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Examination of Higher Education Administrators' Informatics Leadership

Özgür Batur[1*], Çiğdem Cantaş[2], Cemaliye Mahmutoğlu[3]

[1, 2]Final International University, Turkish Republic of Northern Cyprus
[3]Bahçeşehir Cyprus University, Turkish Republic of Northern Cyprus

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Author's Email:
ozgur.batur@final.edu.tr, cigdem.cantas@final.edu.tr

Author's Orcid:
0000-0002-5433-6162, 0009-0007-9410-0393, 0000-0003-3202-5627

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Abstract

This research was conducted to examine academicians' perceptions of informatics leadership in three private universities located in the Turkish Republic of Northern Cyprus (TRNC) by using the Informatics Leadership Scale developed by Ulutaş & Arslan (2018). The study aimed to investigate whether factors such as participants' gender, affiliated university, academic title, administrative experience, and field of education had an impact on the perceptions of administrators' informatics leadership. Findings reveal that none of these factors had a significant impact. However, there was a significant difference in the Information sub-dimension of the scale between academicians with 1-5 years of teaching experience and those with 6-10 years of teaching experience. Likewise, there was a significant difference in the Information sub-dimension of the scale between participants with administrative duties as Dean and Vice-Dean compared to those with no administrative duties. Overall, it was found that the participants' perception of informatics leadership was at a mid-level in all sub-dimensions and for the scale's total score. This possibly mean that there is a need for improvement in the quality of informatics leadership provided by the participants. The findings of this study may be useful for administrators and policymakers in improving the quality of informatics leadership in higher education institutions.

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Introduction

The phenomenon of leadership has been theorized in a wide variety of ways, and there has been a gradual movement through time from an emphasis on individuals to a focus on more collective procedures. Rost (1991) argued that the leadership paradigm has changed from the 20th-century industrial paradigm to the 21st-century post-industrial paradigm, which prioritizes relationships and change, and allows anyone to execute leadership. Uhl-Bien, Marion & McKelvey (2007) stated that the leadership models of the 20th century were characterized by top-down, bureaucratic paradigms, while the post-industrial paradigm is

founded on the belief that leadership does not belong to any one individual. This social phenomenon of leadership is affected and renewed by change, like all other social elements, and is now also shaped by technology and informatics. New technologies have changed how the millennial generation wants to be treated at work compared to previous generations. The millennials are enthusiastic about technological advances, but not much research has been done on how to teach them, what they expect from higher education, and what they think of leadership and success. Organizational development programs should emphasize the development of soft skills in a creative way, speaking the same language as this generation. The importance of emotional intelligence and the emphasis on emotions is undeniable, but it is still not tackled as it should be in academia. Organizations must understand how different generations interact at work and adjust profiles for job offers accordingly (Barron & Novak 2017; Gibson & Sodeman, 2014; Lourenco & Cronan 2017; Stein, 2013). Studying higher education administrators' informatics leadership" is significant for a number of reasons. First, it's critical to comprehend how administrators view and use technology in their leadership roles given the growing integration of technology throughout higher education. Second, it's critical to investigate how technology and informatics affect leadership in this environment because the post-industrial worldview prioritizes relationships and transformation. Third, the study can shed light on how to better support and nurture effective leaders in higher education by studying variables like gender, academic title, and administrative experience that may influence administrators' opinions of informatics leadership. Overall, the study has the potential to educate and advance how technology and informatics are applied to higher education leadership and administration.

Definitions of Leadership

Leadership plays an important role in human groups as it helps to manage and guide them towards their goals. Leaders must understand the personal desires, needs, and interests of their group members and bring them together to increase their strength, courage, desire, and energy (Yılmaz, 2010). The field of leadership has a variety of definitions available. Hughes, et al. (1999) state that leadership involves the ability to gather a group of people around a particular goal and mobilize them to achieve it. Cooley (1902) defines leadership as being at the center of a social movement, while Mumford (1906) describes the term as an individual becoming prominent in a group to control social movements. Bogardus (1934) believes that leadership affects the mental contact and personality of many people in a group, and Kilbourne (1935) believes that it's the ability to possess admired personality traits. Knickerbocker (1948) views leadership as a functional relationship between group members and the person who controls all the instruments that will meet their needs. Koontz & O'Donnel (1955) suggest that leadership is a situation where people are influenced to achieve a common goal, and Koçel (2015) states that it's the process of a person influencing and directing the activities of others to achieve specific personal or group goals under certain conditions. These varying definitions reflect the complexity and multifaceted nature of the concept of leadership.

Historical Development of Leadership Theories

Leadership theories have been studied for centuries, with a focus on identifying the common characteristics and behaviors that define effective leaders. The Great Man Theory, dating back to ancient times, posits that leaders are born with heroic potentials and cannot be developed later (Dobbins & Platz, 1986). Criticisms addressed to this theory led to the emergence of trait theory, which surfaced in the early 20th century, suggesting that leaders are endowed with certain physical and personality traits that distinguish them from non-leaders. However, the inability to identify common leadership traits led to the discrediting of this theory (Nawaz & Khan, 2016). According to the Behavior theory, leadership effectiveness is determined by how a leader behaves, rather than personality characteristics (Northhouse, 2010). The Style Theory recognizes that different individuals have different leadership styles, and certain necessary leadership skills serve as facilitators for the leader who takes action. Three different leadership styles were

identified. Democratic leaders and their followers serve with a high level of satisfaction, creativity, and motivation, irrespective of the presence or absence of the leader, with great enthusiasm and energy to work. Autocratic leaders are mainly focused on maximizing output. Laissez faire leadership is suitable for those who lead a team of highly talented and motivated people with an excellent track record (Yukl, 2001). The Contingency Theories (Situational) propose that no single leadership style is accurate on its own, and it depends on various conditions such as the followers' competence and context (Uslu, 2019). The Process Leadership Theory, which includes servant leadership, learning organizations, administrator-centered leadership, and charismatic leadership, emphasizes advancing the welfare of others with an emphasis on social responsibility (Greenleaf, 1996). Transactional and transformational leadership are the two main theories of modern leadership. The leader-member relationship is the main focus of task-oriented transactional leadership. It places a focus on effective communication between leaders and followers. In contrast, transformational leadership motivates followers to pursue a common goal and reach their full potential. It entails displaying charisma, vision, and passion, and it's been connected to improved performance, organizational commitment, and job satisfaction. These theories stress the importance of motivation and effective communication as determinants of leadership success.

Modern Approaches of Leadership

Changes in the external environment, customer expectations and knowledge, as well as developments and new concepts in the field of management and organization have led to the emergence of new approaches in the field of leadership since 1980 which can be named as modern or alternative approaches (Demir, Yılmaz, & Çevirgen, 2010). Charismatic Leadership is one of the new approaches that Max Weber conceptualized the term charismatic as an authoritarian term and it means the superior talent bestowed by God (Özdemir, 2018). Charisma denotes attractiveness, and these leaders have the ability to drag audiences after them without question. Characteristics of charismatic leaders are to have an exciting vision, to set an example with what they do, to motivate others with their excitement, enthusiasm and energy (Demir, Yılmaz, & Çevirgen, 2010).

Transactional leadership is a theory of leadership based on tradition and history, which deals with the exchange between the leader and the subordinates in fulfilling the leader's duties and meeting the wishes and needs of the subordinates (Besler, 2018), and aims to ensure that the followers follow the leader through a number of awards. It is the type of leadership in which the followers or subordinates are on the right application of the rules.

Transformational leadership, a relatively new concept in the leadership literature, was first put forward by MacGregor Burns in 1978, as a concept that started to gain importance since 1980s, and Bernard B. Bass used transformational leadership in his research titled Leadership and Performance Beyond Expectations (1985), dedicated to Burns, that takes into account the current needs and demands of the followers and in this context, focuses on the development of the followers by considering their higher needs (Özdemir, 2018). Transformational leaders are believed to be very active and increase the awareness level of their employees and help them achieve high performance results (Hoy & Miskel, 2020).

The most important feature of educational administration is that it requires democratic leadership in which authority and responsibilities are shared and decisions are taken together. Educational administration, which is not built on specific training, fails to ensure the effectiveness and efficiency of educational institutions (Küçükali, 2010). Today's educational leaders must, above all, be knowledgeable and versatile. The education administrator, who has to play a leadership role, should have information about teachers' attitudes, personalities, differences and similarities of sub-groups in the organization. Only such leaders can create broad policies aimed at goals. In this context, it is important to train and bring in leadership managers, by knowing that the problem is twofold, not only to train new leaders, but also to develop those in charge (Memişoğlu, 2001).

Informatics Leadership

Globalizations, rapidly developing technology, changes in the structure of societies and increasing

expectations have also affected the forms of management. The ability to manage information and technology successfully has become crucial to higher education administration in the fast-paced digital environment of today. An information system is defined as a system that collects the necessary information from various sources, processes, stores and reports the data for the administrator to make decisions (Güleş, 2000). Informatics, on the other hand, is perceived as data that has been made useful and meaningful for its users (Akolaş, 2004). Ulutaş & Arslan (2017) in their study replaced the term "technology leadership" with the broader concept of "informatic leadership," which encompasses technology leadership. Based on the definitions provided above, informatics leadership can be interpreted as the process by which a person rises to prominence within a group to control and direct social movements and technological advancements in the field of informatics, while also understanding the individual needs, interests, and preferences of group members to inspire them to work together to achieve personal or group objectives under particular circumstances. Informatics leadership entails the capacity to manage and coordinate the actions of people toward the achievement of a shared technological goal. It also encompasses the ability to influence and steer others' activities. It is a sophisticated idea that calls for both technical and interpersonal abilities, as well as a thorough comprehension of how intricate and dynamic technology is in society. According to Sweeney (2005), an effective leader must have a clear vision, the capacity to lead change, and IT competency. When the students are at the center of learning, a vision for teaching and learning that emphasizes ICT can inspire enthusiasm among the community. A successful administrator may foster a learning community by establishing a culture that encourages taking risks, innovating, and adjusting to shifting circumstances (Gurr, 2010).

Technology and leadership is also pronounced together for a long time, including educational institutions and educational administrators, so that education and everything related to it must be updated and effective. The research paper by Flanagan & Jacobsen (2003), insight the importance of leadership development and training for administrators to effectively integrate technology in education. The paper's five-part leadership model could serve as a guide for higher education administrators in developing their technology competencies and providing daily informatics leadership, mentorship, and advocacy for faculty. The research also highlights the need for effective communication, collaboration, and innovation in informatics leadership.

Scott (2005) found that both principals and teachers believe that competencies across the leadership domains are critical for effective technology leadership. However, there were differences in perspectives between principals and teachers. While principals were more likely to believe that all competencies were critical, teachers had more varied ideas about which competencies were necessary. Elementary and secondary teachers did not differ significantly in their perspectives. The findings suggest that when planning technology integration in schools, providing staff development, and providing technology support, educators should carefully consider these differences in perceptions between principals and teachers.

Herbst & Conradie (2011)'s research investigates the relationship between managerial self-perceptions and perceptions of others with regard to leadership effectiveness in a group of managers in a South African university undergoing a merging process. The study aims to investigate the prevalence of self-perception accuracy amongst the managers and explore the patterns of interaction between self-perception accuracy and perceived transformational leadership behavior. The findings indicate that managers tend to overestimate their own leadership capabilities and that there are discrepancies between self- and observer ratings on all five dimensions of leadership. The study highlights the importance of sensitizing managers to introspection and providing comprehensive feedback in a supportive environment to develop their leadership practices

The research by Markova (2014), discusses the changes that are occurring in teaching practices as a result of the introduction of advanced technologies in the classroom and distance learning. The model presented provides a framework for leadership in the

use of technology that is integrated with pedagogically-based teaching strategies. Leadership is important for implementing educational technology, and leaders must support instructors through necessary changes in the learning process. The research concludes that effective leadership in the integration of educational technology still needs to be developed.

Methodology

This research focuses on the higher education institutions' administrators' informatics leadership status from the perceptions of the academicians who were affiliated in three different universities in the Turkish Republic of Northern Cyprus (TRNC). The research emerged from an idea that took place in a leadership course during the graduate course period of the authors (second and third). The authors designed the research to find out their administrators' informatics leadership status which is one of the leading capabilities and competencies expected from higher education administrators in the era that we live in.

In this context, the fundamental research question was designed as, "To what extent higher education institutions' administrators fulfill their informatics leadership from the perceptions of the academicians?" which is followed by the sub-research questions as: "Is there a statistically significant difference between academicians perceptions of administrators informatics leadership according to participants' (1) gender, (2) affiliated university, (3) academic title, (4) teaching experience, (5) administrative experience, (6) administrative position, (7) field of education?" Moreover, in order to examine the possible relation between the sub-dimensions of the Informatics Leadership Scale?" is generated as the final (8) sub-research question.

The research was designed as a quantitative survey, consisting of randomly selected sample of 162 participants from three universities in the TRNC during the 2020-2021 Academic Year, Spring semester. No sampling model was utilized. In the stated year, BAU had 35 full time academics, FIU had 170 and GAU had 197 full time academics affiliated as it was

Table 1: Demographic information of the participants

Variables		1	2	3	4	5	Total
Gender		Female	Male				
	n	93	69				162
	%	57.4	42.6				100
University		GAU	FIU	BAU			
	n	115	37	10			162
	%	71	22.8	6.2			100
Demographic information of the sample (Continued)							
Academic Title		Prof.	Assoc. Prof	Assist. Prof	Senior Lecturer	Lecturer	
	n	7	23	65	42	25	162
	%	4.3	14.2	40.1	25.9	15.4	100
Teaching Experience		1-5 years	6-10 years	11-15 years	16-20 years	21+ years	
	n	32	6	74	11	39	162
	%	19.8	3.7	45.7	6.8	24.1	100
Admin. Experience		1-5 years	6-10 years	11-15 years	16-20 years	No	
	n	29	21	20	11	81	162
	%	17.9	13	12.3	6.8	50	100

stated in the official web sites forming the population total 402 academics. Ethics Committee approval was taken from the three universities. GAU on 20.04.2021 with the 5/18-28 file number, BAU on 25.04.2021 with the REK/2021/KKTCUNI/132 file number, and FIU on 10.05.2021 with the 100/050/REK09 file number.

As stated in Table 1, the sample of the research was consisted of 93 (57.4 %) female and 69 (47.6 %) male participants. 115 academics (71 %) from GAU, 37 academics (22 %) from FIU, and 10 academics (6.2 %) from BAU voluntarily participated in the research. Amongst the 162 academician participants, most of them were Assistant Professor as 63 (40.1 %), Senior Lectures were 42 (25.9 %), Lecturers 25 (15.4 %), Associate Professors were 23 (14.2 %) and the least amount of participants were Professors as 7 (4.3 %). 74 (45.7 %) participants stated 11-15 years of teaching experience, 39 (24.1 %) participants stated 21+ teaching experience, 32 (19.8 %) participants 1-5 years of teaching experience, 11 (6.8%) participants stated 16-20 years of teaching experience and 6 (%) stated 6-10 years of teaching experience. Most of the participants (80, 50%) stated no administrative experience, 29 of them (%) stated 1-5 administrative years, 21 of them (13 %) 6-10 administrative years, 20 of them (12.3%) 11-15 administrative years, and 11 of them (6.8%) 16-20 administrative years. Administrative position of the participants were generally Director/Vice-Director as 34 (21 %), 27 (16.7 %) Head/Vice-Head, 20 (12.3 %) Dean/Vice-Dean, and the rest as 81 (50 %) stated no administrative position. Social Sciences and Humanities were the major domain of the participants as 56 (%), Science as 39 (24.1 %), Educational Sciences 27 (16.7 %), Health Sciences 22 (13.6 %), and Arts 18 (11.1 %).

Data Collection Tool

The data were collected by using Informatics Leadership Scale developed by Ulutaş & Arslan (2018), with 18 items consisting of three sub-dimensions with six items each. The scale's original factor loads and reliability test results are presented in Table 2.

Scale total reliability for this research was measured as .845 for 18 items. The reliability scores for the sub-dimensions of the scale were .820 for Guidance Sub-dimension, .760 for Communication Sub-dimension and .692 for Information Sub-dimension.

Data Analysis

The data were collected via online forms from the three universities and data analysis of the research was conducted by using SPSS 25.0. Normality and reliability tests were applied to the data set. Reliability results are presented above in Table 2 and Kolmogorov-Smirnov test results are presented in Table 3.

Table 2: Informatics leadership scale

	Items	Factor Loading Values	Explained Variance (%)	Cronbach's Alpha
Scale Total	**18**	**.603/.851**	**79.315**	**0.970**
Guidance Sub-dimension	1-6 items	.758/.851	33.023	0.970
Communication Sub-dimension	7-12 items	.640/.820	23.69	0.944
Information Sub-dimension	13-18 items	.603/.734	22.60	0.907

Table 3: Scale normality test results

	Kolmogorov-Smirnov				
	Z	df	p	Skewness	Kurtosis
Scale Total	**0.148**	**162**	**0.000**	**-1.384**	**6.124**
Guidance Sub-dimension	0.110	162	0.000	-.456	1.912
Communication Sub-dimension	0.192	162	0.000	-1.855	7580
Information Sub-dimension	0.131	162	0.000	-.394	1.435

The test results clarified that the data were not normally distributed (p=0.000<0.05). Depending on this finding, non-parametric Mann Whitney-U test for nominal variables and Kruskal Wallis test for ordinal variables were applied to the data set of the research. Spearman correlation test was applied to find out the correlation levels between the sub-dimensions of the scale.

Findings

A 5 point Likert scale was applied to the sample of this research with three sub-dimensions assessing the academicians' informatics leadership perceptions, as the major problem of this research, is stated in Table 4.

Table 4. Informatics leadership scale descriptive statistics

	n	x	SD
Scale Total	**162**	**3.386**	**0.328**
Guidance Sub-dimension	162	3.455	0.4511
Communication Sub-dimension	162	3.537	0.4082
Information Sub-dimension	162	3.171	0.3726

Descriptive statistics of the scale clarified that in all sub-dimensions and for the scale total score, it was measured that the participants' perception of informatics leadership for their administrators was at a mid-level, possibly meaning that the higher education administrators of the three universities that the research was conducted accomplished their duties at a moderate level, related to informatics leadership, but they still have some way to go to fulfill their duties.

In order to examine participants' perceptions of their administrators' informatics leadership status according to gender, as the first sub-problem of the research, Mann-Whitney U test was applied and the findings are stated in Table 5.

Mann-Whitney U test results clarified that there was no statistically significant difference between male and female academicians' perceptions of their administrators' informatics leadership status in the scale Total (p=0.084>0.05), Guidance Sub-dimension (p=0.067>0.05), Communication Sub-dimension (p=0.155>0.05), and Information sub-dimension (p=0.402>0.05).

The second sub-research question is, "Is there a statistically significant difference between academicians' perceptions of administrators' informatics leadership according to participants' affiliated university?" and the Kruskal-Wallis test results are stated in Table 6.

Table 5: Informatics Leadership Mann-Whitney U test results according to gender

		n	Mean Rank	Sum of Ranks	U	Z	p
Scale Total	Female	93	76.04	7071.5	2700.5	-1.728	0.084
	Male	69	88.86	6131.5			
	Total	162					
Guidance Sub-dimension	Female	93	75.73	7043	2672	-1.834	0.067
	Male	69	89.28	6160			
	Total	162					
Communication Sub-dimension	Female	93	77.06	7166.5	2795.5	-1.421	0.155
	Male	69	87.49	6036.5			
	Total	162					
Information Sub-dimension	Female	93	78.88	7335.5	2964.5	-0.838	0.402
	Male	69	85.04	5867.5			
	Total	162					

Table 6: Informatics Leadership Kruskal-Wallis test results according to the affiliated university

	University	N	Mean Rank	df	x2	p	Difference
Scale Total	GAU	115	78.34	2	2.644	0.267	-
	FIU	37	86.08				
	BAU	10	100.9				
	Total	162					
Guidance Sub-dimension	GAU	115	78.43	2	2.725	0.256	-
	FIU	37	88.88				
	BAU	10	89.55				
	Total	162					
Communication Sub-dimension	GAU	115	79.94	2	0.436	0.804	-
	FIU	37	80.61				
	BAU	10	102.7				
	Total	162					
Information Sub-dimension	GAU	115	79.26	2	0.171	0.918	-
	FIU	37	85.81				
	BAU	10	91.3				
	Total	162					

As stated in Table 6, the test results clarified that there was no statistically significant difference according to the participants' affiliated university in the scale Total (p=.267>0.05), Guidance Sub-dimension (p=.256>0.05), Communication Sub-dimension (p=.804>0.05), and Information sub-dimension (p=.918>0.05).

The third sub-research question is, "Is there a statistically significant difference between academicians' perceptions of administrators informatics leadership according to participants' academic title?" and the Kruskal-Wallis test results are stated in Table 7.

Test results clarified that there was no statistically significant difference according to the participants' academic title in the scale Total (p=.585>0.05), Guidance Sub-dimension (p=.288>0.05), Communication Sub-dimension (p=.224>0.05), and Information sub-dimension (p=.540>0.05).

Table 7: Informatics Leadership Kruskal-Wallis test results according to academic title

	Title	N	Mean Rank	df	x2	p	Difference
Scale Total	Prof.	7	93.79	4	2.838	0.585	-
	Assoc.	23	99.41				
	Assist.	65	76.37				
	Senior lecturer	42	77.29				
	Lecturer	25	82				

	Title	N	Mean Rank	df	x2	p	Difference
Guidance Sub-dimension	Prof.	7	103.29	4	4.988	0.288	-
	Assoc.	23	93.52				
	Assist.	65	77.78				
	Senior lecturer	42	78.94				
	Lecturer	25	78.32				
	Total	162					
Communication Sub-dimension	Prof.	7	95.86	4	5.683	0.224	
	Assoc.	23	95.7				
	Assist.	65	73.45				
	Senior lecturer	42	76.17				-
	Lecturer	25	94.3				
	Total	162					

The fourth sub-research question is, "Is there a statistically significant difference between academicians' perceptions of administrators' informatics leadership according to participants' teaching experience?" and the Kruskal-Wallis test results are stated in Table 8.

Test results clarified that there was no statistically significant difference according to the participants' teaching experience in the scale Total (p=.069>0.05), Guidance Sub-dimension (p=.143>0.05), and Communication Sub-dimension (p=.104>0.05). In the Information sub-there was a statistically significant

Table 8: Informatics Leadership Kruskal-Wallis test results according to teaching experience

	Title	N	Mean Rank	df	x^2	p	Difference
Scale Total	1-5 years	29	82.1	4	8.706	0.069	-
	6-10 years	21	84.98				
Guidance Sub-dimension	1-5 years	29	84.9	4	6.863	0.143	
	6-10 years	21	92.69				
	11-15 years	20	84.75				-
	16-20 years	11	66.55				
	No	81	78.61				
	Total	162					

	Title	N	Mean Rank	df	x2	p	Difference
Communication Sub-dimension	1-5 years	29	75.29	4	7.673	0.104	
	6-10 years	21	82.12				
	11-15 years	20	101.85				-
	16-20 years	11	64.82				
	No	81	80.8				
	Total	162					
Information Sub-dimension	1-5 years	29	80.45	4	11.417	**0.022**	**6-10 yLrs > 1-5 yrs**
	6-10 years	21	76.95				
	11-15 years	20	107.5				
	16-20 years	11	89.36				
	No	81	75.57				
	Total	162					

difference (p=0.022<0.05) between the teaching experience of the participants. In order to find out the difference, Games-Howel test was applied and the results stated that academicians with 6-10 years of teaching experience reflected higher perceptions of informatics leadership of their administrators (X=3.777) rather than the academicians with 1-5 years of teaching experience (X=3.135).

The fifth sub-research question is, "Is there a statistically significant difference between

Table 9: Informatics Leadership Kruskal-Wallis test results according to administrative experience of the participants

	Title	N	Mean Rank	df	x2	p	Difference
Scale Total	1-5 years	29	82.1	4	3.194	0.526	-
	6-10 years	21	84.98				
	11-15 years	20	98.98				
	16-20 years	11	66.36				
	no	81	78.12				
	Total	162					
Guidance Sub-dimension	1-5 years	29	84.9	4	3.164	0.531	-
	6-10 years	21	92.69				
	11-15 years	20	84.75				
	16-20 years	11	66.55				
	no	81	78.61				
	Total	162					

	Title	N	Mean Rank	df	x2	p	Difference
Communication Sub-dimension	1-5 years	29	75.29	4	5.843	0.211	-
	6-10 years	21	82.12				
	11-15 years	20	101.85				
	16-20 years	11	64.82				
	no	81	80.8				
	Total	162					
Information Sub-dimension	1-5 years	29	80.45	4	4.58	0.333	-
	6-10 years	21	76.95				
	11-15 years	20	107.5				
	16-20 years	11	89.36				
	no	81	75.57				

academicians' perceptions of administrators informatics leadership according to participants' administrative experience?" and the Kruskal-Wallis test results are stated in Table 9.

Test results clarified that there was no statistically significant difference according to the participants' administrative experience in the scale Total (p=.526>0.05), Guidance Sub-dimension (p=.531>0.05), Communication Sub-dimension (p=.211>0.05), and Information sub-dimension (p=.333>0.05).

The sixth sub-research question is, "Is there a statistically significant difference between academicians' perceptions of administrators informatics leadership according to participants' administrative position?" and the Kruskal-Wallis test results are stated in Table 10.

Test results clarified that there was no statistically significant difference according to the participants' teaching experience in the scale Total (p=.456>0.05), Guidance Sub-dimension (p=.143>0.05), and Communication Sub-dimension (p=.886>0.05). In the Information sub-dimension, like the test results stating difference in teaching experience of the participants, there was a statistically significant difference (p=0.039<0.05) between the academic

Table 10. Informatics Leadership Kruskal-Wallis test results according to administrative position of the participants

	Title	N	Mean Rank	df	x2	p	Difference
Scale Total	Dean/ Vice- Dean	20	96.23	3	2.607	0.456	-
	Director/ Vice- Director	34	83.5				
	Head/ Vice-Head	27	78.2				
	No Admin. Duty	81	78.12				
	Total	162					
Guidance Sub-dimension	Dean/ Vice- Dean	20	85.48	3	0.646	0.886	-
	Director/ Vice- Director	34	83.62				
	Head/ Vice-Head	27	84.56				
	No Admin. Duty	81	78.61				
	Total	162					

	Title	N	Mean Rank	df	x2	p	Difference
Communication Sub-dimension	Dean/ Vice- Dean	20	93.68	3	6.753	0.08	-
	Director/ Vice- Director	34	90.31				
	Head/ Vice-Head	27	63.48				
	No Admin. Duty	81	80.8				
	Total	162					
Information Sub-dimension	Dean/ Vice- Dean	20	108.03	3	8.352	**0.039**	Dean/ Vice-Dean>No Admin. Duty
	Director/ Vice- Director	34	84.09				
	Head/ Vice-Head	27	76.39				
	No Admin. Duty	81	75.57				
	Total	162					

position of the participants. In order to find out the difference, Games-Howel test was applied and the results stated that academicians with Dean/Vice-Dean administrative duty reflected higher scores of perception (=3.40) regarding their administrators' informatics leadership status rather than the participants with No Administrative Duty (=3.10).

The seventh sub-research question is, "Is there a statistically significant difference between academicians' perceptions of administrators informatics leadership according to participants' field of education?" and the Kruskal-Wallis test results are stated in Table 11.

Test results clarified that there was no statistically significant difference according to the participants' administrative experience in the scale Total (p=.940>0.05), Guidance Sub-dimension (p=.852>0.05), Communication Sub-dimension (p=1.000>0.05), and Information sub-dimension (p=.472>0.05).

The eighth sub-research question is, "Is there a statistically significant difference between the sub-

Table 11. Informatics Leadership Kruskal-Wallis test results according to field of education of the participants

	Title	N	Mean Rank	df	x2	p	Difference
Scale Total	Science	39	82.09	3	0.7848	0.94	-
	Social Sciences & Humanities	56	77.31				
	Educational Sciences	27	84.13				
	Health Sciences	22	85.89				
	Arts	18	83.944				
	Total	162					
Guidance Sub-dimension	Science	39	82.92	3	1.3524	0.852	
	Social Sciences & Humanities	56	76.85				
	Educational Sciences	27					-
	Health Sciences	22	83.57				
	Arts	18	89.659				
	Total	162	79.806				

	Title	N	Mean Rank	df	x2	p	Difference
Communication Sub-dimension	Science	39	81.85	3	0.0338	1	-
	Social Sciences & Humanities	56	80.75				
	Educational Sciences	27	82.65				
	Health Sciences	22	81.5				
	Arts	18	81.361				
	Total	162					
Information Sub-dimension	Science	39	88.95	3	3.5402	0.472	
	Social Sciences & Humanities	56	73.41				
	Educational Sciences	27	79.3				-
	Health Sciences	22	84.27				
	Arts	18	90.444				
	Total	162					

Table 12: Informatics Leadership Scale sub-dimensions' Spearman correlation test results

		Guidance	Communication	Information
Guidance	Correlation Coefficient	1		
	Sig. (2-tailed)			
	N	162		
Communication	Correlation Coefficient	.382**	1	
	Sig. (2-tailed)	0		
	N	162	162	
Information	Correlation Coefficient	.248**	.236**	1
	Sig. (2-tailed)	0.001	0.002	
	N	162	162	162

**. Correlation is significant at the 0.01 level (2-tailed).

dimensions of the Informatics Leadership Scale?", and the Spearman test results are stated in Table 12.

Regarding the differences of the significant levels of the sub-dimensions of the scale measured higher than the Scale Total, researchers applied Spearman Correlation test to find out the correlation between the sub-dimensions of the scale used as the data collection tool for this research. It was found out that there was a statistically significant and positive and low level of correlation between Guidance Sub-dimension (r=.382; p=.000<0.05), Communication Sub-dimension and Information Sub-dimension (r=.248; p=.001<0.05). Likewise, Communication Sub-dimension had a statistically significant and positive and low level of correlation between Information Sub-dimension (r=.236; p=.002<0.05). this finding possible state that, an increase in guidance manners of higher education administrators' could have a positive effect on the communication levels in the organization as well as the information levels that can help to back up positive outcomes for the benefit of the organization through increased informatics leadership of the administrators.

Discussion, Conclusion and Recommendations

This research was conducted to examine academicians' informatics leadership perceptions in three different

private universities currently located in TRNC by using the Informatics leadership Scale developed by Ulutaş & Arslan (2018). It was found that participants' gender, affiliated university, academic title, administrative experience and field of education had no statistically significant difference on their perceptions of the administrators' informatics leadership status.

Even if the results of the scale total in participants' teaching experience stated no statistically significant difference, in the Information sub-dimension of the scale a statistically significant difference was found between the 6-10 years of teaching experience and the academicians with 1-5 years of teaching experience. Even if there is not a clear match with this finding due to the newly developed Informatics Scale's items and sub-dimensions, Flanagan & Jacobsen's (2003) results and Markova's (2014) results indicate integration of educational technology and informatics leadership must still be developed highlighted by an effective informatics and technology leadership and young employees with few teaching experiences are more likely to be affected positively from the approaches of their superiors.

Likewise the former finding of the research, the test results stated no statistically significant difference in the scale total of the participants' administrative position. The Information sub-dimension of the scale, there was a statistically significant difference between the participants' with administrative duties as Dean and Vice-Dean rather than the ones with no administrative duties. This finding is in line with Scott's (2005) research findings in which the principals of the schools are more likely to be aware of the technological competencies that are regarded critical. This could be possibly interpreted as the employees who do not have any administrative duties are more likely to be away from technology use but could be affected by their superiors' informatics leadership approaches more positively, when suitable and effective applications are conducted. This is possibly because employees with no administrative duties generally focus only on their responsibilities whether they require technology use or not. But administrators on the other hand, have to deal with the computerized operations of the institution, including their personal issues as well as the employees' instructional and personal issues. This obligation puts the administrators in a situation to learn and use all technological developments for a better fulfillment of their responsibilities. This finding is in line with Markova's (2014) research in which leadership is regarded as crucial for implementing technology use that is integrated with pedagogically-based teaching strategies in higher education institutions.

After measuring differences in the sub-dimensions of the scale, where no statistically significant difference was found in the scale total of the related sub dimension (Information), a correlation test was conducted to examine the relation between the sub-dimensions of the scale. The results indicated that there is a significant and moderate level of correlation between the three sub-dimensions of the scale. A possible increase in the guidance level of the administrators' is can positively affect the communication level between the administrators and their subordinates as well as the information level between them. When the higher education administrator conducts a positive and technology based approach in his/her administrative perspectives and applications, the employee will be technologically guided, the needs and expectations will be communicated and all related official needs will be supplied due to the effective informative operations. Flanagan & Jacobsen (2003) also found that communication, collaboration, and innovation in informatics leadership must be effectively conducted by the administrator.

Overall findings of the scale clarified that in all sub-dimensions and for the scale total score, it was measured that the participants' perception of informatics leadership for their administrators was at a moderate level, possibly meaning that the superiors of the higher education institutions where the research was conducted are following technological developments, whether by will or by obligatory issues due to their administrative positions. Even if this finding could be interpreted positively, one must remember that there are still things to be done by the superiors to drag their subordinates into technological development and internalization of the virtues of the era that we live in by means of the informatics

leadership steps to be taken first to guide, regarding the correlation levels of the sub-dimensions of the scale used, and then to communicate and inform to disseminate the knowledge and experiences gained by the higher education administrators for a better productivity level.

References

1. Akolaş, A. D. (2004). Bi▫li▫şi▫m si▫stemleri▫ ve bi▫li▫şi▫m teknoloji▫si▫ni▫n küreselleşme olgusu ve gi▫ri▫şi▫mci▫li▫k üzeri▫ne yansımaları. *Selçuk* Üniversitesi *Sosyal Bilimler Enstitüsü Dergisi*, (12), 29-43. https://dergipark.org.tr/tr/pub/susbed/issue/61776/923493.
2. Barron, I., & Novak, D. A. (2017). i-Leadership: Leadership learning in the millennial generation. In *Handbook of Research on Human Resources Strategies for the New Millennial Workforce* (pp. 231-257). IGI Global.
3. Belk, R. (2014). Sharingversuspseudo-sharing in Web 2.0. *The Anthropologist*. *18*(1). 7-23. https://doi.org/10.1080/09720073.2014.11891518
4. Bogardus, E. S. (1934). *Leaders and leadership*. New York: Appleton-Century.
5. Cooley, C. H. (1902). *Human nature and the social order*. New Jersey: Transaction Publishers.
6. Demir, C., YILMAZ, M. K., & Çevirgen, A. (2010). Liderlik yaklaşımları ve liderlik tarzlarına ilişkin bir araştırma. *Uluslararası Alanya* İşletme *Fakültesi Dergisi*, *2*(1), 129-152.
7. Gibson, L. A., & Sodeman, W. A. (2014). Millennials and technology: Addressing the communication gap in education and practice. *Organization Development Journal*, *32*(4), 63-75.
8. Greenleaf, R. (1996). *On becoming a servant-leader.* New Jersey: Jossey-Bass Publishers.
9. Gurr, D. (2010) Thinking about leadership for learning. *The Australian Educational Leader*, *32*(4), pp. 15-20.
10. Güleş, H. K. (2000). Bilişim sistemlerinin toplam kalite yönetimindeki yeri ve önemi. *Dokuz Eylül* Üniversitesi İktisadi İdari *Bilimler Fakültesi Dergisi*, *15*(1), 103-113. https://dergipark.org.tr/tr/download/article-file/211439.
11. Hughes, R., Gınnett, R., & Curphy, G. (1999). *Leadership*. New York: McGraw Hill.
12. Herbst-Damm. K. L., & Kulik. J. A. (2005). Volunteer support, marital status, and the survival times of terminally ill patients. *Health Psychology*, *24*(2), 225-229. https://doi:10.1037/0278-6133.24.2.225
13. Katz, I., Gabayan. K., & Aghajan, H. (2007). A multi-touch surface using multiple cameras. In J. Blanc-Talon. W. Philips. D. Popescu. & P. Scheunders (Eds.). Lecture Notes in Computer Science: Vol. 4678. *Advanced Concepts for Intelligent Vision Systems* (pp. 97-108). Springer-Verlag. https://doi:10.1007/978-3-540-74607-2_9
14. Kilbourne, C. E. (1935). The elements of leadership. *Journal of Coast Artillery, 78(*6), 437-439.
15. Knickerbocker, I. (1948). Leadership: a conception and some implications. *Journal of Social Issues, 4*(3), 23–40. https://doi.org/10.1111/j.1540-4560.1948.tb01508.x
16. Koçel, T. (2018). İşletme *yöneticiliği*. İstanbul: Beta Yayıncılık.
17. Koontz, H., & O'Donnel, C. (1955). *Principles of management*. New York: McGraw Hill Book.
18. Lourenco, A. P., & Cronan, J. J. (2017). Teaching and working with millennial trainees: impact on radiological education and work performance. *Journal of the American College of Radiology, 14*(1), 92-95.
19. Markova M (2014) A model of leadership in integrating educational technology in higher education. *Online Journal of Distance Learning Administration*, *17*(4): 1–9 https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=b47c7ff9a7440b2d0f3019c6865628cf8ebd8927.
20. Mumford, E. (1906). The origins of leadership. II. *American Journal of Sociology*, *12*(3), 367-397.
21. Nawaz, Z. A. K. D. A., & Khan, I. (2016). Leadership theories and styles: A literature review. *Leadership*, *16*(1), 1-7. https://core.ac.uk/download/pdf/234696192.pdf.
22. Northouse, P. G. (2010). *Leadership: Theory and practice* (5th ed.). New York: Sage.
23. Rost, J. C. (1991). *Leadership for the twenty-first century*. Connecticut: Greenwood Publishing Group.
24. Shotton, M. A (1989). *Computer addiction? A study of computer dependency*. Taylor & Francis.
25. Stein, J. (2013). Millennials: The me me me generation. *Time Magazine*, *20*, 1-8.
26. Stogdill, R. M. (1974). *Handbook of leadership: A survey of theory and research*. New York: Free Press.
27. Stogdill, R. M., & Bass, B. M. (1981). *Stogdill's handbook of leadership: A survey of theory and research*. New York: Free Press.
28. Sweeney, B. (2005). Management and leadership in schools. *Teacher,* (161), 48–50. https://search.informit.org/doi/10.3316/aeipt.144601.
29. Uhl-Bien, M., Marion, R., & McKelvey, B. (2007). Complexity leadership theory: Shifting leadership from the industrial age to the knowledge era. *The Leadership Quarterly, 18*(4), 298–318. https://doi.org/10.1016/j.leaqua.2007.04.002
30. Ulutaş, M. & Arslan, H. (2018). Bilişim liderliği ölçeği: Bir ölçek geliştirme çalışması. *Marmara* Üniversitesi *Atatürk*

Eğitim Fakültesi Eğitim Bilimleri Dergisi, 47(47), 105-124. https://doi.org/10.15285/maruaebd.2739

31. Uslu, O. A. (2019). General Overview to Leadership Theories from a Critical Perspective. *Marketing and Management of Innovations, 1*(1), 161-172. http://doi.org/10.21272/mmi.2019.1-13
32. VandenBos. G. R. (Ed.). (2007). *APA dictionary of psychology*. American Psychological Association.
33. Von Ledebur, S. C. (2007). Optimising knowledge transfer by new employees in companies. *Knowledge Management Research & Practice, 5*(4), 229-236. http://doi.org/10.1 057/palgrave.kmrp.8500141
34. Yılmaz, H. (2010). *Stratejik liderlik*. İstanbul: Kum Saati Yayınları.
35. Yukl, G. (2001). *Leadership in organisations*. Upper Saddle River, New Jersey: Prentice-Hall.