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# A CASE ANALYSIS ON FACTORS AFFECTING THE EMERGENCE OF SOCIAL INNOVATIONS AFTER COVID-19 IN TURKEY

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## ABSTRACT

**Purpose-** The study aims to explore the factors that accelarate the emergence of social innovations after Covid-19. With the study, it is also aimed to emphasize the topicality and importance of the subject by drawing the attention of stakeholders and academia in the field of social entrepreneurship, where a limited number of studies are conducted in Turkey.

**Methodology-** The study employs a qualitative method that includes literature review, observations and in-depth interviews with 6 social ventures in Turkey.

**Findings-** The analysis reveals that, being extraversion, openness to experience, conscientiousness, passion, need for achievement, social vision and desire to help others are the most common characteristics among social enterpreneurs participants. It is seen that entrepreneurs are highly open to new experiences and conscientious in their relationships. All extroverted participants make progress in their social initiatives by using their personal networks and experience a sense of personal satisfaction through their social ventures. Another implication of the study is that the actions and efforts of the individuals are encouraged by the work itself and the desire to achieve inner satisfaction, and they use their solutions in creating value not only for their own benefits but also for the others. Although there is limited evidence to support the researchers' basic premise that the COVID-19 pandemic period accelerates and encourages the emergence of social entrepreneurship, the findings are consistent with the authors' conceptual model. Social entrepreneurs are intrinsically motivated to express their needs and passion for achievement, while being extrinsically motivated as social visionaries to satisfy their desire to help their target community.

**Conclusion-** The results of the research confirm the researchers' proposition that the prominent factors in the establishment of social enterprises are pro-social factors and personal motivations. While the factors of passionate and need for achievement from personal motivations drew attention, desire to help others and social vision factors from pro-social factors were determined as leading factors. In this context, it has been concluded that since the social vision is one of the prominent features of social entrepreneurs, participants who are open to experiences can define social problems more easily.

**Keywords:** Social entrepreneurship, social ventures, entrepreneurship motivation, post Covid-19.
**JEL Codes:** L26, L31, M13

## 1. INTRODUCTION

The COVID-19 (Coronavirus) pandemic has put the public health, jobs and incomes of millions of people at risk (OECD, 2020), with major knock-on effects on daily life worldwide. It has revealed the violations in existing practices, chronic deficiencies and injustices in areas such as health, shelter and poverty. It has slowed the global economy by affecting businesses, disrupting the world trade and movements (Haleem et al., 2020). The astonishing number of the deaths and confirmed cases of COVID-19 give an idea about the devastating dimension of the effects of pandemic on countries and reveal the difficulty of countries' struggles with the health, social effects of it. Moreover, poverty and inequality are expected to continue to increase all over the world after the pandemic.

Many countries had to introduce a series of measures to mitigate the crisis on public health, and economy (OECED, 2020). Restrictions such as the closure of schools and borders, social distance and quarantine to prevent the spread of the epidemic

have led serious problems mostly economic and social. Commercial activities have decreased, and recruitment, supply and production chains (Ivanov, 2020) have been disrupted. Cash flow, sales and marketing activities, consumer demand (Donthu et al., 2020) and consumer spending were adversely affected (Baker et al., 2020) as the labor & financial markets (Coibion et al., 2020) was suspended.

The negative effects of the epidemic are not limited to the public health & national economy. The pandemic, which also negatively effects countries socially, has caused significant problems on the disadvantaged group compromising of elderly, the disabled and children, who are known as the most affected by the pandemic. Many elderly and disabled people could not participate in social and economic life, and children remained away from education (Bonnici, 2020). More importantly, considering the size of the negative effects seen so far, it should be admitted that such a global epidemic has a high potential to generate millions of new disadvantaged groups and more diverse social problems. Apparently, it will the states, which are currently mostly incapable of responding to increasing social problems as well as economic problems will have difficulties in dealing with social unrest and agitation alone.

It is known that every crisis offers some opportunities in terms of innovation and change as well as its devastating effects. Researchers argue that in times of crisis, entrepreneurs maintain the flow of goods and services by donating critical resources in the form of products and services (Linnenluecke et al., 2017), thereby contributing to business continuity (Herbane 2010).

In this context, it can be concluded that besides the devastating effects of each crisis, it also offers some window of opportunity in terms of innovation and change. The ongoing pandemic and social unrest can also have a positive impact on the emergence of social enterprises operating to improve the well-being of citizens through innovative products, services or methods. It may enhance the role of social entrepreneurship in the recovery from the social and economic crisis and accelerate the emergence of new social ventures. As a result of this, social ventures that proliferate and spread all over countries may contribute to post-COVID-19 recovery by reducing the impact of the pandemic (Boin et al., 2007). Likewise, social enterprises are known to fill institutional gaps where disaster recovery systems fail and restructure the social and economic infrastructure in communities (Linnenluecke et al., 2017). Collectively, the researcher lends credence to the idea that understanding the factors promoting the emergence of social ventures may not only enhance the proliferation of more social ventures all over the countries but also contribute to the development of societies and economies.

Turkey has been exposed to the devastating effects of the COVID-19 pandemic. In this period, the need for social enterprises increased and the effect of social entrepreneurship in responding to social and economic problems was better understood. The challenges encountered dictate the need to increase the number of social enterprises that are an important ally in tackling the new and old economic and social challenges facing society. This need requires an understanding of what factors drive them, both in practice and in theory. This is necessary not only for accelerating and stimulating the emergence of new social enterprises, but also for the development of society and the economy. Therefore, in this qualitative research study, in which in-depth interviews were conducted with 6 social enterprises in Turkey, it is aimed to investigate the factors that affect the emergence of social enterprises after COVID-19 in Turkey.

## 2. LITERATURE REVIEW

### 2.1. Effects of COVID-19 Pandemic on Countries

The COVID-19 pandemic is an important crisis that has affected the whole world in a very short time period, and its devastating consequences are felt all over the world. Although the effects vary in terms of time and amount according to the development status of the countries and the measures they take, each country had to struggle with the effects of most destructive epidemic of the century.

In order to reduce the health crisis caused by the pandemic, countries had to introduce a series of strict containment and precautionary packages (OECD, 2020) to curb the increase in transmission of virus in the first half of 2020. The implementation of measures such as closure of borders, schools and businesses, social distance, shutdowns, and quarantine in order to prevent the spread of the epidemic have led serious problems, mostly economic (Coibion et al., 2020; Ivanov, 2020; Dontu et al., 2020) and social (Verma et al., 2020).

They interrupted the flow of goods and services, brought economies to a standstill, leading to a global recession (Carlsson-Szlezzak et al., 2020). In addition to these, problems such as the decrease in business activities, recruitment, disruption in the supply and production chain (Ivanov, 2020) have created an important obstacle in front of the economies. The economic problems manifest themselves as difficulties in cash flow, consumer demand, sales & marketing activities (Donthu et al., 2020), labor markets (Coibion et al., 2020) and consumer spending (Baker et al., 2020). It is seen that the difficulties created by the measures taken by governments to alleviate the course of the epidemic on the business world are driving businesses

and employees to a dead end. It is expected that millions of people will be driven into unemployment, underemployment and working poverty.

Many business enterprises, social enterprises and non-governmental organizations around the world has significantly been affected by the pandemic. Their value creation approach was affected and they have been forced to reorganize their business models by incorporating social impact and social value creation into their daily performance (Gali et al., 2020). In some cases, those measures eliminated income opportunities for many small businesses (Weaver, 2020). Small businesses are the most affected businesses by the pandemic and abruptly stop their operations in the United States even in the initial phase of the pandemic (Kuckertz et al.2020).

A survey of more than 5,800 small businesses conducted in the United States between March 28 and April 4, 2020 highlights the financial vulnerability of small businesses, which employ almost 50% of American workers, and how deeply they have been impacted by the pandemic. In the study, it was determined that 43% of the enterprises were temporarily closed and employment decreased by 40%. It is emphasized that this is the most devastating crisis since the Great Depression of the 1930s (Wilmoth, 2021). The results of the study show that since most of the firms had very little cash capital at the beginning of the pandemic, they will have to cut expenses significantly, take on additional debt or declare bankruptcy (Bartik et al., 2020)

Another study, examining the effects of COVID-19 pandemic on small businesses in the United States using existing economic datasets, published in March 2021 by the Office of Advocacy supports those small businesses suffer the most from the pandemic. Of these businesses, companies operating in restaurants, taxis and limousine services are the industries with the biggest declines. According to the findings of the study, while the economic impact of the epidemic varies from place to place, it is seen that the metropolitan and coastal regions are mostly affected (Wilmoth, 2021).

Not indifferent to the problems posed by the pandemic, countries across the G20 have taken a wide variety of emergency measures aimed at supporting the liquidity of firms in the face of mandatory job restrictions, quarantines and declining activities. While these included many bold efforts, alongside the liquidity support measures, they could not prevent millions of workers across the G20 from losing their jobs. Job and income losses from the economic consequences of the COVID-19 pandemic have been particularly heavy for women (OECD, 2020). Despite the various economic and social solutions developed to reduce the negative socio-economic effects of COVID-19, most of them are insufficient in solving the increasing socio-economic problems.

The negative effects of the epidemic are not limited to the economy and public health. It also has negative effects on society creating disruptive consequences especially on disadvantages group. The elderly, the disabled and children are the most vulnerable stakeholder of the society. In this period, many elderly and disabled people could not participate in social and economic life, and children remained away from education (Bonnici, 2020).

Apparently, as it is experienced in every global epidemic, in COVID-19 pandemic period, the need for change and innovation is inevitable, and this need makes itself felt deeply in every area increasing the need for coordinated interventions. In such periods social enterprises, which are seen as the glue that not only agile new regulations, but also hold together cross-industry solutions (Bacq et al., 2020) are believed to make a great difference in social & economic development. Thus, social ventures as primarily aiming to provide social benefit, are needed more than ever. Social entrepreneurship may become the most effective and sustainable solution in responding to the social & economic problems (Dobele, 2012). Understanding the factors that drive the emergence of SEs is therefore essential not only for accelerating and promoting the emergence of new social enterprises but also for the development of societies & economies.

## 2.2. Social Entrepreneurship

Social entrepreneurship is beneficial to solve problems during the transformation of a society as well as to increase social welfare by addressing social problems (OECD, 2020). Social entrepreneurs mostly detect social problems in areas such as poverty, health, education, environment and migration and tries to solve them with innovative approaches (Santos, 2012).

Social entrepreneurship differentiates from traditional entrepreneurship in purpose, mission, and market impressions (Gandhi et al., 2018), in characteristics (Abu-Saifan, 2012) and in entrepreneurial attitude, mobilization of resources, measurement of performance (Sastre-Castillo et al., 2015). Social entrepreneurs design all their business models and processes in a way that creates social value from the establishment stage. They operate on a spectrum with social goals and economic goals aligned in two different ends (Battilana 2018). In the light of these information, it is possible to make the following definition for social enterprises. Social enterprises, are the enterprises which produce innovative solutions to social problems through the income they earn over social and commercial activities, using existing/new business models and tools

in cooperation with other businesses within the framework of their primary purpose of creating social value and social/environmental impact.

The main purpose of social ventures is to create social and environmental impact. Especially in times of crisis, their efforts are more valuable than ever, as existing social problems like poverty, violence, economic and racial inequality become more severe. In these periods, they help mitigate the effects of the crisis and reshape the post-crisis economy with innovative solutions (OECD, 2020). According to Utting, social and solidarity economy, which prioritizes ethical values as well as social and environmental benefits, gains importance in order to overcome the negative effects of the crisis that similarly affects the whole world (as cited in ILO, 2017).

The importance of the role & contribution of social ventures is manifested itself in COVID-19 pandemic today. The COVID-19 pandemic both posed new societal challenges and exacerbating social problems that have existed for decades (Weaver, 2020). Inequalities in the global economic system have become more evident during the COVID-19 pandemic, and the market economy and governments have often failed in the face of this threat. Social ventures, developing sustainable models for solving market failures and building inclusive economies for years, supported the marginalized and vulnerable communities most at risk from the effects of COVID-19 providing a range of services in the pandemic period (World Economic Forum, 2020).

There are several examples of social entrepreneurships that created incredible social impact by providing innovative solutions to social problems in previously untapped areas around the world today. Ashoka, Hara House, TOMS, Helpsy, Boodle Learning and Grameen Bank are some of the most notable social ventures in the world (Benz, 2020). Examples of social enterprises in Turkey are Adım Adım, Çöp(m)adam, E-Bursum, Evreka, Fazla Food, Imece, Teyit, Toyi and more. These social enterprises focus on generating social benefits ranging from recycling waste and unsold food to reducing the impact of waste on the environment by producing and selling sustainable products from waste materials. The growth and proliferation of these initiatives, which make a difference in our country and in the world with each passing day, should be among the primary goals of every society.

Although there is no legal definition of social entrepreneurship in Turkey, the British Council, defines social enterprises in the light of the data obtained from a survey conducted on social enterprises in Turkey as the organizations that adopt creating social/environmental impact as their primary purpose, generate income through commercial activities and spend their profits primarily for social purposes (British Council, 2019). The total number of social enterprises in Turkey is not known exactly due to the lack of a legal status defining social enterprises and sufficient data on the field. However, it is accepted that there are approximately 9 thousand organizations in the report published by the British Council, named “Status of Social Enterprises in Turkey” in 2019 (British Council, 2019). This figure is the first calculation attempt made for social enterprises in Turkey.

Social entrepreneurs in Turkey produce innovative solutions to solve social and environmental problems by using sustainable business models that will overcome problems ranging from climate change, food security to personal problems. The leader profile of startups, most of which are new and small businesses, is mostly female leaders under the age of 35. While 55% of leaders in social enterprises in Turkey are women, only 18.9% of leaders in traditional businesses are women. Also, 47.28% of leaders in social enterprises are young, while only 21.4% of leaders in traditional businesses are under 35. This leads to the conclusion that the majority of the social entrepreneur profile in Turkey is composed of young women under the age of 35 (British Council, 2019).

The institutional structures of social enterprises in Turkey have been shaped as private companies, cooperatives, associations and foundations. While companies and cooperatives constitute two-thirds of these, associations and foundations constitute 17.1%. The main actors other than social enterprises in the social enterprise ecosystem; intermediary institutions such as incubation centers, accelerators, co-working spaces and award programs, as well as universities, research institutions, public institutions, local governments and funding organizations (British Council, 2019).

From the financial perspective, the financing opportunities for social enterprises in Turkey are limited. There is only one crowdfunding platform for social enterprises. Although there is no impact mutual fund in Turkey, there are some funds that can be classified as social responsibility priority mutual funds. On the other hand, some banks such as TEB, Garanti and Albaraka Türk offer incubation or accelerator programs instead of investment or financing by providing apiculture services. The sector in which social enterprises are most common in Turkey is the education sector. The education sector is followed by the manufacturing and creative industries sectors (British Council, 2019).

The concept of social enterprise attracts increasing attention and gains momentum with the entry of new actors each day in Turkey. However, it is relatively a new concept when compared to developed countries and did not reveal its full potential yet (Leal, 2019). According to the Thomson Reuters Foundation Reports, Turkey ranks 44th out of the 44 most disadvantaged

countries in terms of providing a suitable environment for social entrepreneurs meaning a great opportunity for the development of the field (as cited in British Council's Report, 2019). Social entrepreneurship is being discussed more in Turkey, both at the individual and academic level, due to the recent economic contractions and social weaknesses.

It is undeniable that the number of social enterprises need to increase in order to build a more inclusive, safer, more sustainable and more prosperous society in Turkey. In order for the society and economy to benefit from the potential benefits of social entrepreneurship, it is necessary to raise awareness of both the state and the society. The growth and proliferation of these initiatives, which make a difference in our country and in the world with each passing day, should be among the primary goals of every society.

### 2.3. Factors Promoting the Emergence of Traditional Entrepreneurship

The crises have positive and negative economic effects on the entrepreneurship sector, as well as other sectors (Doern et al., 2019). The negative economic effects of the crisis on entrepreneurship range from business failure to shrinkage and/or loss of resources (Doern 2016). The positive effects of crises are that they may provide an impetus to develop new opportunities and resource acquisitions (Brünjes et al., 2013). In studies investigating the effects of crises on entrepreneurship to date, it has been found that crises such as conflict situations mostly negatively affect entrepreneurial intentions (Bullough et al. 2014), however in some cases they lead to resource gaps that create opportunities for new business establishment or 'disaster entrepreneurship' (Linnenluecke et al., 2017). It also appears to further encourage creativity and the development of alternative products/services (Irvine et al., 2004) and even accelerate business expansion (Doern 2016). This demonstrates that crises can create opportunities not only for the business world, but also for social entrepreneurs who focus on alleviating the suffering of the victims.

As Carsrud et al., (2011) stated, most of the studies pioneering social entrepreneurship motivation refer to traditional entrepreneurship research (as cited in Nguyen, 2016). Therefore, before looking at the factors that encourage the emergence of social entrepreneurship, it is useful to look at traditional entrepreneurship research. Shane, Locke, and Collins (2003, p. 274) divide entrepreneurial motivations into two groups: (1) the general motivations (such as need for achievement, locus of control, vision, desire for independence, passion) and (2) the task-specific motivations (such as goal setting, self-efficacy). Edelman et al. (2010) classify entrepreneurial motivations as the startup and the growth motivations. Carsrud at al., (2011) divide entrepreneurial motivations into two motivations as external and internal, arguing that traditional entrepreneurs can be motivated not only by external motivators such as money, power and prestige, but also by internal motivators such as success (as cited in Nguyen, 2016). In the literature review compiled by Murnieks et al. in 2019, Benzing et al. (2009) count the economic and financial incentives among extrinsic motivations while Renko (2013) counts the social equality; York et al. (2016) counts ecological conservation; and Adkins et al. (2013) count the work-family balance as extrinsic motivations (as cited in Murnieks et al., 2019). In the same study, Farmer et al., (2011) count self-employment, desire, skills & knowledge, personal satisfaction, need for success and identity among intrinsic motivations while Weber et al. (2008) count moral values; Morgan et al., (2016) and Cardon et al. (2013) count the emotions among intrinsic motivations (as cited in Mcintyre, 2011). Today, intrinsic entrepreneurial motivations such as self-actualization (Wanyoike et al., in 2020), overcoming challenges, achieving independence, being innovative, desire for recognition, & family traditions, identity, ancestry, and pro-social concerns (Yitshaki et al., 2016; Yamini et al., 2020) are seen as strong internal motivation factors that motivate initiatives. The pro-social motives which are seen as a most emerging area of interest among intrinsic entrepreneurial motivation, trigger social initiatives by activating the cognitive and affective processes of entrepreneurs related to their commitment to alleviate the suffering of others (Williams et al., 2016). Among the intrinsic motivations, entrepreneurial passion (Nguyen, 2016; Braga et al., 2015) is considered significant especially for investors. Furthermore, the fear of failure in some cases, can especially entice emerging entrepreneurs with high career success aspirations and trigger them to persist in their actions (Cacciotti et al., 2016).

### 2.4. Factors Accelareting the Emergence of Social Entrepreneurship

Like the traditional entrepreneurship, initiation of a social entrepreneurship is associated with a variety of factors. It is known that there is a positive relationship between motivational factors and entrepreneurial orientation in the emergence of social enterprises (Marques et al 2012). Among the factors affecting entrepreneurship, many individual determinants such as experience, personality, education and financial conditions play a significant role. In addition, personal motivations such as the need for achievement and power (Collins et al., 2000), risk taking, and a sense of competence (Renko, 2012) drive the behavior of social entrepreneurs.

Due to the fact that the pandemic is a novel phenomenon, a few studies are encountered on this subject in the post-COVID-19 pandemic period. For this reason, after reviewing several studies investigating the factors that encourage the emergence

of traditional & social entrepreneurship, the prominent factors in these studies were evaluated and the critical factors that would be subject to the study were compiled keeping in mind that complex external environments impact social entrepreneur differently in comparison to other social entrepreneurs located in developed countries (Ghalwash et al., 2017).

***1.The study conducted by Omorede in 2014 -*** Findings from the study conducted by Omorede in 2014, focusing on the reasons behind the driving forces that motivate individuals to become social entrepreneurs in Nigeria demonstrate that local conditions such as widespread ignorance and unscientific beliefs, together with an individual's deliberate mindset, are contributing factors to explain participation in starting a social venture. Omorede argues in her study that a passion for a cause is an important factor contributing to the pursuit of effective social entrepreneurship. In the study, "local conditions" and "deliberate mentality" are defined as the driving forces for starting social enterprises. They are also important in the development of their passions. The existence of "social network support" together with passion has been identified as the main reason for these entrepreneurs to continue (Omorede, 2014).

***2.The study conducted by Yitshaki et al., in 2016 -*** The results of the study conducted by Yitshaki et al., 2016 investigating the motivations and opportunity recognition models of 30 Israeli social entrepreneurs (SEs) through life history analysis, found that most of the participants were motivated by pull factors, which included pro-social behaviors based on past or present life events. The rest of the entrepreneurs were motivated by push factors, including job dissatisfaction and the search for meaning. In the study, it has been determined that entrepreneurs create awareness about unmet social needs through their current and past life experiences which lead them to recognize opportunities and generate social ventures (Yitshaki et al., 2016).

***3.The study conducted by Dobele, in 2012-*** Dobele examines the factors influencing the social entrepreneurship in Latvia in 2011. The results of his study demonstrate that the main external factors affecting the development of social entrepreneurship are the political & legal environment, the lack of knowledge about social entrepreneurship & its importance in social/economic problem solving and the dominant cultural values in society. In her study, Dobele states that the most dominant internal factors hindering the emergence of social entrepreneurship in Latvia are access to finance, recruitment and retention of qualified professional and well-motivated personnel (Dobele, 2012).

***4.The study conducted by Ghalwash et al., in 2017-*** In a study by Galwash et al. in 2017, through an empirical study of the phenomenon of social entrepreneurship in an Egyptian context, they aimed to specifically investigate the factors that motivate them to start new social enterprises. According to the findings of the study social entrepreneurs are motivated by social problems, challenges, inspirations, previous personal experiences, and their social networks. In the study, new entrepreneurial characteristics, and motivations such as perseverance and social networking, which are critical for entrepreneurial success, are defined. The study is important because, unlike developed countries, it includes individuals' religious or cultural beliefs in the research (Galwash et al., in 2017).

***5.The study conducted by Yangui et al., in 2013 -*** According to the primary data collected from 272 Tunisian entrepreneurs, who were included in the study conducted by Yangui et al. to investigate the motivation and determinants that drive potential entrepreneurs in initiating business in certain groups such as the disabled, immigrants and women in Tunisia, personal motivation are found to stands out. In this study, it is found that discrimination had no effect on the motivation of entrepreneurs (Yangui, et al., 2013).

***6.The study conducted by Yamini et al., in 2020 -*** In the study by Yamini et al. in 2019 examining the effect of pro-social and intrinsic motivations on an individual's tendency to be a social entrepreneur, it was found that pro-social motivations are stronger motivations that positively affect individuals' social entrepreneurial intentions compared to intrinsic and extrinsic motivations. In addition, it has been determined that women are more affected by the combination of motivational factors compared to men (Yamini et al., 2020).

***7.The study conducted by Wanyoike et al., in 2020 -*** Wanyoike et al. conducted a series of interviews with social entrepreneurs who are Ashoka members in 2020 to examine the motivations of social entrepreneurs in East Africa to initiate a social enterprise. They argue that social entrepreneurship orientation serves as the main triggers for social entrepreneurship. The findings of the study suggest that intense personal experiences linked to past-life events as well as high achievement of orientation. The entire social entrepreneurs participating in the research are found to have primary motivations to create systemic change at the community and national levels through capacity building of marginalized groups such as poor farmers, unemployed youth, vulnerable children, prison inmates and artisans. In addition, the personal satisfaction of self-actualization is seen as a less common finding (Wanyoike et al., in 2020).

***8.The study conducted by Braga et al., in 2015 -*** The study by Braga et al. in Portugal in 2015 is about investigating the factors that motivate to create, develop, and maintain a social entrepreneurship project in the light of interviews with 13 social

entrepreneurs. The study shows that the motivations that affect individuals to start and maintain a social project are to highlight altruism, passion, being influenced by role models, past volunteering experiences and the desire to create and innovate. In the study, while social entrepreneurship motivations are closely related to the profile of the person, it is also seen that they are closely related to their previous experiences (for example, volunteering), learning and expectations (Braga et al., 2015).

***9.The study conducted by Boluk et al., in 2014 -*** Boluk et al., in 2014 conducted a study on the basis of two studies examining the social entrepreneurship in South Africa and Ireland using an inductive approach, whose aim is to empirically investigate additional motives as well as social interests that motivate social entrepreneurs. They identified three common themes; (1) entering a network and being approved, (2) lifestyle, (3) generating enough profit to be sustainable. The findings of the study show that entrepreneurs have additional motivations related to their business ventures, such as lifestyle motives, getting approval for the value they create, and making a profit. The motivations discovered also refer to individuals who are mutually interested in their communities, the environments in which they live, lifestyle interests, acceptance and profit (Boluk et al., 2014).

***10.The study conducted by Humphris, in 2017 -*** In another study conducted with seven social entrepreneurs from the north of England on the motivations of social entrepreneurs in the UK, a total of 10 main motivations were determined, including two push factors and 8 pull factors. While the two identified push factors are background and social values, pull factors are seen as the business model, the cause, opportunity recognition, self-motivation, network, personal rewards, lifestyle and non-financial motives (Humphris, 2017).

***11.The study conducted by Nguyen in 2016 - In*** Nguyen's thesis study conducted in 2016, investigating the antecedents of social entrepreneurship motivation in Germany and the triggering events that motivates the social entrepreneur to start a social enterprise, it was seen that all participants were motivated by pull factors influenced by relationships, past social and work experiences. Other factors affecting the decision were identified as financial security, social support, self-confidence and passion. At the same time, it was concluded that social entrepreneurs may be motivated to solve a social problem in a triggering event, but they should consider the existence of key factors at the moment they decide on social entrepreneurship. It can be said that this result confirms the assumption that new social entrepreneurs can be motivated to solve the problems triggered by the social and economic crisis created by COVID-19, but still need to pay attention to the basic factors (Nguyen, 2016).

When the results of the current studies are evaluated, apparently, there are various factors affecting the intentions and motivations of both traditional & social entrepreneurs. Both entrepreneurs are motivated to start a venture either externally or internally, or a combination of the two (the comparison of traditional entrepreneur motivation vs social entrepreneur motivation is demonstrated in Table 1). The entrepreneurs motivated by economic motives encourage the emergence of for-profit initiatives, while those motivated by social motives encourage the emergence of non-profit structures. The motivations of the leaders of those social enterprises are related to their pro-social values, personal characteristics, personal motivations, and environmental factors for the initiation of social enterprises. In particular, making a difference and helping communities are seen among strong social values (Renko, 2013). Because individuals with strong social values have the potential to have a keen understanding of who will need what help, to identify the need with empathy, and to work hard to see that what they do make a difference (Williams et al., 2012). Considering the burden of the COVID-19 pandemic on existing social and economic problems, it is thought that those with strong social values have a high potential to initiate social enterprises. In the light of this assumption, the factors that will be the subject of the study were determined under two main categories as (1) internal (2) external factors. These factors including subcategories are developed in Figure 1.

**Figure 1: The Structure for the Factors to be Examined**

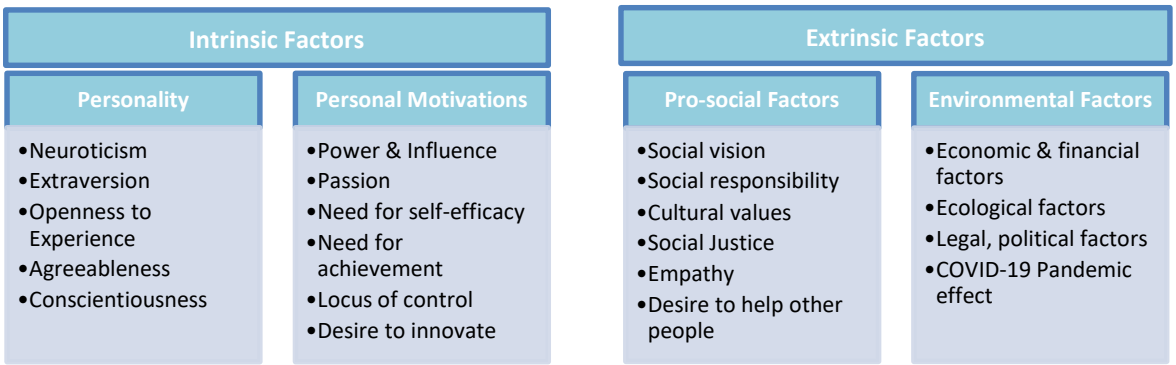



**Table 1: Comparison of Traditional & Social Entrepreneurship in terms of Motivations**

| | Motivations | Studies | Traditional Entrepreneur | Social Entrepreneur |
|---|---|---|---|---|
| Extrinsic | Economic & financial incentives | Collins et al., 2000; Nguyen, 2016; Benzing et al., 2009 | x | |
| | Local conditions, deliberate mentality | Omorede, 2014 | | x |
| | Social network, social support | Ghalwash et al., 2017; Nguyen, 2016 | x | x |
| | Political & legal environment | Dobele, 2012 | | x |
| | Social problems & challenges, religious & cultural beliefs | Ghalwash et al., 2017; Dobele, 2012 | | x |
| | Social equality | Renko, 2013 | x | x |
| | Ecological conservation | York et al., 2016 | x | x |
| | The work-family balance | Atkins et al., 2013 | x | |
| Intrinsic | Experience, personality, education, need for achievement, power | Collins et al., 2000; Nguyen, 2016; Farmer et al., 2011; Shane et al., 2003 | x | x |
| | Altruism, being influenced by role models, desire to create and innovate | Braga et al., 2015 | x | x |
| | Previous personal & volunteering experiences, self-confidence | Nguyen, 2016; Braga et al., 2015 | | X |
| | Search for meaning | Yitshaki et al., 2016 | | X |
| | Passion | Omorede, 2014; Braga et al., 2015; Nguyen, 2016; Shane et al., 2016 | x | X |
| | Pro-social motivations | Yamini et al., 2020; Yitshaki et al., 2016; Shane et al., 2003; Yamini et al., 2020 | x | X |
| | Cause, opportunity recognition, self-motivation, personal rewards, lifestyle, | Humphris et al., 2017 | x | x |
| | Fear of failure | Cacciotti et al., 2016 | x | |
| | Non-financial motives | Humphris et al., 2017 | | x |

## 3. DATA AND METHODOLOGY

The study adopts a qualitative research method which includes in-depth interviews with the research population of 6 social ventures in Turkey. As primary data, information obtained from both in-depth interviews with the social ventures and Ashoka Turkey were used. These interviews with the volunteer social ventures participated in the study were conducted through Zoom interviews at the predetermined date & time. The questionnaire prepared and used by the researcher during the interviews consists of 13 questions of which were answered in about 30 minutes. The primary and the secondary data obtained from the literature review were analyzed with descriptive and content analysis method.

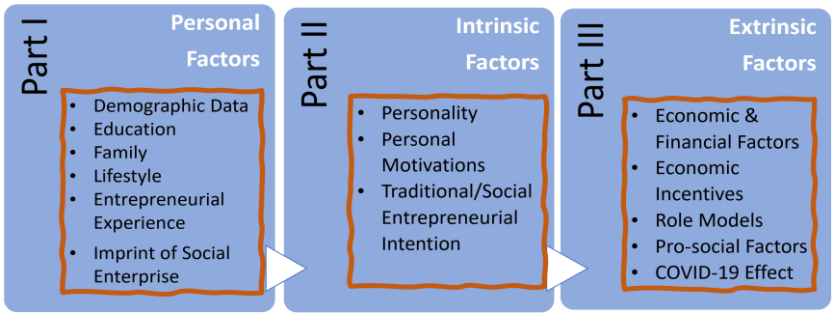
The questionnaire was developed based on a literature review and some of the questions were tailored to the context of social entrepreneurship. The research metrics for each of the determined factors were defined (Table 2) and then the

structure of the questionnaire (Figure 2) was created. In the first part, personal factors are discussed. In addition to demographic information, there are questions about the participant's education, family, lifestyle, entrepreneurial experience and the social enterprise she/he founded. In the second part, there are questions about intrinsic factors consisting of personality traits, personal motivations, and entrepreneurial intentions. In the third part, questions related to extrinsic factors like economic & financial factors, economic incentives, role models, pro-social factors and the effects of the crisis created by the COVID-19 pandemic were developed. All questions were developed to enable the researcher to access information to answer the research questions. Then, the questionnaire was created by placing the questions in the developed questionnaire template.

**Table 2: The List of Research Metrics**

| Metrics | Factors | Studies |
|---|---|---|
| **Personality** | Neuroticism<br>Extraversion<br>Openness to Experience<br>Agreeableness<br>Conscientiousness | Nga et al., 2010;<br>Nga et al., 2018;<br>Brandstatter, 2011 |
| **Personal Motivations** | The need to have power and influence over others,<br>To be passionate<br>The need for self-efficacy<br>The need for achievement<br>Locus of control<br>Desire to innovate | Rantanen et al., 2014;<br>Moriano et al., 2006;<br>Liguori, 2012;<br>Vijaya et al., 1998 |
| **Pro-Social Factors** | ○ Having Social Vision,<br>○ Social Responsibility<br>○ Cultural values<br>○ Social justice<br>○ Empathy<br>○ Desire to help people | Nga & Shamuganathan, 2010;<br>Liguori, 2012 |
| **Economic & Financial** | ○ The need to recover from economic difficulties,<br>○ The need to contribute to the family budget,<br>○ The need to secure the financial future,<br>○ Economic, financial, legal and political incentives | Liguori, 2012 |
| **COVID-19 Pandemic** | ○ Being affected by the crises caused by COVID-19 pandemic economically, psychologically, and socially,<br>○ Considering crisis as an opportunity to start a business,<br>○ Considering crisis as a resource-limiting factor. | Mousell et al., 2017 |

**Figure 2: The Structure of the Questionnaire**




Although the social enterprise ecosystem in Turkey continues to evolve since 2016, there is no legal regulation and registered authority other than a few leading universities, technology incubators, non-governmental organizations, international actors, and policy makers are making efforts to establish a more functional social enterprise ecosystem in Turkey. Hence, some institutions such as Ashoka Turkey, TED University Social Innovation Center, Koç University Social Impact Forum, Impact Hub,

Turkey Social Entrepreneurship Network were contacted. As a result of the information and guidance obtained from them, it was concluded that the candidates applied to Reward Programs related to social entrepreneurship may be those who are likely to be established during the COVID-19 Pandemic period. Social enterprise candidates for such competitions were searched one by one and social enterprises that could participate in the study were identified. More than 50 social enterprises were examined, and 38 of them were contacted via e-mail and LinkedIn Social Network. Approximately 20 of the interviewed social enterprises were found to comply with the criteria required by the study, and they were invited to the research in writing and verbally. 4+2 in total 6 social enterprises were selected for the sample group. As it was a period when the Omicron variant was very effective, the interviews were conducted over zoom meetings.

All participants are the founders and current managers of their ventures and base in Istanbul except one in Erzurum. The 66.6% (4) of the participants were female, 33.3% (2) were male and the average age of the participants was 27.5 years. Table 3 provides an overview of the participants' fields of work, education, entrepreneurial experience, gender, age and years of participation. Participants are represented by a code number for privacy reasons.

**Table 3: Overview of the Participants' Information**

| Codes | Field of Work | No of Founders | Date of Planned | Date of Founded | Major of the Founder | Gender | Age |
|---|---|---|---|---|---|---|---|
| SE1 | Environmental | 2 | 2015 | 2021 | Industrial Engineer | Male | 33 |
| SE2 | Training & Consultancy | 3 | 2018 | 2020 | Journalism | Female | 32 |
| SE3 | Digital Technology | 5 | 2017 | 2017 | Pharmacy | Female | 24 |
| SE4 | Earthquake | 1 | 2018 | 2020 | Geological Engineering | Female | 21 |
| SE5 | Environmental Service | 5 | 2021 | 2021 | Law | Female | 23 |
| SE6 | Music Industry | 2 | 2020 | 2020 | Law | Male | 29 |

## 3. FINDINGS

The findings are examined under intrinsic & extrinsic factors as based on the structure developed by the authors (Figure 1) and shown at Table 4.

### 3.2. Intrinsic Factors

#### 3.2.1. Personality

According to the structure, personality has been studied under the "five macro features" model of John et al., (2008). This model is a multidimensional approach to defining personality by examining openness, conscientiousness, extroversion, agreeableness, and neuroticism (Pekkala Kerr et al., 2017). Neuroticism compares emotional stability and composure with negative emotionality, such as feeling anxious, tense, sad and tense. Extraversion expresses an energetic approach to the social and material world and includes such traits as sociability, activity, assertiveness, and positive emotionality (Pekkala Kerr et al., 2017). The trait of openness consists of imagination, willingness to accept new ideas, versatile thinking, and curiosity. Those who display these traits are unconventional and independent thinkers. As Burger (2006) cites that, the innovative and unusual ways of thinking of such people cause them to get bored with the current situation (as cited in Irengün et al., 2015). Openness to experience defines the breadth, depth, originality, and complexity of an individual's mental and experiential life (Pekkala Kerr et al., 2017). Openness is often considered along with the ability to take risks. Since open people are also seen as adventure and novelty seekers, they may be considered successful in identifying a social problem, aiming to serve a purpose with available resources, and inclined to work in the short term (Irengün et all, 2015). Agreeableness contrasts a pro-social and societal orientation towards others with antagonism and includes characteristics such as altruism, sensitive-mindedness, trust, and humility. Conscientiousness: defines socially determined impulse control that facilitates task- and goal-oriented behavior. As Burger (2006) assert that since conscientious people act in an organized, determined, and planned manner, they are extremely rules-based and perfectionist in their work (as cited in Irengün et al., 2015). These five characteristics, which are defined as the important characteristics of personality, were sought from the answers given during the interview.

Extrovert personality trait is a feature sought both in maintaining a social enterprise economically, in using existing social networks effectively and efficiently, in including volunteers who will work in such projects, and in establishing collaborations. It is clear that extroverted participants in this study use these characteristics in their social enterprises. In particular, the fact that SE 6 has created a social enterprise that will bring together organizations of different structures, find suppliers through the online platform, develop a financial module through them, and help those in need is a proof of this.

It is seen that openness to experience, conscientiousness and extraversion are the three leading common personality traits among entrepreneurs based on the answers given by the participants regarding their personalities.

SE1 asserts this in his own words as; *"since my childhood, I like to try different things. I wanted to try the corporate life first in my career. I have experience working in both an advertising agency and a holding company. When I realized that the corporate life is not suitable for me, and I dedicated myself to entrepreneurship.*

SE3 confirm her being open to experiences as; *"since my childhood, I tried many different things at the same time... I grew up in a city full of cultural differences. This gave me the chance to experience many different things together. I tried several sports like playing tennis and basketball. Sometimes I sold seeds, sometimes I acter as a farmer. This has given me many different perspectives on life.*

SE5 expresses her extroversion and openness to different experiences with these words: *"I am a very active person; I want to try anything I like. I am an animal rights activist, I play basketball, I love meeting tourists and new people. Volunteering allows me to experience different things".*

### 3.2.2. Personal Motivations

Personal motivations of social entrepreneurs were examined through the parameters of the need to have power and influence over others, being passionate, the need for self-efficacy, the need for achievement, locus of control and desire to innovate.

Although the social entrepreneur role revolves around helping other people, it is also important for entrepreneurs to feel complete (Humphris, 2017). One of the common statements of all entrepreneurs participating in the research was the sense of personal satisfaction and fulfillment they felt when their business was successful. The fact that their work raises respect in the society and their close circles increases their self-confidence and makes them feel prouder and more powerful. Their success helps them prove to themselves that they are good, while increasing their passion and motivation for their work. Their social enterprises and projects have permeated their lives so much that one of them defines her existence through her social enterprise.

Passion was at the forefront of all the participants. All the participants were very passionate about social innovation idea, as Omorede found in his 2014 study that passion is partly the reason why individuals persist in the entrepreneurial process (Omorede, 2014). This is particularly evident in the passionate approach of social entrepreneurs to solving the social problem, which is evident in SE1's attempt to beautify the face of the city, SE3's consistency in spreading goodness around the world, SE4's enthusiasm to save people's lives in a possible earthquake.

As Batson (1990) indicates that, according to multiple psychological studies, self-interest is one of the descriptors of individuals' actions (as cited in Yamini, 2020). This means that the actions and efforts of the individual are stimulated by the work itself and the desire to achieve inner satisfaction. Another determinant is the entrepreneur's need for achievement (Carsrud et al. 2017).

In the study, the need for achievement motivation of all participants, except SE 4, appears as an important factor in their being social entrepreneurs. Additionally, having a personal problem can contribute to the establishment of a social enterprise, especially if it relates to a background of lack of experience (Wanyoike et al., 2021). This manifest itself in SE 2 & SE 4 cases. SE2 and SE4, develop their social innovation ideas while seeking answers for the problems they faced. Ideas have emerged to provide solutions to their own needs and have turned into providing social benefit to the whole. This supports the conclusion that social entrepreneurs are oriented towards both themselves and others when starting a business (Ruskin at al., 2016). This statement gains more meaning with the words of SE 6: "For the sake of the industry's survival, I have dedicated myself wholeheartedly to creating social benefit for those who are affected by the pandemic. My only wish is to see more actors survive in the industry when the pandemic is over, and the industry can pick up where it left off".

## 3.3. Extrinsic Factors

### 3.3.1. Pro-Social Factors

Prosocial motivation, which is an important concept in social enterprise studies, is based on prosocial personality traits such as empathy and helpfulness and represents the desire to help others (Penner et al., 2005). This category includes social vision, social responsibility, cultural values, social justice, empathy, and desire to help.

Regarding the pro-social category, one of the questions asked in the in-depth interviews was about their knowledge of social problems in the world and in Turkey in order to get an insight about their level of social vision. It was noted that all of them,

without exception, had detailed knowledge, foresight, and vision regarding social problems in the world and in Turkey. Another observed issue was the devotion and excitement in their expressions when they talked about social problems. While discussing both the social problem that led to the emergence of their own social enterprises and the social problems in the world, different views and insights are presented regarding the underlying causes. As a result of these findings, it was concluded that the participants were social visionaries.

Another notable response during the interviews was the desire to help others and provide social benefits in all of them. Most of the participants very often included both social problems and their desire to help people with statements such as "I want to help others with my work" and "We want to make a positive impact on society and individuals with our work". This finding was not surprising. Because it is a fact revealed by studies that social entrepreneurs have a strong desire to help society as a motivating force to engage in social entrepreneurship. Studies suggest that they are motivated by “commercial gain” and “altruism”, which are the two main differences between traditional entrepreneurs and social entrepreneurs. In this respect, the study is compatible with similar studies in the literature (Austin et al., 2006).

### 3.3.2. Environmental Factors

As environmental factors affecting social entrepreneurship emergence, the economic & financial factors, ecological factors, legal, political factors and the COVID-19 Pandemic effect has been investigated.

Personality, personal motivations, pro-social factors as well as life events related to environmental factors are known to motivate social entrepreneurs to start a business (Humphris, 2017). This means that their intention to start a social enterprise is influenced by a number of factors such as natural and local conditions and a deliberate mindset (Omorede, 2014).

In this study, it is seen that environmental factors are less effective than other factors affecting the emergence of social enterprises. This may be due to the small sample size developed. Among the participants, SE 4 is the only social entrepreneur who has the developed her enterprise by being affected by the risk of a natural disaster. She invents an earthquake emergency communication system upon the fear of an earthquake.

**Table 4: The overview of the Findings**

| Factors | | CODES | SE1 | SE2 | SE3 | SE4 | SE5 | SE6 |
|---|---|---|---|---|---|---|---|---|
| Intrinsic Factors | Personality | Neuroticism | | | | x | | x |
| | | Extraversion (assertive) | x | x | x | | x | x |
| | | Openness to experience | x | x | x | | x | x |
| | | Agreeableness (sensitive-mindedness) | x | | | | x | x |
| | | Conscientiousness | x | x | x | x | | x |
| | Personal Motivation | Power & influence over others | x | | | | | |
| | | Passionate | x | x | x | x | x | x |
| | | Self-efficacy | x | | | x | | x |
| | | Need for achievement | x | x | x | | x | x |
| | | Locus of control | x | | | | | |
| | | Desire to innovate | x | | | | | |
| Extrinsic Factors | Pro-Social Factors | Social vision | x | x | x | x | x | x |
| | | Social responsibility | x | | x | | x | |
| | | Cultural values | | | x | | | |
| | | Social justice | | x | | | | x |
| | | Empathy | | | | x | | x |
| | | Desire to help | x | x | x | x | | x |
| | Environ mental Factor | Economic factors | | | | | | |
| | | Natural/Ecological factors | | | | x | | |
| | | Political factors | | | | | | |
| | | COVID-19 factor | | | | | | x |

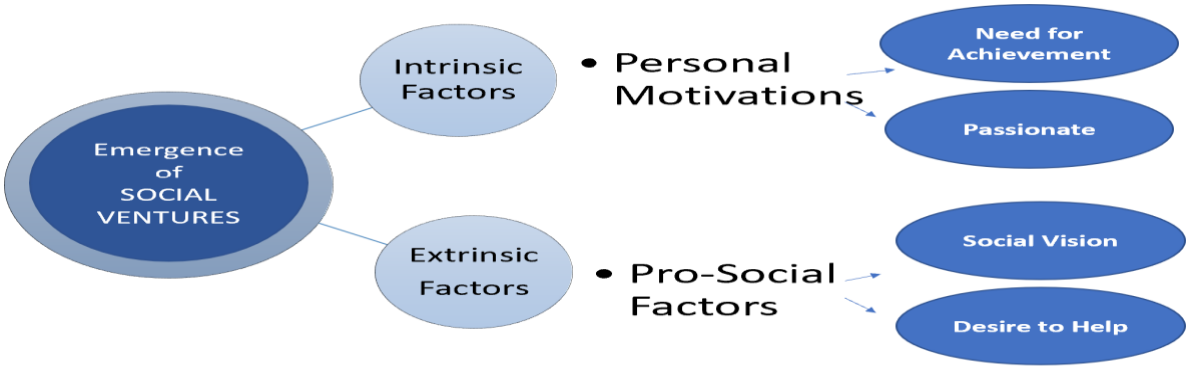
As a summary, it is seen that the extroverted entrepreneurs demonstrate high levels of conscientious and openness to new experiences in relations to personality traits, one of the subfactors of intrinsic factors. Likewise, this extroversion is a feature that is seen high among the participants. Being open to experiences can also be defined as a predisposition to activities that are perceived as adventure. However, it can be thought that these individuals are able to detect a social inequality and are

closer and more prone to developing ideas for the solution of a problem. In this context, since entrepreneurs who are open to experience are also determined to have high social visions, it has been concluded that those entrepreneurs with open experience can identify social problems more easily. It has also been determined that the extrovert personality trait is important in the economic continuation of a social enterprise, in the creation of financial returns in order to continue its activities and in finding stakeholders such as investors. All the extroverted participants stated that they made progress in their social enterprises by using their personal networks and resources. Likewise, passionate and need for achievement motivations from personal motivations are important in the emergence of social entrepreneurship. All the entrepreneurs participating in the research experience a sense of personal satisfaction through their social enterprises.

Passionate motivation, which is at the forefront of all participants, is one of the common points of all of them. In the study, it is seen that the actions and the efforts of the entrepreneurs are encouraged by the work itself and their desire to achieve inner satisfaction. One of the implications of the study is that the entrepreneurs use the solutions they find while searching for a solution to their own problems, for the benefit of both themselves and the whole society. This supports the conclusion that social entrepreneurs tend to create value for both themselves and others when starting a business (Ruskin, Seymour & Webster, 2016).

Analysis of the interviews reveals that four of the factors that spurred the emergence of social enterprises during the COVID-19 Pandemic period stood out. These are (1) the need for achievement, (2) the desire to help people, (3) passion and (4) social vision (Figure 3). The findings are consistent with the author's conceptual model that participants are intrinsically motivated to express their needs for achievements & their passionate and they are extrinsically motivated being social visionaries to satisfy their desire to help a target community.

**Figure 3: The Findings Related to Factors Category**




## 4. CONCLUSION

Social entrepreneurs are pioneers who offer creative and innovative solutions to social problems. Regardless of the factors that encourage them to start social enterprises, the most important denominator they meet is to create social impact.

In this research study, the authors tried to reveal that the number of social enterprises has increased during the COVID-19 pandemic period, when social problems increased and became more visible, and that the factors that encouraged this increase were mostly pro-social factors and personal motivations. In the study, the factors that encourage the emergence of social enterprise were examined in two main sections and in-depth interviews with 6 social enterprises in Turkey were conducted.

Despite the personal characteristics are effective in being a social entrepreneur, it is seen that they are not sufficient in the emergence of a social enterprise. Extraversion, open to experience and conscientious are the three prominent personal characteristics related to personality in the research. The results of the research confirm the researcher's proposition that the prominent factors in the establishment of social enterprises are pro-society factors and personal motivations. While passionate and need for achievement from personal motivations drew attention, desire to help others and social vision from pro-social factors were determined as leading factors. It is not surprising that pro-social factors are at the forefront of the factors affecting the emergence of social enterprises that unite under the social impact denominator.

There is limited evidence to support the researcher's basic premise that the COVID-19 pandemic period accelerates and encourages the emergence of social entrepreneurship. However, the findings are consistent with the authors' conceptual

model that social entrepreneurs are intrinsically motivated to express their needs and passion for achievement and extrinsically motivated as social visionaries to satisfy their desire to help the target community. This may be because of the limited sample size developed due to the fact that COVID-19 Pandemic period is not long enough for a social enterprise to be sufficiently recognized in social and traditional media.

This research study contributes to the emerging social entrepreneurship literature in Turkey in terms of examining the factors affecting the emergence of social entrepreneurship. The finding of this study supports that there is a strong link between social entrepreneurship and both pro-social & personal motivations.

Based on the research findings, policy makers, universities, civil society and the private sector need to promote the development of social entrepreneurship. In this context, it is necessary to recognize the motivations and factors that influence social entrepreneurs in order to develop interventions that can create environments that support social entrepreneurial behavior. Overall, this requires a whole new understanding of the vanguard of social entrepreneurial intentions. For this reason, examining the factors that encourage or hinder social entrepreneurship and the motivations that motivate people to become social entrepreneurs should be especially in the focus of decision makers and researchers and in the topics of future research.

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# SUSTAINABILITY AND EFFICIENCY IN UNIVERSITY HOSPITAL STRATEGIC MANAGEMENT: INTELLECTUAL VALUE ADDED COEFFICIENT (VAIC)

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## ABSTRACT

**Purpose-** Changing economic approaches force the sustainability and efficiency of public health management structures to be provided with existing resources. In this direction, our study is aimed to evaluate the effect of the Intellectual Value Added Coefficient-VAIC of a university hospital, which has important resources in terms of high-level knowledge and skill use, on sustainability and efficiency.
**Methodology-** The financial reports of the university hospital; It was obtained from the precise and detailed trial balance, balance sheet, and income-expense statement data. Relevant data in the VAIC model were taken and analyzed by comparing them over three years.
**Findings-** The VAIC effectively increases the university hospital's efficiency and sustainability rates over three years. There was a statistically significant positive correlation between VAIC and ATO in all of the years 2014-2016. While there was no significant relationship between VAIC and ROA in 2014, there was a negative relationship in 2015, and a positive relationship in 2016.
**Conclusion- T**here is an increasing relationship between the efficiency of the added value created by the components that make up the university hospital resources and the productivity. Between the efficiency of the added value and the profitability, as the debts that were taken over from the previous years are closed; while a relationship could not be established in 2014, it was determined that profitability decreased in 2015 and increased profitability in 2016. It has been determined that the VAIC Model can be used and effective in the evaluation of sustainability and efficiency in the strategic management of university hospitals. In addition, these results reveal that university hospitals should use these important powers by developing them. We claim that this new approach will contribute significantly to financial risks in the implementation of strategic management and cost analysis against financial dilemmas in ensuring the financial sustainability of university hospitals in Turkey.

**Keywords:** Public administration, Intellectual Value Added Coefficient (VAIC), university hospitals, financial sustainability, efficiency.
**JEL Codes:** H83, D24, M21, Q56

## 1. INTRODUCTION

The perspective of renewed strategic management is to increase productivity by producing added value by focusing on intellectual resources and talents (Marzo, 2021). Intellectual resources and talents increase the competitiveness of companies by creating momentum for tangible capital with the best knowledge. This is a source-based view theory. Resource-based view theory is a leading paradigm in the field of strategic management. The main focus of this theory is to achieve financial performance, namely sustainability, by providing profit and efficiency with the effective use of strategic resources. Businesses are obliged to measure and manage Intellectual capital (IC) because of its importance. The literature focuses on the definition of intellectual capital, its measurement, reporting in accounting, examining its effect on performance, and ultimately the management of intellectual capital in terms of businesses. (Marzo, 2021). Studies conducted in this direction have found that intellectual capital is related to many factors. Being the most important competitive tool of the enterprise in the institutionalization process (Demir, & Demirel, 2011), reaching 3-4 times the book value of the enterprise, developing the leadership roles of the managers, and contributing to the enterprises, economic and social value, when applied to the needs of the enterprise rather than a static entity, creates added value. It is reported that creating added value (Bontis, 1998; Mooneeapen et al., 2021), ensures sustainable performance (Bontis, 1998; Stewart, 2010), the value created by bringing together financial and non-financial elements, and corporate Efficiency (Mooneeapen et al., 2021) are possible with

intellectual capital. Therefore, for a better understanding of the IC concept, whether at the national, regional, or organizational level, its components need to be defined (Orsal, 2020). Efforts to identify the dimensions of analysis and IC components are attempts to better understand and improve the management process (Bontis, 1998; Orsal, 2020; Orsal, & Uçkun, 2022).

Intellectual capital (IC) is the stock of knowledge held by an organization (Dierickx & Cool, 1989). Intellectual capital; consists of three different elements: structural capital, human capital, and customer capital (Bontis, 1998). Knowledge is linked to economic wealth and value creation (Sánchez, et al., 2009) in organizations (Quinn, 1992) that are considered "repository of minds and coordinators" at the center of intellectual capital (Stewart, 2010). Therefore, for a better understanding of the concept of IC, whether at the national, regional, or organizational level, its components need to be defined (Orsal, 2020). Efforts to identify dimensions of analysis and IC components are attempts to better understand and improve the management process (Low, Samkin, & Li, 2015; Orsal, 2020; Orsal, & Uçkun, 2022). Intellectual capital (IC) is the stock of knowledge held by an organization (Dierickx & Cool, 1989). Intellectual capital consists of three different elements: structural capital, human capital, and customer capital (Bontis, 1998). Knowledge is linked to economic wealth and value creation in organizations (Quinn, 1992) considered "repository of minds and coordinators" at the center of intellectual capital (Stewart, 2010). There is increasing interest in the role of intellectual capital management in both research and practice in higher education, especially given the knowledge-oriented nature of its activities (Sánchez et al., 2009). There is increasing interest in the role of intellectual capital management in both research and practice in higher education, especially given the knowledge-oriented nature of its activities (Sánchez et al., 2009). In the literature, universities focus on Human Capital-HC and Structural Capital-SC, while the capital employed-CE is less focused (Low, Samkin, & Li, 2015; Sangiorgi and Siboni 2017). In particular, the undeniably important contribution of universities to the value creation process is identified with "structural capital-SC" (DiBerardino & Corsi, 2018).

In the University's Structural Capital-SC information related to internal processes (Ramirez, Tejada, & Manzaneque, 2016), databases, intellectual property of faculty in research projects and inventions, (Leitner, et al., 2014) publications (Secundo, et al., 2016), etc. include intangible resources in the organization. Human capital is defined as the explicit and implicit knowledge of both academic and administrative staff (Ramirez, et al., 2016; Orsal, 2020), competence values (Leitner, et al., 2014; Orsal, 2020), and researcher identities (Secundo et al., 2016). Capital employed-CE is defined as the spectrum of value created by universities (Leitner, et al., 2014; Orsal, 2020), cooperation (Secundo et al., 2016), and relationships developed (Ramirez et al., 2016; Orsal, 2020). Management tools are increasingly used in universities to measure, manage and report the value of intangible assets (Bongiovanni, et al., 2020; Orsal, 2020; Orsal, & Uçkun, 2022). The European Universities Observatory recognizes the mandatory disclosure of intellectual capital-related information by universities (Sangiorgi & Siboni, 2017) as a necessary step to promote efficiency, effectiveness, and excellence (Bongiovanni et al., 2020; Orsal, 2020; Orsal, & Uçkun, 2022). The situation is similar in university hospitals, and successful treatment and surgeries by experienced experts in the technological materials used are an indication that that hospital is preferred and reliable. "Efficiency Scorecard" in hospitals is required to measure three inseparable values: business, employee, and patient (Orsal, 2020; Orsal, & Uçkun, 2022). The hospital business offers both jobs, careers, development, etc. to its employees. It creates value when it provides opportunities and provides patient satisfaction. Employees create value when they provide healthcare to patients and ensure patient satisfaction. On the other hand, patients create value when they constantly apply to that hospital business and that healthcare worker. Therefore, health outcomes and costs affect these three values together. When determining the value of an enterprise due to its intellectual capital, two important aspects are very important: the risks that threaten the knowledge and the efforts to continuously improve the knowledge (Orsal, 2020; Orsal, & Mavili, 2020; Orsal, & Uçkun, 2022). Therefore, intellectual capital should be addressed as a managerial priority in measuring and developing risks and development potential (Garlattil, et al., 2014; Orsal, 2020; Orsal, & Uçkun, 2022). In hospitals, it is necessary to measure the intellectual capital elements consisting of human capital, structural capital, and used capital based on business and elements (Orsal, 2020; Orsal, & Mavili, 2020; Orsal, & Uçkun, 2022). The Ministry of Health has evaluated only the Balanced Score Card application, which is one of the element-based measurement techniques in public hospitals, as a productivity scorecard (Public Hospitals Unions Efficiency Evaluation Regulation, 2014). However, university hospitals where the intellectual capital is the most, in a way where knowledge is graded and health personnel in many fields are taught at the university level, could not be included in this scope. On the other hand, as a natural result of university hospitals being service businesses, it is seen that there are many value movements within the business (Uçkun, & Şahin, Orsal, 2020; Orsal, & Uçkun, 2022; Orsal, & Mavili, 2020).

Changing economic approaches force the sustainability and efficiency of public health management structures to be provided with existing resources (Orsal, 2020; Orsal, & Uçkun, 2022). We claim that when this expectation is reflected in the cost of university hospitals with high intellectual capital, their efficiency will increase and their sustainability will be ensured (Orsal, 2020; Orsal, & Uçkun, 2022). In this direction, this study was carried out to evaluate the effect of the university hospital in providing sustainability and efficiency with its Intellectual Value Added Coefficient (VAIC) with this important resource. In the literature summary section of the research, the definition of the concept of intellectual capital and its importance in terms of

businesses are mentioned, then the Intellectual Value Added Coefficient method (VAIC), which is one of the methods and approaches developed to measure intellectual capital, the dimensions of intellectual capital in terms of health services, the difficulties in using intellectual capital in hospitals are included. Resource-based view theory is a leading paradigm in the field of strategic management (Orsal, 2020; Orsal, & Uçkun, 2022). The main focus of this theory is to achieve sustainability by providing profit and efficiency by using strategic resources effectively (Orsal, 2020; Orsal, & Uçkun, 2022). The theoretical structure of our study is based on the source-based view theory.

In this study, "How does the Intellectual Value Added Coefficient (VAIC) of a university hospital, which has important resources in terms of high-level knowledge and skill use, affect sustainability and efficiency? In order to answer the question, first of all, studies in the literature were examined. Later financial reports; The relevant data in the Intellectual Value Added Coefficient (VAIC) model were taken from the final and detailed trial balance, balance sheet, and income-expense statement and compared for three years. As a result, it is stated that the new approach makes a significant contribution to financial risks in the implementation of strategic management and cost analysis against financial dilemmas in ensuring the financial sustainability of university hospitals in Turkey.

## 2. LITERATURE REVIEW

### 2.1. Intellectual Capital Concept and Definition

In organizational and managerial terms, the concept of intellectual capital, firstly, is defined by Stewart as "Everything that employees know that will provide a competitive advantage to the enterprise in organizational terms" (Stewart, 2010). He also developed it as "intellectual material that can be put to use to create wealth, that is, a combination of knowledge, information, intellectual property and experience" (Stewart, 2010). OECD, on the other hand, is the economic value of two categories of intangible assets of the enterprise, whose definition includes organizational and human capital. According to Sveiby, who pioneered the development of accounting methods, the first theory of intellectual capital is the "Invisible Balance Sheet". Peter Drucker, who is accepted as the guru of business management, defines intellectual capital as a resource that provides a competitive advantage in the market and adds value to the business (Drucker, 1995; 59-60). Edvinsson, known as the first professional intellectual capital manager, deals with the knowledge that can be converted into value and as a matter of relations (Edvinsson, 1997: 366).

#### 2.1.1. The Importance and Benefits of Measuring Intellectual Capital

Intellectual capital is a critical issue in general. The biggest proof of this is the important role that companies play in increasing their performance (Orsal, 2020). Expressed the reasons why intellectual capital is such a critical issue as follows.

a. Intellectual capital is the wealth that can be noticed and not depreciated in an organization's success. Many of the structural assets may depreciate from the day they are acquired. A manager must make intellectual capital productive and transform it into customer value.

b. It is argued that the developments in the service economy are direct, while the progress observed in the traditional manufacturing industry is indirect. The growth of the service economy gradually increases the importance of intellectual capital.

c. The fact that people with intellectual capital have different preferences about where they will work and want to be in a certain company is an important detail about themselves (volunteer employees). These employees are also more likely to find employment in many companies. This does not mean that employees work unpaid.

d. Most managers underestimate intellectual capital. The negative consequences of this situation; Increasing competition, increasing consumer demands, gradually decreasing management layer, increasing responsibilities, pressures created by different modern management practices, negatively affecting the business life of employees, and not staying in organizations for a long time can be counted both for managers and employees.

e. Another contribution of intellectual capital is that it notices and considers high-level employees for the organization.

f. If there is an increase in value recently when the market values of organizations are compared with their book values, the only significant and only reason is intellectual capital.

The difference between market values and book values is large in companies in the service sector where information is important. It can be eliminated by measuring the intellectual capital to eliminate the antiquities caused by the difference (Orsal, 2020; Orsal, & Uçkun, 2022; Roslender & Fincham, 2001). Although it is not easy to measure intellectual capital precisely at the moment, it is imperative to accurately measure such an important asset. Those that can be measured are controlled and managed (Orsal, 2020; Orsal, & Uçkun, 2022). Reasons for measuring intellectual capital: To show the

managers the value-creating elements of their businesses with a reliable measurement tool, to evaluate the business performance, and to evaluate the financial resources (payment power) of the business (Orsal, 2020; Orsal, & Uçkun, 2022; Orsal, & Mavili 2020).

Why should Intellectual capital be measured (Orsal, 2020)?

It is important to measure with a reliable measurement tool to show managers the value-creating elements of their business, evaluate business performance, and evaluate the financial resources (solvency) of the business (Orsal, 2020).

So, measuring intellectual capital, which variables benefit businesses in terms of efficiency, effectiveness, and performance? (Orsal, 2020).

- Detailed definition of assets and values that are not included in financial reports (financial reports), an inspection of active values by detailed planning and measurement, determination of ways to increase value and make them available for risk management,
- To increase the culture, perception, and performance of the employees of the institution,
- In determining the understanding created by knowledge in mutual relations and prioritizing according to its criticality and urgency,
- Increasing joint activities with the understanding of corporate social networks,
- Recognizing information flow patterns in communication capital and identifying representatives in social networks that create technological change,
- In accelerating learning models,
- In the creation of a shared / sharing-based information culture with information management,
- In increasing innovation (invention),
- Identifying the best and most appropriate evidence-based practices and providing the environment for the dissemination of the most appropriate evidence-based practice,
- We argue that it will provide effective benefits in the creation of a performance-based culture (Orsal, 2020).

### 2.1.2. Methods of Measuring and Reporting Intellectual Capital

For business managers to better manage intellectual capital, various indicators and measurement methods have been developed to measure this value. Two approaches that are particularly accepted are:

The first is financially measured at the enterprise level. The reason is that credit institutions, investors, suppliers, etc. may want to measure the intellectual capital of the enterprise and evaluate it as a whole (Gravili, et al., 2021). Intellectual capital can be measured on a business basis in three ways; Market Book and Book Value Method, Tobin's Q Ratio Method, and Calculated Intangible Value Method. While the measurement methods of intellectual capital on a firm basis show its possible share in the market value, it cannot explain its effects on value (Bontis, 1998).

The second considers human capital, structural capital, and customer capital separately, focusing on the measurement of its components rather than intellectual capital. The five measurement methods by element are: Intellectual Value Added Coefficient Method (Value Added Intellectual Capital - VAIC), Economic Value Added - EVA, Intellectual Capital Index (IC-Index), Balanced Scorecard, Skandia Guide (Skandia Navigator), and Intangible Assets Monitor.

### 2.1.3. Value Added Intellectual Capital (VAIC)

Pulic, Intellectual Value Added Coefficient method; management levels of the organization, personnel, investors, shareholders, partners, interest groups, resources, etc. developed to measure the value created by each (Pulic, 2004). According to Pulic, the Intellectual Value Added Coefficient (VAIC) is the method used by the organization to measure its performance in its intellectual - intangible assets and physical - tangible capital - value (Pulic, 2004). In summary, the intellectual capital value of the enterprises is the real value in the accounting records (Pulic, 2004: 63).

Application stages of the VAIC Method: It can be said that the application of this method consists of the following stages.

1. It is the calculation of the added value obtained by the business in a period, in other words, the value created in a period. To calculate the CEE, HCE, and SCE values, the total value added (VA) created by the business must first be calculated. This value is defined as the difference between business outputs and inputs. In short, VA expresses the income generated from all products and services sold by the enterprise, that is, the difference between total sales and all expenditures made by the

enterprise (Public, 2004: 64). Based on Pulic's definition, Firer and Williams state that value-added, in more detail, is equal to the sum of the following business accounts (Bontis, 1998).

Equation1; VA= I + DP + D + T + M + R + WS

VA: Total Added Value Created by the Business, I: Interest expenses, DP: Depreciation Expenses, D: Dividends, T: Corporation Tax, M: Participation Profit, R: Undistributed Profits, WS: Total Salary and Fees Expenses.

2. Calculation of the effectiveness of the added value that arises as a result of physical, financial, and intellectual capital,

3. Finding the effectiveness of human capital and structural capital,

4. Structural capital efficiency; Structural capital is considered the difference between intellectual capital and human capital. The added value created by the structural capital and human capital in production enterprises is small, and the added value of the capital used is large. In knowledge-based businesses, the added value of structural capital and human capital is greater. The enterprise obtains the capital used as book value and the total added value created from the sum of its human and structural value. It deals with human capital based on total salary and wage expenses.

The efficiency coefficient calculations that make up the VAIC of the enterprise are below (Pulic, 2004: 64-65).

Equation2; CEE = VA/CE, Equation3; HCE= VA/HC, Equation4; SCE= SC/VA, SC= VA-HC

VA: Total Added Value Created by the Business, CE: Used Capital in the Business (Book Value of Assets), HC: Human Capital of the Business (Total Salary and Wage Expenses), SC= Structural capital of the business (added value excluding human greenhouse).

5. Intellectual Value Contribution Coefficient (VAIC); is the sum of the results of the four stages of implementation (Pulic, 2004: 65). Equation5; VAIC= CEE + HCE + SCE

With the increase in the intellectual value-added coefficient of the enterprise, the added value created by its total resources also increases in parallel (Pulic, 2004). The effects of business-specific factors and performance criteria should be investigated. Advantage; Since accounting data is standardized, objective, and verifiable since it is audited data, consistent as it can be obtained from all businesses and sectors, and mathematically calculated, comparable analyzes can be made as a fixed criterion. In summary; The Intellectual Capital Value Additive Coefficient is superior to other element-based methods as it is a real performance measurement based on accounting records.

### 2.2. Dimensions of Intellectual Capital in terms of Health Business

#### 2.2.1. How has intellectual capital research developed in the healthcare business?

While only one article was seen abroad before 2000, 14 articles were published between 2000 and 2005, 48 articles were published in 2006-2010, 91 articles were published in 2011-2015, and 101 articles were published between 2016 and 2019. In this case, the number of intellectual capital research in the health sector has increased over the years. Quantitative methods were used in 43.53% (111 articles) and qualitative methods in 36.47% (93 articles) of the analyzed articles.

#### 2.2.2. What are the main topics discussed in this field literature?

Considering the importance of intellectual capital, especially in knowledge-intensive sectors such as health care, the results of previous studies should be organized conceptually (Orsal, 2020).

In the systematic review of Paoloni et al.; Out of 255 articles, 42 articles; Information Transfer and Sharing & Human Capital, Relational Capital, Structural Capital, 42 articles; Services & Technology & Structural Capital, 28 articles; Performance & Human Capital, 14 articles; Management & Structural Capital, 5 articles; Partnership and Network & Relational Capital variables are examined (Paoloni et al., 2020).

In Tiwari's research, the relationship between the intellectual capital and profitability of 84 healthcare companies in India was analyzed by the Indian Economy Monitoring Center (CMIE). It has been determined that the most relational & capital is used to increase profitability (Tiwari, 2022).

In the systematic review by Gravili et al., 4 articles from 28 European countries were evaluated and the performance of intellectual capital (IC), human capital, relational & employed capital, and structural capital health companies was examined. It has been determined that the positive effect of human, used and structural capital in the performance indicator is the country, the ratio of the number of beds to the population, and its effects are variability (Gravili et al., 2021).

In the study conducted by Sulaiman et al., Health Services Companies Listed in Nigeria were examined. It has been found that there is an inverse relationship between managerial ownership and moderate value-added intellectual capital on financial performance, supporting the consolidation effect (Sulaiman et al., 2021).

In the study of Tafazzoli-Harandi et al. in a health center in Tehran, they found that human capital has a significant effect on intellectual capital (Tafazzoli-Harandi et al., 2020).

In the literature, it is seen that structural capital is mostly discussed and examined in private health enterprises and hospitals that are included in the market index. The results obtained due to the volumes of hospitals, physical equipment, differences in service delivery, number of beds, differences in the fields of specialization and expertise of the employees, and differences in the variables discussed prevent generalizations as in other sectors. In addition, studies on VAIC in university research and practice hospitals with high knowledge and skills are scarce or not found in the literature. And there is a big gap in this regard.

So, what is the situation in our country? How has intellectual capital research developed in the health sector in Turkey?

What are the main topics discussed in the field literature in Turkey?

When the studies in the national thesis center are examined; 2 theses on intellectual capital in the health sector in Turkey in 2009 (Bozdemir, 2009; Gül, 2009), 2 theses in 2014 (Cezlan, 2014; Karaman, 2014), 1 thesis in 2019 (Özgün, 2019), 2020 1 doctorate It is seen that a total of 6 theses, including thesis (Orsal, 2020), have been written. Of the analyzed theses, 2 are master's (Bozdemir, 2009; Gül, 2009), 4 are doctoral (Cezlan, 2014; Karaman, 2014; Özgün, 2019; Orsal, 2020), and 2 theses are quantitative (Karaman, 2014; Orsal , 2020), qualitative (Bozdemir, 2009; Cezlan, 2014; Gül, 2009; Özgün, 2019) method was used in 4 theses. In this case, it is seen that intellectual capital theses in the health sector in Turkey have been made in the last 13 years and their number is very low.

Gül completed her thesis titled “Dimensions of intellectual capital in physical therapy and rehabilitation training and research hospitals” in 2009. In the Institution Information Guides, intellectual capital is discussed in terms of structural capital, and human and relational capital. In the focus of the thesis, ISO 9001:2000 Quality Management System and Ministry of Health Service Quality Standards; structural capital dimension, patient rights, relationship capital dimension, human capital dimension, professional skills, and training of employees. In the results obtained, it is emphasized that human and relational capital are effective on structural capital in quality management.

Bozdemir completed his thesis on the effects of intellectual capital on the organization and examples from practice in 2009. The focus of the thesis is on the performance and competitiveness of businesses and their ability to use their intellectual capital effectively. According to the results of the data analysis, it has been determined that it is the most effective option for intellectual capital management, employee performance, patient satisfaction, and competitive advantages in health enterprises.

Cezlan's thesis named "The effect of intellectual capital on firm innovation and firm performance: An application for health enterprises" was made in 2014. He dealt with intellectual capital in the dimension of knowledge management. In the focus of the thesis, its components are human, organizational, and relationship capital. The effects of these components on innovation and performance in public and private health enterprises were examined. In the results obtained, human, organization, and relationship capital increase its effect on innovation and performance in public and private health enterprises.

Karaman completed his thesis in 2014, titled Intellectual capital, its measurement by value-added coefficient (VAIC) method, and an application in the health sector. The data used for the VAIC method calculations are obtained from the balance sheet, income statement in the accounting records, and the revolving fund accounting offices of the health enterprises traded in the BIST, the Public Disclosure Platform of the Capital Markets Board. It has been determined that the investments made in intellectual capital elements contribute to the profitability of health enterprises to a large extent and cera tain extent to productivity.

Özgün researched the relationship between social capital, intellectual capital, innovation, and performance: Health institutions in 2019. He dealt with intellectual capital in the dimensions of organizational social capital and performance. The focus of the thesis is on innovation studies that increase performance. According to the results obtained, it has been determined that it increases organizational social capital and performance.

### 2.2.3. Difficulties in Using Intellectual Capital in Hospitals

The quality method is used effectively in university hospitals.

1. The absence of an item called intellectual capital in the accounting system

2. For the university hospitals to be well-known field specificity to them and to be compared, they are not prepared and calculated according to a general set of criteria (the results are not disclosed, such as the companies registered in the ISE in the banking sector), and they are not reported by a system outside the enterprise.
3. According to the benefit-cost analysis, a general calculation is not made for the service provided in university hospitals (not calculating how much money the successful surgeries bring to the hospital and the individual compared to the unsuccessful surgeries on a patient basis) because there are too many types of diseases. Although there are few focused studies based on the unit, they are very insufficient as they remain in expressing the holistic approach (10%).

### 2.3. Theory and Hypothesis Development

Our work is based on the source-based view theory. The quality of corporate governance practices have tried to identify their role in improving financial performance and minimizing different types of risks that may occur in the future (Orsal, & Uçkun 2022). If institutions have strong public management structures, they explain the Intellectual Value Added Coefficient (VAIC) method. The resource-based view theory is the main driving force behind the Firm's financial growth. This success is based on the firm's tangible or intangible assets that can lead to a competitive advantage. Numerous studies have described the role of tangible assets in job growth, but the strategic role of intangibles needs to be explored. The resource-based view theory is a leading paradigm in the field of strategic management that will become increasingly familiar in all areas of business and economics and is an indicator of competitiveness. The main focus of this theory is to achieve financial performance, namely sustainability, by providing profit and efficiency by using strategic resources effectively. The theoretical structure of our study is based on the source-based view theory. Therefore, based on the resource-based perspective theory, our study will examine the H1, H2, H3, and H4 hypotheses of visible and invisible resources, using the intellectual Value Added coefficient VAIC model (2014-2016) by considering financial data for the three years.

H1. Capital employed (CEE) has a greater impact on intellectual capital than other components.

H2. Structural capital (SCE) has a greater impact on the efficiency (ATO) of the university hospital than other intellectual capital components.

H3. Human capital (HCE) has a greater impact on university hospital profitability (ROA) than other intellectual capital components.

H4. On the intellectual capital (VAIC) of the university hospital, efficiency (ATO) has more impact than profitability (ROA).

## 3. DATA AND METHODOLOGY

The main problem that the research focuses on is to evaluate the effect of intellectual capital on productivity in universities and specifically university hospitals, where intellectual capital is the highest, with a cost approach. It can make it possible to increase efficiency and maintain the functions of hospitals effectively by using intellectual capital in cost analysis. The Intellectual Value Added Coefficient (VAIC) method, which is compatible with cost analysis in intellectual capital measurements, was used to measure business performance as well as to determine the values of tangible and intangible assets. Researcher; Cost and efficiency criteria / strategic targets/steps to be followed were determined for a three-year application with a team of 14 people (7 managers, 7 experts). The results were analyzed and cost and efficiency were evaluated. Hospital senior manager (n=1) and assistant manager (n=3). Hospital chief manager (n=1), financial services manager (n=1), assistant finance manager (n=1), experts determined by senior managers (n=7).

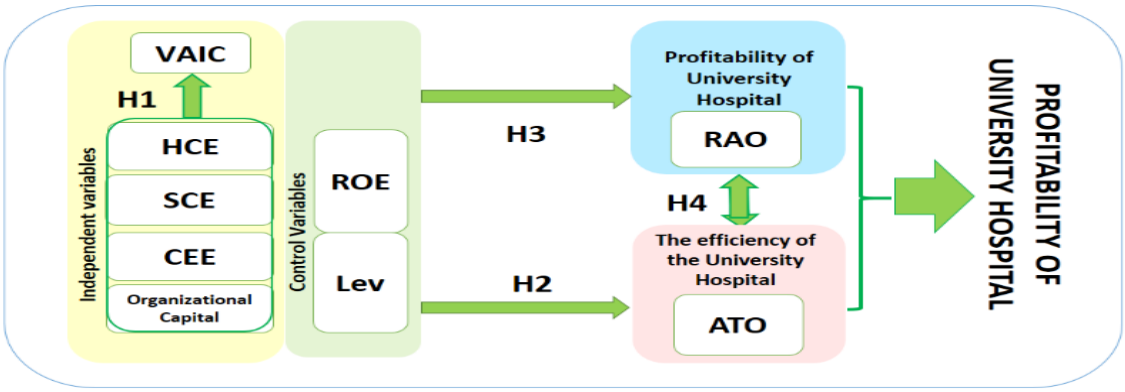
This cross-sectional study was obtained from 83 data in the Final Financial Statements (General budget n = 38, Revolving fund n = 45) for the years 2014-2015-2016. Together with the expert team (n = 14), 32 data meeting the intellectual capital variables were selected and used in the analysis. With 32 data, 0.15 effect size, and 0.05 alpha in G-Power analysis, the effective power of our study is 96%.

**Limitation of the Research**; It is limited to only one university hospital.

**Original Value**: Today, healthcare services are structured into a competitive market with the build-operate-transfer philosophy. The closure of state hospitals by opening city hospitals with health policies is a concrete indication that competitive markets will be operated in non-profit public hospitals very shortly. This indicator obliges hospitals to get the best efficiency and service output with their resources. This obligation will especially contribute to university hospital managers, who provide health services with the highest level of knowledge, in using intellectual capital effectively.

The main problem that the research focuses on will make an original contribution, as it will focus on a new approach in management and cost analysis applications by evaluating the effect of intellectual capital on the efficiency of public health institutions with a cost approach. Intellectual capital is not used in current cost calculations. This comparison will be made for the first time in health institutions. In this respect, it is thought that it will make an important contribution to the literature.

**Figure 1: Research Model**




### 3.1. Research Model

Within the framework of the theoretical studies in the literature section, the data set that will constitute the intellectual capital values of the university hospital, which is one of the semi-autonomous public enterprises, has been determined. In our model consisting of VAIC parameters, HCE, SCE and CEE constituted our independent, Lev and ROE control, and RAO and ATO dependent variables. In Table 2, the revolving fund and added budget (general budget) capital calculations of the university hospital are formulated according to the VAIC parameters. Then, with the VAIC method, which is an economic analysis method, the effect of intellectual capital values on productivity covering the years 2013-2014-2015 was examined.

### 3.2. Data Set and Variables

Within the framework of the theoretical studies in the literature section, the revolving fund and the added budget (general budget) capital accounts of the university hospital, which are semi-autonomous public enterprises, were handled separately, and the data set that would form the intellectual capital values was determined from the sum of the two. Determination of input and output from the balance sheet, if the income – expense difference is positive (participation gains from the other income part of the income statement; (operation incomes, for example, canteen, in-kind and solid incomes donations) are taken. Interest expenses, Depreciation expenses, Corporate Tax, Participation Earnings, Undistributed profits, Total salary and wage expenses, The capital used of the enterprise (book values of the assets), the total salary and wage expenses of the enterprise, Dividends, The independent variables to be used in the cost analysis of the structural capital of the enterprise. The independent variables obtained from the balance sheet are the HCE, SCE, and CEE parameters in our model, form ed the independent variables.

## 4. FINDINGS AND DISCUSSIONS

The efficiency (ATO) and profitability (ROA) of the university hospital were evaluated (2014-2015-2016) according to the VAIC parameters. There is an increasing relationship between the effectiveness of the added value created by the components that make up the university hospital resources and efficiency and sustainability. It was determined that negative accounts and debts that could not be closed until 2014 were reduced by the efficient use of resources. It is seen that the steady productivity and sustainability approaches made in 2014 continued in 2015, and the increase in human capital, especially by the state, started to rise again in 2016. In other words, when investing in people using structural capital, both Human Capital and Structural capital are contributed. When the average values are examined, they will be able to increase their productivity, especially when they use their intellectual capital better in the university hospital. The intellectual capital efficiency coefficient (ICE) has grown steadily over three years. When the average values of the dependent variables are examined, it is seen that the profitability (ROA), which shows the earning power of assets, has increased regularly over the years. ROA shows how efficiently assets (in terms of normal assets on the balance sheet) are used to generate income or profits. That is, "the higher the ratio, the more efficient the use of assets" is interpreted as, therefore, more efficiency is achieved by using fewer assets to generate higher profits through more sales. When this situation is evaluated according to the active turnover rate (ATO), it is proportional to the number of patients who applied to the health institution in the years 2014-2015-2016. It has been found that the efficiency increases simultaneously with the number of patients admitted to the university hospital, especially with the active turnover rate (ATO).

The relations of all the variables with each other according to the years 2014-2016 were evaluated by correlation analysis. The correlation distribution of dependent/independent and control variables according to the Intellectual capital models of the university hospital in 2014 is given in Table 1. There is a statistically significant positive correlation between VAIC and SCE

(r=.486), ATO (r=.254), and ROE (r=.237) (p<0.01). (Table 1). Between CEE and HCE (r=.631), ATO (r=.361), Lev (r=.420) and ROE (r=.446), positive directional, between SCE (r=-.224) negative directional, statistical there is a significant relationship (p<0.01). There was a positive directional between HCE and ATO (r=.551), Lev (r=.542), and ROE (r=.515), negative directional, statistically significant relationship between SCE (r=-.549) and ATO (r=.348).

The increase in the leverage ratio affects the asset turnover rates of the enterprises positively and the decrease negatively. The increase or decrease in the investments made in Human capital (HCE) in the university hospital, will affect the Structural capital at the same rate. Human capital investments increase knowledge, skill development, and business performance. In particular, it ensures the effective use of R&D investments and the technological structure of the enterprise. This will contribute to the increase of the service performance, that is, the efficiency of the health enterprise.

**Table 1: The Efficiency (ATO), and Profitability (ROA) of the University Hospital in 2014 according to the VAIC Parameters**

| | | VAIC | CEE | HCE | SCE | ATO | ROA | Lev | ROE |
|---|---|---|---|---|---|---|---|---|---|
| **VAIC** | r | 1,000 | | | | | | | |
| | p | . | | | | | | | |
| **CEE** | r | -,033 | 1,000 | | | | | | |
| | p | ,725 | . | | | | | | |
| **HCE** | r | ,052 | **,631**** | 1,000 | | | | | |
| | p | ,578 | **,000** | . | | | | | |
| **SCE** | r | **,486**** | **-,224*** | **-,549**** | 1,000 | | | | |
| | p | **,000** | **,016** | **,000** | . | | | | |
| **ATO** | r | **,254**** | **,361**** | **,551**** | **-,193*** | 1,000 | | | |
| | p | **,006** | **,000** | **,000** | **,038** | . | | | |
| **ROA** | r | -,004 | -,141 | **-,348**** | ,150 | **-,880**** | 1,000 | | |
| | p | ,966 | ,131 | **,000** | ,109 | **,000** | . | | |
| **Lev** | r | **,186*** | **,420**** | **,542**** | -,168 | **,779**** | **-,550**** | 1,000 | |
| | p | **,045** | **,000** | **,000** | ,072 | **,000** | **,000** | . | |
| **ROE** | r | **,237*** | **,446**** | **,515**** | -,075 | **,780**** | **-,548**** | **,984**** | 1,000 |
| | p | **,011** | **,000** | **,000** | ,423 | **,000** | **,000** | **,000** | . |

The correlation distribution of dependent / independent and control variables according to the Intellectual capital coefficient of the university hospital in 2015 is given in table 2. Between VAIC and SCE (r= ,435), ATO (r=,485), Lev (r=,448) and ROE (r=.485), positive directional, between ROA (r=-,485) negative directional, statistical there is a significant relationship (p<0.01). This means that human capital and structural capital efficiency significantly affect productivity. Between CEE and HCE (r=.910), SCE (r=.415), ATO (r=.586), Lev (r=.557) and ROE (r=.586), positive directional, between ROA (r=-.586) negative directional, statistical there is a significant relationship (p<0.01). There was a positive directional between HCE and ATO (r=.653), Lev (r=.674), and ROE (r=.653), negative directional, statistically significant relationship between ROA (r=-.653) (p<0,01), (Table 2). This means that the efficiency of structural capital and human capital significantly affects productivity. There is a statistically significant positive correlation between ATO and Lev (r=.993), ROE (r=.780) (p<0.001). It can be said that equity efficiency significantly affects profitability. There is a statistically significant negative correlation between ATO and ROA (r=-.880) (p<0.001), (Table 2).

**Table 2: The Efficiency (ATO), and Profitability (ROA) of the University Hospital in 2015 according to the VAIC Parameters**

| | | VAIC | CEE | HCE | SCE | ATO | ROA | Lev | ROE |
|---|---|---|---|---|---|---|---|---|---|
| VAIC | r | 1,000 | | | | | | | |
| | p | . | | | | | | | |
| CEE | r | -,274 | 1,000 | | | | | | |
| | p | ,106 | . | | | | | | |
| HCE | r | ,229 | **,910**** | 1,000 | | | | | |
| | p | ,179 | **,000** | . | | | | | |
| SCE | r | **,435**** | **,415*** | ,088 | 1,000 | | | | |
| | p | **,008** | **,012** | ,611 | . | | | | |
| ATO | r | **,485**** | **,586**** | **,653**** | -,189 | 1,000 | | | |
| | p | **,003** | **,000** | **,000** | ,271 | . | | | |
| ROA | r | **-,485**** | **-,586**** | **-,653**** | ,189 | **-,880**** | 1,000 | | |
| | p | **,003** | **,000** | **,000** | ,271 | **,000** | . | | |
| Lev | r | **,448**** | **,557**** | **,674**** | -,276 | **,993**** | **-,993**** | 1,000 | |
| | p | **,006** | **,000** | **,000** | ,103 | **,000** | **,000** | . | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ROE | r | **,485*** | **,586**** | **,653**** | -,189 | **,780**** | **-,995**** | **,995**** | 1,000 |
| | p | **,003** | **,000** | **,000** | ,271 | **,000** | **,000** | **,000** | . |
| r=Spearman's Coefficient | p=statistical significance | | | | | | | | |

The correlation distribution of dependent/independent and control variables according to the Intellectual capital models of the university hospital in 2016 is given in Table 3. There is a statistically significant positive correlation between VAIC and HCE (r=.651), ROA (r=.800), ATO (r=.802), Lev (r=.772) and ROE (r=.809) (p<0.01), (Table 3).

There is a statistically significant positive correlation between CEE and HCE (r=.543), ROA (r=.658), ATO (r=.660), Lev (r=.616) and ROE (r=684) (p<0.01). There is a statistically significant positive correlation between HCE and ROA (r=.800), ATO (r=.803), Lev (r=.809) and ROE (r=.772) (p<0.01), (Table 3). There is a statistically significant positive correlation between ROA and ATO (.980), Lev (r=.998), and ROE (r=990) (p<0.001), (Table 3). This situation increases the productivity of structural capital and equity capital while increasing the profitability of enterprises together. In other words, it significantly affects productivity and profitability. There is a statistically significant positive correlation between ATO and Lev (r=.995) and ROE (r=999) (p<0.001). There is a statistically significant positive correlation between control variables Lev and ROE (r=.954) (p<0.001), (Table 3).

**Table 3: The Efficiency (ATO), and Profitability (ROA) of the University Hospital in 2016 according to the VAIC Parameters**

| | | VAIC | CEE | HCE | SCE | ROA | ATO | Lev | ROE |
|---|---|---|---|---|---|---|---|---|---|
| VAIC | r | 1,000 | | | | | | | |
| | p | . | | | | | | | |
| CEE | r | ,138 | 1,000 | | | | | | |
| | p | ,414 | . | | | | | | |
| HCE | r | **,651**** | **,543**** | 1,000 | | | | | |
| | p | **,000** | **,001** | . | | | | | |
| SCE | r | ,130 | -,273 | ,010 | 1,000 | | | | |
| | p | ,442 | ,102 | ,952 | . | | | | |
| ROA | r | **,800**** | **,658**** | **,800**** | -,271 | 1,000 | | | |
| | p | **,000** | **,000** | **,000** | ,105 | . | | | |
| ATO | r | **,802**** | **,660**** | **,803**** | -,271 | **,980**** | 1,000 | | |
| | p | **,000** | **,000** | **,000** | ,105 | **,000** | . | | |
| Lev | r | **,772**** | **,616**** | **,809**** | **-,374**** | **,998**** | **,995**** | 1,000 | |
| | p | **,000** | **,000** | **,000** | **,023** | **,000** | **,000** | . | |
| ROE | r | **,809**** | **,684**** | **,772**** | ,161 | **,990**** | **,999**** | **,954**** | 1,000 |
| | p | **,000** | **,000** | **,000** | ,340 | **,000** | **,000** | **,000** | . |
| r=Spearman's Coefficient | p=statistical significance | | | | | | | | |

In Tables 1, 2, and 3, the relationship between the efficiency (ATO) and profitability (ROA) of the university hospital for three years and the independent and control variables according to the VAIC parameters were examined. In the literature, some researchers have found that IC has a mediating role in the process (Wu and Hu, 2012) and human resource management (Yang and Lin, 2009; Tiwari, 2022) on performance. The impact of IC on performance (Peng, Pike, & Roos, 2007), sustainability of hospitals (Tiwari, 2022; Hamzah, et al., 2018), and financial structure is not understood (Pirozzi & Ferulano, 2016). They defined the concept of efficiency applied to the public sector and efficiency from a managerial point of view (Linna, et al., 2010; Orsal, & Uçkun, 2022). Intellectual capital emerges as an important element that helps managers plan their ventures to be supported by structural, used, and social capital (Tiwari, 2022; Mura, et al., 2014). It reveals that intellectual capital is an important driver of corporate performance and that healthcare companies in emerging economies should develop their intellectual potential. Therefore, companies and governments in emerging economies should encourage investments in intellectual capital development for improved corporate performance and economic growth (Tiwari, 2022; Sulaiman, et al., 2022; Orsal, & Uçkun, 2022). It has been found that when effective intellectual capital is adopted in corporate governance, it maintains a high level of firm performance, minimizes financial distress, and protects companies from the risk of financial distress (Tiwari, 2022; Nawaz, 2017; Luqman et al., 2018). The key findings of these studies support the role of IC as a strategic asset in minimizing the firm's competitiveness, firm value, asset management capabilities, and thus the risk of financial distress. It can be used as a reference by policymakers when drafting future policy for the development of intellectual capital and, in particular, the health sector. The resource-based view theory shows organizational performance, namely sustainability, by increasing profit and productivity with the effective use of visible and invisible resources with the models that corporate governance applies within the institution.

## 5. CONCLUSION AND IMPLICATIONS

According to the analysis results: There is a statistically significant positive correlation between the VAIC of the university hospital and the ATO in all the years 2014-2016. According to the results of the analysis, there is an increasing relationship

between the efficiency of the added value created by the components that make up the university hospital resources and the productivity. As for the university hospital's VAIC and ROA, while there was no significant relationship in 2014, there was a statistically significant relationship in the negative direction in 2015 and the positive direction in 2016. According to the results of the analysis, it is seen that there is no relationship between the efficiency of added value and profitability, since the debts carried over from previous years were closed in 2014, it decreased the profitability in 2015, but increased the profitability in 2016**.** It is observed that the variables that affect profitability the most are structural capital efficiency, equity efficiency, and human capital efficiency. The capital efficiency leverage ratio affects profitability in all years in parallel. These results show that there is a relationship between intellectual capital and profitability. Structural capital efficiency also strongly affects profitability in university hospitals. When the analysis results are evaluated in terms of efficiency; there are statistically significant relationships between independent variables and asset turnover rate. This means that investments in intellectual capital elements, especially human capital, affect productivity. The fact that there is a correlation between ICE and increased human capital productivity (HCE) in the same period can be interpreted as an indicator of high trust in people. Based on the findings of the analysis, it will make a unique contribution as it will focus on a new approach in the management and cost analysis applications where intellectual capital is effective in the efficiency evaluations of university hospitals. The VAIC Model is effective and can be used by university administrations in evaluating efficiency and sustainability. Since university hospitals in Turkey are semi-autonomous public hospitals, inefficiency assessments cannot be taken into account due to the high uncertainty in public hospitals. However, when we focus on this new approach in management and cost analysis applications, we think that it will make a significant contribution to university hospitals against financial risks.

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# THE VOLATILITY SPILLOVER BETWEEN NFT INVESTMENT INDEX AND GLOBAL TECHNOLOGY INDEX: DCC-GARCH APPLICATION

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## ABSTRACT

**Purpose-** NFT is a digital token that represents a unique, one-of-a-kind asset on the blockchain. In this respect, NFTs can be used to represent ownership of any unique asset. In this study, the volatility spillover relationship between the NFT Investment Index and the Global Technology Index (XTEC) is investigated.

**Methodology-** More than one GARCH type model has been developed that reveals the relationship between assets in financial markets. The DCC GARCH model was preferred because it is a current model that reveals the variable correlation coefficient depending on time. The DCC-GARCH method was preferred for modeling the volatility spillover in the study. Daily data covering the period 19.04.2021-22.04.2022 are used.

**Findings- -** According to the findings of the study; A mutual volatility spillover has been detected between the NFT Investment Index and XTEC. Accordingly, the 1% shock in XTEC increases the NFT Investment Index volatility by 0.24%, while the 1% shock in the NFT Investment Index increases the XTEC volatility by approximately 1.86%. The findings show that NFT Investment Index volatility is more effective on XTEC volatility.

**Conclusion-** Those who invest in NFT or technology markets and those who are considering investing should also take into account the developments in the other market in question in terms of risk management. In addition, market regulators should take a proactive approach by considering the impact and importance of NFT markets.

**Keywords:** Blockchain, crypto assets, DCC-GARCH model, Non-Fungible Token **(**NFT).
**JEL Codes:** G11, G14, G15

## 1. INTRODUCTION

One of the other blockchain-based assets that has not fallen off the agenda recently with cryptocurrencies is a digital asset called a unique token (non-fungible token - NFT). People's interest in NFT markets has increased even more, especially with the digital artwork called Everydays: The First 5000 Days, created by digital artist Mike Winkelmann using the pseudonym Beeple, sold at Christie's auction house on 12.03.2021 for approximately 69.3 million dollars. The first tweet of Twitter's co-founder Jack Dorsey, "just setting up my twttr" dated 21.03.2006, was certified as NFT and sold for approximately 2.9 million dollars, which also attracted people's attention to NFT markets. The sale of Beeple's digital artwork mentioned above coincides with the sale of Jack Dorsey's first tweet.

Blockchain can be seen as "a technology that transforms partial trust, which can be provided by a trusted third party, a central authority, into absolute trust without being dependent on a single leader (server) with its distributed architecture" (Güven and Şahinöz, 2018: 184). Blockchain is a technology that "provides a secure, transparent digital transaction ledger that allows data to be recorded and transferred over the internet as time-stamped, in a distributed structure, encrypted and immutable"

(Gul Senkardes, 2021: 155). In this context, money transfers can be made reliably with Bitcoin and other cryptocurrencies based on Blockchain technology, without the need for a trusted third party or central authority. These decentralized value storage and value transfer opportunities offered by blockchain technology can be used in other fields besides cryptocurrencies, in information storage and information transfer transactions as well as value. Applications related to NFT are among the activities that can be evaluated in this context.

In this study, the relationships between NFT Investments Index and the Global Technology Index (XTEC) are investigated. Studies investigating the relationships between NFT markets and different markets are relatively new. Current studies focus on the relationship between NFT markets and especially crypto currency markets. Studies investigating the relationship between NFT prices and XTEC have not been found in the literature. In this respect, the study is an original study. The results obtained from the study provide important information to investors, researchers and policy makers.

The next stages of the study are as follows: In the second part, the concepts of tokens and NFT are explained in detail. The third chapter includes a literature review. In the fourth chapter, there are explanations of the data used in the study and the method applied. In the fifth section, the empirical findings of the study are included, and in the sixth section, the results of the study are explained.

## 2. TOKEN AND NFT CONCEPTS

Unlike money, a token is a value used only to represent a certain right or asset, or an object used instead of money, limited to a certain purpose. Accordingly, while money can be used as money everywhere, token is an object that can only be used for certain purposes in certain areas. Tokens can also be divided into fungible and non-fungible.[1] Fungible tokens, in other words non-unique tokens, are tokens that meet a certain standard and therefore can be exchanged for their counterparts. A non-fungible token, or NFT, is a digital token that represents a unique, distinct asset on the blockchain. NFTs, which can be used to represent ownership of one-of-a-kind items, allow for the symbolization of assets such as art, collectibles, and even real estate (www.ethereum.org/en/nft/). According to another definition, NFTs can be music, in-game items, artwork, collectibles, etc. are transferable rights to digital assets (Ante, 2021: 1). Dowling (2022a: 1) also briefly defined NFT as “a blockchain-recorded right to a digital asset”. In the literature or in daily life, the concept of crypto-collectibles or digital collectibles is used as well as the concept of "non-fungible". NFTs are not equal because they are unique, so they are not interchangeable. The concept of non-interchangeability here is important. Although NFTs represent a value like money, it is possible to use or exchange two currencies of the same value, while NFTs cannot be used or exchanged interchangeably. As a result of the non-interchangeability of NFTs, NFTs serve as proof of reality and ownership in the digital world (Binance Academy, 2020).

While explaining the concept of token in the paragraph above, it was stated that the token represents a right or an asset. From this point of view, the question of what NFTs can represent is of critical importance. In addition to digital items, rarely physical collections can be represented by NFTs. But what is common is that digital artworks, songs, Graphics Interchange Format (GIF), and videos have their own NFT (Binance Academy, 2021). NFTs can be identified with digital artworks. But digital art is just one of the ways to use NFTs. Like title deed to any item in the digital or physical realm, NFTs can be used to represent ownership of any unique asset (www.ethereum.org/en/nft/).

Finally, NFTs can be sold in marketplaces with different features such as OpenSea, Nifty Gateway, Foundation, Rarible, SuperRare, Axie Marketplace.

## 3. LITERATURE REVIEW

Although there is a very large literature on cryptocurrencies, there are more theoretical explanations in the literature regarding newly developing NFTs, but there are very limited empirical studies. Bao and Roubaud (2022) conducted a systematic review of research studies on NFT published in journals indexed in Web of Science and ScienceDirect until April 2022, and as a result of the research, they found only 13 published articles in the relevant journals, mainly focused on asset pricing.

Ito, Shibano and Mogi (2022) investigated price bubbles in NFT markets in their study. Dowling (2022a) analyzes the price behavior in NFT markets. The studies investigating the relationships between NFTs and other assets are listed below.

[1] NonFungible.com (2022) also mentions a third classification as “semi-fungibility” for the fungibility of tokens depending on usage.

Ante (2021) explores the relationships between NFT markets and cryptocurrency markets. According to the results of the study; Bitcoin (BTC) and Ether (ETH) prices affect the NFT markets. In other words, the newly developing NFT market is driven by the cryptocurrency market.

Alawadhi and Alshamali (2022) investigated the relationships and volatility spillovers between NFT, DeFi and cryptocurrency markets. According to the results of the research, there are important relationships between NFTs and DeFi assets. Moreover, the volatility spillovers among non-traditional financial markets is very limited. As a result of the study, also weak volatility spillovers between NFTs and cryptocurrencies, low correlation between DeFi assets and cryptocurrencies were detected. DeFi assets appear to be relatively unconnected with the cryptocurrency markets.

Dowling (2022b) investigated the volatility spillover effects and the existence of co-movement between the crypto currency markets consisting of BTC and ETH and the 3 NFT (Decentraland LAND, CryptoPunk, Axie Infinity characters). According to the results of the research; there is low volatility spillovers between cryptocurrency and NFT asset groups. In this case, it is argued that the markets in question are quite different from each other. However, it has been determined that there are low spillovers among the NFT markets. On the other hand, according to the result of wavelet coherence analysis, it is stated that there is a lot of co-movement between Ether and Decentraland LAND pricing.

Pinto-Gutiérrez et al. (2022) are investigating the determinants of NFT attention (measured by Google searches with the topic "non-fungible token" and "NFT"). For this purpose, Google search queries, major cryptocurrency prices, VIX, gold and S&P 500 returns are included in the analysis. According to the results of VAR analysis; BTC returns from the previous week draw significant attention to NFTs. In addition, according to the results of wavelet coherence analysis, it was determined that investors were more interested in NFTs after the increases in both BTC and ETH returns. These results suggest that increases in underlying crypto currencies could explain the attention for NFTs.

Yousaf and Yarovaya (2022) investigated the return and volatility transitions between NFTs, DeFi and selected assets. According to the results obtained from the study; weak static returns and volatility spillovers were found between the new digital markets of NFTs and DeFi assets and selected markets, which are explained as new digital assets are still relatively separate from traditional asset classes. On the other hand, it has been found that the dynamic return and volatility connection is higher during the initial phase of the COVID-19 pandemic and the 2021 cryptocurrency bubble. Finally, it is suggested that investors and portfolio managers add NFTs and Defi assets to their gold, oil and stock portfolios to gain diversification benefits.

Studies in the literature on the relationships between NFTs and other assets are summarized in Table 1 below.

**Table 1: Literature Summary**

| Source | Samples | Data and Frequency | Method |
|---|---|---|---|
| Ante (2021) | NFT sales volume, NFT number of active wallets, BTC and ETH | 01.01.2018-16.05.2021 (Daily) | Impulse-response functions<br>Johansen cointegration test<br>Short-term Granger causality test |
| Alawadhi and Alshamali (2022) | 4 NFT, 1 DeFi asset, BTC and ETH | 15.01.2021-06.12.2021 (Daily) | Diebold-Yilmaz (2012) volatility spillover approach<br>Karim vd. quantile connectedness approach<br>Han vd. (2016) bivariate cross-quantilogram approach |
| Dowling (2022b) | 3 NFT, BTC and ETH | 03.2019-03.2021 (Weekly) | Diebold-Yilmaz (2012) volatility spillover approach<br>Wavelet coherence analysis |
| Pinto-Gutiérrez et al. (2022) | BTC, ETH, NFT, VIX, gold and S&P 500 returns; BTC, ETH, NFT, CryptoPunk, Decentraland attention | 01.12.2017-30.07.2021 (Weekly) | ADF unit root test<br>Vector autoregressive models<br>Wavelet coherence analysis<br>Granger causality test |
| Yousaf and Yarovaya (2022) | 5 NFT, 5 DeFi assets, gold, BTC, WTI and S&P 500 | 03.05.2018-01.07.2021 (Daily) | TVP-VAR Model<br>VAR-BEKK-GARCH Model |

As seen in the literature review results so far, empirical studies on NFT are both very limited and very recent. Because NFT markets are a newly emerging market. Of the studies described above in the literature, only Pinto-Gutiérrez et al. (2022),

Yousaf and Yarovaya (2022) explained the relationships between stock indices and NFTs in their studies, but technology indices have not been discussed in any of these studies yet.

## 4. DATASET AND METHODOLOGY

This study investigates the existence of a relationship between NFT and XTEC. Therefore the DCC-GARCH model was run using daily data for the periods 19.04.2021-22.04.2022. All daily data of the variables were obtained from www.investing.com. First of all, the logarithm of the data of the raw price series was taken and included in the analysis, and the results obtained from the analysis were shared in the findings section. In case of creating the data set of the research take considered data constraint of the variables such as limited period range.

The DCC-GARCH model was preferred due to indicates the relationship between the variables while determining the volatility interaction and transfer of the DCC-GARCH model.

Multivariate GARCH models are very important from the finance literature. GARCH models, which are used extensively to examine the volatile interactions of financial variables; It is possible to specify Vector Error Correction (VECH) model, Baba, Engle, Kraft and Kroner (BEKK) model, Dynamic Conditional Correlation (DCC) model and Constant Conditional Correlation (CCC). The definitions of mean equations are the same in VECH, BEKK, DCC and CCC models. However, conditions differ in the estimation process of conditional variance (Sattary, 2014: 28-29).

Bollerslev, Engle and Wooldridge (1988) introduced multivariate GARCH models with the development of univariate ARCH and GARCH models. They developed "VEC parameterization" for the multivariate GARCH model and expressed the multivariate GARCH model as the VEC-GARCH model. Engle and Kroner (1995) developed the BEKK-GARCH model using the BEKK parameterization and brought it to the literature due to some problems arising from the VEC parameterization. Bollerslev (1990) stated that in multivariate GARCH models, conditional correlations should be taken into account as well as conditional variance. For this reason, he developed the "CCC" parameterization.

Thus, multivariate GARCH models were introduced to the literature as CCC-GARCH. Instead of the conditional correlation parameter used in the CCC-GARCH models, Tse and Tsui (2002) and Engle (2002) used the " DCC" parameterization. Thus, they developed the DCC-GARCH model.

$$r_t = \alpha + \sum_{i=1}^{k} \beta r_{t-i} + y_t \tag{1}$$

Equation (1) expresses the average model following a vector autoregressive (VAR) process of order k.

$$\gamma_{A,t} = \sqrt{h_{A,t}\varepsilon_{A,t}} \tag{2}$$

$$\gamma_{A,t} = \sqrt{h_{B,t}\varepsilon_{B,t}} \tag{3}$$

$$\rho_t = COV(\beta_{A,t}\beta_{B,t}) = (1-\theta_1-\theta_2)\rho + \theta_1\rho_{t-1} + \theta_2\Psi_{t-1} \tag{4}$$

As seen in Equation (4); $\rho_t$ represents the non-constant correlation coefficient that changes with time. In order for the $\rho$ correlation matrix to be of positive significance, the condition $0 \leq \theta_1, \theta_2 < 1$ ve $\theta_1 + \theta_2 \leq 1$ must be done (Hepsağ and Akçalı, 2016: 58).

$$\begin{bmatrix} h_{A,t} \\ h_{B,t} \end{bmatrix} = \begin{bmatrix} y_1 \\ y_2 \end{bmatrix} + \begin{bmatrix} \emptyset_{1,1} & \emptyset_{1,2} \\ \emptyset_{2,1} & \emptyset_{2,2} \end{bmatrix} \begin{bmatrix} y^2_{A,t-1} \\ y^2_{B,t-1} \end{bmatrix} + \begin{bmatrix} \delta_{1,1} & \delta_{1,2} \\ \delta_{2,1} & \delta_{2,2} \end{bmatrix} \begin{bmatrix} h_{A,t-1} \\ h_{B,t-1} \end{bmatrix} \tag{5}$$

In the DCC-GARCH model, $\emptyset_{11}$ ve $\delta_{11}$ are parameters that express the volatility persistence of a financial asset. $\emptyset_{22}$ ve $\delta_{22}$ parameters are used to measure the volatility of another financial variable. At the same time, these parameters should be meaningful and have values close to 1. Whether there is a volatility interaction between the variables is explained by the parameters $\emptyset_{12}$ ve $\delta_{12}$

Finally, the DCC-GARCH model not only identifies the volatility interaction between variables, but also estimates the time-varying correlation coefficient. Thus, it also explains the relationship between the returns of financial assets.

## 5. FINDINGS

In the application part of the study, NFT and XTEC returns were examined. In this direction, descriptive statistics on the variables were reported at first, then the results obtained through the DCC-GARCH model were also reported.

**Table 2: Descriptive Statistics of Variables**

| | NFT | XTEC |
|---|---|---|
| **Mean** | 0.9824 | 0.7968 |
| **Median** | 0.6952 | 0.7440 |
| **Maximum** | 74.2457 | 38.8961 |
| **Minimum** | -57.5697 | -41.5978 |
| **Standard Deviation** | 21.2569 | 11.2587 |
| **Skewness** | 0.1957 | 0.4986 |
| **Kurtosis** | 3.5697 | 2.5697 |
| **Jarque-Bera** | 7.5697 | 4.5987 |
| **Prob.** | 0.0267 | 0.0469 |

According to the descriptive statistics of NFT and XTEC return series, it is observed that the standard deviation values are larger than the average values of the return series. Looking at the Jarque-Bera test statistics, the return series do not offer a normal distribution.

**Tablo 3: DCC-GARCH Model Results for NFT and XTEC Returns**

| | Coefficients | Standart Errors | T-statistics | Prob. |
|---|---|---|---|---|
| $\boldsymbol{\gamma_1}$ | -2130.1038 | 4186.0508 | -1.2689 | 0.2635 |
| $\boldsymbol{\gamma_2}$ | -17059.8657 | 79.1307 | -1.5782 | 0.1426 |
| $\boldsymbol{\emptyset_{11}}$ | 0.2407 | 0.3981 | 0.9651** | **0.0257** |
| $\boldsymbol{\emptyset_{12}}$ | 0.8628 | 0.4828 | 4.9800** | **0.0169** |
| $\boldsymbol{\emptyset_{21}}$ | 1.8624 | 0.8693 | 2.6694* | **0.0856** |
| $\boldsymbol{\emptyset_{22}}$ | 0.6843 | 0.6971 | 1.10537 | 0.2489 |
| $\boldsymbol{\delta_{11}}$ | 0.6700 | 0.4856 | 4.9939** | **0.0189** |
| $\boldsymbol{\delta_{12}}$ | -0.5035 | 0.2939 | -2.0567 | 0.1500 |
| $\boldsymbol{\delta_{21}}$ | -0.4060 | 0.8037 | -0.9657 | 0.8425 |
| $\boldsymbol{\delta_{22}}$ | 0.1222 | 0.6125 | 0.1900** | **0.0469** |
| $\boldsymbol{\theta_1}$ | 0.2837 | 0.0458 | 5.0597*** | **0.0008** |
| $\boldsymbol{\theta_2}$ | 0.6614 | 0.0752 | 5.0368*** | **0.0098** |

Note: ***, ** and * denote statistically significance level at the 1%, 5% and 10%, respectively.

According to the findings of the DCC-GARCH model of NFT and XTEC returns presented in Table 3, it was determined that volatility occurred in NFT since the parameters $\emptyset_{11}$and $\delta_{11}$, which explain the persistence of NFT volatility, are significant at the 5% significance level. According to the sum of these parameters, NFT volatility shows continuity with a value of 0.9093. Likewise, it was reached slightly less volatility persistence regard to explaining XTEC volatility $\emptyset_{22}$ and $\delta_{22}$ parameters with a total value of 0.8065.

On the other hand, only $\delta_{22}$ was found to be significant at the 5% significance level that explain volatility persistance of XTEC while $\emptyset_{22}$ is not significant by the value of the probability value of 0.2489.

1% of shock in NFT increases XTEC volatility by 1.8624%. Considering the volatility interaction between NFT and XTEC, NFT shocks affect XTEC just as NFT shocks affect XTEC. In this case, it is possible to say that there is a bidirectional volatility interaction between NFT and XTEC. The parameters $\theta_1$ ve $\theta_2$ which express the dynamic correlation relationship between NFT and XTEC, are statistically significant at the 1% significance level. Thus, there is a positive and strong relationship between returns that changes over time.

## 6. CONCLUSION

The digital transformation, which has accelerated in the Global Markets, has become an increasingly challenging structure in recent years. At the forefront of these transformations are the blockchain system, cryptocurrencies and other digital asset markets created in this direction. In a classical saying, people used to go away for miles to see each other, to meet, and therefore to be in the same environment. This situation was carried out for business negotiations and consultations. But today, it is unknown whether humanity is for the purpose of communicating faster or because it has become more selfish. Now, this need is met with digital channels. Even today's people prefer to see a work of art digitally, attend a concert, and spend time together in an environment where they can socialize. Here, the NFT system, which is also the subject of this study,

is mentioned. In short, NFT is a technology that gives ownership to digital assets and registers their authenticity. Accordingly, the cost of using this technology and the investment and profitability of this technology are questioned. Because NFT investments are directly related to the technology sector, the relationship between technology sector profitability and NFT investments should be closely monitored.

This study focused on the volatility relationship between NFT investments and stock returns of global technology companies. DCC-GARCH model was applied to investigate the volatility relationship between NFT investment index and the Global Technology Index by using daily data in period of 19.04.2021-22.04.2022.

According to the findings of the DCC-GARCH model, the results are significant at 5% significance level. It is determined that volatility occurs in NFT, and this volatility persistence is higher when compared to the XTEC since the parameters $\emptyset_{11}$and $\delta_{11}$ which explain the persistence of NFT investments volatility. This means that is, a shock in the NFT lasts longer and is more susceptible to external interactions. In addition, the 1% unit shock in the XTEC increases NFT volatility by 0.24. 1% shock in NFT increases the XTEC volatility by 1.8624%. Based on the $\theta_1$ ve $\theta_2$ parameters, it was determined that the relationship between NFT investments and the XTEC is in a two-way positive correlation. Under the assumption of the model used in this study, the data range and the number of selected variables; It is concluded that NFT investments are affected by global technology indices in the same direction. It is an empirical finding for individuals and institutions that will invest in this field, and it is hoped that it will also contribute to the literature. According to these findings; those who invest in NFT or technology markets and those who are considering investing should also take into account the developments in the other market in question in terms of risk management. In addition, market regulators should take a proactive approach by considering the impact and importance of NFT markets.

In future studies, the existence of price bubbles can be investigated in the NFT market, where prices grow very rapidly. Likewise, the relationships between other blockchain-based assets such as DeFi assets, Metaverse, cryptocurrencies and technology indices can be investigated apart from the NFT market. Also, for similar studies to be carried out in this area, it is recommended to make an application that includes variables such as (political economic uncertainties, news spreading with the sector, energy costs, etc.) that are expected to have a direct and more direct effect on NFT investments.

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# THE MEDIATING ROLE OF ORGANIZATIONAL IDENTIFICATION IN THE EFFECT OF LEADER-MEMBER EXCHANGE ON PERFORMANCE

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## ABSTRACT

**Purpose-** It is known that research assistants are in constant interaction with their advisors on various issues related to their thesis processes and other academic studies as well as their administrative work during their academic development. The literature has some studies on the factors that increase the performance of research assistants in these processes, as well as on the factors that adversely affect their performance. At this point, the quality of the research assistants' relationships with their advisors and their level of identification with the university they work for can affect their academic and administrative performances. Accordingly, the study aims to investigate the mediating role of organizational identification in the effect of the quality of the relationship between research assistants and their advisors on their performance.

**Methodology-** Research data were collected from research assistants working for public universities in Turkey. With 201 completed questionnaires, the model with mediation analysis was tested by the researchers, based on the partial least squares structural equation modeling (PLS-SEM) through SmartPLS 4 software. Also, descriptive data were analyzed by SPSS 25 software.

**Findings-** The results of the research reveal that LMX influences research assistants' job performance via their advisors. In addition, organizational identification has a partial mediating role in the effect of research assistants' relationship with their advisors on their job performance.

**Conclusions-** It is considered that research assistants' quality relations with their advisors, as well as identification with the universities they work for, can be significantly beneficial to their job performance. The study is expected to contribute performance determinants of research assistants. Future studies can be carried out on mediation effects by adding different variables to the model.

**Keywords:** Leader-member exchange, organizational identification, job performance, research assistants, PLS-SEM.
**JEL Codes:** C12, D23, M10

## 1. INTRODUCTION

Most theories that have been used to describe leadership in the organization have taken the macroscopic approach where a leader's leadership style is considered in light of how it impacts his subordinates in their entirety. All the employees are thought of as having a similar relationship with the leader based on his leadership style. In these approaches, very little attention is given to the bilateral relations that exist in these situations. However, in modern organizational studies that consider the strategic contribution of employees, there is a more microscopic approach to this understanding in which the interaction and communication between the leader and his subordinates are integral to understanding the relationship. Leader-member exchange (LMX) is a social interaction process that represents the mutual interaction that develops between the leader and his employees. The theory argues that the nature and quality of the exchange between the leader and his subordinates will always be different since the leader may establish a more sincere and high-quality relationship with some subordinates and a lower exchange relationship with others, due to certain factors. (Yukl et al., 2009).

LMX is much less concerned with the success of a leader than what goes into the communication, relationship, and general reciprocity that develops between the leader and his subordinates over time. A high-quality exchange is based on mutual respect, trust, and appreciation. At this level, the leader tends to give their followers more responsibilities and various tasks that are generally in the form that subordinates desire to perform. In return, subordinates anticipate trust, respect, and loyalty from their superiors. On the other hand, when the interaction relationship does not have strong qualities, subordinates prefer to perform only tasks outlined in their job description and take no additional duties or responsibilities (Mahsud et al., 2010). Employees with whom the leader has a high-quality relationship are "in-group"; Employees with whom they have low-quality relationships are defined as "out of the group".

The efficiency of leadership in this theory is based on the quality of the interaction. A leader who has a high-quality interaction with his subordinates will be more effective in inspiring and motivating his subordinates than leaders who do not have this type of relationship and cannot establish strong interaction relationships (Graen and Uhl-Bien, 1995). It is the inspiration drawn from such a high-quality interaction that has been tied to the performance of employees in many leadership formats. The extant literature contains LMX studies concerning various organizational outcomes including performance (Howell and Hall-Merenda, 1999), identification (Loi et al., 2014), commitment (Lee, 2005), and employee creativity (Tierney et al., 1999), satisfaction (Graen et al., 1982), organizational identification (OI) (Çankır and Palalar Alkan, 2018) among others.

OI is a term used when there is complete integration between the values and aims of the employee and the organization. Mael and Ashforth (1992) define it as a perception by the employees as having a sense of belonging to the organization and adopting the successes and failures of the organization as their successes and failures. At a deeper level, an emotional attachment is formed between the employee and the organization to the extent that the employee sees their future tied to that of the organization and is willing to subordinate their goals to those of the organization in cases where there is an overlap.

OI rises from Social Identity Theory (Tajfel and Turner, John, 2004) which is the knowledge that an individual subscribes to a social group from which they derive the concept of meaning and value (Hogg and Reid, 2006). In other words, the norms and values an individual possesses are often derived from those of the social group they belong to. The level of OI determines the extent of psychological integration between the employees and their organizations. This influences the degree to which employees are satisfied with the activities of the organization and impacts how hard they are willing to exert themselves to achieve the goals of the organization. High OI has been associated with many favourable outcomes for the individual and the organization including low intention to leave, high job satisfaction, improved performance, increased motivation, and less absenteeism.

Research assistants are the faculty members who have the closest experience of the superior-subordinate relationship in the academy due to the relationship between them and their advisors. Based on the predictors of job performance, it is thought that two of the factors that enable research assistants to reach a certain performance are the quality of their relations with their advisors and the degree of identification with the university they work for. The quality of their relationships with their advisors can cause research assistants to become cynical (Kasalak and Aksu, 2014) as well as trigger an increase in their job performance (Deconinck, 2011). In addition, it is stated that the advisors can increase the performance of the research assistants by making the working environment more suitable (Kandemir and Özdaşlı, 2019). In addition, research assistants can serve in different institutions for a certain period as personnel assigned to carry out their postgraduate education in the context of Turkey. Therefore, for research assistants, the quality of their advisor relationships and their identification with their institutions attain importance in terms of their job performance. According to the data from the Council of Higher Education in Turkey, the number of research assistants working at universities as of 2022 is 52396 and this number constitutes 28 percent of all academic staff in Turkey (YÖK, 2022). Building on the theoretical background, the following research question about the performance of research assistants, who constitute a large part of the faculty members in our country lead the current study:

- Does organization identification mediate the relationship between advisor-researcher assistant exchange and performance?

In this study, OI was examined as a mediator in the relationship between LMX and Performance. The remainder of the study is organized as follows: The literature review is given in the following section followed by the methodology. And while section four presents the results of this study, the last section discusses the results and presents its conclusions.

## 2. LITERATURE REVIEW

### 2.1. Job Performance

Job performance can be expressed as the extent to which employees have accomplished which task in a given time and how efficiently they perform it (Shahzadi et al., 2014). It is seen that studies on job performance in the literature have generally explored this concept in the context of motivation, leader attitude and behavior, task design, and other organizational research topics (Griffin, 1981).

Although the position of the employees in the network of relations they are in is at a level that satisfies them, it is not considered sufficient for a serious increase in performance. However, job performance and productivity are explained as a pathway to promotion, and salary increase for employees. In addition, it is stated that the level of performance depends on the group norm in the work environment and if the norm is made as desired by the management, the desired employee performance will be achieved (Brayfield and Crockett, 1955). Thus, managers want to create an environment where their subordinates are satisfied with their work and their workplace so that they can achieve an effective and optimal performance by showing their talents (Azar and Shafighi, 2013). Hameed and Waheed (2011), argue that employee development positively affects job performance, and job performance positively affects organizational effectiveness. Diamantidis and Chatzoglou (2019) also stated that the two factors that most affect job performance are the work environment and management support, while they also state that adaptability and internal motivation are among the determinants of job performance. Otherwise, Murali et al. (2017) revealed that time pressure and role ambiguity negatively affect employee performance based on the analysis of data gathered from 136 employees from various sectors.

### 2.2. Organizational Identification

Individuals who identify as members of the organization can absorb the organizational culture and corporate goals and align their objectives with the vision of the organization. OI brings employees to par with the organization both emotionally and cognitively (Riketta, 2005). The level of identification with the organization plays a vital role in making sense of the attitudes and behaviors of the employees towards work. Similarly, the level of identification of individuals with the organization has been shown to result in favorable outcomes for both the individual (self-esteem and self-worth) and the organization (established and committed human capital) (Carmeli et al., 2007). OI is thus considered a key variable in understanding the behavior and performance of members of an organization.

When individuals have reached a certain level of connection with the organization to which they belong and have adopted the fate of the organization as their own, a sense of belonging is born which then meets their safety needs and helps reduce uncertainty about their position at the workplace (Ashforth et al., 2008). According to Dutton et al. (1994), the linked fate pushes employees to exert more effort in their work knowing that their existence depends on that of the organization.

Another positive aspect of increased OI is the improved motivation and increased job satisfaction that comes with it (Van Dick, 2005). An employee with a high level of identification enjoys an increased level of physical and emotional well-being and is motivated to perform at the highest level.

### 2.3. Leader-Member Exchange (LMX)

Leadership literature often ties leader behavior or style to some form of reaction or action from the employee, and this is the case that has been perpetuated in LMX literature. The LMX theory presumes that the leader's time, energy, and authority are limited, and they wouldn't want to waste it on non-responsive employees. As such, the leader gets into an exchange relationship with employees depending on the reciprocity from the other side. The theory presents different levels of communication between the leader and the employees with the *in-group* feeling closer to the leader and feeling some degree of privilege based on the attention they receive from the leader (Dansereau et al., 1975). The perceived privilege often determines how the employees conduct themselves in the organization as well as their feelings about the organization. For instance, (Lee, 2005) presents the finding from 201 respondents from Singapore in which commitment to the organization is found to be somehow tied to the quality of LMX.

Employees have certain expectations as a result of their job description in terms of monetary compensation and fringe benefits. Employees that enjoy a higher quality interaction with their leaders will probably have higher expectations as a reward for the loyalty and trust they have in their leaders and the organization whereas the leader will expect the employees to take on more tasks. Howell and Hall-Merenda (1999) tie LMX to contingent rewards, an indication that leaders compensate employees in the *in-group* more handsomely. They also find high-quality LMX to be tied to job performance.

Many more studies in the extant literature have considered the impact of LMX on the performance of the employees and of the organization by looking at different factors of the organization. There is a general agreement on the existence of a relationship between high-quality LMX and the performance of the leader, member, workgroup, and organization ( Graen and Uhl-Bien, 1995).

According to Janssen and Van Yperen (2004), high-quality interaction relationships focus on mutual trust, knowledge sharing, respect, and the responsibilities of leaders and followers to each other. Such an interaction instills in the employees, confidence to perform their tasks and opens them up to being more creative. The confidence derived from the knowledge that they have the trust of their superior and that the leader has their back makes them want to go a step further beyond the call of duty. Out of this interaction, the employees find within themselves the motivation to work harder leading to improved performance and increased job satisfaction.

Mutual interaction, more sincere and more honest communication is provided between the leader and the in-group, employees have more access to resources, and role behaviors beyond expectations are exhibited by the members. It is thought that high LMX increases efficiency and satisfaction (Gerstner and Day, 1997). Members in the outgroup are deprived of opportunities to develop their career and self-development. These members have limited communication with their leader, and they get less support, resources, and information from the leader. It is claimed that this situation will increase the job dissatisfaction of the member, decrease the organizational commitment and increase turnover intention (Maslyn and Uhl-Bien, 2001).

Scott and Bruce (1998) revealed that the higher the quality of LMX, the higher the innovative behavior level of the members. Atwater and Carmeli (2009) relate a good LMX to the positive state of energy experienced by employees and this provides a momentary force arising from the improved mood which thus creates positive emotions, intrinsic motivation, readiness to act, and participation. This provides followers with a cognitive and emotional power that will enable them to exhibit creative behaviors. Similarly, LMX energizes followers, accelerates their performance, and ultimately contributes to creative work. Creativity is often equated to performance, especially in sectors that depend on creativity for daily sustainability. It thus benefits the leader to be in a close interaction relationship with his relationship with creative employees, both for the business, the leader and the employee.

In their study that considers a total of 48 participants consisting of managers and employees of a consulting firm, Graen et al. (1982) found LMX to be more effective on personnel turnover rate than the average leadership style. A similar result was found by Krishnan, (2005) who also found LMX to influence the intention to job satisfaction and the employee's intention to leave.

Job performance both affects and is affected by LMX (Brower et al., 2000). Members who gain the leader's trust and support ass a result of high job performance may be considered a special group by the leader. However, it also can be thought that the members who want to reach the leader's support and the resources that the leader will distribute will want to position themselves in the close circle of the leader by showing higher job performance.

### 2.4. Hypothesis Development

LMX and OI have been used both separately and together to predict other organizational phenomena (Deconinck, 2011; Loi et al., 2014), and generally, both have often been found to positively impact the various outcomes of an organization such as turnover rate, job satisfaction, and performance. The two factors together are brought together by the feelings they arouse in the employees in the organization. By looking at the nature of LMX in a range, there will always be employees that enjoy a high-quality LMX and those that have a low-quality LMX, and others yet in the middle. The employees who are on the higher side of the spectrum may benefit from contingent rewards (Howell and Hall-Merenda, 1999), such as career and self-development (Maslyn and Uhl-Bien, 2001), and even the benefit of improved communication and relations. If the aforementioned benefits are attributed to the nature of the leader by the employees, they can increase their performance by associating their leaders with their organizations (Eisenberger et al., 2002). Employees can feel safer and readily willing to adopt the values of the organization when they already enjoy a closer relationship with their superiors hence tying LMX to OI. Accordingly, a study carried out by Erdogan and Enders (2007) found that benefits like recognition and promotion that could be gleaned from a high-quality LMX are possible to inspire reciprocal action by employees who may feel the need to increase their performance by dedicating themselves to their work and showing more commitment. The study confirms the relationship between LMX and job performance through a survey of a total of 248 employees and supervisors of a grocery store chain in the United States. Similarly, Wang (2016) also looked at the impact of LMX on motivation, creativity, and job performance by surveying over 300 employees and 60 supervisors in Taiwanese international Tourist hotels. The findings provided evidence of improved motivation and performance in instances of high-quality LMX.

Efraty and Wolfe (1988) surveyed 215 personnel at 8 nursing homes for the elderly on their extent of job satisfaction and performance among other issues. The findings revealed what has become a general trend in most of the literature - a positive relationship between OI and job satisfaction and performance. Carmeli et al. (2007) found out a positive link between OI and the degree of adjustment of employees in the organization which was then found to impact the rate of performance of the employees. Their study, which considered both subordinates and managers found the OI of employees to be a factor in the organizational financial and CSR performance, making OI a cause and a consequence of performance. Walumbwa et al. (2009) also reached that OI positive impact on performance in their study, which tested the research model on 398 employees from a large-scale automobile dealership. In addition, Kesen (2015) in his study researching the relationship between organizational democracy and job performance, found a mediate effect of OI on job performance. Finally, relating to our last hypothesis, Katrinli et al. (2008) found a positive relationship between LMX quality and OI.

In line with the aforementioned arguments, we proposed the hypotheses and the model shown below:

H1: The effect of leader-member exchange on performance is significant.

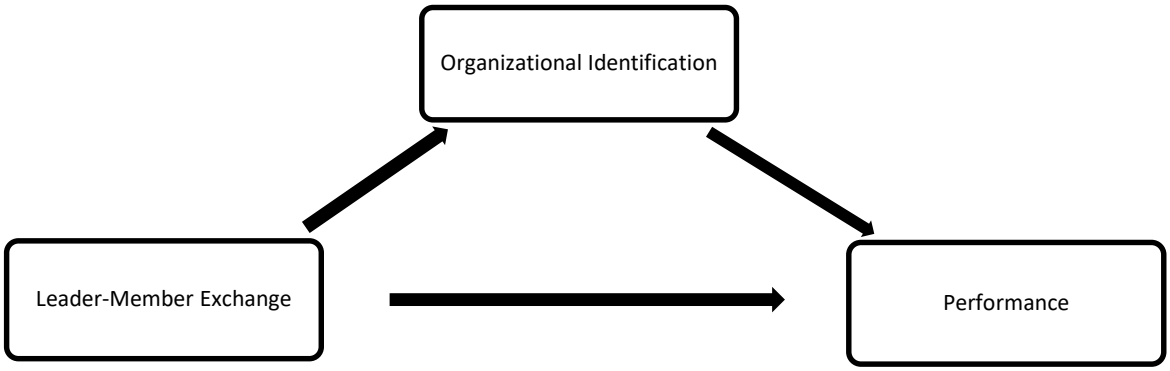
H2: The effect of leader-member exchange on organizational identification is significant.

H3: The effect of organizational identification on performance is significant.

H4: Organizational identification has a mediating role in the effect of leader-member exchange on performance.

In line with the studies in the literature, this study deals with whether OI has a mediating role in the effect of LMX on job performance and the type of this mediation. Our proposed research model is depicted in Figure 1.

**Figure 1: The Proposed Research Model**




## 3. METHOD

In this section, the sample of the study, data collection process, and measurement tools are discussed.

### 3.1. Sample and Data Collection

This research was carried out in a cross-sectional study. By convenience sampling technique, we selected the research assistants of Turkey public universities as the respondents for the study. The data were gathered from March 2020 to October 2020. A total of 201 questionnaires were received via google forms from research assistants of universities in Turkey. The sample size is appropriate for investigating the path model in the technique of partial least squares structural equation modeling (PLS-SEM) which is a good choice when the sample size is relatively small and the data are non-normally distributed in the social sciences studies (Hair et al., 2017). Therefore, we used SmartPLS 4 software based on PLS-SEM and SPSS 25 software for data analysis. PLS-SEM consists of a two-phase procedure: measurement model assessment, and structural model assessment. As a first phase, The measurement model assessment focuses on the reliability and validity of the construct measures. The structural model will be implemented if the measurement model description ensures that those constructs have acceptable indicator outer loadings, convergent validity, composite reliability, and discriminant validity. In a second phase, path coefficients are evaluated and their significance is investigated in structural model assessment (J. F. Hair et al., 2017). Therefore, we assessed the measurement model as the first phase followed by the structural model assessment as the second phase in the analysis process.

In addition, common method bias (CMB) is a potential problem that may influence behavioral studies carried out through the self-evaluation of the individual by using the questionnaire technique (Podsakoff et al., 2003). To helps to identify CMB, we used Harman's one-factor test, one of the most commonly used techniques by researchers, as suggested by Podsakoff et al., (2003). CMB is not likely to be a potential problem in the study, because the first factor (33.38%) was accounted for less than the recommended threshold of 50% of total variance shared by all items (with all measured items included) (Fuller et al., 2016; Kock et al., 2021). We used also the full collinearity test as an indication of the CMB proposed by Kock, (2017, p. 245). The variance inflation factors (VIFs) values obtained by SmartPLS for all latent variables of our model were examined. CMB is not present, because all VIFs (range between 1262 and 2688) arising from a full collinearity test are lower than 3.3 (Kock and Lynn, 2012).

### 3.2. Measures

For the questionnaire used in the study, previous studies in the literature were used. LMX Scale which consists of 7 items was developed by Graen and Scandura (1987) and adapted to Turkish culture by Özutku et al. (2008). The mediator variable for this study, OI is a scale by developed Mael and Ashforth (1992). The scale was adapted to the Turkish culture by Tak and Aydemir, (2004). We used the performance scale formed by Zehir and Erdogan (2011) by benefiting from the scales developed by Kirkman and Rosen, (1999), Fuentes et al. (2004), Rahman and Bullock, (2004), as the dependent variable for this study. The survey used a five-point Likert scale, with 1 representing "strongly disagree" and 5 representing "Strongly Agree."

## 4. RESULTS

According to descriptive statistics in Table 1, approximately 37% of the 201 respondents who completed the questionnaire were female, while 63% of them were male. Most respondents were in the 26-35 (42%) and 31-35 (38%) age range. The majority of the respondents (83%) had a doctoral education and almost 58% of them were not married.

**Table 1: The Demographic Characteristics of the Respondents**

| Demographic Variables | Percentage (%) | |
|---|---|---|
| **Gender** | **Valid Percent** | **Cumulative Percent** |
| **Male** | 37.4 | 37.4 |
| **Female** | 62.6 | 100 |
| **Age** | | |
| **21-25** | 10.8 | 10.8 |
| **26-30** | 42.4 | 53.2 |
| **31-35** | 37.4 | 90.6 |
| **36+** | 9.4 | 100 |
| **Education Level** | | |
| **Master's Degree** | 17.2 | 17.2 |
| **PhD** | 82.8 | 100 |
| **Marital Status** | | |
| **Married** | 41.9 | 41.9 |
| **Single** | 58.1 | 100 |

### 4.1. Measurement Model Assessment

We tested the reliability and the validity of the construct for the study model. First, all items were examined for factor loadings. When considering the measurement model, some items were extracted from the measurement model because the factor loadings were low the required threshold value of 0.60 (Gefen and Straub, 2005, p. 92). All of the constructs have average variance extracted (AVE) and composite reliability (CR) values that are equal to or greater than 0.50 and 0.70, respectively. The Cronbach's Alpha (α) values ranged from 0.75 to 0.89, surpassing the threshold value (0.7) hence, convergent validity and reliability are confirmed (Ali et al., 2018). Additionally, an SRMR value of 0,074 was derived for the proposed research model, suggesting an above-average model fit. In general, an SRMR value of less than 0.08 is suggested to be acceptable for PLS path models (Hair et al., 2019; Merli et al., 2019). Table 2 shows indicators of outer loadings and results of CR and AVE for all the constructs.

**Table 2: Measurement Model Assessment Results**

| Variables | Λ | α | rho_A | CR | AVE | Model Fit |
|---|---|---|---|---|---|---|
| **Leader-Member Exchange (LMX)** | | **0.891** | **0.908** | **0.885** | **0.613** | |
| LMX2 | 0.602 | | | | | |
| LMX3 | 0.949 | | | | | |
| LMX4 | 0.918 | | | | | |
| LMX6 | 0.712 | | | | | |
| LMX7 | 0.675 | | | | | **SRMR**=0.074 |
| **Organizational Identification (OID)** | | **0.807** | **0.855** | **0.816** | **0.606** | $\chi^2$ = 381.39 |
| OID3 | 0.831 | | | | | NFI = 0.81 |
| OID4 | 0.913 | | | | | |
| OID5 | 0.644 | | | | | |
| **Performance (PERF)** | | **0.750** | **0.750** | **0.746** | **0.50** | |
| PERF1 | 0.649 | | | | | |
| PERF2 | 0.689 | | | | | |
| PERF3 | 0.768 | | | | | |

** Λ: Outer Factor Loadings; α: Cronbach Alpha; CR: Convergent Validity; AVE: Average variance extracted; Rho_A = Reliability Coefficient.

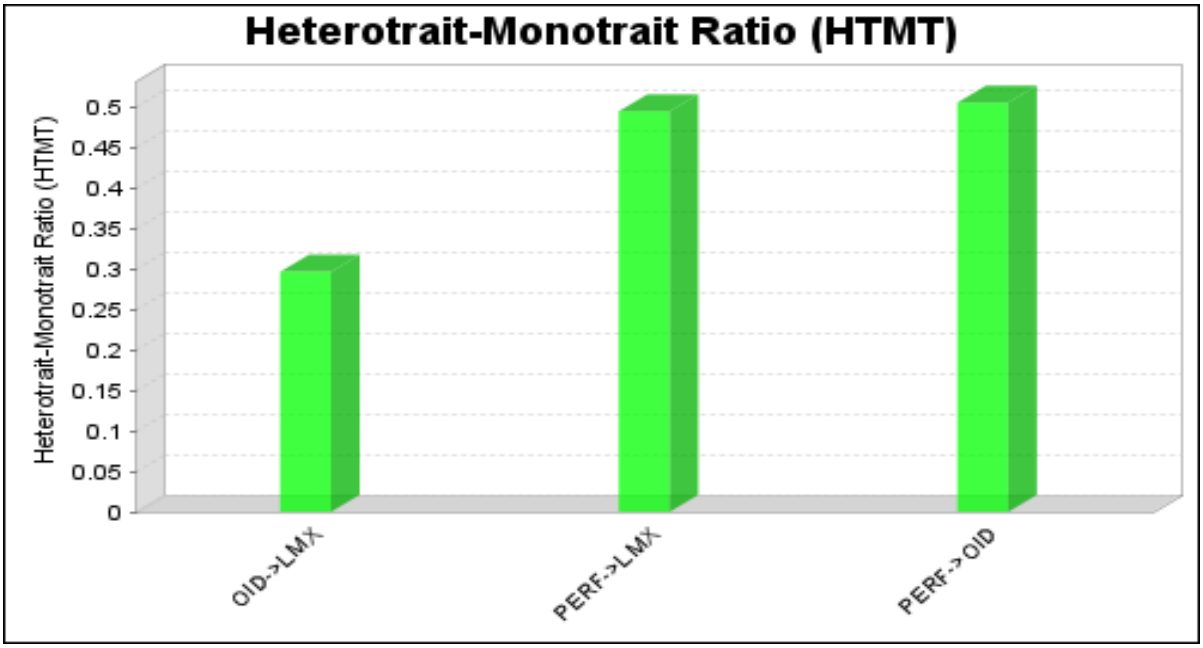
To evaluate the discriminant validity of the construct, we used the Fornell-Larcker's criterion and the Heterotrait Monotrait (HTMT) Ratio (See Table 3, and Figure 2). In the correlation matrix of the Fornell-Larcker's criterion (Table 3), the square root of the construct's AVE is indicated in bold on the diagonal, whereas the other values indicate correlations with other constructs. (Sahibzada et al., 2020). Accordingly, to ensure discriminant validity, the square root of each AVE (shown in bold on the diagonal) must be higher than the related inter-construct correlations (Ali et al., 2018; Henseler et al., 2015). The Heterotrait– Monotrait ratio (HTMT), which has a high sensitivity for validity issues in PLS-SEM, was also employed to test discriminant validity. All values (0.29; 0.49;0.50) of the HTMT are less than the suggested 0.90 values (Figure 2). In this respect, discriminant validity was achieved (Henseler et al., 2015; Merli et al., 2019). Overall, the measurement model evaluation demonstrated the reliability and validity of constructs. Therefore, the following section carried out the second phase of the analysis process.

**Table 3: Fornell-Larcker Discriminant Validity**

| Constructs | LMX | OID | PERF |
|---|---|---|---|
| **LMX** | **0.783** | | |
| **OID** | 0.314 | **0.779** | |
| **PERF** | 0.507 | 0.504 | **0.690** |

Note. Square root (AVE) on the diagonal in boldface and construct correlations below the diagonal. LMX: Leader-Member Exchange; OID: Organizational Identification; PERF: Performance.

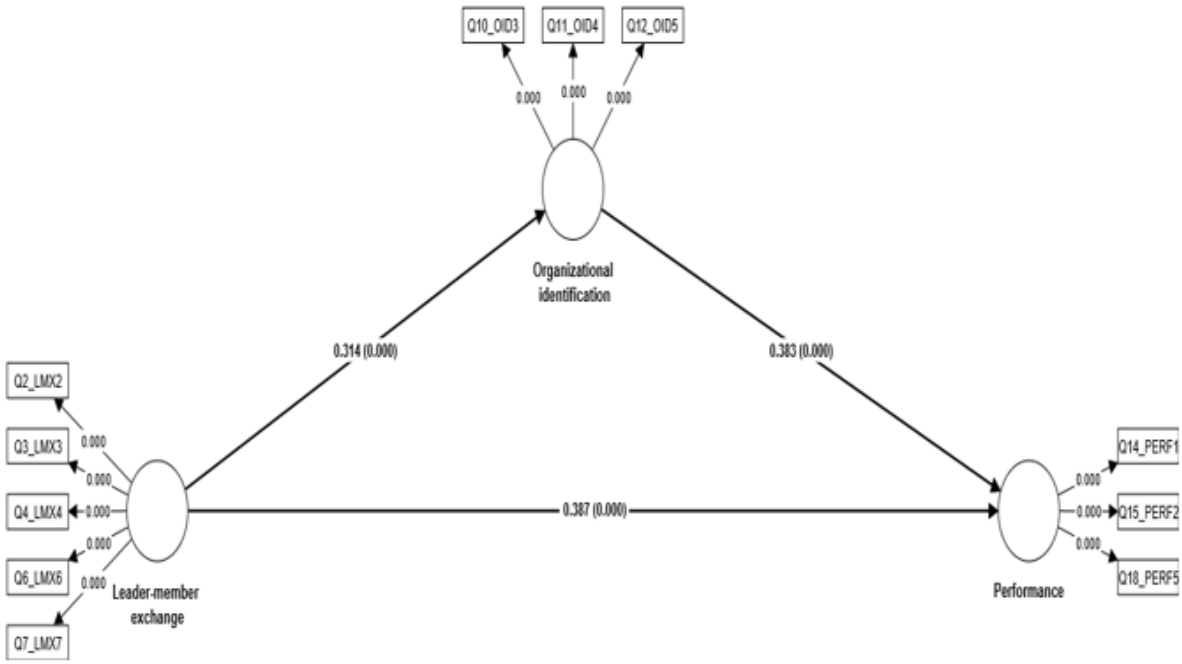
**Figure 2: HTMT Discriminant Validity**




## 4.2. Structural Model Assessment

SmartPLS software version 3.3.3 was used to test the hypotheses of the study. The statistical significance of the path coefficients in the structural model was investigated using the bootstrapping approach with 5.000 iterations. Figure 3 shows the visual appearance of the tested structural model.

**Figure 3: Results of the Structural Model**



For the model, the coefficient of determination ($R^2$) reflects the effect of the exogenous latent variables on endogenous latent variables and the criterion of predictive accuracy (Merli et al., 2019). In addition, to evaluate the values of the $R^2$ values as a criterion of predictive accuracy of the model, this study also calculated Stone-Geisser's $Q^2$ values, obtained via a blindfolding procedure (J. F. Hair et al., 2017; Merli et al., 2019). The predictive accuracy of the model is confirmed by the $Q^2$ and $R^2$ values since $R^2$ values of the OI and the performance can be described as moderate and the Q2 values are higher than zero (See Table 4).

**Table 4: Endogenous Constructs Assessment**

| Construct | $R^2$ | $Q^2$ |
|---|---|---|
| OID | 0.299 | 0.047 |
| PERF | 0.389 | 0.150 |

Note: $Q^2$ values greater than zero are meaningful; R2 values of 0.75, 0.50, and 0.25 are considered substantial, moderate, and weak (Joseph F. Hair et al., 2019); OID: Organizational identification; PERF: Performance

Next, $H_4$ evaluates whether OI mediates the linkage between LMX and performance. The results showed that the total effect of LMX on performance without the introduction of the mediator into the model was significant (H1: β = .507, t = 6.846, p < .005). While the direct effect with the inclusion of the mediating variable into the analysis, the impact of LMX on performance was observed to be significant and decreased by 0.38 from 0.507 (β = .387, t = 4.922, p < .000). The indirect effect of leader-member exchange on performance via OI was found significant since the confidence interval of the indirect effect does not also include zero (β = 0,120, t= 2.933, p < .003). The results, therefore, reveal a partial mediation. According to Zhao et al. (2010), since both the direct effect and indirect effect point in the same positive direction, the mediating role is a complementary partial mediation (Nitzl et al., 2016; Zhao et al., 2010). This shows that the effect of LMX on performance is partially mediated by OI. Accordingly, the effect of the quality of the relationship between research assistants and their advisors on their performance is affected by their identification with the organizations. Results of the bootstrapping technique show that all path coefficients are significant with a confidence interval of 95%. Consequently, all the hypotheses ($H_1$, $H_2$, $H_3$, and $H_4$) are supported. The results of the mediation analysis are given in Table 5, and all hypothesis results are shown in Table 6.

**Table 5: Summary of Mediation Results**

| Total Effect (LMX->PERF) | | Direct Effect (LMX->PERF) | | Indirect Effects of LMX on PERF (LMX->OID->PERF) | | | | |
|---|---|---|---|---|---|---|---|---|
| Coefficient | p-value | Coefficient | p-value | Coefficient | SD | T value | p-values | LLCI (2.5%); ULCI (97.5%) |
| 6,846 | 0,000 | 4,922 | 0,000 | 2,933 | 0,041 | 2,933 | 0,003 | .050; .212 |

Finally, we benefited from the Cohen's (1992) guidelines to measure the effect size. Cohen (1992, p. 100) states that 0.02, 0.15, and 0.35 are considered small, medium, and large effect sizes, respectively. In this respect, the effect sizes of $H_1$ ($f^2$= 0.221) and $H_3$ ($f^2$= 0.216) are medium and the effect size of $H_2$ is small as can be understood from Table 6.

**Table 6: Results of Path Coefficients**

| Hypotheses | Relationship | β | Mean | SD | t-value | Decision | $f^2$ |
|---|---|---|---|---|---|---|---|
| $H_1$ | LMX -> PERF | 0,387 | 0,389 | 0,079 | 4,922 | Supported | 0.221 |
| $H_2$ | LMX -> OID | 0,314 | 0,321 | 0,083 | 3,763 | Supported | 0.109 |
| $H_3$ | OID -> PERF | 0,383 | 0,383 | 0,081 | 4,708 | Supported | 0.216 |
| $H_4$ | LMX->OID->PERF | 0,120 | 0,123 | 0,041 | 2,933 | Supported | |

## 5. DISCUSSION AND CONCLUSION

The study investigates the effect of the quality of the relationship between research assistants and their advisors on their job performance and the mediating role of OI in this process. Research data includes 201 complete questionnaires gathered from research assistants work for public universities in Turkey. Accordingly, some conclusions drawn from the results are discussed below.

The results reveal that while the quality of the exchange of research assistants with their advisors affects their job performance, they also develop a sense of belonging to the universities they work for in the process. The increase in the attitude of research assistants to see themselves as a part of the organization they work for affects their performance

positively. In other words, according to the results, as the quality of the relationship between the advisor and the research assistants increases, the positive feelings of the research assistant towards the organization and the level of sense of belonging increase. This also reflects more positively on the job performance of the research assistants. Therefore, it is seen that OI is a significant mediator variable in the tested model and is an effective factor in increasing the job performance of research assistants. Consequently, it is understood that more attention should be paid to the quality of the relationships of advisors and research assistants, who are the academic future of their universities to increase their identification with the organization and thus, increase their performance.

This study has some limitations. The partial mediation role of OI in the study may be a clue to the necessity of other mediating variables in the model. Thus, future studies can be carried out on mediation effects by adding different variables to the model. The second limitation of the study is the sample size. Although tests regarding the validity and reliability of the scales used in this study, which was conducted with 201 respondents, were carried out, larger sample sizes are always desirable. Another limitation is that the study only covers research assistants working at universities in Turkey. In future, researchers could investigate the proposed model by testing it comparatively with a sample that includes respondents from different countries.

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