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Research Article

Impact of Emotional Intelligence on the Decision-Making Styles of Academic Leaders

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ABSTRACT

This study aimed to explore the relationship between the decision-making styles of academic leaders and their levels of emotional intelligence (EI). The sample consisted of Academic Deans, Heads of Departments, Professors, Associate Professors, and Assistant Professors. Data collection was carried out among academic administrators from universities in Kerala using questionnaires. Responses were successfully gathered from 497 employees, out of which 490 were deemed suitable for analysis. The data was analyzed using SPSS version 23, employing statistical tools such as mean scores, standard deviation, correlation, t-test, and f-test to derive meaningful conclusions. The findings indicate a significant impact of EI on the decision-making styles of academic leaders. Specifically, individuals with higher EI tend to employ an intuitive decision-making style, whereas those with lower EI are more likely to adopt a rational decision-making style. Emotional self-control emerged as a primary antecedent of EI. Additionally, no significant differences were found in EI quotients or decision-making styles based on gender or job experience among the respondents.

Keywords: Emotional Intelligence, Decision-Making Styles, Leadership Skills, Abilities and Competencies

Introduction

In today's organizations, navigating complex and dynamic environments necessitates top-level employees possessing diverse skills and competencies for sound decision-making and crisis management. The fierce competition demands dynamic and evolving organizations, where leaders must make timely, pertinent decisions to drive success (Sarkhosh, 2014). Higher education, crucial for national development and significant economic investment, faces similar challenges, with academic leaders struggling to manage changing times. Effective leadership requires identifying correct objectives and selecting optimal alternatives, interacting with diverse individuals, and continually enhancing awareness of employee needs and skills. Decisions are made under certainty or uncertainty, with the latter involving high-stakes, stressful scenarios. Emotional intelligence (EI), defined as the capacity to manage one's own and others' emotions (Mayer & Salovey, 1995), is vital for leaders to succeed in today's uncertain and ever-changing workplace, enabling them to navigate complex interpersonal dynamics and maintain a productive organizational environment.

Decision-making is one of the most challenging tasks for any leader, significantly impacting organizational performance. It is a crucial function in any organization, where leaders' decisions greatly affect efficiency and well-being (Dumitriu et al., 2014). Innovative and creative decision-making is highly valued and consistently demanded. While leaders in the public and private sectors may exhibit different decision-making styles, their work contexts necessitate adaptability to various approaches depending on circumstances (Sahidur Rahman et al., 2016). Several factors, including emotional intelligence (EI) abilities, influence organizational leaders' decision-making styles. Research indicates that a high level of EI is associated with improved decision-making among leaders (Yildizbas, 2017). EI, described as "emotional common sense," is crucial for adjusting to and dealing with diverse individuals in the workplace, assisting leaders in managing difficult situations and navigating transitions and crises smoothly (Chrobot-Mason & Leslie, 2012). Academic leaders, in particular,

aim to evaluate their cutting-edge capabilities while advancing in innovative ways. Consequently, this study explores the significance of EI in shaping the decision-making approaches of academic leaders.

Literature Review

Over the past two decades, emotional intelligence (EI) has garnered significant academic attention (Meisler, 2014). The concept of EI traces its origins to Thorndike's (1920) studies on social intelligence, which he defined as the ability to understand and manage human relationships effectively. Salovey and Mayer (1990) further refined EI as a set of skills related to accurately appraising and expressing emotions in oneself and others, effectively regulating emotions, and utilizing emotions to motivate, plan, and achieve personal objectives. Goleman (1995; 1998) popularized EI and emphasized its critical role in achieving excellence, asserting that EI skills are multiple times more crucial than technical and intellectual abilities. The relationship between EI and leadership has been extensively explored by scholars such as George (2000), Goleman (2000, 2003), Holian (2006), and Boyatzis et al. (2013), establishing EI as essential for effective leadership. Goleman (2003) identifies the primary traits of an emotionally intelligent leader as self-awareness, self-regulation, social awareness, and empathy. According to Goleman (2000), EI significantly influences leadership style and decision-making efficacy. Decision-making, a habitual response pattern rather than a personality trait, involves selecting among choices to achieve specific goals with minimal risk under uncertain conditions (Scott & Bruce, 1995; Kashaninia et al., 2015). The harmonization of ideas and emotions is central to EI frameworks, particularly in decision-making processes (Wu et al., 2014). Scott and Bruce (1995) identified five primary decision-making styles: dependent, avoidant, spontaneous, rational, and intuitive. This study examines these aspects to elucidate the impact of EI on academic leaders' decision-making styles.

Recent research underscores the pivotal role of emotional intelligence (EI) in leadership and decision-making across various sectors, highlighting its significant impact on organizational performance (Ahmadi & Hendijani, 2018). Studies have consistently shown a strong correlation between EI and decision-making styles, with EI positively influencing intuitive decision-making while negatively affecting avoidant and dependent styles (Ibrahim & Elsababhy, 2020; Ottman et al., 2020). Gender differences also indicate that females typically exhibit higher EI levels than males. In corporate settings, EI is associated with enhanced rational and intuitive decision-making styles and reduced dependent and spontaneous styles, while showing no significant relationship with locus of control (Ahmadi & Hendijani, 2018). These findings are consistent with prior research demonstrating EI's positive links with rational, intuitive, reliant, and avoidant decision-making styles, and its negative association with spontaneous styles (Grubb et al., 2018; Bhardwaj, 2017). Studies also explore EI's moderating effect on leadership and decision-making, particularly in domains such as sports management (Nowrozi, 2015). Additionally, the literature suggests that older adults tend to exhibit stronger EI due to better emotional management (Dolcos, 2018), while academic success shows a negative correlation with EI (Mohamed & Yousef, 2014). Research across sectors including oil, health, corporate, public, police, and education consistently underscores the importance of EI in leadership and decision-making (Moghadam et al., 2011; Mohamed & Ahamed, 2019; Ahmadi & Hendijani; Bhardwaj; Grubb et al., 2018; Ottman et al., 2020; Soltwisch, 2016). However, there remains a notable gap in research specific to academic leaders. This study seeks to address this gap by examining how EI influences the decision-making processes of academic leaders, considering the unique challenges they face in university settings.

There is a noticeable scarcity of research on how emotional intelligence (EI) impacts the decision-making processes of academic leaders within university settings, as indicated by existing literature. Recognizing this gap, the present study has chosen to investigate this topic. The aim of this investigation is to contribute to filling this gap in knowledge by exploring the influence of EI on the decision-making behaviors of academic leaders.

Objectives

- To explore the Emotional Intelligence (EI) of academic leaders.
- To examine the decision-making styles of academic leaders.
- To analyse the relationship between EI and decision-making styles.
- To study the influence of gender on EI and decision-making among academic leaders

Hypotheses

The hypotheses established to achieve the aforementioned objectives are:

H1: Academic leaders do not exhibit varying levels of emotional intelligence.

H2: Different components of decision-making styles do not significantly impact leadership effectiveness.

H3: There is no significant correlation between emotional intelligence (EI) and decision-making styles among academic leaders.

H4: There is no significant gender difference in EI levels and components of decision-making styles among academic leaders.

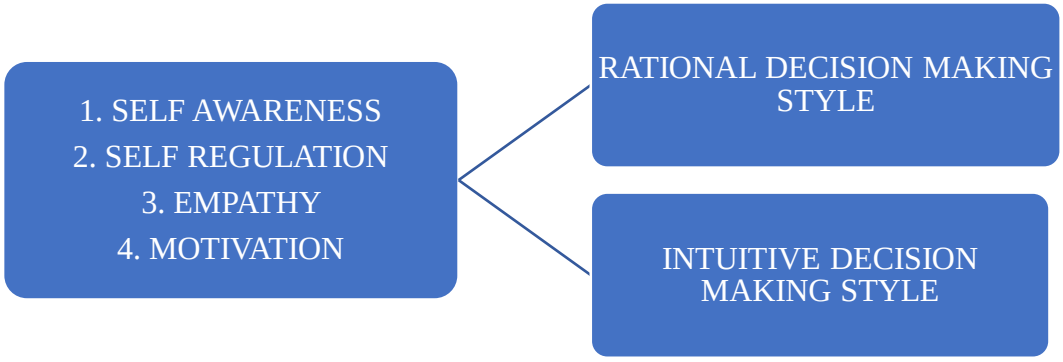
Research Methodology

The research conducted is purely descriptive, aimed at describing the characteristics of academic leaders in universities and colleges of Kerala. This study employed various questionnaires and factual inquiries to gather information from Academic Deans, Heads of Departments (HODs), professors, associate professors, and assistant professors. The sample included respondents from top-ranking universities and Colleges in Kerala, such as Kerala University, Kerala Agriculture University, Mahatma Gandhi University, Kannur University, Maria College Kuttikkanam, Amrita Vishwa Vidyapeetham, Kochi , Oriental School of Hotel Management, St. Xavier's College Aluva and Government Engineering College Thrissur (GEC Thrissur) as per the NIRF rankings. A total of 497 responses were received, with 490 considered suitable for data analysis. The data were analyzed using SPSS version 23, employing techniques such as mean scores, standard deviation, correlation and t-tests to derive meaningful insights from the gathered data.

Models Used in the Study

The present study adopts a theoretical model integrating Daniel Goleman's (1998) framework of Emotional Intelligence (EI) and Scott and Bruce's (1995) model of decision-making styles to investigate their interplay among academic leaders in university settings. EI components include Self-awareness, Self-regulation, Social skill, Empathy, and Motivation, each influencing how academic leaders navigate decision-making scenarios. Specifically, Self-awareness is hypothesized to positively correlate with Rational decision-making styles, while Self-regulation is expected to negatively associate with Avoidant styles. Social skill is predicted to enhance Dependent decision-making, Empathy to support Intuitive decision-making, and Motivation to drive Spontaneous decision-making among academic leaders. This integrated model aims to elucidate the nuanced relationships between EI and decision-making styles, providing insights into leadership behaviors crucial for effective university management and organizational success.

Theoretical Model



Source: Developed by Researcher

Analysis and Interpretation

A. Frequency Analysis

Frequency analysis is essential for researchers to grasp the demographic makeup of the sampled organization.

Table 1: Gender

Gender	*Frequency*	*Percent*	*Valid Percent*	*Cumulative Percent*
Male	418	85.3	85.3	85.3
Female	72	14.6	14.6	14.6
Total	490	100.0	100.0	100.0

Table 1 indicates that 85% of respondents were male, with the remaining 15% being female. The study observed a higher participation rate among males compared to females. Graph 1 visually represents the data from Table 1.

B. Descriptive Analysis

Descriptive analysis allows researchers to understand the behavior of the constructs under examination, typically using mean scores and standard deviation to infer insights. Table 2 presents the analysis of all research constructs. Emotional self-awareness, self-regulation, motivation, and empathy were utilized to assess Emotional Intelligence (EI), as previously mentioned in this study. Similarly, both logical and intuitive decision-making were employed to assess decision-making styles.

Table 2: Descriptive Statistics of All Factors

Dimensions	*N*	*Mean*	*Std. Deviation*
Self-Awareness	490	3.5442	.88896
Self-Regulation	490	3.7347	.65624
Motivation	490	3.7619	.66667
Empathy	490	3.6822	.49681
Rational	490	3.6490	.67643
Intuitive	490	3.6122	.80458

According to the table, respondents indicated that self-regulation and emotional self-awareness were the next two important antecedents of their Emotional Intelligence (EI) after emotional self-control, with an average score of 3.7619 (SD 0.66667). Emotional self-awareness had an average score of 3.5443, while emotional self-regulation scored an average of 3.7347 (SD 0.65624). Motivation received an average rating of 3.7619. Empathy was rated at an average of 3.6822 (SD 0.49681). In terms of decision-making styles, respondents indicated a preference for a more rational style over an intuitive one, with a mean score of 3.6490 (SD 0.67643) compared to 3.6122 (SD 0.80458) for intuitive decision-making.

C. Independent Sample *t* -Test on Gender

After reporting the mean scores for each construct, the study sought to determine significant differences between males and females. Table 3 presents the results of this analysis.

Table 3: Independent Sample *t* -Test on Gender

	Gender	*N*	*Mean*	*Std. Deviation*	*Std. Error Mean*	*T-Value*	*P-Value*
Self-Awareness	Male	418	3.5951	.87585	.13515	.909	.391
	Female	72	3.2380	.97589	.36886		
Self-Regulation	Male	418	3.1789	.62789	.09685	-.323	.756
	Female	72	3.8287	.85967	.32456		
Motivation	Male	418	3.8174	.65931	.10185	1.446	.186
	Female	72	3.4285	.65867	.02496		
Empathy	Male	418	3.6529	.50595	.15689	1.135	.286
	Female	72	3.8569	.42856	.09785		
Rational	Male	418	3.6569	.63134	.36514	.151	.884
	Female	72	3.6000	.96608	.11478		
Intuitive	Male	418	3.6856	.76144	.36255	1.329	.224
	Female	72	3.1713	.97589	.34521		

Note: test has been conducted at 5% significance level.

Table 3 demonstrates that, at a 5% significance level, there is no significant gender difference across any of the variables. The t-values are all below the threshold value, and all constructs have p-values greater than 0.05. This indicates that men and women perceive the constructs similarly, and any observed differences in mean scores are coincidental. Therefore, we accept the null hypothesis H4.

D. Correlation Analysis

Emotional Intelligence (EI) is treated as an independent variable, and decision-making styles are considered dependent variables. The primary objective was to examine the relationship between EI and decision-making styles. To determine the significance of this relationship, Pearson correlation analysis was conducted between the independent variable (EI) and the dependent variables (decision-making styles). The results of this analysis are presented in Table 4.

Table 4: Correlation between Emotional Intelligence and Decision-Making styles

		IDMS	*RDMS*	*SA*	*SR*	*MOV*	*EMP*
Intuitive Decision-Making Style (IDMC)	PC						
	P						
	N						
Rational Decision-Making Style (RDMS)	PC	-.663**					
	P	.000					
	N	490					

Self-Awareness (SA)	PC	.484**	-4.38**				
	P	.000	.002				
	N	490	490				
Self-Regulation (SR)	PC	.472**	-.496**	.434**			
	P	.001	.000	.002			
	N	490	490	490			
Motivation (MOV)	PC	-.264*	.023*	.247	.294*		
	P	.066	.876	.088	.040		
	N	490	490	490	490		
Empathy (EMP)	PC	.230	-.188	.310*	.485**	.234	
	P	.111	.195	.030	.000	.106	
	N	490	490	490	490	490	

*. **Correlation is significant at the 0.05 level (2-tailed).** **. **Correlation is significant at the 0.01 level (2-tailed).**

From the table,

- The analysis reveals a significant correlation between decision-making styles and emotional self-awareness. Specifically, there is a significant positive correlation between intuitive decision-making style and emotional self-awareness (R = .484, N = 490, P = .000), while there is a significant negative correlation between rational decision-making style and emotional self-awareness (R = .438, N = 490, P = .002).
- The second component of EI, self-regulation, is significantly related to both decision-making styles. There is a strong positive correlation between emotional self-regulation and intuitive decision-making style (R = .472, N = 490, P = .001). Conversely, there is a strong negative correlation between emotional self-control and rational decision-making style (R = .496, N = 490, P = .000). The positive, significant relationship between self-control and intuitive decision-making suggests that self-control enables individuals to consider all factors influencing their ultimate goal, thus favoring an intuitive decision-making approach that goes beyond mere facts and data.
- The third dimension of EI, empathy, is also associated with both decision-making styles, but in contrasting ways. There is a negative correlation between empathy and intuitive decision-making (R = -.264, N = 490, P = .066). In contrast, there is a positive correlation between empathy and rational decision-making (R = .023, N = 490, P = .876).
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Table 5: Acceptance/ Rejection of Null Hypothesis

Sr. No	***Hypothesis***	***Decision***	***Reason***
H1	Academic leaders do not exhibit varying levels of emotional intelligence.	Reject	Mean value is greater than mid-point.
H2	Different components of decision-making styles do not significantly impact leadership effectiveness.	Reject	Mean score is High.
H3	There is no significant correlation between emotional intelligence (EI) and decision-making styles among academic leaders.	Partially Reject	Empathy dosent show significant correlation with decision making styles.
H4	There is no significant gender difference in EI levels and components of decision-making styles among academic leaders.	Accept	P value > 0.05

Source: Prepared by the researcher

Discussion

The literature review highlights the relationship between Emotional Intelligence (EI) and decision-making styles among academic leaders, confirming the link through current research data. The study, based on Daniel Goleman's EI model and the decision-making model by Bruce and Scott, examines the moderating role of EI on decision-making. The findings reveal that academic leaders with higher EI tend to use intuitive decision-making over rational methods. This aligns with previous studies (Ibarahim & Elsababhy, 2020; Ottman et al., 2020; Yildizbas, 2017; Dua, 2016; Nowrouzi, 2015). The results underscore the importance of incorporating EI training for academic leaders, as recommended by past research (Fauzan et al., 2021; Bystydzienski et al., 2017; Morris & Laipple, 2015; Wepner et al., 2014, 2015; Wolverton et al., 2001, 1999). The study advocates for enhanced EI development programs for academic administrators and aspiring leaders. Despite its limitations,

the study is a crucial step in understanding the interplay between EI and decision-making styles. Future research should address these limitations by incorporating cross-ratings and exploring additional decision-making styles for a comprehensive analysis.

Suggestion and Conclusion

The literature review highlighted significant advancements in understanding the relationship between Emotional Intelligence (EI) and decision-making styles. This research aimed to explore how EI influences the decision-making approaches of academic leaders. The study found that higher levels of EI are associated with intuitive decision-making, while lower levels of EI correlate with rational decision-making. These findings align with previous research, confirming the significant impact of EI on decision-making styles. The study emphasizes the need for academic administrators to prioritize EI in their training programs, focusing on developing faculty members who can effectively recognize and manage emotions, both their own and others', in decision-making and problem-solving contexts. Additionally, as the population of academic deans ages, there is a need to prepare future leaders with strong EI skills. Properly managing emotions is crucial for leaders to be effective in both their professional and personal lives, aiding in effective problem resolution across various scenarios.

Reference

Ahmadi, A., & Hendijani, R. (2018). Relationship between emotional intelligence and locus of control with decision-making styles among corporate managers in Iran. Journal of Business and Social Review in Emerging Economies, 4(2), 139-146. doi:https://doi. org/10.26710/jbsee.v4i2.288.

Bhardwaj, M. K., & Kumar, M. (2017). The empirical impact of emotional intelligence on decision making styles among adolescents.

Boyatzis, R., Smith, M., Van Oosten, E., & Woolford, L. (2013). Developing resonant leaders through emotional intelligence, vision and coaching. Organizational Dynamics, 42(1), 17-24. doi:https:// doi.org/10.1016/j.orgdyn.2012.12.003.

Bystydzienski, J., Thomas, N., Howe, S., & Desai, A. (2017). The leadership role of college deans and department chairs in academic culture change. Studies in Higher Education, 42(12), 2301-2315. doi:10.1080/03075079.2016.1152464.

Chrobot-Mason, D., & Leslie, J. (2012). The role of multicultural competence and emotional intelligence in managing diversity. The Psychologist-Manager Journal, 15(4), 219-236. doi:https://doi.org/10.1080 /10887156.2012.730442.

Dolcos, F. (2018). Wisdom comes with age, at least when it comes to emotions. Science Daily. University of Alberta, Faculty of Medicine and Dentistry.

Dua. (2016). Emotional intelligence of entrepreneurs and their decision-making style: Role of vision. Jindal Journal of Business Research, 4(1-2), 101-114. doi:10.1177/2278682116664608.

Dumitriu, C., Timofti, I., Nechita, E., & Dumitriu, G. (2014). The influence of the locus of control and decision-making capacity upon the leadership style. Procedia - Social and Behavioral Sciences, 141, 494-499. doi:https://doi.org/10.1016/j.sbspro.2014.05.086.

Othman, R. E., Othman, R. E., Hallit, R., Obeid, S., & Hallit, S. (2020). Personality traits, emotional intelligence and decision-making styles in Lebanese universities medical students. BMC Psychology, 8(1).doi:https://doi.org/10.1186/s40359-020-00406-4.

Fauzan, A., Musnadi, S., & Sulaiman. (2021). Emotional intelligence, personality, and its impact on leadership capability; subsequently on the effectiveness of decision making. International Journal of Academic Research in Business and Social Sciences, 11(3). doi:https://doi.org/10.6007/ijarbss/v11-i3/8973.

George, J. (2000). Emotions and leadership: The role of emotional intelligence. Human Relations, 53(8), 1027-1055. doi:https://doi. org/10.1177/0018726700538001.

Goleman, D. (1996). Emotional intelligence, why it can matter more than IQ; and working with emotional intelligence. Bloomsbury.

Goleman, D. (1998). The emotional intelligence of leaders. Leader to Leader, 1998(10), 20-26. doi:https://doi.org/10.1002/ltl.40619981008.

Goleman, D. (2000). Leadership that gets results. Harvard Business Review, 78(2), 4-17.

Goleman, D. (2003). What makes a leader. Organizational Influence Processes, 82, 229-241.

Goleman, D. (2014). Leading for the long future. Leader to Leader, 2014(72), 34-39. doi:https://doi. org/10.1002/ltl.20124.

Grubb, A. R., Brown, S. J., & Hall, P. (2018). The emotionally intelligent officer? Exploring decision- making style and emotional intelligence in hostage and crisis negotiators and non-negotiator-trained police officers. Journal of Police and Criminal Psychology, 33(2), 123-136. doi:https://doi. org/10.1007/s11896-017-9240-2.

Holian, R. (2006). Management decision-making, ethical issues and "emotional" intelligence. Management Decision, 44(8), 1122-1138. org/10.1108/00251740610690658 doi:https://doi.

Kashaninia, Z., Yusliani, F., Hosseini, M., & Soltani, P. (2015). The effect of teaching critical thinking skills on the decision making style of nursing managers. Journal of Client-Centered Nursing Care, 1(4). doi:https://doi.org/10.15412/j.jccnc.04010405.

Khan, E. A., Riaz, M. N., Batool, N., & Riaz, M. A. (2016). Emotional intelligence as a predictor of decision making styles among university students.

Mayer, J., & Salovey, P. (1995). Emotional intelligence and the construction and regulation of feelings. Applied and Preventive Psychology, 4(3), 197-208. doi:https://doi.org/10.1016/s0962-1849(05)80058-7.

Meisler, G. (2014). Exploring emotional intelligence, political skill, and job satisfaction. Employee Relations, 36(3), 280-293. doi:https://doi.org/10.1108/ er-02-2013-0021.

Mohamed, F. R., & Ahamed, E. M. (2019). Nurse managers emotional intelligence and its relation with decision-making styles. IOSR Journal of Nursing and Health Science, 8(September), 0-6. doi:https:// doi.org/10.9790/1959-0805010106.

Mohamed, F. R., & Yousef, H. R. (2014). Emotional intelligence and conflict management styles among nurse managers at Assiut University Hospitals.Journal of Education and Practice, 5(5), 160-165.

Morris, T. L., & Laipple, J. S. (2015). Leadership challenges: Perceptions of effectiveness of deans and chairs. Journal of Higher Education Management, 30(1), 110-118.

Nowzari, V. (2015). Decision-making styles among managers at sports organizations in fars province. Indian Journal of Fundamental and Applied Life Sciences, 5, 1302-1310.

Sahidur Rahman, M., Aftab Uddin, M., & Rahman, M. (2016). Role of emotional intelligence in managerial effectiveness: An empirical study. Management Science Letters, 237-250. doi:https:// doi.org/10.5267/j.msl.2016.1.004.

Sarkhosh, M. (2014). How does university teachers' emotional intelligence relate to their self-efficacy beliefs? Porta Linguarum Revista Interuniversitaria De Didáctica De Las Lenguas Extranjeras. doi:https://doi.org/10.30827/digibug.30484.

Scott, S., & Bruce, R. (1995). Decision-making style: The development and assessment of a new measure. Educational and Psychological Measurement, 55(5), 818-831. doi:https://doi. org/10.1177/0013164495055005017.

Singh, S. (2004). Development of a measure of emotional intelligence. Psychological Studies, 49, 136-141.

Wepner, S. B., Henk, W. A., Clark-Johnson, V., & Lovell, S. (2014). The importance of academic deans' interpersonal/negotiating skills as leaders. Perspectives: Policy & Practice in Higher Education, 18(4), 124-130. doi:https://doi.org/10.1080/1360310 8.2014.

Wepner, S. B., Henk, W. A., Lovell, S. (2015). Developing deans as effective leaders for today's changing educational landscape. Journal of Higher Education Management, 30(1), 51-64.

Wolverton, M., Gmelch, W. H., Montez, J., & Nies, C. T. (2001). The changing nature of the academic deanship. ASHE-ERIC Higher Education Report, 28(1), 1-156.

Wolverton, M., Wolverton, M. L., & Gmelch, W. (1999). The impact of role conflict and ambiguity on academic deans. The Journal of Higher Education, 70(1), 80-106. doi:https://doi.org/10.2307/2649119.

Wu, T., Tsai, H., & Yeh, S. (2014). The role of manager's locus of control between perceived guanxi and leadership behavior in family Business. Revista Internacional De Sociología, 72(Extra_2), 87-104. doi:https://doi.org/10.3989/ris.2013.08.11.

Yildizbas, F. (2017). The relationship between teacher candidates'emotional intelligence level, leadership styles and their academic success. Eurasian Journal of Educational Research, 17(67), 215-231. doi:https://doi.org/10.14689/ejer.2017.67.13.