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### Abstract

The leadership characteristics and innovation skills of university students are of great importance in order to increase the quality of education in universities and to ensure academic development, change and renewal. This study aimed to investigate the potential leadership and innovation skills of university students with a correlational approach. Therefore, the leadership characteristics and innovation skills of university students were examined based on the variables of gender, year of study and academic career expectations through a descriptive survey design. The participants of this study consist of 343 students studying at 2 state universities in Konya. Personal information form, potential leadership scale and innovation scale were used to collect data. The results of the research showed that there were significant differences in terms of potential leadership characteristics and innovation skills of university students by gender, year of study and academic career expectations. In addition, the potential leadership characteristics of the participants significantly predicted their innovation skills.

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### Introduction

In the changing and developing world, the competitive environment is expanding. The literature review shows that leadership and innovation have been two important concepts that stand out both in university systems and in global competition. It is acknowledged that leaders are important drivers of economic development, and nurturing an entrepreneurial mindset in youth has become a key priority for innovation. In addition, new trends and changes emerging in university systems contribute to the development of leadership and innovation skills and leads to formation of new ideas. In order to keep the competitive power in all sectors today and in the future, students at universities need to be leaders, entrepreneurs, innovative, creative and original (Campos, 2014; Lubienski, 2009; Yılmaz & Sünbül, 2008). One of the best ways to improve these features is possible by using appropriate training approaches. Thus, it is important to examine the leadership characteristics, innovation skills and behaviors of university students that will affect the quality of university education and to make suggestions in this respect.

The topic of leadership has recently been addressed by many authors and researchers from different aspects and

many articles have been published. Many definitions of leadership have been made in these studies. Various disciplines examine leadership from their own perspective and emphasize its importance in accordance. As the terms 'leadership' and 'innovation' are at the core of this perspective, it is essential to define them at the outset. For the present purposes, we have taken the definition of leadership set out by Yukl (2006) as "the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives." Innovation is defined as "a broad set of activities involving the creation and implementation of concepts and products new to an organisation" (Weintraub & McKee, 2019)

Based on various definitions in the literature, leadership is the art of influencing people's actions and behaviors. There is "merit" at the core of leadership. Leadership is the ability to impose his or her will to other people by gaining their respect, trust, obedience and loyalty (Garih, 2001). The leader is the person who is able to put common thoughts and desires, felt by the group members but not revealed, in an embraceable action and put the potential powers of the group members around the common objective into action. Leadership is the capacity and willingness of leading people towards a common goal (Eren, 2004; Şimşek & Çelik, 2010). A leader is someone who has more leadership qualities than his followers. If it is possible to identify individuals with these characteristics among group members, it will be easier to find and train people to lead the groups.

The personal characteristics of a successful leader can be listed as follows (Aydın, 1997; Harrell, 2003):

- Leaders have a personality that has a developed sense of self-confidence and gives self-confidence to their followers. Leaders are people who can analyze situational factors correctly, make effective and timely decisions and put their decisions into practice with the widest alliance possible.
- Leaders are people who communicate with their followers in a versatile way, observe events and facts, establish relationships between causes and effects, are close to cooperation and have a high technical understanding.
- Leaders are people with developed determination, responsibility and social adaptability. Leaders are creative, sociable, intelligent and idealistic people. A leader is a good organizer, a knowledgeable and skillful manager, an intelligent supervisor and an active executive.
- Leaders are people with a balanced and consistent personality and the ability to control emotions and enthusiasm. Leaders are individuals who have the ability to create a sense of unity in the organization, and sensitivity to events and people. Leaders are free from prejudices, open to criticism and opposing opinions.
- Leaders are people who blend traits such as control, commitment, farsightedness, intuition and courage in their personality.
- Leaders are good speakers and listeners. Leaders are people with a strong sense and motivation to succeed. Leaders are people with multidimensional and abstract thinking capacities.

The process of how to develop a leader's capacity to be effective remains a constant debate amongst scholars. Research on leader development, defined as "the expansion of the capacity of individuals to be effective in leadership roles and processes" (Day & Dragoni, 2015) indicated that there are individual capabilities that

enable leader to continuously enhance their skills in increasingly dynamic, complex and demanding environments (Uhl-Bien & Arena, 2017). Leaders who are highly self-aware, identify strongly with being a leader and are highly self-efficacious are more likely to be effective leaders (Day & Dragoni, 2015; Rupprecht et al, 2019).

The concept of leadership potential is based on Peoplewise's extensive research on leadership potential. Leadership potential consists of five basic psychological (vertical) abilities and five behavioral (horizontal) abilities. Vertical skills are essential personal qualities that are constantly linked to current and future success. The sum of horizontal and vertical abilities is defined as the positive psychological state characterized by the individual (Akkaya, 2018; Board, 2017; Weiner & Mahoney, 1981). Horizontal abilities that a correct potential leader should possess include studying, analyzing and understanding new problems and situations (mental agility); personal effectiveness and interpersonal effectiveness (emotional agility); confidence, striving to grow and succeed when faced with difficulties and challenges, (flexibility), and taking action to seek and achieve goals. On the other hand, vertical skills for leadership potential include thinking, comprehension, leading, transforming and finalizing (Akkaya, 2018; Board, 2017). According to Hughes and Beatty (2005), individuals with strong leadership potential also provide many benefits for organizations. They provide a clear view of the future and an important basis for the vision and innovation of organizations.

The concepts of leadership and innovation are interrelated. Innovation and leadership are closely related. Leadership always has some focus on bringing about a better future. In this sense, leaders are necessarily innovators. To be an innovator/leader requires a particular state or a way of being and relating to the world, a higher level of conscious awareness, especially in the context of change, challenge and uncertainty (Rao Jada, Mukhopadhyay & Titiyal, 2019; Villaluz & Hechanova, 2019). In the literature, it is possible to find many studies both in education and other fields that examine the relationships between innovation and leadership characteristics (Kang, 2013; Politis & Politis, 2009; Raposo & Paço, 2011; Yitshaki, 2012). The characteristics of a leader in an organization closely affect the innovative potential of the organization and other stakeholders. It is seen that the concept of entrepreneurial and innovative leadership is used to explain the relationship between leadership and innovation (Fernald, Solomon, & Tarabishy, 2005). It is stated that innovative leaders devote themselves to opportunity focused activities. In addition, these leaders have a tendency to connect with social and political movements and to change the services and policies in public and private institutions (Greenberg, McKone-Sweet, & Wilson, 2011).

Studies that define innovation in terms of personal characteristics are remarkable. According to this approach, innovation expresses the inherent innovative character of a person as all of the internal dynamics and tendencies that involve creating a different style by integrating it with new methods, techniques and information processing (Im et al., 2007). Personal innovativeness can also be defined as the way an individual exhibits innovative attitudes and behaviors with his free will, without being bound by system norms (Midgley & Dowling, 1978). Innovations and improvements in education can increase the quality of human capital. Thus, the welfare and economic order of the society can improve. Real changes in the education system are only possible through right innovative activities (Campos, 2014). In the last two decades, there has been a growing debate about the role of

education on the capacity of individuals to cope with an increasingly competitive, uncertain and complex world which has higher rates of innovation and change. Today, vital skills that individuals need to develop in all sectors are the capacity to create new enterprises, developing interpersonal skills, innovation and “entrepreneurial” capacity. In other words, increasing awareness of entrepreneurship and innovation as a different educational challenge is a must in higher education.

Complex, knowledge-based work, and adaptation to changing surroundings, fast decision-making, and other proactive practices often require teams, which are increasingly being used in organizations (Illgen et al. 2005; Kozlowski & Bell 2003; Liden & Antonakis 2009). Furthermore, to remain competitive, innovation is widely viewed as essential for success and long-term survival (Ancona & Caldwell 1992; Mumford 2000). Individual innovation has been described as the creation of new and useful, or functional ideas, and their application in organizational settings. Innovation benefits the organization and innovative teams and organizations also tend to achieve higher levels of performance (Balkin et al. 2001).

In this study, unlike the studies in the literature, the relationships between potential leadership and innovation skills based on the perceptions of university students were examined. The findings were presented for both researchers and practitioners. Within the scope of the research, answers were sought for the following research questions:

- What are the levels of university students’ perceptions of potential leadership characteristics and innovation skills?
- Do university students’ perceptions of potential leadership characteristics and innovation skills differ based on gender?
- Do university students’ perceptions of potential leadership characteristics and innovation skills differ based on the year of study?
- Do university students’ perceptions of potential leadership characteristics and innovation skills differ based their academic career expectations?
- Do leadership characteristics predict innovation skills based on university students’ perceptions?

## **Method**

This research is a descriptive survey model aimed at determining the perceptions of students studying at universities in Konya province regarding potential leadership characteristics and innovation skills. This model obtains data from participants in a big community and hence aims to make generalizations based on the data obtained from a group of participants or samples in that community (Karasar, 2007).

## **Participants**

The participants of the research were students who studied at Selçuk and Necmettin Erbakan University in Konya province in the 2019-2020 academic year. In Konya, there are 3 state and 2 private universities. This research was conducted among students studying at 2 state universities. Students who did not accept filling

surveys, or students who did not fill the surveys completely were not included in the study. The number of completed surveys that were suitable for statistical evaluation was 343. The frequency and percentage distributions that describe the group's personal characteristics (gender, university, year of study) are given in Table 1.

Table 1. Demographic Characteristics of the Participants

Variable		F	%
University	Necmettin Erbakan University	165	48.10%
	Selçuk University	178	51.90%
Gender	Female	161	46.94%
	Male	182	53.06%
Year of study	1 <sup>st</sup> year	79	23.03%
	2 <sup>nd</sup> year	91	26.53%
	3 <sup>rd</sup> year	110	32.07%
	4 <sup>th</sup> year	63	18.37%
Total		343	100.0

### **Data Collection Tools**

#### *Potential Leadership Characteristics Scale*

In this study, Potential Leadership Traits Scale developed by Tatar, Çelikbaş and Özdemir (2018) was used to measure leadership characteristics, one of the research variables. The scale, which consists of 15 items, is a 5-point Likert type scale. The scale explains 31.495% of the total variance with a single factor solution, 39.706% of the total variance with a two factor solution, and 46.504% of the total variance with a three factor solution.

Confirmatory factor analysis results showed a high consistency for all three structures. The one-dimensional form of the scale was used in this study. The researchers who developed the scale found 0.841 for internal consistency reliability coefficient. In this research, the reliability coefficient of the scale was found as 0.86. Getting higher scores on the scale indicates that potential leadership characteristics are at a high level.

#### *Innovation Scale*

The Innovation Scale, developed by Hurt, Joseph, and Cook (1977) and adapted to Turkish by Sarıoğlu (2014), was used to determine university students' perceptions of innovation skills. The scale consists of 18 items and is a 5-point Likert type scale. The construct validity of the Turkish form of the scale was tested by factor analysis.

Single factor scale explained 49.33% of the total variance. As a result of the factor analysis, 2 items were removed from the scale. As a result, the Turkish form of the scale consisted of 18 items. The Cronbach Alpha internal consistency coefficient calculated to determine the reliability of the scale in this study was 0.88. The data obtained in this study showed that the reliability of the scale was satisfactory.

## Data Analysis

In this study, the effect of university students' potential leadership perceptions on their innovation skills was examined. In analyzing the data, sub-problem order was followed, and the scores obtained from the scales were analyzed using the SPSS 22 package program. While analyzing the data, regression analysis for the effect level, t-test and Kruskal-Wallis test for independent groups is used. Margin of error in research was assumed as 0.05.

## Findings

In this section, in accordance with the sub-problems of the research, the findings obtained by comparing the scores obtained from the measurement tools based on the variables of gender, year of study, academic career expectations are included. Before making comparisons, descriptive information about the scores obtained from measurement tools is presented (see Table 2).

Table 2. Descriptive Values Regarding University Students' Perception of Potential Leadership and Innovation Skills Scales

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Innovation Skills	343	1.00	4.89	3.64	0.83
Leadership	343	1.06	4.72	3.52	0.72

According to the table, the mean score of potential leadership perception of university students was  $3.64 \pm 0.83$ . Mean score of innovation skills was  $3.52 \pm 0.72$ . According to these findings, it can be argued that the level of potential leadership perceptions and innovation of university students was above moderate. The results of the t-test regarding the potential leadership perceptions and innovation levels of university students based on gender are given in Table 3.

Table 3. Comparison of University Students' Potential Leadership Perceptions and Innovation Skills by Gender

Variable	Gender	N	Mean	Std. Deviation	t	p
Innovation Skills	Female	161	3.54	0.88	-2.20	0.03
	Male	182	3.73	0.78		
Leadership	Female	161	3.42	0.75	-2.48	0.01
	Male	182	3.61	0.68		

According to the results of the t-test, the potential leadership perceptions and innovation levels of the students differed significantly based on gender ( $p < 0.05$ ). This difference was in favor of male students when the mean scores of the groups are taken into account. The distribution of potential leadership and innovation skills of the participants by gender is shown in Figure 1.

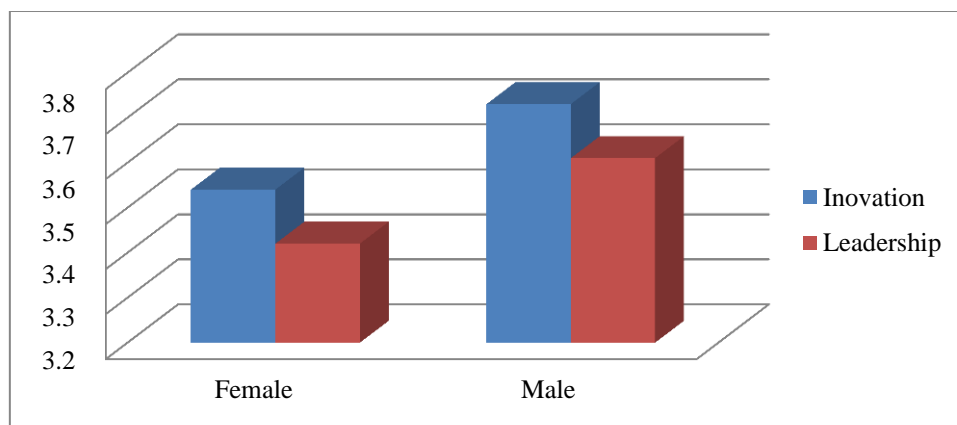


Figure 1. Potential Leadership Perceptions and Innovation Skills of University Students based on Gender

The scores obtained from the innovation skills scale did not differ significantly based on the year of study ( $p>0.05$ ). However, a significant difference was found among the scores obtained from the potential leadership characteristics scale based on the year of study ( $p<0.05$ ). The potential leadership perception levels of 4th and 3rd year university students were significantly higher than the 1st and 2nd year students (see Table 4).

Table 4. Comparison of University Students' Potential Leadership Perceptions and Innovation Skills Based on the Year of Study

Variable	Year of Study	N	Mean	Std. Deviation	F	p	Sheffe
Innovation Skills	1	79	3.50	1.05	1.75	.15	
	2	91	3.58	0.86			
	3	110	3.71	0.69			
	4	63	3.79	0.68			
Leadership	1	79	3.42	0.69	13.40	.00	4>1;
	2	91	3.26	0.83			4>2
	3	110	3.56	0.60			3>1
	4	63	3.95	0.57			3>2

Research findings show that the potential leadership and innovation levels of students who had expectations for graduate education were higher than those who did not have ( $p<0.05$ ) (see Table 5).

Table 5. Comparison of University Students' Potential Leadership Perceptions and Innovation Skills based on Academic Career Expectations

Variable	Academic Career Expectations	N	Mean	Std. Deviation	t	p
Innovation Skills	No	274	3.58	0.85	-2.69	.007
	Yes	69	3.88	0.71		
Leadership	No	274	3.41	0.70	-5.684	.000
	Yes	69	3.94	0.64		



According to Table 6, it was found that the regression model developed to determine the effect of university students' potential leadership perceptions on their innovation skills was significant ( $F=63.25$ ;  $p<0.05$ ). Approximately 15% of the change in the students' innovation skills was explained by the potential leadership perceptions. Potential leadership perceptions had a positive effect on innovation skills ( $=0.39$ ;  $p<0.01$ ).

Table 6. The Effect of University Students' Potential Leadership Perceptions on Innovation Skills

Variable	R	R <sup>2</sup>	Beta	F	p
Potential leadership perception	.396	.154	0.39	63.25	<0.001

The dependent variable = Innovation skill

## **Discussion**

In this study, the relationships between university students' potential leadership perceptions and innovation skills were examined using a descriptive approach based on the variables of gender, year of study, and academic career expectations. It was found that the potential leadership perceptions and innovation skills of the participants showed a distribution above moderate. In addition, male university students had significantly higher potential leadership perceptions and innovation skills than their female peers. These findings corroborate the findings in the studies conducted by Kara (2020), Ludeman and Erlandson (2004, 2006, 2007), Sünbül and Yılmaz (2009), Ward et al. (2009), Yılmaz and Sünbül (2008), Özdemir and Demircioğlu (2016). Most of the research carried out in universities and various organizations in Turkey showed that men had higher level of leadership perception and innovation skills than women. However, some studies suggest that leadership behaviours are similar for men and women (Cellar, et al., 2001; Giannantonio et al., 1995). Ludeman and Erlandson comprehensively studied the concept of alpha male and leader. According to Ludeman and Erlandson (2007), men in leadership positions are alpha males described as people who are well-balanced human beings with full command of their strengths, respected by colleagues and revered by. In their comparative research on male and female leaders, the researchers found that male leaders had significantly higher scores than female leaders on all the characteristics that they define as "alpha" (e.g. charismatic leadership, dominance, confidence, aggressive, competitive, persistent, far-sighted, and courageous).

Another finding is related to the comparison of the participants' potential leadership and innovation skills based on the year of study and academic expectations. The results showed that there was no significant difference in innovation skills based on the year of study, while a significant difference was found in potential leadership perceptions. In the study, the potential leadership perceptions of 4th and 3rd year university students had significantly higher scores than 1st and 2nd year students. These findings are similar to the findings of Dries and Pepermans (2012), Hirschfeld et al. (2008), McKeon et al. (2004), Mustar (2009), Neck and Greene (2011), Silzer and Church, (2009), Tresh et al. (2019). In general, leadership characteristics are based on entrepreneurial learning, which is an important area of interest (McKeon et al. 2004). Therefore, as the year of study increases, students show higher leadership characteristics. Leadership potential is reserved by organizational evaluators, usually for individuals with broader responsibilities and demonstrating possible effectiveness in future roles at

higher levels in the hierarchy (Silzer & Church, 2009). As the age, education level and year of study increase, the awareness of the leadership potential perceptions gets stronger and developed.

The study also showed that there was a significant relationship between university students' potential leadership perceptions and innovation skills. The findings are similar to those of the studies conducted in different fields (Jacobs et al., 2015; Kang, 2013; Philips, 2012; Schermuly, Meyer & Dammer, 2013; Yitshaki, 2012). Many studies carried out in different school levels and institutions have revealed that individuals with strong leadership characteristics show high innovation and entrepreneurship. Similar to the findings of the study, leadership is suggested as one of the central influences in the innovation process in many studies (Antonakis, 2017; Gerlach et al., 2020; Hammond et al., 2011; Junni et al., 2015; Hughes et al., 2018; Hülshager et al., 2009). A study by Zacher et al. (2016) found that leadership behavior is positively correlated with innovation skills and behaviors related to creativity.

## **Conclusions**

The findings of this study on the relationships between leadership characteristics and innovation skills by the variables of gender, year of study and academic expectations are expected to contribute to the literature, both in Turkey and abroad. However, an important limitation of the study is that the participants are university students. Findings of the research conducted on leadership characteristics and innovation skills show that there are differences between student participants and participants in working life. For this reason, conducting the study with participants other than university students will contribute to the assessment of potential leadership characteristics and the transformation of this into innovative behaviors and increase the generalizability of the findings.

The study revealed that there are significant differences between potential leadership and innovation skills with regard to perceptions. It was found that as the academic career expectations and education level of the students increased, their perception level of potential leadership and innovation skills increased. This result draws attention to formal education, personal academic expectations and the importance and necessity of education.

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