek, aşağıdaki şekilde ifade etmek mümkündür (Alp ve Engin, 2011, s. 69):

$$A = \begin{bmatrix} a_{11} & \cdots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{1m} & \cdots & a_{mn} \end{bmatrix} \qquad (1)$$

Adım 2: Karar Matrisinin Normalize Edilmesi

Karar matrisinin elemanları aşağıdaki formül aracılığıyla normalize edilerek tekrar yazılır (Yurdakul ve İç, 2003, s. 12). (i = 1,2, … , m; j = 1,2, … , n) (Normalize edilerek yazılmış matris B ile gösterilsin).

$$b_{ij} = \frac{a_{ij}}{\sqrt{\sum_{i=1}^{m} a_{ij}^2}} \qquad (2)$$

Adım 3: Normalleştirilen Karar Matrisinin Ağırlıklandırılması

A karar matrisinin normalize edilmesiyle oluşan, normalize edilmiş B matrisi, belirlenen kriterlerin ağırlıkları ile çarpılarak, ağırlıklandırılmış normalize matris elde edilir (Dumanoğlu, 2010, s. 331). (Ağırlıklandırılmış normalize matris L ile gösterilsin) wj, j inci kriterin ağırlığı olmak üzere, şeklinde ağırlıklarla çarpım işlemi yapılır.

$$l_{ij} = w_j.b_{ij} \qquad (3)$$

Adım 4: İdeal ve Negatif İdeal Çözümlerin Oluşturulması

Ağırlıklandırılmış normalize matris olan L matrisinden, pozitif ideal çözüm (A+) ve negatif ideal çözüm (A-) belirlenir. Bu değerler belirlenirken, L matrisinin sütunlarındaki maksimum ve minimum değerler alınır (Yurdakul ve İç, 2003, s. 12).

$$A^+ = \{l_1^+, l_2^+, \ldots, l_n^+\} \rightarrow \text{Pozitif İdeal Çözüm} \qquad (4)$$

$$A^- = \{l_1^-, l_2^-, \ldots, l_n^-\} \rightarrow \text{Negatif İdeal Çözüm} \qquad (5)$$

Adım 5: Uzaklık Değerlerinin Hesaplanması

Her alternatifin pozitif ideal çözümden olan mesafesi (S_i^+) ve negatif ideal çözümden olan mesafesi (S_i^-) aşağıdaki formüller yardımıyla hesaplanır. Denklem (2.6) ve denklem (2.7)'den görüleceği üzere bu hesaplamalarda Euclidian Uzaklık Yaklaşımı'ndan yararlanılmaktadır (Alp ve Engin, 2011, s. 71):

$(i = 1, 2, \ldots, m)$

$$S_i^+ = \sqrt{\sum_{j=1}^{n} (l_{ij} - l_j^+)^2} \qquad (6)$$

$$S_i^- = \sqrt{\sum_{j=1}^{n} (l_{ij} - l_j^-)^2} \qquad (7)$$

Adım 6: İdeal Çözüme Göre Göreli Yakınlığın Hesaplanması

Her bir alternatifin ideal çözüme göre benzerliğinin hesaplanmasında (C_i^+) pozitif ve negatif ideal çözüme olan uzaklık ölçülerinden yararlanılmaktadır. Pozitif ideal çözüme göre benzerliğin hesaplanışı aşağıdaki formül yardımıyla yapılmaktadır (Jadidi vd., 2008, s. 765):

$$C_i^+ = \frac{S_i^-}{S_i^+ + S_i^-}, \, (0 < C_i^+ < 1, \, i = 1, 2, \ldots, n) \qquad (8)$$

Buradaki C_i^+ değeri 0 ile 1 arasında değer almaktadır. C_i^+ değerinin 1 olması, ilgili alternatifin pozitif ideal çözüm noktasında olduğunu göstermekte iken; C_i^+ değerinin 0 olması ile ilgili alternatifin negatif ideal çözüm noktasında olduğunu göstermektedir (Özdağoğlu, 2012, s. 551).

Tüm adımlar düzenli olarak takip edildikten sonra, alternatifler negatif ideal çözümden göreli uzaklıklarına göre büyükten küçüğe doğru sıralanırlar. Böylelikle alternatiflerin önem sıraları belirlenmiş olur. Değeri en büyük olan alternatif diğerlerine göre en iyi alternatif olacaktır (Ersöz vd., 2011, s. 236).

4. Araştırma verilerinin analizi ve bulgular

Bu çalışmada, maliyet ve karlılık oranlarının başarısını test etmek için, Borsa İstanbul Ana Metal Sanayi Endeksinde işlem görmekte olan bir üretim şirketinin, 2008-2017 yılları arasındaki finansal performansı TOPSIS yöntemiyle analiz edilmiştir. Bu çerçevede iki başlık altında toplam yedi finansal oran karar kriteri olarak kabul edilerek 2008 ile 2017 arasındaki dönem için başarı sıralaması yapılmıştır. Bu amaç doğrultusunda Borsa İstanbul Ana Metal Sanayi Sektöründe işlem gören şirketin finansal verileri kamuyu aydınlatma platformundan (KAP) elde edilerek analiz gerçekleştirilmiştir.

Çok ölçütlü karar verme probleminin çözümünde TOPSIS yöntemi uygulanırken önemli aşamalardan biri, hesaplamaya dahil edilen karar değişkenlerinin fayda maksimizasyonu mu yoksa maliyet minimizasyonu mu hedeflediğinin belirlenmesidir. Bu uygulamada; işletmenin maliyetlerini temsil eden karar değişkenlerinin minimizasyonu, işletmenin karlılığını temsil eden karar değişkenlerinin ise maksimizasyonu hedeflenmiş olup bu hedeflere ilişkin bilgiler Tablo 1'de gösterilmiştir.

Tablo 1. Maliyet ve Karlılık Değişkenleri

Finansal Oran Kodu	Finansal Oran Adı ve Hesaplama Yöntemi	İdeal	Ağırlıklar
İşletmenin Maliyetlerini Temsil Eden Finansal Oranlar (Karar Değişkenleri)			
MO1	Satışların Maliyeti / Hasılat	Minimizasyon	%12,50
MO2	Esas Faaliyet Giderleri / Hasılat	Minimizasyon	%12,50
MO3	Esas Faaliyetlerden Diğer Giderler / Hasılat	Minimizasyon	%12,50
MO4	Finansman Giderleri / Hasılat	Minimizasyon	%12,50
İşletmenin Karlılığını Temsil Eden Finansal Oranlar (Karar Değişkenleri)			
KO5	Esas Faaliyet Karı veya Zararı / Hasılat	Maksimizasyon	%16,67
KO6	(Sürdürülen Faaliyetler Vergi Öncesi Faaliyet Karı veya Zararı – Finansman Geliri veya Gideri Öncesi Faaliyet Karı veya Zararı) / Hasılat	Maksimizasyon	%16,67
KO7	Dönem Karı veya Zararı / Hasılat	Maksimizasyon	%16,67
		Ağırlıkların Toplamı	%100

Yöntemin Uygulanması

TOPSIS yönteminin uygulanmasına ilişkin adımlar aşağıda gerçekleştirilmiştir. TOPSIS yönteminin birinci adımı karar matrisinin oluşturulmasıdır. Karar matrisinin oluşturulmasında maliyet ve karlılık performans oranları iki ana grupta toplanmış ve bu gruplara bağlı yedi alt performans kriteri tespit edilmiştir. Kriterlerin finansal performansa etkisi toplamda 1 olacak şekilde ağırlıklandırılmış ve ağırlık katsayıları (W) tespit edilmiştir. Analize ilişkin karar matrisi Tablo 2'de gösterilmiştir.

Tablo 2. Karar Matrisi

Yıllar	MO1	MO2	MO3	MO4	KO5	KO6	KO7
2008	0,6766	0,0250	0,0274	0,0542	0,3204	0,2991	0,2374
2009	1,0465	0,0404	0,0107	0,0211	0,0907	0,0901	0,0911
2010	0,9395	0,0490	0,0071	0,0306	0,0303	0,0217	0,0209
2011	0,8057	0,0312	0,0264	0,0441	0,1464	0,1264	0,1168
2012	0,8412	0,0244	0,0126	0,0222	0,1309	0,0108	0,1152
2013	0,8500	0,0208	0,0294	0,0762	0,1093	0,0417	0,0552
2014	0,7647	0,0267	0,0184	0,0498	0,2028	0,0259	0,1689
2015	0,9158	0,0344	0,0459	0,1488	0,0370	0,1173	0,0096
2016	0,8936	0,0260	0,0823	0,1927	0,0584	0,1499	0,0530
2017	0,8310	0,0196	0,1039	0,1208	0,1256	0,0726	0,0633
W	0,1250	0,1250	0,1250	0,1250	0,1667	0,1667	0,1667

İkinci adımda, standart karar matrisinin normalize edilmesi gerçekleştirilmiştir. Normalize edilmiş karar matrisi Tablo 3'de gösterilmiştir.

Tablo 3. Normalize Edilmiş Karar Matrisi

Yıllar	MO1	MO2	MO3	MO4	KO5	KO6	KO7
2008	0,2483	0,2549	0,1824	0,1817	0,6770	0,7524	0,6571
2009	0,3840	0,4118	0,0709	0,0706	0,1917	0,2266	0,2522
2010	0,3447	0,4996	0,0471	0,1026	0,0641	0,0547	0,0579
2011	0,2956	0,3179	0,1754	0,1480	0,3093	0,3178	0,3233
2012	0,3087	0,2493	0,0838	0,0745	0,2765	0,0272	0,3188
2013	0,3119	0,2124	0,1954	0,2557	0,2310	0,1050	0,1529
2014	0,2806	0,2721	0,1220	0,1671	0,4285	0,0650	0,4676
2015	0,3360	0,3510	0,3053	0,4988	0,0782	0,2950	0,0266
2016	0,3279	0,2653	0,5467	0,6463	0,1234	0,3771	0,1468
2017	0,3049	0,1998	0,6903	0,4051	0,2654	0,1827	0,1753

Üçüncü adımda, normalleştirilen karar matrisinin kriterleri, ağırlık değerleri ile çarpılarak ağırlıklandırılmış karar matrisi elde edilmiştir. Normalleştirilen karar matrisinin ağırlıklandırılması Tablo 4'de gösterilmiştir.

Tablo 4. Ağırlıklandırılmış Normalize Edilmiş Karar Matrisi

Yıllar	MO1	MO2	MO3	MO4	KO5	KO6	KO7
2008	0,031	0,032	0,023	0,023	0,113	0,125	0,110
2009	0,048	0,051	0,009	0,009	0,032	0,038	0,042
2010	0,043	0,062	0,006	0,013	0,011	0,009	0,010
2011	0,037	0,040	0,022	0,018	0,052	0,053	0,054
2012	0,039	0,031	0,010	0,009	0,046	0,005	0,053
2013	0,039	0,027	0,024	0,032	0,038	0,017	0,025
2014	0,035	0,034	0,015	0,021	0,071	0,011	0,078
2015	0,042	0,044	0,038	0,062	0,013	0,049	0,004
2016	0,041	0,033	0,068	0,081	0,021	0,063	0,024
2017	0,038	0,025	0,086	0,051	0,044	0,030	0,029

Dördüncü adımda, normalize edilmiş ve ağırlıklandırılmış karar matrisindeki her sütundan ideal pozitif ve negatif değerler seçilerek ideal çözüm setleri belirlenir. İdeal çözüm setleri Tablo 5'da gösterilmiştir.

Tablo 5. İdeal ve Negatif İdeal Çözüm Setleri

	MO1	MO2	MO3	MO4	KO5	KO6	KO7
Poz. İÇS	0,031	0,025	0,006	0,009	0,113	0,125	0,110
Neg. İÇS	0,048	0,062	0,086	0,081	0,011	0,005	0,004

Beşinci adımda, pozitif ve negatif ideal çözümlere olan uzaklık değerleri hesaplanmıştır. Pozitif ve negatif ideal çözüme olan uzaklık değerleri Tablo 6 ve Tablo 7'de gösterilmiştir.

Tablo 6. Pozitif İdeal Çözüme Uzaklık Değerleri

Yıllar	MO1	MO2	MO3	MO4	KO5	KO6	KO7
2008	0,0000	0,0000	0,0003	0,0002	0,0000	0,0000	0,0000
2009	0,0003	0,0007	0,0000	0,0000	0,0065	0,0077	0,0046
2010	0,0001	0,0014	0,0000	0,0000	0,0104	0,0135	0,0100
2011	0,0000	0,0002	0,0003	0,0001	0,0038	0,0052	0,0031
2012	0,0001	0,0000	0,0000	0,0000	0,0045	0,0146	0,0032
2013	0,0001	0,0000	0,0003	0,0005	0,0055	0,0116	0,0071
2014	0,0000	0,0001	0,0001	0,0001	0,0017	0,0131	0,0010
2015	0,0001	0,0004	0,0010	0,0029	0,0100	0,0058	0,0110
2016	0,0001	0,0001	0,0039	0,0052	0,0085	0,0039	0,0072
2017	0,0001	0,0000	0,0065	0,0017	0,0047	0,0090	0,0064

Tablo 7. Negatif İdeal Çözüme Uzaklık Değerleri

Yıllar	MO1	MO2	MO3	MO4	KO5	KO6	KO7
2008	0,0003	0,0009	0,0040	0,0034	0,0104	0,0146	0,0110
2009	0,0000	0,0001	0,0060	0,0052	0,0005	0,0011	0,0014
2010	0,0000	0,0000	0,0065	0,0046	0,0000	0,0000	0,0000
2011	0,0001	0,0005	0,0041	0,0039	0,0017	0,0023	0,0024
2012	0,0001	0,0010	0,0057	0,0051	0,0013	0,0000	0,0024
2013	0,0001	0,0013	0,0038	0,0024	0,0008	0,0002	0,0004
2014	0,0002	0,0008	0,0050	0,0036	0,0037	0,0000	0,0054
2015	0,0000	0,0003	0,0023	0,0003	0,0000	0,0020	0,0000
2016	0,0000	0,0009	0,0003	0,0000	0,0001	0,0034	0,0004
2017	0,0001	0,0014	0,0000	0,0009	0,0011	0,0007	0,0006

Altıncı adımda, ideal çözüme göre nispi yakınlık hesaplanarak, başarı sıralaması yapılmıştır. İdeal çözüme göre nispi yakınlık sıralaması Tablo 8'de gösterilmiştir.

Tablo 8. Çözüme Yakınlık Sıralaması

Yıllar	Pozitif İdeal (S^+)	Negatif İdeal (S^-)	Yakınlık (C_i)	%	Başarı Sıralaması (C_i)
2008	0,0229	0,2115	0,9021	100%	1
2009	0,1406	0,1194	0,4592	51%	4
2010	0,1884	0,1056	0,3592	40%	7
2011	0,1127	0,1230	0,5218	58%	2
2012	0,1495	0,1247	0,4547	50%	5
2013	0,1587	0,0947	0,3738	41%	6
2014	0,1272	0,1369	0,5185	57%	3
2015	0,1766	0,0710	0,2866	32%	10
2016	0,1700	0,0716	0,2964	33%	8
2017	0,1686	0,0694	0,2917	32%	9

Tablo 8'da görülebileceği üzere işletmenin maliyet ve karlılık açısından en başarılı olduğu yıl C_i (0,9021) değeri ile 2008 yılı 1. sıradadır. Başarı sıralamasında C_i (0,5218) değeri ile 2011 yılı 2., C_i (0,5218) değeri ile 2014 yılı 3., C_i (0,4592) değeri ile 2009 yılı 4. ve C_i (0,4547) değeri ile 2012 yılı 5. sırada yer almıştır. İşletmenin maliyet ve karlılık açısından en az başarılı olduğu yıl C_i (0,2866) değeri ile 2015 yılı 10. sıradadır. Başarı sıralamasında C_i (0,2917) değeri ile 2017 yılı 9., C_i (0,2964) değeri ile 2016 yılı 8., C_i (0,3592) değeri ile 2010 yılı 7. ve C_i (0,3738) değeri ile 2013 yılı 6. sırada yer almıştır.

Demir çelik işletmeleri, sermaye yoğun bir üretim tarzına sahip olduklarından dolayı, yüksek düzeyde faaliyet riskine maruz kalan işletmelerdir. Bu işletmelerin satış tutarlarında meydana gelebilecek değişmeler maliyet ve karlılık performanslarında önemli dalgalanmalara yol açmaktadır. İşletmenin 2008 yılında maliyet ve karlılık puanında ortaya çıkan başarının temelinde, dünya demir çelik üretimin ve tüketiminin yarısını tek başına gerçekleştirebilen Çin faktörü yatmaktadır. 2008 Pekin Olimpiyatları, dünyada demir çelik ürünlerine olan talebin artması ve demir çelik fiyatlarının aşırı yükselmesine neden olmuştur. Bu durum işletmenin 2008 yılındaki maliyet ve karlılık performansı açısından ulaşılan üstün başarı durumunu C_i (0,9021) açıklar niteliktedir. 2015 yılında dünya demir çelik tüketiminin daralması ile birlikte, Çin ve Rusya başta olmak üzere bazı ülkelerin kapasite fazlalıklarını devlet destekli dampingli fiyatlardan dünya piyasalarına yöneltmeleri, söz konusu işletmenin hem yurtiçi hem yurt dışı satışlarının azalmasına neden olmuştur. Bu durum nedeniyle 2015 yılında işletmenin en az başarılı maliyet ve karlılık puanına C_i (0,2866) ulaştığı

söylenebilir. Çin ve Rusya gibi ülkelerin devlet destekli dampingli ürünleri hem Türkiye'nin demir çelik ürünleri ihracatını olumsuz etkilemiş hem de bu ürünlerin Türkiye'ye ithalatını artırmıştır. Bu durum demir çelik sektörünün ve dolayısıyla ilgili işletmenin maliyet ve karlılık puanını olumsuz etkilemiştir. Bu yönüyle Türkiye'nin (US dolar bazında) demir çelik ihracatı ile maliyet ve karlılık performans puanları arasındaki ilişkinin görülmesi açısından Şekil 1'in oldukça dikkat çekici olduğu düşünülmektedir. Şekil 1'de yıllar itibariyle Türkiye'nin (US dolar bazında) demir çelik ihracatı ile maliyet ve karlılık performans puanları dönüştürülerek[1] karşılaştırılmıştır.
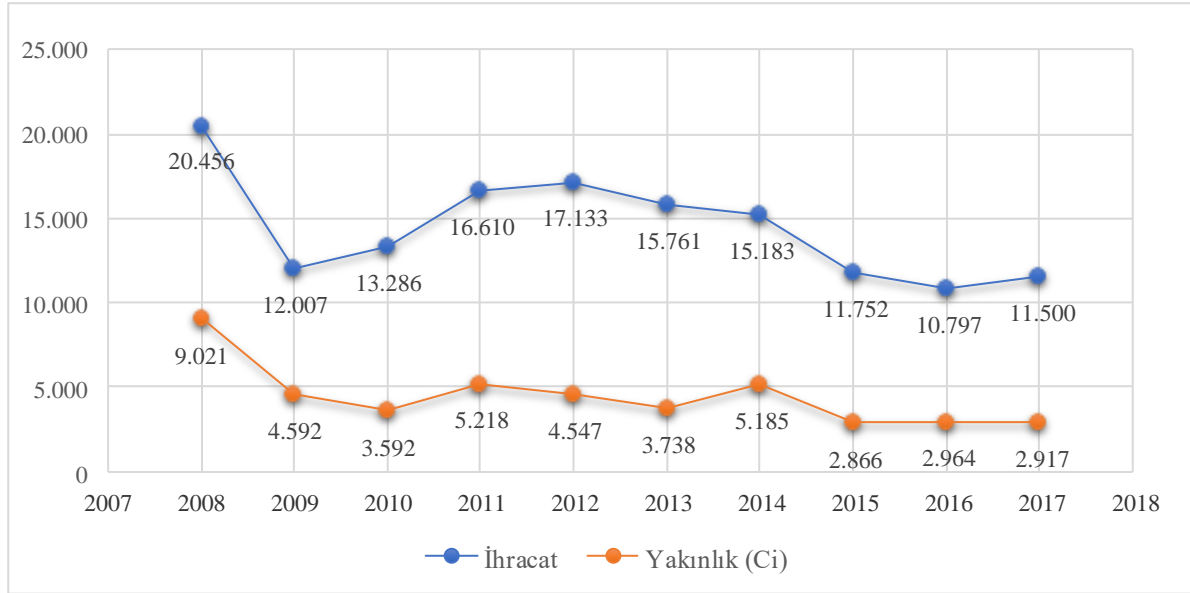
Şekil 1. Türkiye'nin Demir Çelik İhracatı(Milyon USD) ve İşletmenin Maliyet ve Karlılık Puanları ile Karşılaştırılması (Kaynak: Türkiye Demir ve Demir Dışı Metaller Meclisi Sektör Raporu 2013-2017).

Şekil 1'de Türkiye'nin demir çelik ihracatı ile işletmenin maliyet ve karlılık performansı arasında güçlü bir pozitif ilişki olduğu görülebilir. Bu iki değişken arasındaki korelasyon katsayısı (r) 0,854 olarak hesaplanmıştır. Türkiye demir çelik ürünleri ihracatının 20.456 Milyon Dolar olduğu 2008 yılında maliyet ve karlılık puanın C_i (0,9021) olması ve ihracatın 11.752 Milyon Dolar olduğu 2015 yılında maliyet ve karlılık puanın C_i (0,2866) olması oldukça anlamlıdır.

5. Sonuç

Çalışmada, üretim işletmelerinde TOPSIS yöntemi ile yapılacak finansal performans analizinde önerilen maliyet ve karlılık oranlarının başarısı ortaya konulmaya çalışılmıştır. Bu amaç doğrultusunda, Borsa İstanbul Ana Metal Sanayi Endeksine kote olan bir üretim şirketinin, 2008-2017 yılları arasındaki maliyet ve karlılık oranları, çok ölçütlü karar verme yöntemlerinden TOPSIS yöntemiyle değerlendirilmiş ve başarı durumu sıralanmıştır.

Yapılan analiz sonucunda elde edilen maliyet ve karlılık puanlarına göre, ilgili işletmenin en başarılı olduğu yılın 2008 yılı olduğu görülürken, en az başarılı olduğu yılın ise 2015 yılı olduğu görülmüştür. İşletmenin satışlarında meydana gelen dalgalanmaların, işletmenin finansal performansında dalgalanmalara yol açtığı görülmektedir. Bu durum sermaye yoğun faaliyet gösteren işletmeler için oldukça normal bir durumdur. Özellikle, dünya demir çelik ürünlerine talebin tavan yaptığı 2008 yılının en başarılı yıl olması; mevcut yerli ve yabancı pazarların kaybedildiği 2015 yılının ise en az başarılı yıl olması elde edilen sonuçların isabeti bakımından oldukça anlamlıdır. Bu durum ilgili dönemde Türkiye demir çelik ürünlerinin ihracat rakamları ile desteklenmektedir.

Analiz sonucunda elde edilen bulgular, TOPSIS yönteminin ve kullanılan oranların başarısını doğrulanmakla birlikte sektörde yaşanan ulusal ve uluslararası gelişmeler analizin sonuçlarını desteklemektedir. Sonuç olarak yapılan çalışmada kullanılan maliyet ve karlılık oranları TOPSIS

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[1] İlgili puanlar 1.000 ile çarpılarak aynı grafikte gösterilmesi sağlanmıştır.

yöntemi ile isabetli sonuçlar ortaya koymuştur. Çalışmada kullanılan maliyet ve karlılık oranlarının özellikle üretim işletmelerinin performans ölçümlerinde kullanılması bu alanda yapılacak diğer çalışmalara da katkı sağlayacaktır.

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Kadın Girişimciliğin Bibliyometrik Durum Analizi

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MAKALE BİLGİSİ	ÖZ
	Kadın girişimcilerin ülke ekonomilerine katkısı hızla artmaktadır. Ekonomik büyümeye etkisi arttıkça, literatürde daha ilgi çekici ve üstünde çalışılan bir kavram olmuştur. Çalışmanın amacı, son yıllarda öne çıkan kadın girişimcilik kavramı ile ilgili yapılmış araştırmaları incelemektir. Araştırma kapsamında veriler bibliyometrik analiz ile incelenmiş, VOSviewer haritalama yöntemi ile görselleştirilmiştir. Kadın girişimcilik kavramı ile ilgili Web of Science veritabanında 1983 ile 2019 yılları arasında taranan yayınlar, makale sayısı, atıf sayısı, en çok yayın yapan üniversiteler ve yazar ağ analizi şeklindeki bibliyometrik göstergeler kullanılarak incelenmiştir. Çalışma sonucunda, kadın girişimciliği ile ilgili yapılan yayınlar kategorize edilmiş ve görselleştirilmiştir. Araştırmacılar için bundan sonraki çalışmalarında yol gösterici bir araştırma ortaya konmuştur.

Bibliometric Status Analysis of Women Entrepreneurship

ARTICLE INFO	ABSTRACT
	The contribution of women entrepreneurs to the national economies is increasing rapidly. As the impact of women entrepreneurs on economic growth increases, it has become a more interesting and studied concept in the literature. The aim of this study was to examine researches about the concept of women entrepreneurs which has been prominent in recent years. The data was examined by bibliometric analysis and visualized by VOSviewer mapping method. In the Web of Science database related to the concept of women entrepreneurs, the publications scanned between 1983 and 2019 were analyzed by using bibliometric indicators such as number of articles, number of citations, the most published universities and author network analysis. At the end of the study, publications about women entrepreneurs were categorized and visualized. A guiding study has been attempted for the researchers.

1. Giriş

Cinsiyet eşitliğinin günümüzde öne çıkardığı kavramlardan biri olan kadının gücü ve hayat akışında bulduğu yer sosyal ve ekonomik alanlarda giderek önemini arttırmaktadır. Dünya nüfusunun neredeyse yüzde ellisi kadın olmasına rağmen, ülkeler dünyanın yarı nüfusunun sosyal ve ekonomik alanda karşılaştıkları sorunlar üzerine yeterince eğilmemektedir. Kadınların sosyal ve ekonomik

yaşamda karşılaştıkları eşitsizlikler ve zorluklar, onların sahip oldukları potansiyellerinin tümünü kullanmalarını engellemektedir.

Özellikle ekonomik alanda cinsiyet eşitsizliği, gelişmiş ve gelişmekte olan ülkeler için ekonomik büyüme ve gelişme açısından önem taşımaktadır. Ülkelerin ekonomik büyümelerinde kadınların ekonomik hayatta üstlendikleri roller ve karşılaştıkları zorluklar yıllar içinde bilimsel alanda çalışmalara konu olmuştur. Kadın girişimciler bu araştırmalar içinde ayrı bir yer edinmektedir.

Sanayi toplumundan bilgi toplumuna geçiş, adaletsiz gelir dağılımı, ekonomik büyüme ve giderek artan rekabet ortamı girişimciliğin önemini giderek artırmaktadır. Bilgi toplumunda "girişimcilik" kavramı, sanayi toplumunun sermayedar, kapitalist, patron, işadamlığı gibi kavramlarından farklıdır. Özellikle 1980'lerden sonra hızla yükselen girişimcilik kavramı, kadınların da ilgi alanına girmeye başlamıştır (Karadal, 2016, s.1).

Kadın girişimcilik kavramına, hem araştırma hem de uygulama açısından büyüyen ilgi, konuyla ilgili sistematik bir literatür taraması geliştirilmesini gerekli kılmıştır (Vita vd.,2013, s.451). Konuyla ilgili çalışmaların sayısının her geçen gün artması, çalışmaların sınıflandırılmasını ve analizini gerektirdiğinden, kadın girişimciliği konusunu ele alan araştırmaların bibliyometrik yöntemlerle incelenmesi bir ihtiyaç haline gelmiştir.

Bibliyometrik analiz, bilimsel ilerleme için hayati olan sosyal dinamiklerin nicel yorumunu desteklemektedir. Kadın girişimciliği üzerine kavramsal ilerleme nedeniyle yaygın bir teorik kurgunun evrimini aramak, boşluklarını tanımlamak, yeni ve eklektik yöntemleri ortaya koymak ve tasarlamak, alternatif yöntemler üretmek için bibliyometrik analiz yol göstericidir (Lara-Rodriguez, 2019, s.1).

Araştırma kapsamında, önemli ve etkili dergilerin tarandığı Web of Science veritabanında "Women Entrepreneurs" (Kadın Girişimciler) kelimeleri taranmıştır. 1979'dan 2019'a kadar yayınlar taranmış ve ilk makalenin 1983 yılında yazıldığı görülmüştür. Tarama sırasında çeşitli kısıtlamalar yapılmıştır. Kısıtlamalardan biri belge türü olarak makale seçilmesi olmuştur ve bu kısıtlama ile bütün veri tabanında tespit edilen 477 makale çalışmada incelenmiştir. Bilgisayar destekli VOSviewer yazılımı kullanılarak yapılan bibliyometrik analizler sonucunda yayın, yazar, kurum, atıf bilgileri ile bilim haritaları elde edilmiştir.

2. Yöntem

Hızla evrimleşen bilim içinde "aşırı bilgi" olarak adlandırılan veriler, kısa süre içinde "ikinci başarısızlık" olarak adlandırılmaya başlamaktadır (Huggett, 2013). Yeni bilgi teknolojileriyle beraber ortaya çıkan çok sayıda bilimsel bilgi, araştırmacıları bu büyük bilgi hacmini analiz etmenin yeni yollarını aramaya teşvik ederek yeni bir disipline neden olmuştur: bibliyometri (Castillo-Vergara vd., 2018, s.1). Bibliyometrik yöntemler, belirli araştırmacıları karşılaştırmak veya araştırma grupları arasında karşılaştırma yapmak için uygun olmasa da, büyük kavramları karşılaştırmak veya sınıflandırmak için yararlı olan güvenilir ve sağlam kalite göstergeleri üretebilir (Devos, 2011).

Araştırma kapsamında veri setini analiz etmek için bibliyometrik haritalama yöntemi kullanılmıştır. Bibliyometrik haritalama, ham (veya normalize edilmiş) bilimsel verilerin anlamlı sonuçlarını gösteren, görselleştirme yöntemlerini kullanmanın yeni ve etkili bir yoludur. Uzmanların belirli bir alanda bilgilerini geliştirmelerine yardımcı olmak için iyi bir tekniktir (Li vd., 2014, s.71).

VOSviewer'da "VOS" kısaltması "benzerliklerin görselleştirilmesi" anlamına gelir. Bunun için kullanılan algoritma MDS'ninkine (çok boyutlu ölçekleme) benzer: VOSviewer sistem seviyesinde bir stres fonksiyonunu en aza indirir (Van Eck vd., 2010). Yakın zamanda, Van Eck ve Waltman (2010), düğümlerin konumlandırılması ile aynı prensipler temelinde çalışan programa bir kümeleme algoritmasını entegre etmiştir. Küme sonuçları otomatik olarak haritaya renklendirilir. Kümeleme algoritması, çözümde daha fazla veya daha az küme üretmek için etkileşimli olarak değiştirilebilen bir parametre ile çalışır. Haritanın bir yoğunluk veya ısı haritası olarak gösterimi VOSviewer'da sağlanmıştır.

Çalışmada, ilk olarak kadın girişimciliği makalelerinin yayın yılı sınırlaması konulmadan sayısal olarak görülebilmesi için Web of Science veritabanının bütün dizinleri taranmıştır. Elde edilen veriler, haritalama yapmak için VOSviewer yazılımı ile uyumlu dosya formatlarına kaydedilmiştir.

VOSviewer yazılımında haritaları elde etmek üzere anahtar kelimeler belirlenmiştir. Veri seti, yıllar içindeki araştırma konularını yansıtacak anahtar kelime ile analize dahil edilmiştir. Sonuç olarak kadın girişimciliğinin zaman içindeki gelişimi ortaya konulmuştur. Veriler, tamamlayıcılık amaçlı ağ haritalarında ve tablolarda sunulmuştur. Tablolarda yalnızca en sık kullanılmış on anahtar kelimeye yer verilirken, ağ haritalarında anahtar kelimelerinin ortaya çıkma ve bağlantı özelliklerine ilişkin yoğunluk temelini gösteren bir şekil sunulmuştur. Çalışmanın bir diğer amacı olan atıf analizlerinin yapılabilmesi için 477 makalenin toplam atıf ve ortalama atıf sayıları hesaplanmıştır.

3. Bulgular

Araştırma bulgularında öncelikle yayınlanan doküman sayısı ve bu göstergelerden elde edilen oransal bibliyometrik göstergelere dayanan performans analizi sonuçları verilmektedir. Daha sonra VOSviewer haritaları verilmiştir.

Tablo 1'de taranan makalelerin yıllara göre dağılımı yer almaktadır. Tabloda görüldüğü üzere konu ile ilgili yayın sayısının yıllar itibariyle arttığı görülmektedir. Kadın girişimciliği ile ilgili 1983 yılında yalnızca bir makale bulunurken 2018 yılı içinde makale sayısı 68'e yükselmiştir. 2005 yılından sonra konu ile ilgili yayınların hızla artış gösterdiği görülmektedir. Kadın girişimciliği konusu ile ilgili son beş yılda yayınlanmış toplam makale sayısı 227 olup, 1983'ten bu yana yazılmış makale sayısının neredeyse yarısıdır. Tablo sonucuna göre son yıllarda kadın girişimciler akademisyenlerin çalışma alanlarında giderek artarak yer bulmaktadır.

Tablo 1. Yıllara göre maale sayıları

MAKALE YILI	MAKALE SAYISI
2019	23
2018	68
2017	48
2016	49
2015	39
2014	21
2013	20
2012	18
2011	16
2010	21
2009	11
2008	14
2007	15
2006	21
2005	10
2004	8
2003	5
2002	5
2001	15
2000	5
1999	3
1998	5
1997	6
1995	3
1994	10
1993	4
1992	3
1990	1
1989	2
1988	2
1987	2
1986	3
1983	1

Tablo 2'de Web of Science'da Kadın girişimciliğinin taranması sonucunda alanına beş ve daha fazla katkısı olan 13 üniversitenin, konu ile ilgili yayınlanan makale sayısı verilmiştir. University of North Carolina 13 makale ile kadın girişimciliği alanında literatüre en çok katkı sağlayan üniversitedir.

Tablo 2. Kadın girişimciliğe Katkısı Olan İlk 13 Üniversite ve Makale Sayıları

Örgüt	Çalışma Sayısı
Unıversity of North Carolina	13
Unıversity of North Carolina Greensboro	10
Siena Coll	9
Akademıa Leona Kozmınskiego W Warszawıe	8
Babson College	8
Brock University	8
Unıversıty of Urbino	6
Lancaster University	5
The World Bank	5
Unıversıtı Kebangsaan Malaysia	5
Unıversıtı Malaya	5
Unıversıty of London	5
University of Wisconsin System	5

Tablo 3'de "Kadın girişimci" kelimeleri taranarak, incelenmiş makaleler içerisinde en çok makalesi olan 6 yazar verilmiştir. Konuyla ilgili en çok katkı sağlayan, 9 makale ile Smith-Hunter'dır. Kaciak ve Welsh 8 makale ile ikinci sırada bulunmaktadır. Tablo oluşturulurken yazarlara ait en az beş makalenin bulunması sınırlılığı kullanılmıştır. Kadın Girişimci kavramı ile ilgili 5'ten az makalesi olan yazarlar tabloya eklenmemiştir.

Tablo 3. Kadın Girişimciliğe Katkısı Olan Yazarlar ve Makale Sayıları

Yazar Adı	Çalışma Sayısı
SMITH-HUNTER, Andrea E.	9
KACIAK, Eugene	8
WELSH, Dianne H.B.	8
BRUSH, Candida G.	5
WELTER, Friederike	5
CESARONI, Francesca M.	5

Tablo 4'te görüldüğü üzere makalelerin çoğunluğu İngilizce yazılmıştır. Yedi makale İspanyolca, ikişer makale Fransızca ve Portekizce dillerinde yazılmıştır. Genel kabul gören bilim dilinin İngilizce olması ve Web of Science veritabanının İngilizce olması bunda en büyük etkendir.

Tablo 4. Makale Dili

Çalışmanın Dili	Çalışma Sayısı
İngilizce	457
İspanyolca	7
Fransızca	2
Portekizce	2
Çince	1

3.1. VOSviewer haritaları

VOSviewer haritaları elde edilirken görsel karışıklık yaratmamak adına belirli kısıtlamalar uygulanmıştır. Kısıtlamalar sayesinde daha belirgin ve anlaşılır haritalar elde edilmiştir.

Harita 1'de Kadın Girişimciler kavramına katkısı olan 67 ülke varken, en az beş makale ile katkısı olan ülke sayısı 17'dir. Maviden sarıya değişen renkler ülkelerin katkı sayılarını vermektedir. Yine haritada ülkelerin her biri için olan yuvarlakların büyüklüğü ülkenin katkı sayısına göre değişmektedir. En küçük yuvarlak en az katkı yapan ülkeyi en büyük yuvarlak en fazla katkısı olan ülkeyi temsil etmektedir. Kadın girişimcilik kavramına en çok katkıyı Amerika Birleşik Devletleri, İngiltere, Kanada ve İspanya yapmıştır.

Harita 1. Kadın girişimciliğine en çok katkısı olan ülkeler
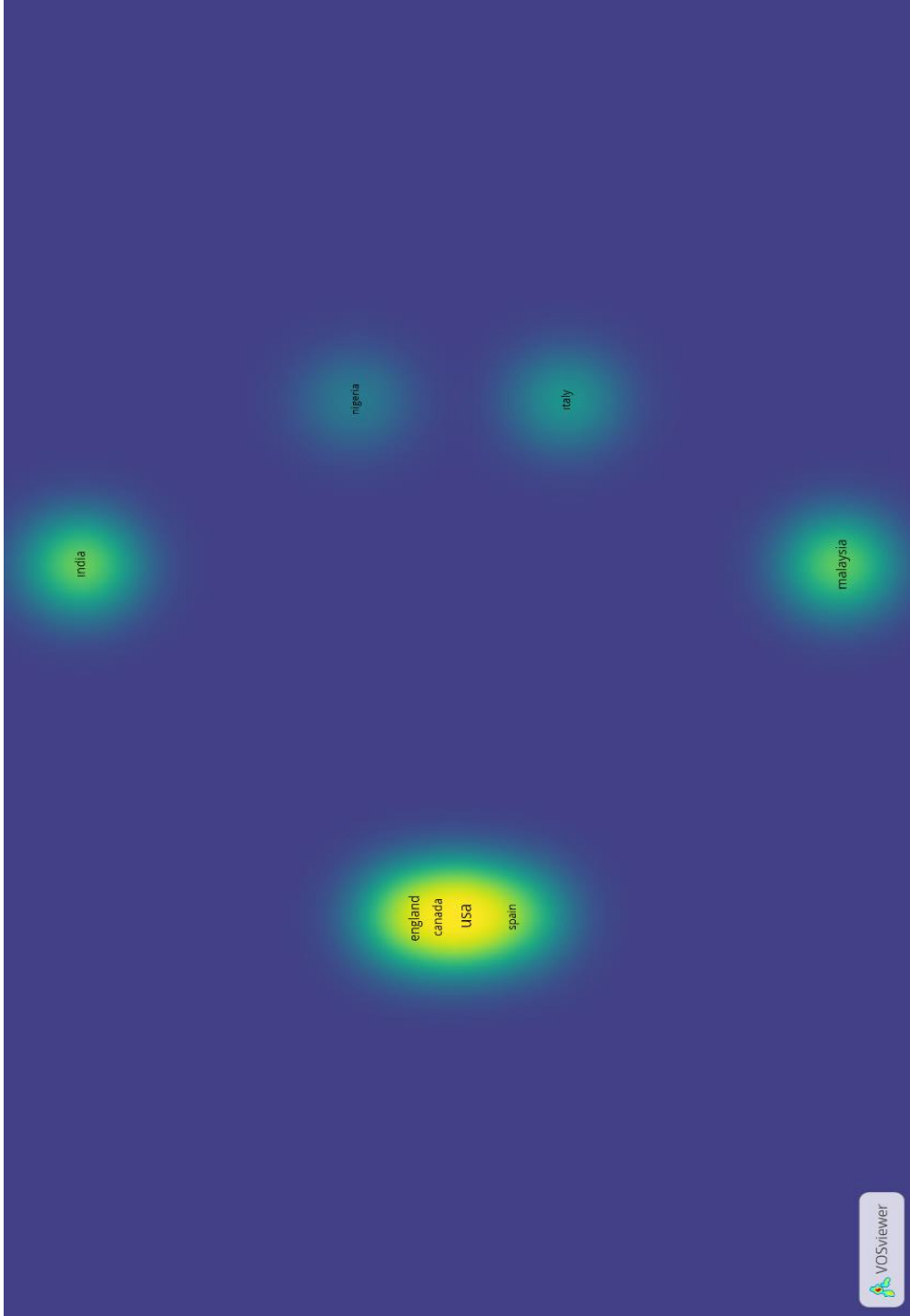
Harita 2'de yazılan makalelerin anahtar kelimeleri içerisinde en az 10 kez tekrar edilmiş 19 kelimenin aralarındaki temsili bağlantının haritası verilmiştir. Kelimelerin birbirlerine olan

bağlantıları, makalelerde beraber anahtar kelime olarak kullanıldıklarını göstermektedir. Toplam anahtar kelime sayısı 5236 olup tekrar edilmiş kelimeler şöyledir: Women entrepreneurs, women, entrepreneurship, entrepreneurs, female entrepreneurs, motivation, challenges, women entrepreneur, india, woman entrepreneur, female entrepreneurship, entrepreneur, empowerment, social capital, economic development, women entrepreneurship, performance, africa, microfinance, gender en çok kullanılan 20 kelimedir.

Harita 2. Kadın Girişimcilik konusunda yazılan makalelerde en çok geçen anahtar kelimeler
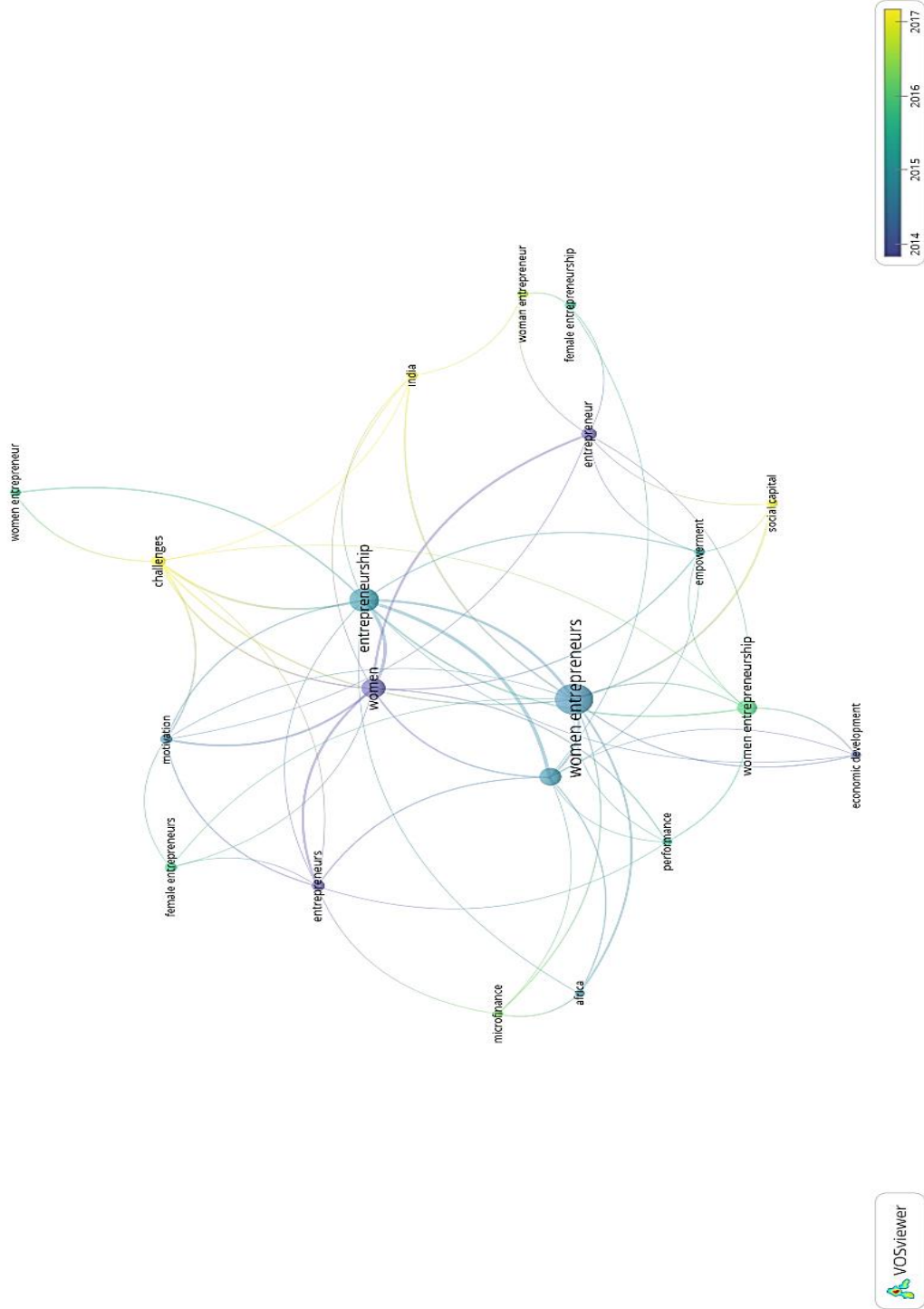
Kadın girişimciliği çalışan 18 yazarın makale sayıları, atıfları ve birbirleri ile olan ilişkileri temsili bağlantılar kurularak istatistiksel analizlerle desteklenen bilgiler ile birlikte Harita 3'te verilmiştir. En az 50 atıfı olan 18 makale harita hazırlanırken ele alınmıştır. Haritada bulunan yuvarlakların

büyüklüğü atıf sayılarının yoğunluğunu temsil ederken renkler ise haritanın sağ alt köşesinde görüldüğü üzere birbirlerine atıf yaptıkları yılları gösterir. Mordan sarıya doğru giden renk şeridinde mor 1995 yılı öncesini, sarı ise 2007 yılı sonrasını ifade eder.

Harita 3. Kadın girişimciliği konusunda en çok atıf alan yazarlar
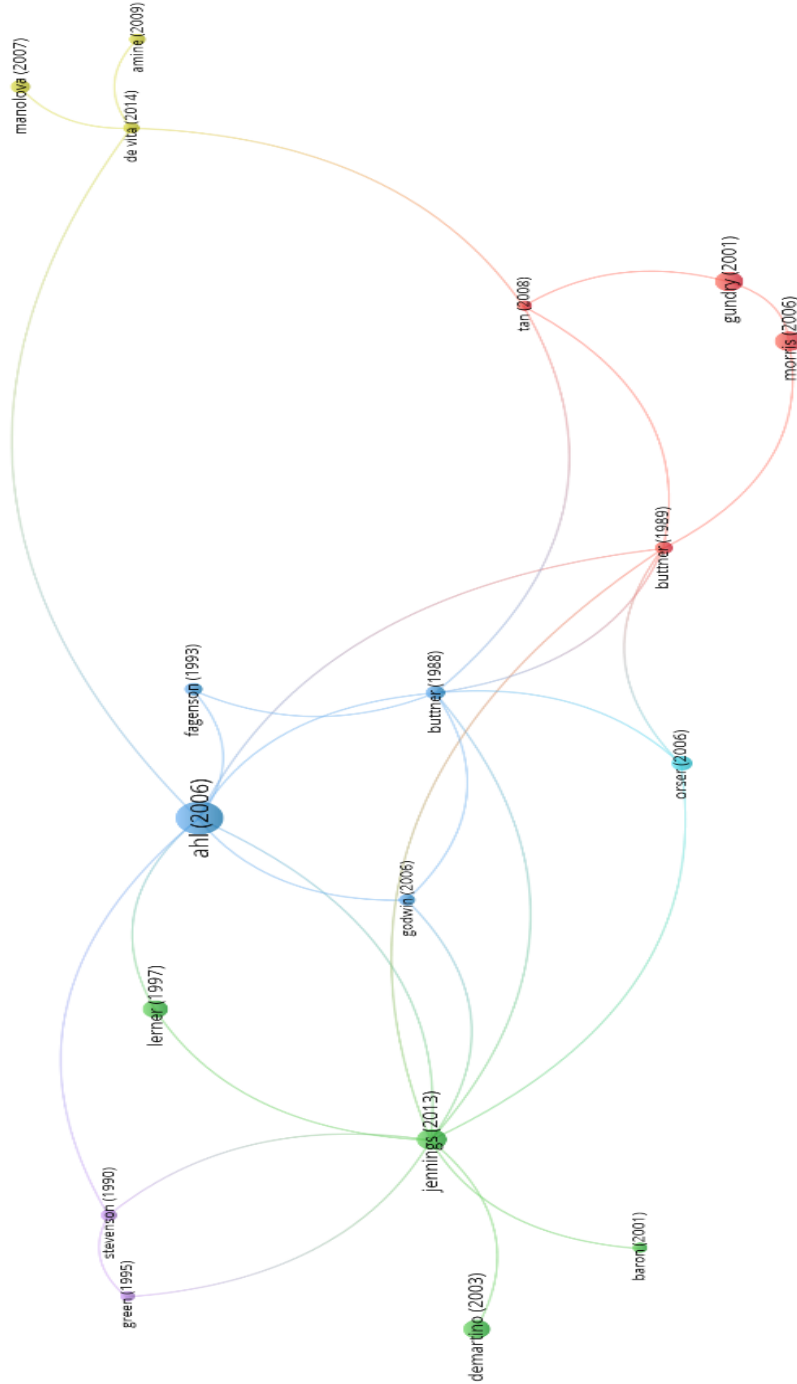
Harita 4'te Kadın girişimciliği ile ilgili en az 50 atıfı olan 55 yazar görülmektedir. Haritada sarı ve büyük olan konumlar atıf yoğunluğu fazla olan yazarları göstermektedir. 529 atıf ile Ahl, Helene en yoğun atıf alan yazardır. 286 atıf ile ikinci Brush, Candida G. gelmektedir. Jennings, Jenifer E. 197 atıfla üçüncü sırada gelmektedir.

Harita 4. Kadın girişimciliği konusuna en çok katkısı olan yazarlar
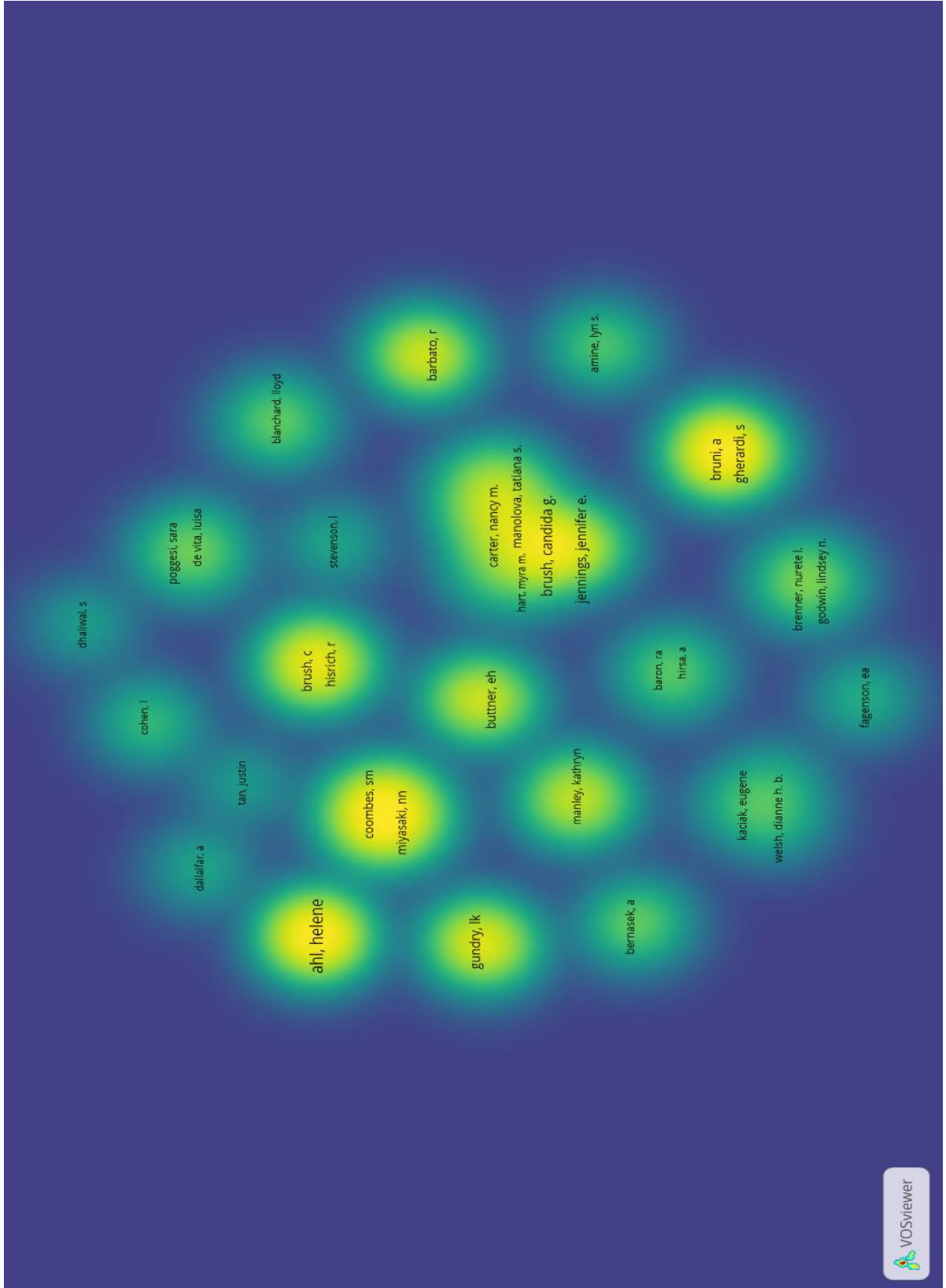
Harita 5'te kadın girişimciliği konusuna en fazla katkı sağlayan örgütler görülmektedir. Haritada, toplamda en az 2 makale ile kadın girişimciliği kavramına katkısı olan 60 örgüt verilmiştir. İlk sırada 8 makale ile University of North Caroline gelmektedir.

Harita 5. Kadın girişimciliği konusuna en çok katkı sağlayan örgütler
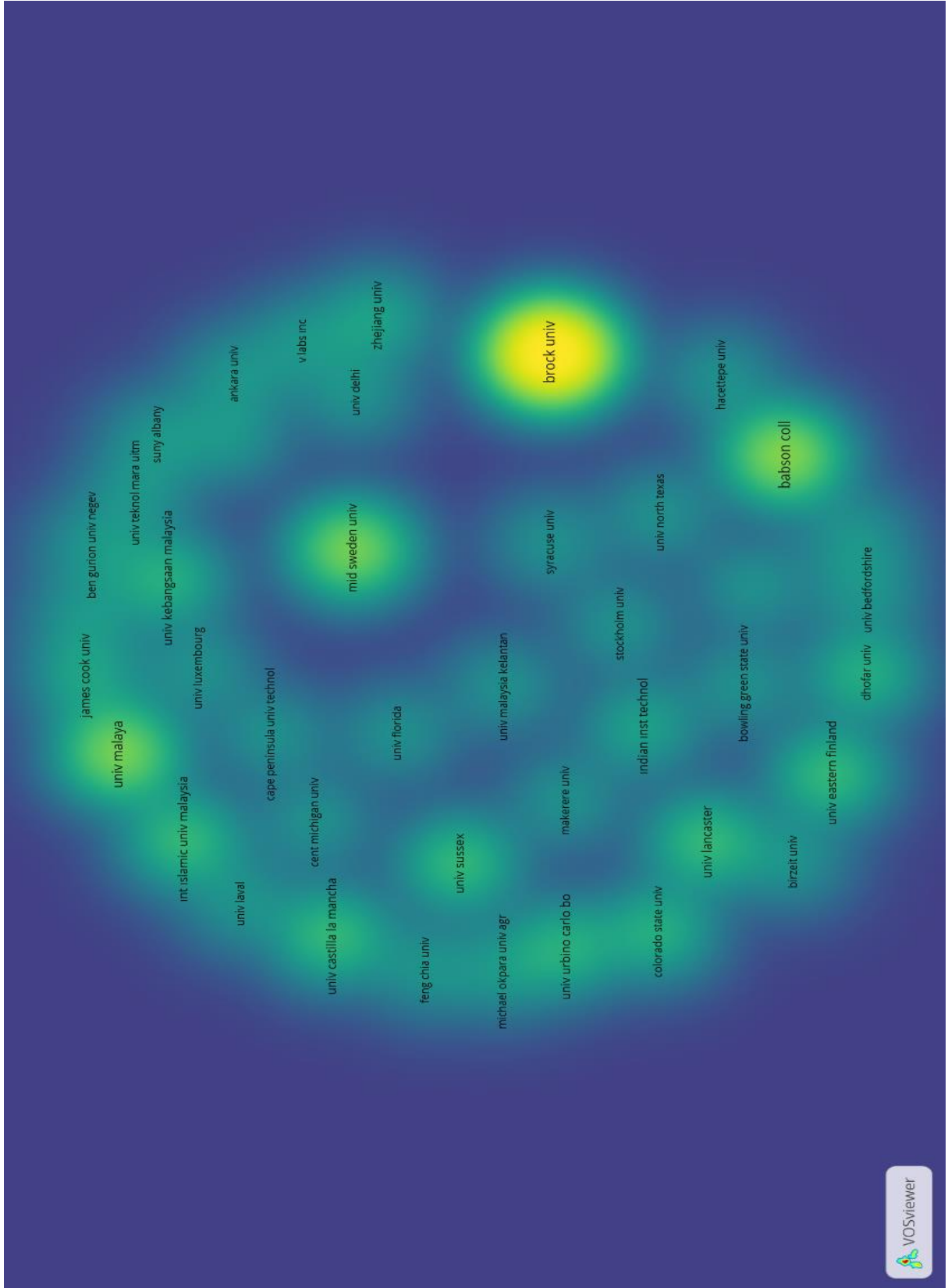
Makalelerin tam künyeleri Tablo 5'te verilmiştir. Tablo 5 makalelerin yayımlandığı yıl baz alarak oluşturulmuştur. Tabloda görülen makaleler, kadın girişimcilik alanında araştırma yapan bilim insanlarına yön veren temel makalelerdir. Ayrıca literatürde, birbirleri arasında en çok atıf yapılan makalelerdir.

Tablo 5. Kadın girişimcilik kavramı ile ilgili en çok atıf almış makalelerin künyesi

Makale Künyesi	Web Of Science	Google Scholar
Ahl, H, 2006, Why Research On Women Entrepreneurs Needs New Directions, Entrepreneurshıp Theory And Practıce 30/ 5 Pages: 595-621	503	1434
Jennings, Jennifer E.; Brush, Candida G., 2013, Research On Women Entrepreneurs: Challenges To (And From) The Broader Entrepreneurship Literature? Academy Of Management, 7/1 Pages: 663-715	202	503
Bruni, A; Gherardi, S; Poggio, B., 2004, Entrepreneur-Mentality, Gender And The Study Of Women Entrepreneurs Journal Of Organızatıonal Change Management, 17/3 Pages: 256-268	194	567
Gundry, Lk; Welsch, Hp., 2001, The Ambitions Entrepreneur: High Growth Strategies Of Women-Owned Enterprises Journal Of Busıness Venturıng 16/5 Pages: 453-470	190	621
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4. Sonuç

Araştırma kapsamında, sosyal bilimler alanında çalışan akademisyenler için güncel konulardan biri olan kadın girişimciliği ile ilgili Web of Science veritabanında taranan makalelere bibliyometrik analiz yapılmıştır. Kadın girişimciliği kavramının literatür taraması, hem tablolaştırılmış hem de görselleştirilmiştir. Araştırmacılar için kadın girişimciliği konusunda yol gösterici bir çalışma ortaya konmuştur.

Web of Science veritabanında 1979-2019 yılları arasındaki kadın girişimciliği (women entrepreneurs) ile ilgili makaleler taranmış, WoS Core Collection veritabanından bir savedrects dosyası şeklinde alınmıştır. Taranan 477 yayın bibliyometrik olarak farklı yönlerden (makalelerin atıf analizi, en çok atıf almış yazarlar, anahtar kelimeler, araştırmaya katılan ülkeler ve yayın dilleri) analiz edilmiş ve VOSviewer yazılımı ile haritalandırılmıştır.

Araştırma sonucunda, kadın girişimciliği konusunda altı yazarın öne çıktığı görülmüştür. Bu yazarlar; Smith-Hunter, Andrea E., Kaciak, Eugene, Welsh, Dianne H.B., Welter, Friederike, Cesaroni, Francesca M., Brush ve Candida G.'dir. Web of Science veritabanının İngilizce olmasından dolayı taranan makalelerin dili çoğunlukla İngilizcedir. Konuyla ilgili en az 50 atıfı olan 55 yazar haritalandırılmıştır. Kadın girişimciliği ile ilgili en çok çalışmaya ev sahipliği yapmış örgütler, hem tablo olarak sıralanmış hem de haritalandırılmıştır. University of North Carolina 13 yayınla konuya en

çok katkı yapan üniversite olmuştur. Ülke bazında bakıldığında, kadın girişimciliği kavramına en çok katkıyı, Amerika Birleşik Devletleri, İngiltere, Kanada ve İspanya yapmıştır.

Bibliyometrik analiz araştırmacılar için araştırdıkları konu ile ilgili bir yol göstericidir. Araştırma alanıyla ilgili ayrıntılı ve bütünsel bir görüş sağlamaktadır. Elde edilen kuşbakışı görünüm araştırma başında ve sürecinde teorik ve pratik olarak araştırmacılara büyük kolaylık sağlar. Bibliyometrik analiz, Web of Science veritabanı dışında başka veritabanlarına da uygulanabilir. VOSviewer haritalama yöntemi ile farklı veritabanları (dosyalamaya uygun) belirli bir konu çerçevesinde karşılaştırılabilir.

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The Mediating Role of Organizational Commitment in the Organizational Justice's Effect on Job Satisfaction and Turnover Intention: A Research on Academic Staff

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ARTICLE INFO	ABSTRACT
         Keywords: Organizational Justice, Organizational Commitment, Job Satisfaction, Turnover Intention, Academic Staff	Over the last couple of decades, surge in the number of universities established in Turkey has become significant which leads to increased attention to the faculty members responsible for helping young individuals prepare for their professional career. The retention of high-skilled academic staff seeking continual and frequent support from the faculty management has long been a central objective of the institutions involved in higher education system. Within this respect, facilitating organizational justice among faculty members appears to be one of the prime issues due to its impact on their levels of organizational commitment, job satisfaction and turnover intention. From an organizational behavioral context, the major purpose of this study is to examine the effects of organizational justice and organizational commitment on job satisfaction and turnover intention in a sample consist of 235 academicians of a foundation university. The study reveals that the levels of organizational commitment and job satisfaction of the academic staff may increase while the level of turnover intention may decrease when their perception on organizational justice increases. Data obtained from this study were analyzed by SPSS 25 package software. The quantitative research methods including frequency, correlation and regression analyses were utilized and the reliability of the scales was validated through Cronbach's alpha reliability coefficients in this study. The study aims to provide an extensive understanding on how organizational justice directly impacts retention rates of the academic staff through essential organizational behaviors such as organizational commitment, job satisfaction and turnover intention which are critical indications of employee well-being.

Örgütsel Adaletin İş Tatmini ve İşten Ayrılma Niyetine Etkisinde Örgütsel Bağlılığın Aracı Rolü: Akademisyenler Üzerine Bir Araştırma

MAKALE BİLGİSİ	ÖZ
   	Son yıllarda Türkiye'de kurulan üniversite sayısında gözlenen önemli artış, dikkatleri, genç bireyleri profesyonel kariyerlerine hazırlamaya yardımcı olmaktan sorumlu akademisyenler üzerinde yoğunlaştırmıştır. Fakülte yönetiminin daimi desteğine ihtiyaç duyan üstün yetenekli akademisyenlerin görevlerinde kalıcılıklarının sağlanması, yükseköğrenim kuruluşlarının uzunca bir süredir esas hedefi haline gelmiştir. Bu bağlamda, akademisyenlerin örgütsel bağlılık, iş tatmini ve işten ayrılma niyeti düzeylerini etkilemesi bakımından fakülte üyeleri arasında örgütsel adaletin sağlanması başlıca sorunlardan biri olarak gündeme gelmektedir. Örgütsel davranış bağlamında, bu çalışmanın asıl amacı; örgütsel adaletin ve örgütsel bağlılığın, iş tatmini ve işten ayrılma niyeti üzerindeki etkilerini bir vakıf üniversitesinde görevli 235 akademisyenden oluşan bir örneklem üzerinde incelemektir. Bu çalışma, akademik personelin örgütsel adalet algılarının artması durumunda örgütsel bağlılık ve iş tatmini düzeylerinin artarken işten ayrılma düzeylerinin ise azaldığını ortaya çıkarmaktadır. Bu çalışma sonucunda elde edilen veriler, SPSS 25 paket programı ile analiz edilmiştir. Bu çalışma kapsamında frekans, korelasyon ve regresyon analizlerini kapsayan nicel araştırma yöntemlerinden yararlanılmış olup; çalışmada kullanılan ölçeklerin güvenilirliği, Cronbach alfa güvenilirlik katsayıları ile doğrulanmıştır. Bu çalışma ile örgütsel adaletin; örgütsel bağlılık, iş tatmini ve işten ayrılma gibi çalışanların esenliğinin önemli göstergesi olan temel örgütsel davranışlar üzerinden akademik personelin görevlerinde kalıcı olma oranına nasıl doğrudan etki ettiğine yönelik ayrıntılı bir kavrayış sağlanması amaçlanmaktadır.

1. Introduction

Education is a critical and indispensable part in the development of any country. Particularly for developing countries, investment in education has vital importance for sustainable development and growth. The number of universities established in Turkey has dramatically risen in the past few decades. According to the statistical data obtained from the Council of High Education, the total number of universities and academics in Turkey has reached up to 206 and 167 237, respectively, as of the year 2019. The results show that higher education has been determined to be crucial element in country's investment strategy for strengthening the structure of its education system that gives important role to academics whose priority is to provide high quality teaching for students. An analysis of organizational behaviors affecting academic staff helps to generate implications about their working conditions. In this regard, Organizational Justice (OJ) appears to be one of the essential topics to be examined through the lens of psychological well-being of employees.

The concept of OJ was first introduced into the literature by Greenberg (1987) and over the past three decades, OJ has become a popular topic and a broad range of studies on this topic have emerged in the disciplines relating to behavioral sciences, sociology, psychology, strategic management and organizational theory. Many of those which were conducted from educational perspective targeted teaching professionals (DiPaola and Hoy, 2005a; DiPaola and Hoy, 2005b; DiPaola and Guy, 2009; Hoy and Tarter, 2004; Hoy and Sweetland, 2000; 2001; Burns and DiPaola, 2013). Greenberg (1987) defines OJ as employee's attitude in response to the perception of justice. OJ refers to the extent of perceived fairness of an employee against behavior exerted by an organization that results with attitudinal response of an employee (Fox, Spector, and Miles, 2001; Lam, Schaubroeck, and Aryee, 2002).

Fair treatments displayed by the organization directly influences work-related behaviors of the employees such as Organizational Commitment (OC), Job Satisfaction (JS) and Turnover Intention (TI) besides job performance of the employees (Cohen-Caharash and Spector, 2001; Colquitt et al., 2001). Thus, OJ has been accepted to be one of the major driving forces for any organization to successfully implement its overall activities (Greenberg, 1990b). OJ evolved from two-factor model, which consist of procedural and distributive justice, to four-factor model with the inclusion of interpersonal and informational justice. Sweeney and McFarlin (1993) proposed a model demonstrating the relationships between two dimensions of OJ as personal and organizational outcomes in which distributive justice was correlated with satisfaction while procedural justice was correlated with OC. These findings are in consistent with the studies conducted by Folger and Konovsky (1989) and McFarlin and Sweeney (1992).

2. Conceptual framework and literature review

2.1. Organizational justice

The word justice generally represents the acts of righteousness, honest behaviors and fair approaches. The employees' perception of justice is occurred when they analyze their work-related behaviors as well as the procedures administrating the way of allocation of these work-related outputs (Cropanzano and Prehar, 2001). OJ has its roots in Equity Theory coined by Adams (1965) which is based on the perceptions of individuals resulted from their judgments regarding their level of inputs in comparison with resulting outputs. Social Exchange Theory has also played a major role in the development of the concept OJ. According to Bies (2001), perceptions of the employees are formed based on Interactional Justice (IJ) and Procedural Justice (PJ). OJ implies employees' perceptions of equality emerged as the outcome of objective treatments exhibited by the organization (Ambrose et al., 2007; Cropanzano and Rupp, 2003) which in turn having positive impacts on employees' job performance. The concept of OJ involves four dimensions namely distributive, procedural, interactional and informational justice, which was originally developed as two-dimensional construct (Colquitt, 2001; Colquitt, Greenberg, and Zapata-Phelan, 2005). According to the Moorman (1991), OJ refers to the patterns in which employees determine if they have experienced fair treatment by the organization and the influence of these determinations on other work related outcomes.

2.1.1. Distributive justice

Distributive Justice (DJ) is defined as the distribution of resources or outcomes by the organization in a fair manner and individuals' perceived fairness regarding the allocation of resources (Folger and Konovsky, 1989) that may be associated with payment, praise, rewards etc. The results of the research conducted to elucidate the outcomes linked with the allocation of resources suggests that DJ has positive effect on JS whereas has negative effect on TI of the employees (Lee, 2000). According to Adams (1965) DJ can be nourished when the resources or outcomes are perceived to be equally distributed by employees. DJ has found to be directly correlated with satisfaction of employees particularly relating to payment (Deconinck and Stillwell, 2004). Deconinck and Stillwell (2004) argue that DJ may be viewed as one of the major determinants of employee satisfaction when they feel that organization fairly allocates the rewards. McFarlin and Sweeney (1992) argued that DJ plays a significant role in forecasting the work-related results of the employees. Lambert (2003) reported the effect of DJ on employees' work related behavior such as JS. Perceived fairness of resource allocation within an organization is associated with increased levels of OC and JS (Cohen-Charash and Spector, 2001; Colquitt et al., 2001).

2.1.2. Procedural justice

PJ refers to the assessment of OJ in association with policies and processes (Blakely et al., 2005; Sjahruddin and Sudiro, 2013). PJ focuses on methods while DJ is based on results (Nadiri and Tanova, 2010). Kim and Mauborgne (1998) suggested that employees' level of discretionary collaboration varies according to the extent of fair treatment displayed by the organization which thus affects employees' level of commitment to the organization and they are less likely to collaborate with their organization in case of exposure to unfair procedure of the organization. Lee (2000) reported the direct correlation

between PJ and JS in which employees are more likely to accept decisions when they experience fair procedure rather than unfair procedure. Lambert, Hogan, and Griffin (2007) found that PJ have more significant effect both on OC and JS as compared to DJ. Cloutier and Vilhuber (2008) identified the multidimensionality of the PJ in which justice of the salary determination process was evaluated by the perceptions of employees on allocation procedures, decision-makers, system transparency. This study shows the direct effect of procedural characteristics about decision-makers on JS (Cloutier and Vilhuber, 2008). According to the study conducted by Wittmer, Martin and Tekleab (2010), who argued the significance of supervisors' training and performance appraisal, PJ have found to be correlated with job attitudes and TI of the employees and this result was not supported by the findings of Bagdadle, Roberson and Poalele (2006) who found the indirect impact of the PJ on TI.

2.1.3. Informational justice and interpersonal justice as interactional justice

The interactional justice (IJ) dimension which was initially developed by Bies and Moag (1986), deals with the communication aspect of fairness and adequate explanations concerning decisions in the organization (Bies and Moag, 1986). Based on their research on interpersonal treatment during recruitment process, they described four criteria to define this construct namely as *justification, truthfulness, respect* and *propriety* (Colquitt, 2001). Greenberg (1990a) later analyzed this construct from two dimensional perspectives which are *explanations* and *sensitivity*. Deluga (1994) suggested that IJ occurs when managers attempt to build trust in the form of *fairness, loyalty, integrity, openness, discreetness, promise fulfillment* and related trustworthy behaviors within an organization. IJ, which is described as employees' perception on fairness based on interpersonal treatment (Nadiri and Tanova, 2010), is composed of interpersonal and informational justice. Greenberg (1993) was the first researcher to state that it may be logical to divide interactional into two sub-dimensions as interpersonal and informational justice by expressing their independent influences from each other (Colquitt et al., 2001).

Interpersonal justice refers to the way managers treat employees and the reactions of employees accordingly (Cohen-Charash and Spector, 2001). Colquitt (2001) incorporated two facets as *respect* and *relevance* into interpersonal justice. Interpersonal justice involves with respectful attitudes exhibited by managers in their relationships with other members of an organization who take part in distributive and procedural decision-making process. Interpersonal justice is formed within an organization when employees are treated respectfully and sensitively (Heather and Spence, 2004).

Informational justice refers to the extent to which employees are informed about how the decisions relating to them are taken in the organization (Heather and Spence, 2004). Colquitt (2001) incorporated two facets as *accuracy* and *justification* into the informational justice. Informational justice forms if employees perceive their managers as an honest person when they give information to them. Informational justice also refers to employees' perceived equality on the information used in decision making process of organization.

2.2. Organizational justice and organizational commitment

OC is described as the strength of an individual's identification with and employees' engagement to a particular organization (Mowday, Steers and Porter, 1979). The concept organizational commitment has been investigated by many researchers with great deal of attention. The positive and significant relationship between OC and OJ has been evidenced by some researchers (Chang and Dubinsky, 2005). OC is also defined as affective involvement of employees with organizational vision, mission, values and goals of an organization (Landsman, 2008; Jaskyte and Lee, 2009). In the literature, there are some studies imply that PJ dimension of OJ is concerned with OC (Tremblay et al., 2010; Hung et al., 2004; Lambert, 2003; Simons and Roberson, 2003; Memarzadeh and Mahmoudi, 2010). Some researchers including Rezaiean et al. (2010), Loi et al. (2001) and Lambert et al. (2007) observed that PJ is more influential on OC than IJ whereas some suggest that DJ have stronger effect than PJ on OC (Phromket et al., 2012). Nili et al. (2012) claimed that four dimensions of OJ have an effect on OC in their study conducted among municipal employees in Iran.

2.3. Organizational justice and job satisfaction

JS, in particular, is deemed to be one of the important organizational behavior which serves as an indication for employee retention. According to the definition of Locke (1969), JS is "the pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating the achievement of one's job values". JS is also described as the positive feelings arise from job experience which will then induce employees (Locke and Latham, 1990b). Spector (1985, 1997) defines JS as the degree to which employees are satisfied or dissatisfied with their jobs. In addition, Spector (1985) also describes JS as employees' response towards their jobs and the influence occurs when employees compare the actual results with those expected. Mowday et al. (1982) argue that JS is viewed as particularly related with job while OC is accepted more general issue for an organization. In the literature, findings of some researchers evidenced the direct link between JS and OJ in which all dimensions of OJ are positively correlated with JS (Colquitt et al., 2001). Among those reviewed, there are many studies particularly reported the positive correlation between PJ and DJ and JS (Lambert, 2003; Nadiri and Tanova, 2009; Promket et al., 2012, Jespen and Rodlwell, 2007; Choi, 2011; Elamin and Alomain, 2011). Lambert (2003) and Mamarzadeh and Mohmoudi (2010) suggest that PJ has more significant effect on JS as compared to DJ. The findings of Lambert et al. (2007) also verified the positive and significant correlation between PJ and JS which are in consistent with those obtained by Jahangir et al. (2006) and Koh and Boo (2004). Lambert et al. (2007) reported that DJ has significant impact on JS, as well. The results imply that employees who experienced high levels of DJ may keen on performing their jobs. According to McFarlin and Sweeney (1992), DJ has multifaceted influences when it comes to the negative affective and personal responses which make employees feel dissatisfied with their jobs. There are also studies supported the view that IJ have more significant effect on JS as compared to DJ and PJ (Elamin and Alomain, 2011). In addition those indicated the correlation between JS and IJ dimension of OJ is also proved by some researchers (Choi, 2011; Simons and Roberson, 2003).

2.4. Organizational justice and turnover intention

The term turnover intention involves employees' purposeful and conscious willingness to quit their organizations and their intention for searching alternative job opportunities (Tett and Meyer, 1993). If the new alternative is favorable as compared to existing one, it gives a stimulus for leaving the organization and results with actual withdrawal (Lee, 2000). TI rate in an organization involves with the number of employees' discretionary leaves within a year and increased levels of TI thus bring negative results for the organization (Smith and Clark, 2011). Bluedorn (1982) expressed JS as a phenomenon preceding OC in the model he proposed for TI. Nevertheless, OC has been found to be associated with TI, empirical research conducted so far implied that actual turnover is directly resulted from intention to leave (Bluedorn, 1982). Although researchers have conducted a great deal of study focusing on the effect of OJ on OC and JS, it has been argued that variables particularly playing mediator role have not been sufficiently examined in the relationship between OJ and work-related behaviors so far (Abu Elanain, 2010). Lee (2000) found that only perception of DJ made a contribution to TI. According to Alexander and Ruderman (1987), TI directly results from the perceived unfairness by employees in terms of DJ. Lee (2000) discovered the contribution of employee perception on DJ in his research. İyigün and Tamer (2012) found negative impact of PJ and DJ on TI in his research conducted among 156 employees working in an electronic store chain in Turkey.

2.5. Organizational commitment and job satisfaction

In the literature, OC and JS have found to be significantly related with each other (Tai et al., 1998). Boles et al. (2007) reported that JS has various aspects which are significantly associated with OC. According to Markovits et al. (2007), affective organizational commitment has the strongest impact on JS. The relationship between OC and JS was demonstrated in the previous studies (Yang, 2009). Mete et al. (2016) found the positive significant relationship between the JS and OC (r=0.28, p>0.01) in their studies conducted among IT employees working at the Ministry of the Turkish Government. There are also some studies implying that OC is considered as dependent variable whereas JS is considered as independent variable (Mowday et al., 1982; Gaertner, 1999; Lok and Crawford, 2001). OC is deemed to be the result of JS. JS is suggested as a constituent of OC (Kovach, 1977). Medlin and Green (2009) suggested that positively affected employees exhibit JS which thus positively associated with OC and

organizational effectiveness. Mowday et al. (1982) argues that OC and JS can be displayed in various ways. According to Feinstein and Vondrasek (2001), OC should demonstrate long lasting stability depending upon the JS level of an employee.

2.6. Organizational commitment and turnover intention

Over the last couple of decades, the term organizational commitment has attracted immense attention since its substantial role in intention to leave and TI (Brown and Peterson, 1993). Griffeth et al. (2000) indicated that TI of the employees are the prime component in predicting the actual voluntary turnover. Employees' TI would increase in case of the absence of OC and JS (Wong et al., 2001). Less JS accompanied with low salary is viewed to be the prime factors which have a strong impact on employees' job retention (Al-Hussami, 2008). Jyoti (2013) suggested in his study that OC and JS are negatively correlated with TI. DeConinck and Bachmann (2011) reported the negative correlation between OC and TI in their studies conducted among marketing managers. Maheshwari and Maheshwari (2012) also found the inverse relationship between OC and TI.

3. Method

The objective of this study is to investigate the effect of OJ and OC on JS and TI in a sample composed of academic staff. Based upon the theoretical framework, a model in below, which incorporates the research hypotheses, was generated with the aim of exhibiting the relationship between the variables accordingly (Figure 1).
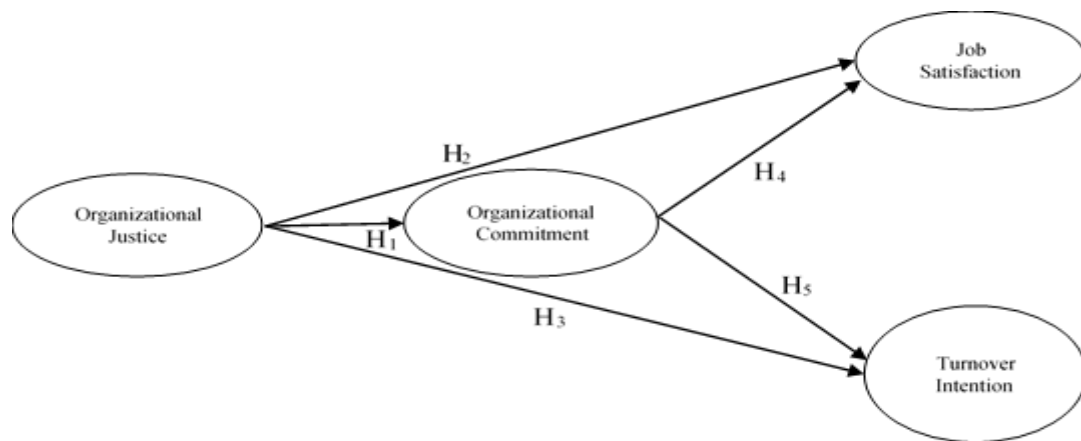
Figure 1: Research Model
Based on the above research model, the hypotheses were generated as follows:

H₁: OJ has a significant effect on OC.

H₂: OJ has a significant effect on JS.

H₃: OJ has a significant effect on TI.

H₄: OC has a significant effect on JS.

H₅: OC has a significant effect on TI.

H₆: OC has a mediating role on the effect of OJ on JS.

H₇: OC has a mediating role on the effect of OJ on TI.

The research has been conducted among academic staff in a foundation university during the period between September and November 2018. Within this period, the total number of the employees in the academic departments of the university was 1 420 and totally 235 usable questionnaire forms were returned. Within this context, the sample which is selected for this study represents approximately 17 % of the research population.

20-items Organizational Justice Scale developed by Colquitt was used to measure the participant's perception of OJ. The participant's perception of OC was measured through 15-items Organizational

Commitment Scale developed by Mowday et al. (1979), job satisfaction of the participants was measured through 3-items Job Satisfaction Scale developed by Cellucci and De Vries (1978), and participants' TI was measured through 3-items Turnover Intention Scale developed by Bluedorn (1982). All scales were used in the survey are five-point Likert-type scale ranging from (1) Strongly Disagree to (5) strongly Agree). The scales were distributed electronically and were delivered by hand for enhanced participation.

4. Results of the analyses

Data obtained as a result of this study were evaluated by SPSS 25 package software. Data relating to the demographic features of the participants were explained by frequency analysis and percentage values. Correlation and regression analyses were applied for hypotheses testing.

130 female and 105 male participated in this research. 64.9 % are married and 35.1 % are single among the participants. When the distribution of participants by age is examined, 18.4 % are between 20-29 years old, 16.2 % are between 30-39 years old and 65.4 % are 40 years old and above. Of the participants, 14.7 % have an undergraduate degree, 22.4 % have a master's degree and 62.9 % have a doctorate degree. When looking into the distribution of the participants by years of service, 14.8 % have work experience between 0 and 5 years, 26.4 % have work experience between 6 and 10 years, 38.6 % have work experience between 11 and 15 years and 20.2 % have work experience more than 16 years.

Table 1. Cronbach Alfa Coefficients And Correlation Values of the Variables

	1	2	3	4
Organizational Justice (OJ)	[0.972]			
Organizational Commitment (OC)	.489**	[0.890]		
Job Satisfaction (JS)	.472**	.499**	[0.874]	
Turnover Intention (TI)	-.406**	-.412**	-.689**	[0.886]

**Correlation is significant at 0.01 level (two-way), [Cronbach Alfa reliability coefficients are shown in brackets]

The reliability values that are used in this research are 0.972 for Organizational Justice Scale, 0.890 for Organizational Commitment Scale, 0.874 for Job Satisfaction Scale and 0.886 for Turnover Intention Scale. The values show that reliability coefficients of these scales are acceptable.

The correlation analysis was conducted to demonstrate the relationships between the variables. As a result of the analysis, it was found that there is a positive and significant relationship between OJ and OC *(r=0.489, p>0.01)*; there is a positive and significant relationship between OJ and JS *(r=0.472, p>0.01)*, there is a negative and significant relationship between OJ and TI *(r=-0.406, p>0.01)*. Significant positive relationship between OC and JS *(r=0.499, p>0.01)* and significant negative relationship between OC and TI *(r=-0.412, p>0.01)* were also determined.

Table 2. Regression Analysis

Independent Variable	Dependent Variables					
Organizational Justice (OJ)	*Organizational Commitment (OC)*		*Job Satisfaction (JS)*		*Turnover Intention (TI)*	
	ß	*Sig*	*ß*	*Sig*	*ß*	*Sig*
	0.489	0.000	0.472	0.000	-0.406	0.000
	$R^2 = 0.288$		$R^2 = 0.273$		$R^2 = 0.186$	
	$F = 61.565$		$F = 60.583$		$F = 42.565$	
Organizational Commitment (OC)	*Job Satisfaction (JS)*		*Turnover Intention (TI)*			
	ß	*Sig*	*ß*	*Sig*		
	0.499	0.000	-0.412	0.000		
	$R^2 = 0.286$		$R^2 = 0.196$			
	$F = 61.537$		$F = 45.013$			

The results obtained from the regression analysis suggest that OJ have significant influences on OC *(ß=0.489; p<0.001)* and 28.8 % ratio of explanatory power with R-squared value *(R^2)* of 0.288, JS

(ß=0.472; p<0.001) with 27.3 % ratio of explanatory power with R-squared value *(R²)* of 0.273 and TI *(ß=-0.406; p<0.001)* and 18.6 % ratio of explanatory power with R-squared value *(R²)* of 0.186. The Hypotheses 1, 2, and 3 are thereby accepted. Along with the results above, it can be expressed that when the perceptions of academic staff on OJ increase, their levels of OC and JS increase whereas their levels of TI decrease. Besides, it can be observed that OC has a significant effect on JS *(ß=0.499; p<0.001)* with 28.6 % ratio of explanatory power with R-squared value *(R²)* of 0.286 and has a significant effect on JS *(ß=-0.412; p<0.001)* with 19.6 % ratio of explanatory power with R-squared value *(R²)* of 0.196. The Hypotheses 4 and 5 are accepted, accordingly. In accordance with these results, it can be articulated that when the perceptions of academic staff on OC increase, their levels of JS increase while their levels of TI decrease.

The mediating variable analysis method developed by Baron and Kenny (1986) was used to determine the mediating role of OC on the effect of OJ on the relationship between JS and TI. In this study, two separate models were generated since the mediating role can be identified through a three-variable model in this method. A model, which illustrates the mediating role of OC on the effect of OJ on JS, was initially tested.
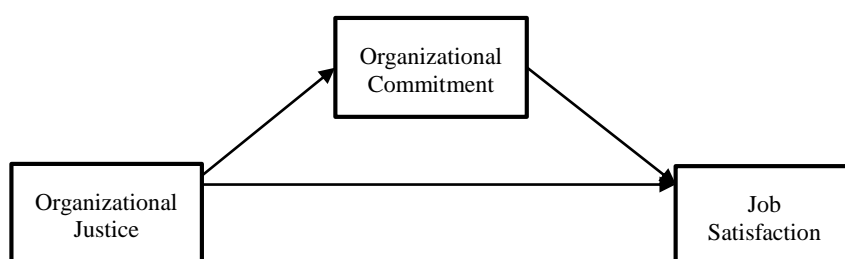

Figure 2: Mediating Variable Model 1

Along with the results of regression analysis in Model 1, it was concluded that OJ has a significant effect *(ß=0.472; p<0.001)* on JS in the first path; OJ has a significant effect *(ß=0.489; p<0.001)* on OC in the second path; then OC has a significant effect *(ß=0.499; p<0.001)* on JS. Finally, OJ and OC were incorporated into the analysis and their effects on the JS were investigated. The positive and significant effect of OJ on JS thereby has existed by incorporating OJ and OC into the analysis, whereas the effect of the coefficient was reduced *(ß=0.336; p<0.001)*. The positive and significant effect of OC on JS has also existed, whereas the effect of the coefficient was reduced *(ß=0.318; p<0.001)*. The mediating effect of OC on the effect of OJ on JS can be observed, accordingly. Hence, the Hypothesis 6 is accepted.
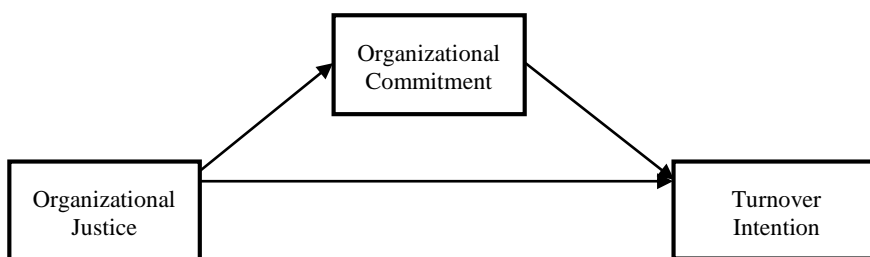
Figure 3: Mediating Variable Model 2

In accordance with the results of regression analysis in Model 2, it was found out that OJ has a significant effect *(ß=-0.406; p<0.001)* on TI in the first path; OJ has a significant effect on OC in the second path *(ß=0.489; p<0.001)*; then OC has a significant effect *(ß=-0.412; p<0.001)* on TI. Finally, OJ and OC were incorporated into the analysis and their effects on the TI were investigated. The negative and significant effect of OJ on TI thereby has existed by incorporating OJ and OC into the analysis, whereas the effect of the coefficient was reduced *(ß=-0.229; p<0.001)*. The negative and significant effect of OC on TI has also existed, whereas the effect of the coefficient was reduced *(ß=-0.278; p<0.001)*. Thus, the mediating effect of OC on the effect of OJ on TI can be observed. The Hypothesis 7 is thereby accepted.

5. Discussions and limitations

Although this study has been validated by quantitative analyses, limited data was generated due to the single source investigated. Research population, which is composed of universities with various organizational structures, provides larger data for multi-faceted evaluation. Despite the limitations, the findings obtained in this study may provide a multifaceted insight by contributing the analysis of mediator variables besides direct effects of the variables. The models proposed in this study clearly illustrate how OC, JS and TI of employees are influenced by OJ.

6. Future research

The study is expected to enlighten the future research on how organizational justice shapes the work-related behaviors of the employees. Future researches may be aimed to explore the larger research populations including diverse set of universities located in different regions. Not only foundation but also private and state universities could be examined in terms of the academicians' perceived justice and their behavioral outcomes which may yield greater data to analyze. The variables investigated in this study may further be expanded to explore the impacts of OJ on organizational citizenship behaviors of the employees. Based on the notion that interactional facet of OJ, particularly, can be resulted with high levels of employees' organizational citizenship behaviors as a critical factor for employee retention.

7. Conclusion

Rapid and accelerated changes resulted from globalization have given significant responsibilities and have posed challenges on the employees. Justice is an important organizational element conducive to the integration of employees into their organizations as reflections of OC and JS. From managerial point of view, developing honest communications with employees, establishing fair culture in the organization and building interpersonal relationships to enhance trustworthiness are important to maintain justice within an organization which then affects overall functions by creating valuable assets for organization. The quality of relationships between managers and subordinates plays a substantial role in creating corporate culture pivoting on superior performance of the members of organization. OJ facilitates an environment where leaders display behaviors towards the recognition of employees' intrinsic worth and high-quality characteristics such as knowledge and skills. The purpose of the present study is to outline the effect of OJ on JS and TI of the academic staff in a foundation university. These findings also indicate the mediating role of OC on the relationship among OJ, JS and TI as proposed in Mediating Variable Model 1 and Mediating Variable Model 2. The results of this study is consistent with the data collected by Rai (2013) among 511 staff members from 10 various health and rehabilitation centers in a southern state in the United States. Organizational efficiency is crucial for almost all enterprises around the world. The results obtained in this study highlight the importance of OJ and OC as the antecedents of JS and TI, which thus influence employee retention in an academic environment.

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An Empirical Evidence on the Causality between Sectoral Economic Growth and Financial Development in Turkey

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ARTICLE INFO	ABSTRACT
	In this study, the causal relationships of financial development indicators and trade openness with total economic growth, economic growth of manufacturing industry and construction sectors, are investigated in the 2003Q1 - 2018Q3 period. As a result of Johansen cointegration analysis with three seperate models, it is determined that there is a long-term relationship between the variables, valid for all models. According to the results of the Granger causality test, the direction of the relationship between financial development and economic growth changes according to the financial development indicator. Accordingly, a mutual causal relationship of the total economic growth and the manufacturing industry economic growth with the private sector loans, which is indicator of quantitative financial development, is identified. As the economic growth in the construction sector leads to financial development, it is determined that the demand-following view is dominant.

Türkiye'de Sektörel Ekonomik Büyüme ile Finansal Gelişme Arasındaki Nedensellik Üzerine Ampirik Bir Uygulama

MAKALE BİLGİSİ	ÖZ
	Bu çalışmada 2003Ç1-2018Ç3 döneminde finansal kalkınma göstergeleri ve ticari açıklık ile ekonomik büyüme arasındaki nedensellik ilişkisi, hem toplam ekonomik büyüme hem de imalat sanayi ve inşaat sektörlerinin ekonomik büyümesi açısından araştırılmıştır. Üç ayrı modelle yapılan Johansen eşbütünleşme analizi sonucunda, tüm modeller için geçerli olmak üzere, değişkenler arasında uzun dönem ilişki olduğu belirlenmiştir. Granger nedensellik testi tahmin sonuçlarına göre, finansal gelişme ile ekonomik büyüme arasındaki ilişkinin tespitinde, finansal gelişme göstergesinin belirleyici olduğu sonucuna ulaşılmıştır. Buna göre, miktar ölçütlü finasal kalkınma göstergesi olan özel sektör kredileri ile toplam ekonomik büyüme ve imalat sanayi ekonomik büyümesi arasında karşılıklı bir nedensellik ilişkisi belirlenmiştir. İnşaat sektöründe ise ekonomik büyüme finansal kalkınmaya neden olduğu için talep takipli görüşün baskın olduğu tespit edilmiştir.

1. Introduction

Globalization is a process in which goods and services, production factors, technological accumulation and financial resources are freely circulated among countries and the factors, goods, services and financial markets are increasingly integrated (Şenses, 2004, p. 13). In order to measure the integration of countries economically into the world, trade openness and financial openness indicators are taken into consideration. Trade and financial openness are defined as the removal of national restrictions on the free movement of goods, services, labor, and capital between countries, (Yapraklı, 2007).

Trade liberalization is to soften the protection walls for both imports and exports and to bring foreign investment and competition to the economy (Rruka, 2004, p. 8). Trade openness, as a result of trade liberalization, refers to the policies implemented by countries in their trade relations with the outside world. Indicators of trade openness can be classified into three criteria(Wacziarg, 2001, p. 402). The first is the output criteria, which represents the amount of trade or the components of the trade. Second, there are policy indicators, which reflect the attitude of the country's institutions towards other countries, for example, tariff rates, non-tariff barriers. Finally, the deviation criteria are deviations between the amount of trade realized and the estimated free trade amounts.

Even though the history of trade liberalization movements is old, financial liberalization, which is its complement, gained momentum in the 1980s. Increasing trade relations, developments in the information communication sector, technological innovations allowed capital to move freely. Increasing the number of financial instruments accelerated financial liberalization movements by offering the opportunity to diversify risk for investors (Eichengreen & Mussa, 1998, p. 17). Thereby, financial liberalization is the result of regulations in money and capital markets (Onur, 2005) and in the broadest sense is the removal of controls on international capital movements.

It can be said that the concepts of trade openness and financial openness are reflected in the national market as financial development. It is expected that economic and financial indicators in the national market will ultimately affect economic growth. The relationship between financial development and economic growth has been the subject of interest for many researchers and different results have emerged. The theoretical and empirical literature can be summarized in four headings as the demand-following, supply-leading, studies indicating that there is mutual interaction and is not a relationship. Demand-following and supply-leading hypotheses are developed by Patrick (1966). While the economic growth in demand-following hypothesis causes financial development, the development of the financial system in the supply-leading hypothesis is accepted as the cause of economic growth. According to the mutual interaction approach put forward by Arthur Lewis (1955), economic growth leads to financial development by increasing demand for financial services, and financial development provides economic growth by transferring the resources needed by the real sector (Kirkpatrick & Green, 2002, p. 207; Türedi & Berber, 2010, p. 302). Lucas (1988) argues that financial growth does not affect economic growth as the source of economic growth depends on physical and human capital.

Determining the variables that can measure the level of financial development is more complex than the indicators of trade openness, because the aspect of the causal relationship between financial development and growth can vary according to the indicators. In order to achieve correct results, the most comprehensive indicators to reflect the economic conditions and the situation of the country concerned should be identified. Lynch (1996) recommends the use of monetary aggregates, loans-related sizes, capital markets-related indicators, structural indicators, change indicators as indicators of financial development.

In this study, unlike the studies in the literature, both total GDP and GDP of manufacturing industry and construction sectors are analyzed. In this way, it is thought that economic growth will contribute to sectoral restructuring and sustainable economic growth by identifying sectors that are motor/driving forces of economic growth. Accordingly, the main dynamics affecting the GDP of manufacturing industry and construction sectors, and total GDP are investigated on the basis of integration with the world.

In this study, the causal relationship between sectoral economic growth and trade openness and the determined financial development indicators are investigated. The financial development indicators are

determined according to quantitative, structural and change criteria as suggested by Lynch (1996). As the quantitative criterions the stock exchange trading volume / GDP, private sector loans to represent the intermediation activities of the banking sector / GDP; as the structural criterion the M2 money supply definition / GDP; and as the change criteria the difference between loan interest rate and deposit interest rate are taken. When the literature is examined, no study that examines economic growth with these variables on a sectoral basis has been found. Another contribution of this study to the literature is the period of 2003Q1- 2018Q3. This period is characteristic in the world economy in terms of both the 2008 global crisis and the impact of policies implemented after the crisis on the markets. The aim of this study is to determine the basic dynamics of economic growth of manufacturing industry, and construction sectors, and total economic growth in order to ensure sustainable economic growth. Also, it is to contribute to the creation of policies appropriate to the sectors that need to be supported.

The study was conducted amidst few limitations. First, only the banking system, capital markets, broad monetary definition, and change indicators were used as financial development indicators. Second, the services and the agricultural sectors were excluded from the analysis, to determine the relationship between manufacturing industry and construction sectors with financial development. In the study, it is found that there is a mutual causal relationship between the total GDP and private sectors loans. The results are evaluated on a sectoral basis as follows. There is dominant the supply-leading vision in manufacturing industry sector; that is, financial development is interpreted as causing economic growth. There is dominant the demand-side vision in construction sector, because economic growth is the cause of financial development.

The rest of the paper is organised as follows. Section 2 reviews the related literature. Section 3 presents the data used and empirical applications. Section 4 concludes, providing some policy implications.

2. Literature review

Amount of studies have been carried out to investigate the relationship between economic growth and trade openness and financial development, which are two main sources of liberalization. The studies investigating the causal relationship are given below.

Some of these studies arguing that economic growth causes financial development are as follows: In the study of Awojobi (2013), the relationship between domestic output, trade openness and financial development are investigated using the Granger causality test in Greece for the period 1960-2009. According to the results, there is relationship between financial development and economic growth. Also, economic growth is an accelerator for trade openness, and there is one-directional causality from the trade sector to financial development. Saaed and Hussain (2015) examined the causal relationship between financial development, trade openness and economic growth in Kuwait for the period 1977-2012 with Granger causality tests. The results show that there is one-directional causality between economic growth and financial development and between trade openness and economic growth. Also, while economic growth is the Granger cause of financial development, trade openness is the Granger cause of economic growth.

In Ersoy's (2011) study of Turkey for the period 1980-2008, the causal relationship to financial development and to economic growth from financial openness is not found. But there is one-directional causal relationship to financial openness from financial development in the long-term. In the study of Özel (2012), Turkey's economy is examined with the VAR model in the quarter period 1991 - 2010. According to results of this study financial openness is determined as the Granger cause of both GDP and trade openness. Kar et al. (2014) are stated that mutual causality between economic growth and trade openness. Also, they indicated that the economic development ist he cause of the financial development. Variables of the study are trade openness (total trade to the GDP), financial development, domestic credit to income, private sector credit to income, and the market capitalization ratio, GDP series. In the study of Öztürk (2008), using the VAR framework and Granger test, the causality between financial development and economic growth for the period 1975-2005 in Turkey is investigated. The results show that there is not a long-run causal relationship between variables. But, there is a one-directional causality running to financial development from economic growth.

Çınar and Nulambeh (2017) stated that one-directional causality towards trade openness from GDP, inflation and exports, to per capita income from inflation and direct foreign investment, imports are found in Turkey's economy for the period 1974-2015. In study of Cihangir and Öztürk (2018), the relationship between trade openness, designated financial development indicators (financial openness, private sector domestic credit volume/GDP and exchange trading volume/GDP) and sectoral (total GDPs of all sectors, construction sector, manufacturing sector, services sector) economic growth are investigated using Johansen-Juselius Cointegration Test and VECM over the period 2002Q1 - 2017Q4 for Turkey's economy. According to the results, there is a long-term relationship between the variables but there is no short-term relationship.

The studies arguing that financial development causes economic growth are as follows: Yapraklı (2007) investigate causal relationship between trade openness, financial openness and economic growth for the quarter period 1990-2006 in Turkey's economy. As a result of the study, one-directional causality relation from trade openness to financial openness is determined. Türedi and Berber (2010) proved a mutual causal relationship between trade openness and economic growth, and one-directional causal relationship from financial development to economic growth in Turkish economy over the period 1970 - 2007 using VAR and causality test. Also, there is a relationship between the variables in the long term. Demir et al. (2017) examine the causality between trading openness, financial openness, and economic growth with Granger casualty test and VAR analysis for the period 1991Q4 - 2016Q3 in Turkey. Variables of the study are trade openness, financial openness, economic growth, exchange rate, direct foreign investment, interest rate and BİST 100 index. The results show that there is one-directional causal relationship from the financial market data to economic growth and from the direct foreign investment to financial openness. Trade and financial openness positively influence economic growth.

Jung (1986) examined the causal relationship between financial development and economic growth using the Granger causality test in 56 countries for the period of 1950-1980. It is determined that the causality relation is from financial development to economic growth in underdeveloped countries and from economic growth to financial development in developed countries.

Studies suggesting a mutual relationship between financial development and economic growth as follows: Pradhan et al. (2015) are investigated that the causal relationship between financial depth, trade openness and economic growth data during 1994-2011 in India. According to this study, economic growth is positively affected from trade openness and there is a mutual causal relationship between financial depth and economic growth.

In the study of Yücel (2009), the causal relationship between financial development, trade openness and economic growth in Turkey for the period 1989M1-2007M11 is investigated. The results of Granger causality test are indicated that there are mutual causality relations between financial development and economic growth and between trade openness and economic growth. Yıldırım and Çevik (2017) detected a causal relationship from economic growth to financial openness in the period 1993-2016 in Turkey using Granger causality test and asymmetric causality test. According to the result of the Granger causality test, there is a mutual causal relationship between economic growth and financial openness.

There are also studies suggesting that there is no relationship between liberalization policies and economic growth. Such as, Menyah et al. (2014) investigated the relationship between financial development and trade liberalization with growth in the 21 African countries using the Granger causality test for the period 1965-2008. According to the results of this study, the related variables have no significant effect on growth.

3. Data and methodology

3.1. Data Description

In this study, the causal relationship between manufacturing industry and construction sectors's GDPs and trade openness, Private Sector Domestic Loan Use / GDP, Stock Exchange Trading Volume / GDP, and M2 / GDP, and the difference between loan interest rate and deposit interest rate indicators are investigated for the period of 2003Q1 – 2018Q3.

The variables used in the analysis and the sources of these variables are below. The values of GDP are based onthe Chain Linked Volume method. The data of foreign trade transactions are taken from TURKSTAT database and the other data is from Central Bank of Republic of Turkey (CBRT) electronic data delivery system (EDDS).

- Trade Openness [((Import + Export) / GDP)*100] is calculated by this formula. For the foreign trade data the aggregate values of TURKSTAT's broad categories of economic categories (BEC) are taken as the series generated by the Chain Linked Volume method for GDP.

- Stock exchange trading volume / GDP representing the capital markets in order to determine the impact of the development of the financial sector,

- The use of private sector domestic credit / GDP representing the investments financed by the banking sector (Lynch, 1996; Baltagi et al., 2008)

- As the structural indicator of financial development, M2 / GDP (Lynch, 1996, Demetriades and Hussein, 1996)

- As the exchange cost indicator of financial development, the difference between loan interest rate and deposit interest rate (Lynch, 1996).

The models established for the three dependent variables are as follows:

Model 1: GDP_{Total} = f(credits, spread, m2, trade)
Model 2: $GDP_{Manufacturing}$ = f(credits, spread, m2, trade)
Model 3: $GDP_{Construction}$ = f(credits, spread, m2, trade)

3.2. Empirical evidence

Stability analysis of variables is performed by using augmented Dickey-Fuller (ADF) and Philips-Perron (PP) Unit Root tests. Phillips-Perron (1988) Test provides strong results in unit root test results in terms of error correlation and serial variance because this test does not require a changing variance assumption and uses nonparametric correction in the case of autocorrelation.

All variables are seasonally adjusted by Moving Average Methods, and then natural logarithms of the GDP variables aere taken. Table 1 shows the unit root test results for the variables. The results show that the levels of the variables are not stationary and the PP test shows that the first differences are stationary. These series integrate to the same degree and are I(1).

Table 1. Augmented Dickey-Fuller (ADF) and Philips-Perron (PP) Unit Root Tests

Variables	ADF Unit Root Test				PP Unit Root Test			
	Level	Prob.	First Difference	Prob.	Level	Prob.	First Difference	Prob.
$LGDPSA_{TOTAL}$	4.18754	1.0000	-8.27859	0.0000*	4.46609	1.0000	-8.27859	0.0000*
$LGDPSA_{MANU.}$	2.23391	0.9934	-10.0029	0.0000*	9.03345	1.0000	-10.9178	0.0000*
$LGDPSA_{CONS.}$	2.01241	0.9887	-4.16882	0.0016*	2.97668	0.9991	-11.6573	0.0000*
CREDITSA	3.72218	0.9999	-2.69026	0.2444	9.30654	1.0000	-5.42549	0.0002*
SPREADSA	0.32119	0.7753	-5.26773	0.0003*	-0.00841	0.6761	-5.19370	0.0004*
M2SA	6.23019	1.0000	-4.73280	0.0016*	6.05413	1.0000	-4.74683	0.0016*
TRADESA	0.05710	0.6973	-8.74732	0.0000*	0.33677	0.7795	-9.31796	0.0000*

*, **, *** respectively %1, %5, and %10 are indicate the significance levels.
Not: Both unit root tests have constant terms in the first difference values.

The variables must be stationary for the Granger causality test to be applied. Accordingly, if the mean and variance of a series are constant over time and the covariance of the series does not change over time, the series is stationary. In a model set up with non-stationary series, the causal relationship may not be correctly identified. The exception to this is that the series move together in the long run, that is, there is a cointegration relationship between the series. While the Vector Autoregressive Model (VAR) is used to determine the causal relationship between variables that are non-stationary and do not have a cointegration relationship, it is appropriated to use the Vector Error Correction Model (VECM) for the causal relationship between variables that are non-stationary but have a cointegration relationship (Yavuz, 2005).

In order to investigate the cointegration relationship, the optimal lag length should be determined. According to LR (Log Likelihood), FPE (Akaike Information Criterion), SIC (Schwarz Information Criterion) and HQ (Hannan-Quinn Information Criterion) criteria, which are taken into consideration in calculating optimal lag length in VAR Model. The lag length determined for these Models is given respectively 2, 1, and 2 (see. Appendix 1).

Table 2. Results of Johansen's Cointegration Test

LGDPSA$_{TOTAL}$							
H0	λ_{trace}	%5 Critical Value	Prob.	H0	λ_{max}	%5 Critical Value	Prob.
r = 0	*73.01681*	*69.81889*	0.0272*	r = 0	*29.72722*	*33.87687*	0.1446
r ≤ 1	-	-	-	r ≤ 1	-	-	-
LGDPSA$_{MANUFACTURING}$							
H0	λ_{trace}	%5 Critical Value	Prob.	H0	λ_{max}	%5 Critical Value	Prob.
r = 0	*87.81591*	*69.81889*	0.0010 *	r = 0	*32.36360*	*33.87687*	0.0749
r ≤ 1	*55.45231*	*47.85613*	0.0082 *	r ≤ 1	*30.07458*	*27.58434*	0.0234 *
LGDPSA$_{CONSTRUCTION}$							
H0	λ_{trace}	%5 Critical Value	Prob.	H0	λ_{max}	%5 Critical Value	Prob.
r = 0	*76.73404*	*69.81889*	0.0126 *	r = 0	*31.85212*	*33.87687*	0.0855
r ≤ 1	*44.88192*	*47.85613*	0.0926	r ≤ 1	-	-	-
* Statistical significance at the 5% level.							

The basic hypothesis (H0) that there is no long-term equilibrium relationship between variables at 5% significance level for all models is rejected. Therefore, according to the Johansen Cointegration test, there is a long-term equilibrium relationship between the variables since there is at least one cointegrated relationship in the models (Table 2).

If there is a cointegration relationship between the variables, the short-term relationship should also be investigated. The vector error correction model is used to determine the short term relationship among the variables. Accordingly, if the error correction coefficient is negative and statistically significant, there is a short term relationship between the variables. There was no correlation between variables in the short-time for all three models based on the estimation results of the vector error correction model (See. Appendix 2).

Granger causality test is very sensitive to the choice of lag length (Gujarati, 2004, p. 703). In this study, the optimal lag length test is performed for each model and the optimal lag length is determined as respectively 2, 1, and 2 for all three models (See. Appendix 1). Table 3 shows the results of the Granger causality test estimation.

Table 3. The Results of Granger Causality Test via VECM

LGDPSA$_{TOTAL}$			
Aspect of Relationship	DF	Prob.	Prob.
Δ CREDITSA $\leftrightarrow$ Δ LGDPSA$_{TOTAL}$	2	0.0017 *	0.0501 **
Δ M2SA $\rightarrow$ Δ LGDPSA$_{TOTAL}$	2	0.0251 **	
LGDPSA$_{MANUFACTURING}$			
Aspect of Relationship	DF	Prob.	Prob.
CREDITSA $\leftrightarrow$ LGDPSA$_{MANUFACTURING}$	1	0.0055 *	0.0637 ***
LGDPSA$_{MANUFACTURING}$ $\rightarrow$ SPREADSA	1	0.0082 *	
LGDPSA$_{CONSTRUCTING}$			
Aspect of Relationship	DF		
LGDPSA$_{CONSTRUCTING}$ $\rightarrow$ M2SA	2	0.0175 **	

DF: Degree of Freedom
*, **, *** respectvely %1, %5, and %10 are indicate the significance levels.

According to results of the Granger causality test, a mutual causal relationship is found between the private sector loans and the total GDP. This result shows that private sector loans, which are the quantitative measure of financial development variable, trigger the economic growth. Furthermore, the definition of M2 money supply is determined to be the Granger cause of total GDP. Accordingly, it can be said that supply is the primary relationship since M2 is the cause of economic growth, which is a structural financial development indicator in terms of total GDP.

When the growth dynamics of the manufacturing industry sector is analyzed, different interpretations can be made according to the financial development variable. The relationship between private sector loans, the quantitative measure of financial development variable and manufacturing industry growth is mutual. However, the criterion of change in the manufacturing industry GDP is the Granger cause of the spread which is the financial development variable. In other words, in terms of the criterian of change in the manufacturing industry sector, there is the demand-following relationship since economic growth causes financial development.

Finally, it is determined that the economic growth in the construction sector is the Granger cause for the definition of M2 money, which is the indicator of structural financial development. Since the relationship is from economic growth to financial development, it is interpreted as demand-followed relationship.

3. Conclusions and policy implication

In this study, the causal relationship between total GDP, manufacturing industry and construction sectors's GDPs and selected financial development indicators and trade openness are investigated for the period 2003Q1 – 2018Q3. Lynch (1996) classifies financial development indicators as quantity, structural, diversity and cost of exchange indicators. As the quantitative criterions the private sector loans / GDP; as the structural criterion the M2 money supply definition / GDP; and as the change criteria the spread of loan – deposit interest rate are taken. In this period, the financial development has a great effect on the fluctuating movement of economic growth. In this study, the effects of financial development are investigated both in terms of the total growth of economy and the growth of manufacturing industry and construction sectors. The purpose of such a classification is to provide sector-specific policies for the sustainable economic growth.

As a result of the models established separately for the total GDP, and GDP of manufacturing industry and construction sectors, it is determined that there is a long term cointegration relationship between the variables. Apart from the economic growth of the construction sector, the analysis results for general economic growth and the economic growth of the manufacturing industry do not give a single relationship. Accordingly, while there is a mutual relationship between the general economic

growth and the private sector loans; it is determined that there is supply-leading relationship between growth and M2 money definition. In other words financial development causes economic growth.

There is a mutual relationship between the economic growth in manufacturing industry and private sector loans. However, when the spread of loan - deposit interest rate is evaluated, it is determined that there is a demand - following relationship. As the economic growth in the construction sector causes the financial development, it is determined that there is a demand-followed relationship between the economic growth and the financial development in this sector.

The industrial sector plays an important role in ensuring sustainable economic growth, because it is more suitable than other sectors to support and increase the country's productivity, employment level and production and use of technology. The policies implemented by policy makers to develop the industrial sector will also serve as the locomotive for the economy. In this sense, according to the results of the analysis, policies that can develop this sector-specific loan alternatives or create demand can be developed. For examples, bank loans can be redirected to support the manufacturing industry, especially sectors with high technology weight and added value, instead of the construction sector that creates temporary benefits. Also, as investment incentives, the supports of the KOSGEB (Small and Medium Enterprise Development of Turkey) and tax advantages can be increased. Trainings can be organized to manage these resources and that is as important as access to financial resources. Projects that increase the industry and university cooperation can be extended in accordance with regional conditions. Ultimately, sustainable economic growth can only be achieved in this way.

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Appendix

Appendix 1: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
LGDPSATOTAL						
0	-1040.204	NA	9.30e+08	34.84014	35.01467	34.90841
1	-686.5959	636.4950	16325.72	23.88653	24.93370*	24.29614*
2	**-660.5893**	**42.47739***	**16067.53***	**23.85298***	**25.77279**	**24.60392**
3	-643.9555	24.39619	22214.88	24.13185	26.92431	25.22414
LGDPSAMANUFACTURING						
0	-1057.293	NA	1.64e+09	35.40975	35.58428	35.47802
1	**-730.8740**	**587.5534***	**71427.27***	**25.36247***	**26.40964***	**25.77207***
2	-709.2533	35.31387	81364.01	25.47511	27.39492	26.22605
LGDPSACONTRUCTING						
0	-1040.859	NA	3.16e+09	36.06411	36.24173	36.13329
1	-710.9471	591.5663	86183.12	25.54990	26.61565*	25.96503
2	**-674.8380**	**58.52166***	**59915.20***	**25.16683***	**27.12070**	**25.92790***
3	-657.5286	25.06876	82124.62	25.43202	28.27401	26.53903

 * indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Appendix 2: The Results of VECM

	LGDPSA_{TOTAL}	LGDPSA_{MANUFACTURING}	LGDPSA_{CONSTRUCTING}
Error Correction Coefficient	0.006704	0.031287	0.051950
Prob.	0.9252	0.7237	0.4030