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Knowledge-Oriented Leadership in Powering Team Performance and Sustainable Competitive Advantages through Innovation: Evidence from Higher Education Institutions

Amna Manzoor, Bowen Zhang * and Hongguang Ma

School of Economic and Management, Beijing University of Chemical Technology, Beijing 100029, China; amnamanzoor@buct.edu.cn (A.M.); mahg@buct.edu.cn (H.M.)
* Correspondence: zhang-bowen@foxmail.com

Abstract: The literature on sustainable competitive advantages and performance has grown extensively in organizations over the last three decades. However, sustainable competitive advantages have received limited attention from scholars in academic institutions. To contribute to the literature, this research examines how knowledge-oriented leadership stimulates team performance through innovation, eventually directing towards a sustainable competitive advantage in higher education institutions (HEIs). The data was gathered from 64 team leaders and 303 team members from Pakistan's HEIs to assess the model. The results indicate that knowledge-oriented leadership significantly enhances team performance, with this association partially mediated by the speed of innovation. At the same time, no mediating role is observed for the quality of innovation. In addition, team performance and its relationship with a sustainable competitive advantage originated positively. As a result, HEIS should promote knowledge-oriented leadership as a crucial strategy for managing the complex dynamics of innovation, team performance, and sustainable competitive advantages. These institutions should prioritize appointing knowledge-oriented leaders to enhance innovation, team performance, and sustainable competitive advantages. Further implications are conferred.

Keywords: knowledge-oriented leadership; innovation speed; innovation quality; team performance; sustainable competitive advantage

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1. Introduction

Knowledge is a significant resource for gaining sustainable organizational competitive performance [1,2]. Organizational success depends on exploiting knowledge assets [3,4]. Higher education institutions (HEIs) are actively working on effectively managing knowledge resources to remain and grow in the vigorous market [5]. Moreover, HEIs are immensely confronted with enormous challenges, for instance, financial challenges, the internationalization of institutions, and the pressure of diverse market demands [6]. Strategy scholars argue that leaders must effectively seek and manage new knowledge [7] to gain a sustainable competitive advantage in HEIs [8,9]. Hence, leadership plays a noteworthy role in HEIs. According to the literature on leadership, knowledge-oriented leadership is a strong leadership style that consists of "motivational" and "communication" skills with the components of transactional and transformational leadership styles [10,11]. Considering the motivational work [9], knowledge-oriented leadership is still in the initial stage [12,13], and more research on knowledge-oriented leadership is required [14], especially in HEIs [15]. In addition, studies need to be more detailed on how knowledge-oriented leadership influences team performance across innovation, which leads to sustainable competitive performance in HEIs. Therefore, we emphasize the ability of HEIs to unleash the worth of knowledge-oriented leadership towards innovation and team performance that could lead to a sustainable competitive advantage.

First, prior studies have demonstrated the positive impact of knowledge-oriented leadership on team performance virtually [16] and revealed that leaders can boost team performance [17]. KOLs are central in disseminating knowledge directly affecting team performance [18]. From one perspective, leaders can create an environment where participants can advance and expand their transformational skills to improve their knowledge and acquire quick but relevant knowledge [19]. On the other side, a leader's "behavior" may encourage the acquisition of knowledge [20]. Studies have also examined other leadership styles (e.g., emergent, transformational, shared, etc.) with team performance [17,21,22]. A few empirical studies found the effect of knowledge-oriented leadership as a facilitator of team performance in HEIs.

Second, knowledge-oriented leadership seems important for enhanced innovation [23,24], which may improve team performance [25]. In the existing literature on knowledge-oriented leadership and studies based on performance, innovation is frequently viewed in terms of product and process innovation [26]. However, scant studies on two essential elements of "innovation", named innovation speed and innovation quality, mediate knowledge-oriented leadership with performance in HEIs [27,28]. Innovation speed is defined as the capacity of companies to commercialize and develop their products and services rapidly to gain a competitive advantage [29]. Innovation quality refers to the effectiveness of the procedures based on innovation and their final outcome [30]. Innovation (e.g., speed and quality) as a mediator between knowledge-oriented leadership and team performance still needs to be explored. This study investigates innovation conferring as a mediator amidst knowledge-oriented leadership and team performance, which is rarely explored in HEIs.

Third, the existing research found that increasing team performance can substantially affect the competitive advantage of organizations [31]. This may improve the organization's performance [32,33]. According to the Knowledge Base View (KBV) theory, organizational sustainable competitive advantages are constructed on significant strategic resources of relevant knowledge [34]. Hence, tacit knowledge from team members is considered a significant source of relevant knowledge. These unique and dynamic resources of the firm have the potential to enhance performance, resulting in the acquisition of a sustainable competitive advantage [35]. Although different factors influencing sustainable competitive advantages have been studied, e.g., value and beliefs, IT managerial resources, successful IT employment, human resource competency, and social responsibility [36,37], research on effective team performance still needs to be conducted [38]. Similarly, the antecedents of team performance to sustainable competitive advantages have minimal research relevance to HEIs. Hence, this study aims to fill the stated gap in team performance, leading to a sustainable competitive advantage in HEIs.

Consistent with these limitations and gaps, our study has established interrelationships among knowledge-oriented leadership, innovation (speed and quality), team performance, and sustainable competitive advantages in HEIs. This study aims to bridge the identified limitations and the subsequent contributions our research has made in the domain of knowledge-oriented leadership within HEIs, by pursuing the following goals. Firstly, given the nascent stage of knowledge-oriented leadership, this research enriches the existing literature by delving into its role. Secondly, while prior studies mainly focused on the connection between knowledge-oriented leadership and organizational performance, our research uniquely investigates this relationship within the context of team performance in HEIs. Thirdly, while innovation is traditionally assessed as a product and process, our study innovatively establishes a framework to understand the mediating mechanisms of innovation speed and innovation quality that ease the path of knowledge-oriented leadership and impact team performance in HEIs. Lastly, a pioneering aspect of our research involves examining the intricate link between team performance and sustainable competitive advantages regarding the specific background of Pakistani HEIs. The economic development of any country depends on the performance of its higher education institutions, especially in Pakistan. HEIs in Pakistan have advanced over the years [39]. Still, there is a need to explore the significant impact of knowledge-oriented leadership (KOL) in Pakistan's higher

education institutions due to the limited exploration of its impactful influence [13,26]. The focus on Pakistan's higher education institutions (HEIs) reflects the expanding service industry, which will help demonstrate new heights of stability for Pakistan's growth and advancement [40,41]. Hence, knowledge-based, oriented leadership behaviors need to explore more Pakistan HEIs with different factors and mediators that will help in the progress and growth of Pakistan's economic development. Therefore, our study's principal focus was to evaluate leadership's role in HEIs in Pakistan. With the results of this study, experts can set up rules and policies to better influence those aspects of HEIs.

With significant research on the position of knowledge-oriented leadership among Pakistan's HEIs, this research remarkably assists Pakistani HEIs. Furthermore, current research adds value to the literature on leadership in HEIs and provides additional recognition for a knowledge-based view theory [34].

Throughout the remainder of this study, Section 2 will delve into the literature review along with the development of hypotheses. Section 3 will detail the methodological technique employed to establish the hypotheses' relationships. Section 4 will discuss analyzing the data and its ultimate results. Finally, Section 5 will outline the theoretical contributions and implications and provide recommendations for future research.

2. Theory and Hypotheses

In this study, we draw upon the Knowledge-Based View (KBV) theory, which indicates that organizations need knowledge [34]. KBV theory, derived from the resource-based view, states that if any organization has resources, it is the management's job to use them optimally. Donate and de Pablo [10] stated that KOL could generate new knowledge using different leadership skills. Therefore, leaders even used capital to generate new knowledge. As mentioned in the KBV, communication within the company is its most crucial function. Hence, the organization's structure is the most influential element in determining how employees communicate within or with other departments. New knowledge will be created through discussion. When knowledge is shared, innovation occurs [42]. Knowledge-oriented leadership structures the organization so that when knowledge is discovered and applied, each team can leverage knowledge assets to perform better. That is why the KBV emphasizes the importance of teams because they help create, share, and apply knowledge [16,43]. Knowledge-oriented leadership performs like a mentor in the team that everyone can talk to, and each person knows how their work can provide benefits [44]. Therefore, team performance will improve when knowledge is generated. This team performance will help the company attain a sustainable competitive advantage due to its knowledge resources [45]. A sustainable competitive advantage helps the firm operate smoothly. Any firm's unique characteristic that no other firm can copy is its sustainable competitive advantage. According to the KBV, knowledge resources are the company's sustainable competitive advantage [46]. Considering the theoretical basis of the KBV knowledge approach, the institutions know about the trends and others that can be adopted according to themselves. As a result, innovation happens, which holds significant importance for HEIs. Therefore, knowledge-oriented leadership is a new approach to 'leadership style' that contains the principles of the KBV and may require a change in the institution's structure accordingly. Institutional leaders should find the knowledge resources properly, which enhances team performance [33,47,48] that excels due to increased innovation [28], ultimately resulting in a sustainable competitive advantage [49] for institutions. Considering the unique qualities of the KBV, we have laid the foundation of our study and tried to identify how the relationship will be made among knowledge-oriented leadership, innovation, and sustainable competitive advantages.

2.1. Knowledge-Oriented Leadership and Team Performance

Knowledge-oriented leadership is a collective or individual process or specific behavior that affects new and specialized knowledge that is shared and used among others. All the thinking changes and collective results should be achieved [50]. Team performance can

be defined in such a way that the knowledge, behavior, and skills of a team that help to achieve the team goal are called team performance [51].

Every organization has its own specific goal on the basis of which they are working, and achieving their goal shows their performance, especially when organizations are doing their work in teams [52,53]. In general, effective team performance indicates goal attainment. Those organizations based on team structures need leaders for efficient team performance. A team leader motivates each person and the whole team to achieve their goal [54]. Previous studies have reported a positive bond between leadership and team performance [55–57]. However, whether leadership influences team performance indirectly or directly, it is a significant component of team performance. Leadership is achieving a specific goal through communicating, motivating, and encouraging [58–60]. Yet, these elements are insufficient when achieving goals, and results depend on knowledge [61]. Knowledge-oriented leadership articulates effectively on team performance, as knowledge-oriented leadership could generate new knowledge efficiently that improves team performance. For example, Lin and Chiu [16] conducted an empirical study examining knowledge-oriented leadership, the effectiveness of collective IT, and team performance in the IT industry and established a constructive association between KOL and virtual team performance. They concluded from their study that virtual team performance would be successfully promoted when knowledge-oriented leadership communication was based on knowledge. However, knowledge-oriented leadership and team performance bonds are negligible in HEIs in Pakistan. On this basis, the proposed hypothesis is as follows:

H1: *Knowledge-oriented leadership has affected team performance positively.*

2.2. Knowledge-Oriented Leadership and Innovation

Leaders who encourage their employees to acquire new knowledge sources from both within their own departments and from others while appreciating their work successfully achieve innovation [62]. Knowledge-oriented leaders in particular can manage, create, attract, and organize to transfer knowledge and information well across organizations [63]. Among all the essential elements, innovation has now become an essential source for quickly responding to change to achieve sustainable competitiveness [64], especially for HEIs. Leaders' behavior is significant to employees' innovation performance because leaders' behavior is very effective in motivating them, which increases their mental capacity and skills and leads them towards innovation [65]. Although innovation has been classified into various categories, the most important characteristics are innovation speed and quality, which are critical for HEIs in developing their innovation strategy [28]. Innovation speed in the context of universities demonstrates "the capability of introducing new academic programs, curricula, and pedagogic methods to face technological, economic, and turbulent environmental challenges" ([28,66]). Innovation quality is termed "the capability to propose 'innovative educational services' that are superior and well-integrated worldwide, meeting economic and social needs better than competitors" ([66] p. 4). Prior investigations have reported the association of knowledge-oriented leadership with innovation; for example, Rehman and Iqbal [26] conducted their research in Pakistani HEIs and learned about the optimistic alliance of knowledge-oriented leadership and innovation (product–process). They claimed that if university leaders exhibited a knowledge-oriented leadership attitude, they would easily succeed in achieving product and process innovation for the university. However, knowledge-oriented leadership has a significant role in creating an innovative environment, resulting in innovation taking place [45]. Keeping these arguments aligned, knowledge-oriented leadership motivates their employees to generate and implement new knowledge to create new and better ideas that lead to innovation (speed and quality). Based on these arguments, we have put forth the following hypotheses:

H2a: *Knowledge-oriented leadership positively affects innovation speed in HEIs.*

H2b: *Knowledge-oriented leadership positively affects innovation quality in HEIs.*

2.3. Innovation and Team Performance

The literature argues that innovation speed and quality enhance organizational performance [67,68]. Likewise, a recent study by Rahman [69] emphasized that innovation affects performance. This possibility occurs only when the leaders have knowledge-sharing personality traits [70], which help the organization respond quickly to changing customer demands through innovation and excel in their business performance. This is achievable through innovation speed and quality [71]. Furthermore, innovation is a direct outcome of team performance [72]. According to Shoukat and Elgammal [73], when team members participate in important decisions, they feel valued and encouraged, stimulating team performance and making them perform better. The study presented by Pal and Baral [74] highlighted a notable impact of innovation on enhancing performance within healthcare centers in India. The authors argue that the augmentation of organizational performance can be achieved through the consistent pursuit of innovation.

Similarly, a recent study indicates that the integration of innovation has an optimistic effect on performance in Pakistani textile productions, as indicated by [75]. The authors suggested that knowledge-oriented leadership can ease the attainment of new knowledge, ultimately leading to innovation that enhances performance [76]. Likewise, we have corroborated the research conducted by Iqbal [66], which underscores the favorable influence of speed and quality innovation on performance within Pakistan's HEIs. The research suggests that when knowledge is effectively used, shared, and acquired, it cultivates innovation, enhancing overall performance. Hence, when university leaders demonstrate knowledge-oriented leadership behavior, they encourage the adoption of innovations that elevate team performance. Knowledge-oriented leadership behavior significantly shapes the innovative environment, fostering excellent team performance. These justifications led to the formulation of the following hypothesis:

H3a: *Innovation speed has been positively related to team performance in HEIs.*

H3b: *Innovation quality has been positively related to team performance in HEIs.*

2.4. Innovation as a Mediator

Knowledge-oriented leadership plays a dynamic role in enhancing team performance. Their influence extends beyond conventional hierarchies, as they possess a unique ability to inspire, guide, and shape the collective efforts of a team by using modern management practices. Other leadership styles inspire followers to acquire and share knowledge to innovate. As the recent study by Phong & Thanh [77] explored, transformational leadership inspires and motivates team members to change. They stimulate innovation through the sharing of knowledge [78]. The investigation explored in the educational sector of Malaysia stated that transformational leaders directly affect innovation instead of employing knowledge management [79]. Additionally, KOL inspires followers to create and disseminate knowledge to innovate. Using modern management practices is a current need for survival, especially in HEIs, that KOL possesses and uses to foster sustainable innovation [80].

Knowledge-oriented leaders possess knowledge, experience, and expertise that empowers them to provide insightful perspectives and solutions. The connection between leadership and team performance may require the process through which knowledge-oriented leadership affects team performance. However, in the competitive paradigm and the knowledge-based atmosphere, innovation is considered a crucial strategic approach for survival [81]. Particularly, the demands of today's global world underscore the necessity for innovation, especially in HEIs [82]. Existing studies showed knowledge-oriented leadership outcomes towards innovation through the indirect relationship linking knowledge-oriented leadership and team performance. Studies and investigations have underscored the significant role of innovation as a mediator. For example, Wang and Wang [71] concluded that innovation, in terms of speed and quality, interprets positive execution as a mediator concerning knowledge sharing and performance in technology companies in China. They emphasized that when leaders in their organization promote a knowledge-sharing environ-

ment, innovation speed and quality will stimulate results whose performance will be good. Hence, knowledge-oriented leadership must adapt their strategy accordingly.

Similarly, Muenjohn and Ishikawa's [83] research was based on enterprises (small and medium) in China and Vietnam. Their study scrutinized the positive relationship between innovation and the leadership and performance of the enterprise. They argued that innovation is the result of gaining a competitive advantage. This is only possible with the firm's knowledge of the needs of its customers. Therefore, leaders are central to the firm's innovation, which boosts performance. Likewise, Chaithanapat and Punnakitikashem [84] discovered the bond between customer-knowledge management (C-KM) and performance-mediating innovation. They argued that firms must adopt the knowledge-oriented leadership approach for C-KM in SMEs. Related to the work of Gürlek and Cemberci [14], knowledge-oriented leadership behavior may foster a knowledge environment that encourages learning, tolerates mistakes, and facilitates knowledge acquisition, which may contribute to fueling innovation that may help improve performance. Given the above discussion, knowledge-oriented leadership can facilitate innovation speed and quality, leading to higher team performance in HEIs. The following hypothesis is proposed:

H4a: *The association of knowledge-oriented leadership and team performance mediated through innovation speed in HEIs.*

H4b: *The association between knowledge-oriented leadership and team performance is mediated by innovation quality in HEIs.*

2.5. Team Performance and Sustainable Competitive Advantages

Teams are effective sources of unique and diverse knowledge [48]. Teams are the backbone of knowledge-based organizations, so team performance can be very beneficial in generating a competitive advantage, producing better products, gaining market shares, bringing more profit, and getting the newest knowledge that makes all this possible [85,86]. The social cohesion of the team, in which new knowledge is distributed equally to everyone, gives a competitive edge to organizations and is possible when the organization has created a particular company structure [87]. For this reason, organizations are now building their structures on the team, which provides a high level of information and knowledge, from which a sustainable competitive advantage can be obtained, especially in HEIs [88]. Sustainable competitive advantages are defined as resources that are unique, infrequent, and hard for anyone else to duplicate [89,90]. Hence, new knowledge is the source for creating a sustainable competitive advantage. Therefore, according to the KBV, new knowledge is a much-needed resource created through team performance to gain a competitive advantage. Adding to this, Gil-Cordero et al. [91] argue that the newest knowledge can lead to a sustainable competitive advantage.

A significant amount of research has been done on team performance in different sectors of society, e.g., [16,92,93], across several contexts such as healthcare centers [94], IT companies [95], tourism companies [54], academia [96], and the banking sector [97]. Therefore, better organizational performance achieves a competitive advantage regardless of the sector. Lee and Ooi [98] researched manufacturing firms in Malaysia and concluded that the relationship between performance and competitive advantage is positive. The most central aspects influence the association between the two constructs. For example, according to [99], the most important factor for team performance is tactic knowledge, through which a sustainable competitive advantage is achieved. Knowledge can be simplified as concepts, thinking, skills, abilities, potential, experience, and expertise [100], the key essences of team performance to achieve a sustainable competitive advantage in HEIs. This study aims to advance the empirical research on how team performance helps to achieve a sustainable competitive advantages in HEIs. The subsequent hypothesis is proposed as follows:

H5: *Team performance positively affects sustainable competitive advantages in HEIs.*

To sum up, Figure 1 shows the conceptual model of the study in the first circled part, which illustrates influential factors such as "knowledge-oriented leadership", "innovation speed and quality", and "team performance", while the second part demonstrates consequences such as "team performance" as well as "sustainable competitive advantages" in HEIs.

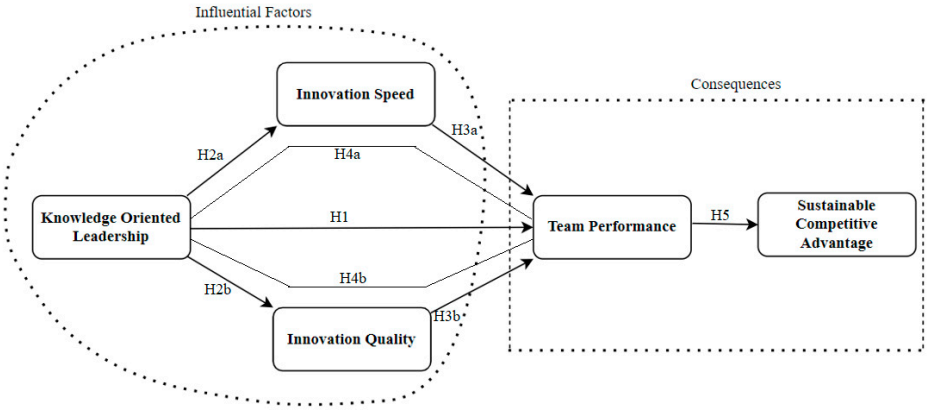

Figure 1. Conceptual model.

3. Methodology

This research is centered on a quantitative perspective on data analysis. The focus population of the study consists of Pakistani "public and private" universities. There are 179 accredited public and private universities in Pakistan, out of which 104 are public and 75 are private, according to the Higher Education Commission of Pakistan (HEC) [101]. Our target population included leaders (e.g., heads of departments, directors, deans, and chairpersons) and members (e.g., lecturers and administrators) within the university setting. Data collection was conducted using convenience sampling, a commonly used approach for business and social surveys due to its efficiency [28]. Some universities were accessed through a hardcopy approach, while others were contacted online due to their location in other cities. Universities in the twin cities of Rawalpindi, Islamabad, and Lahore were considered for the hard copy approach while others were considered for online survey method.

We sent the questionnaire via email to the affiliated, recognized universities. We opened the authentic websites of the universities and their departments. Every department of the university has deans and their faculty team members. The proper email address is clearly mentioned on the university's website. The proper designation and the department name must be mentioned in the questionnaire to inform us about the responses of the university deans and heads of departments, as well as their faculty members. The team leaders were selected because of their leading roles in their respective departments, research centers, and/or institutes. All the team leaders are administrators of their respective units, and most are professors. These are considered team leaders or supervisors in higher institutes in Pakistan. The faculty of the respective department was selected as team members; therefore, their sample volume is relatively higher.

Hence, 153 questionnaires were emailed to the deans and heads of departments to assess team performance and sustainable competitive advantage. Similarly, we sent 570 questionnaire emails to department faculty members to gauge their opinions about knowledge-oriented leadership and innovation. We also personally visited the nearby universities and distributed the questionnaires to the different universities' leaders, heads of departments, and their respective faculty members. After a week, we collected the responses from them. After one or two follow-ups, we ultimately received 72 team responses, of which 64 were usable, resulting in a response rate of 47%. Similarly, we received 303 valid replies from team members, showing a response rate of 53.16%. Details of the leaders and team members are provided in Table 1.

Table 1. Frequency analysis of responses.

Particulars		Members		Leaders	
Gender	Male	270	89.1%	055	85.9%
	Female	033	10.9%	009	14.1%
Age (years)	<28	029	9.60%	000	0.00%
	28–37	139	45.9%	014	21.9%
	38–47	093	30.7%	019	29.7%
	48–57	031	10.2%	019	29.7%
	>58	011	3.60%	012	18.8%
Education	Ph.D.	197	065%	036	56.3%
	Master/Mphill	101	033%	028	43.8%
	Bachelor	005	1.70%	000	000%
Experience (years)	<5	140	46.2%	018	28.1%
	5–10	77	25.4%	029	45.3%
	10–15	54	17.8%	007	10.9%
	15–20	19	6.30%	004	6.30%
	20–25	9	3.00%	005	7.80%
	>25	4	1.30%	001	1.60%
Team size	2–3	-	-	015	23.4%
	3–4	-	-	010	15.6%
	4–5	-	-	012	18.8%
	>5	-	-	027	42.2%
	2–3	-	-	015	23.4%
Team tenure	<1	-	-	012	18.8%
	1–2	-	-	016	25.0%
	2–3	-	-	012	18.8%
	3–4	-	-	013	20.3%
	4–5	-	-	008	12.5%
	>5	-	-	003	4.70%

3.1. Measures

We took 24 items from different published studies that are given below. However, according to the university context, a slight change was made in the wording of the questions. The questions were calculated based on a Likert scale of 5.

3.1.1. Knowledge-Oriented Leadership

Knowledge-oriented leadership focuses on the knowledge-related skills of the top management team. We examined knowledge-oriented leadership with six constructs taken from the study [10]. However, a slight modification was made according to the higher education institution study context.

3.1.2. Innovation

In this study, we used two dimensions of innovation named innovation speed and innovation quality, for which 10 items (five items for innovation speed and five items for innovation quality) were used based on the investigation [71]. However, some words were adjusted according to the university context so the faculty members could answer easily. The same constructs of the study were also used by [66] in his research.

3.1.3. Team Performance

We measured team performance with four questions established by [102]. These constructs were also used by [103] to measure team performance. Similarly, a few words of these questions were modified so the respondents could answer the question according to the university domain.

3.1.4. Sustainable Competitive Advantage

Sustainable competitive advantage indicates four merits of firms' tangible and intangible resources, including the valuable resources that are "rare" to find and the lack of available substitutes, along with the imperfectly immeasurable, which display the sustainable competitive advantage of a firm. To measure the university's sustainability, we used four items [104] that were validated by the study conducted by [36].

3.1.5. Control Variables

To attenuate spurious results in the research, we controlled leaders' attributes (e.g., their experience, their age as well as education, department, and position, etc.) and members' features (e.g., age, education, experience, department, etc.) in the conceptualized model. The one-way ANOVA results revealed that gender has no significant relationship with outcome variables. Thus, the imbalance in the sampling frame for gender inequality may not have any influence on study results. These variables were suggested in previous studies while dealing with sustainable competitive advantage [105].

4. Data Analysis and Results

This study conducted data analysis using Smart PLS 4.0.8.4 software. PLS is applied in social science, business, and management research to deal with intricate models whose samples consist of few sizes and non-normal data [106]. PLS software simultaneously analyses the measurement and structural equation models [107]. In addition to this, Smart PLS provides many sorts of validity and reliability throughout the analysis of the data, which improves the validation of the outcomes. Several recent studies have used Smart PLS in the case of mediators [108,109].

4.1. Measurement Model Assessment

The initial stage assessed the measurement model, and the results are shown in Table 2. Hair and Black [110] used criteria to confirm the "reliability and validity" of the items and the dimensions in the measuring model evaluation. Because of the recommended 0.60 value, all 20 indicators observed were integral as the evaluated factor loading was more significant than the specified value. Likewise, the item values for AVE and CR, which are 0.50 and 0.70, were respectively larger and equivalent. This is how we recognized reliability and convergent validity. Similarly, we established discriminant validity using the standard advised by [111]. The "confirmatory factor analysis" complete outcomes specify that the model is enough for the structural evaluation.

The R2 demonstrates that knowledge-oriented leadership explains 8% of the variation in innovation quality, 10.7% of the innovation speed, and 47.8% of the team performance (in the presence of innovation). However, 43.1% of the variation is explained by sustainable competitive advantages due to managers' and leaders' demographic factors as control variables.

Table 2. Loading, reliability, and validity.

Construct	Cronbach				
	Items	**Loading**	**Alpha**	**CR**	**AVE**
Knowledge-Oriented Leadership			0.907	0.927	0.681
	KOL 1	0.853			
	KOL 2	0.860			
	KOL 3	0.807			
	KOL 4	0.833			
	KOL 5	0.814			
	KOL 6	0.780			

Table 2. *Cont.*

Construct	Cronbach				
	Items	**Loading**	**Alpha**	**CR**	**AVE**
Innovation Speed			0.938	0.953	0.802
	IS 1	0.847			
	IS 2	0.903			
	IS 3	0.931			
	IS 4	0.931			
	IS 5	0.862			
Innovation Quality			0.939	0.953	0.803
	IQ 1	0.906			
	IQ 2	0.890			
	IQ 3	0.907			
	IQ 4	0.901			
	IQ 5	0.876			
Team Performance			0.912	0.936	0.791
	TP 1	0.880			
	TP 2	0.903			
	TP 3	0.911			
	TP 4	0.861			
Sustainable Competitive Advantage			0.833	0.890	0.670
	SCA 1	0.853			
	SCA 2	0.851			
	SCA 3	0.853			
	SCA 4	0.706			

Heterotrait–Monotrait Correlation Ratio (HTMT) is the newest criterion for measuring discriminant validity in Smart PLS [112]. A value that is smaller than 0.90 illustrates what discriminant validity has achieved. In our research (see Table 3), all values are under the threshold, which confirms the condition.

Table 3. Heterotrait–Monotrait Ratio of correlations.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Innovation Quality															
2. Innovation Speed	-														
3. KOL	0.310	0.349													
4. Leader Age	0.107	0.132	0.046												
5. Leader Department	0.037	0.069	0.067	0.067											
6. Leader Education	0.040	0.070	0.096	0.111	0.061										
7. Leader Experience	0.229	0.221	0.161	0.035	0.158	0.060									
8. Leader Gender	0.054	0.068	0.053	0.112	0.072	0.024	0.007								
9. Member Age	0.021	0.015	0.018	0.369	0.030	0.039	0.034	0.094							
10. Member Department	0.050	0.128	0.062	0.005	0.017	0.010	0.002	0.019	0.018						
11. Member Designation	0.068	0.048	0.033	0.199	0.005	0.180	0.097	0.134	0.503	0.027					
12. Member Education	0.037	0.032	0.115	0.175	0.037	0.394	0.089	0.052	0.228	0.008	0.434				
13. Member Experience	0.160	0.177	0.089	0.160	0.026	0.017	0.050	0.034	0.539	0.076	0.324	0.149			
14. Member Gender	0.021	0.035	0.044	0.161	0.021	0.045	0.005	0.538	0.134	0.022	0.208	0.214	0.109		
15. SCA	0.502	0.52	0.522	0.070	0.038	0.054	0.353	0.032	0.068	0.092	0.048	0.098	0.216	0.029	
16. Team Performance	0.683	0.712	0.413	0.113	0.060	0.044	0.246	0.053	0.052	0.095	0.063	0.077	0.218	0.123	0.619

4.2. Common Method Bias

We already handled social desirability and the common-method-biases (CMB) process in collecting data. However, CMB is possible in the cross-sectional data [113]. For instance, we gathered the data from team leaders and their subordinates to enhance the validity of the research. However, Harman's single-factor assessment was run in SPSS to check for

in-depth bias. The outcomes indicated five factors: eigenvalues greater than 1 and factor 1 with a 46.5% variance lower than 50%. Hence, we ensure that the standard method bias in our sample is not an issue.

4.3. Structural Model Assessment

In the second stage, we analyzed the structural assessment model and the mandatory measurement assessment model (see Figure 2). The hypotheses were tested using several procedures. First, we examined the direct influence of knowledge-oriented leadership on team performance. Second, we assessed the impact that knowledge-oriented leadership draws towards innovation (both speed and quality) and the ramifications of innovation (speed and quality) on team performance, respectively. Next, we tested the mediation effect of innovation speed and quality on knowledge-oriented leadership and team performance. Finally, we examined the direct effect of team performance on sustainable competitive advantages. To regulate the worth of paths and estimate the standard errors, we utilized the bootstrapping resample approach with 5,000 resamples. Table 4 presents the test findings for the hypotheses.

Table 4. Hypotheses testing.

Paths	β	S.D.	*p* Values
Control Variables			
Leader Age -> Sustainable Competitive Advantage	0.022	0.041	0.586
Leader Department -> Sustainable Competitive Advantage	0.033	0.04	0.412
Leader Education -> Sustainable Competitive Advantage	0.061	0.043	0.155
Leader Experience -> Sustainable Competitive Advantage	0.195	0.048	0.000
Leader Gender -> Sustainable Competitive Advantage	−0.036	0.049	0.459
Member Age -> Sustainable Competitive Advantage	−0.029	0.056	0.596
Member Department -> Sustainable Competitive Advantage	−0.043	0.044	0.331
Member Designation -> Sustainable Competitive Advantage	−0.097	0.054	0.071
Member Education -> Sustainable Competitive Advantage	0.106	0.053	0.044
Member Experience -> Sustainable Competitive Advantage	−0.087	0.055	0.117
Member Gender -> Sustainable Competitive Advantage	−0.016	0.067	0.813
Main Variables			
Knowledge Oriented Leadership -> Team Performance	0.191	0.045	0.000
Knowledge Oriented Leadership -> Innovation Speed	0.331	0.057	0.000
Knowledge Oriented Leadership -> Innovation Quality	0.293	0.065	0.000
Innovation Quality -> Team Performance	0.215	0.10	0.032
Innovation Speed -> Team Performance	0.407	0.096	0.000
Knowledge Oriented Leadership -> Innovation Speed -> Team Performance	0.135	0.037	0.00
Knowledge Oriented Leadership -> Innovation Quality -> Team Performance	0.063	0.033	0.062
Team Performance -> Sustainable Competitive Advantage	0.471	0.066	0.000

Knowledge-oriented leadership and team performance exhibited a positive outcome (β = 0.191, $p < 0.001$). Therefore, H1 is accepted. H2a anticipates the positive effect of knowledge-oriented leadership on innovation speed (β = 0.331, $p < 0.001$), while H2b shows an optimistic effect of knowledge-oriented leadership on innovation quality (β = 0.293, $p = 0.000$). Therefore, H2a and H2b findings were supported. H3a proposed positive effects of innovation speed on team performance (β = 0.407, $p = 0.000$), and H3b obligated the significant outcome for innovation quality on team performance (β = 0.215, $p = 0.032$). Hence, H3a and H3b results were accepted. The innovation (speed and quality) effect as a mediator in the relationship between knowledge-oriented leadership and team performance was proposed in H4a and H4b. H4a showed the positive mediation of innovation speed towards knowledge-oriented leadership on team performance (β = 0.135, $p = 0.000$). However, H4b did not find support, as innovation quality did not mediate the path between knowledge-oriented leadership and team performance (β = 0.063, $p = 0.062$). Thus, H4a was supported, whereas H4b was not. Finally, the impact of team performance on sustainable

competitive advantages was significantly positive (β = 0.471, p = 0.000). Therefore, the H5 result is accepted.

Regarding the "control variables", as depicted in Figure 2, we found that only leader experience and member education significantly influenced sustainable competitive advantages. However, the rest of the demographic factors do not play a positive role in the sustainable competitive advantage of universities.

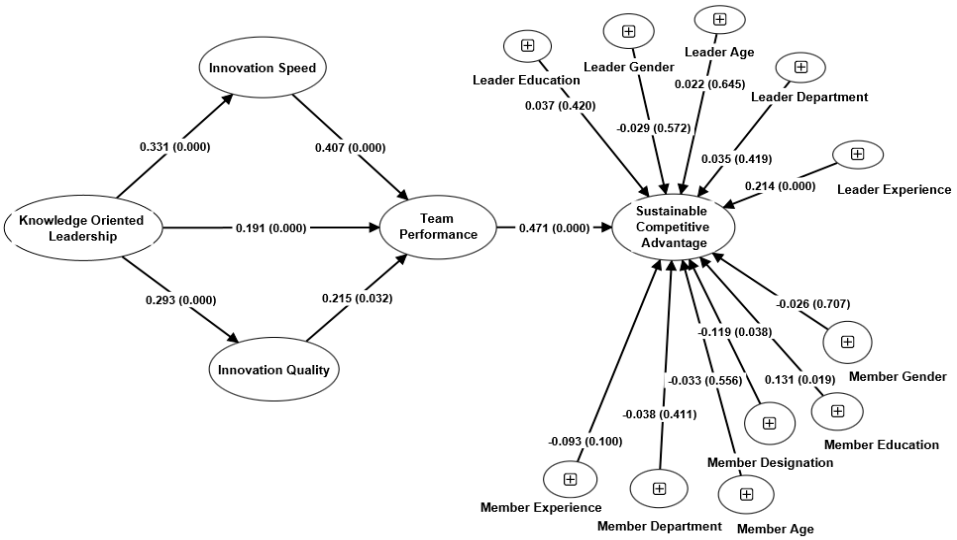

Figure 2. Structural model.

4.4. Robustness Tests

To validate the study's results and assess their practical implications, we conducted a robustness test in SPSS, incorporating team performance mediation, knowledge-oriented leadership, sustainable competitive advantages, and several control variables. Model 1 in Table 5 illustrates the control effects, Model 2 presents the direct influence, and Model 3 demonstrates the mediating role of team performance.

Table 5. Regression model.

Particular	Model 1		Model 2		Model 3	
	β	p	β	p	β	p
(Constant)	2.210	0.072	1.769	0.108	1.941	0.061
Member Age	−0.002	0.796	−0.004	0.568	−0.010	0.196
Member Department	−0.019	0.058	−0.021	0.020	−0.017	0.044
Member Qualification	−0.203	0.267	−0.246	0.136	−0.171	0.272
Member Experience	−0.022	0.094	−0.016	0.184	−0.004	0.740
Member Gender	0.120	0.751	0.283	0.409	0.220	0.493
Leader Age	0.118	0.337	0.114	0.297	0.074	0.471
Leader Department	0.028	0.619	0.021	0.684	0.016	0.738
Leader Qualification	−0.004	0.986	0.004	0.985	−0.022	0.906
Team Tenure	−0.026	0.581	−0.044	0.303	−0.045	0.264
Leader Designation	−0.046	0.635	−0.068	0.433	−0.119	0.159
Leader Gender	−0.038	0.922	−0.201	0.566	−0.212	0.518
University Type	0.303	0.119	0.294	0.092	0.217	0.189
Leader Experience	0.397	0.000	0.294	0.001	0.249	0.002
Knowledge-Oriented Leadership	-	-	0.273	0.001	0.230	0.004
Team Performance	-	-	-	-	0.218	0.013

DV = Sustainable competitive advantage.

The sum clearly specifies that team performance acts significantly, albeit as a partial mediator between knowledge-oriented leadership and sustainable competitive advan-

tages. Overall, the regression sequel exhibits strong consistency with those obtained from Smart PLS, affirming the study's robustness and confirming the validity of the practical implications.

5. Discussion and Conclusions

The determination of existing research is to probe the act of knowledge-oriented leadership on team performance while investigating the mediation of innovation speed and innovation quality between these variables and the connection between team performance and sustainable competitive advantages in Pakistan's higher educational institutions.

Our verdicts revealed that knowledge-oriented leadership has a positive effect on team performance. It also ties in with research findings of a positive and direct bond between knowledge-oriented leadership and team performance [16]. Knowledge-oriented leadership positively relates to collective IT efficacy, eventually expanding virtual team performance. Likewise, when university leaders demonstrate knowledge-oriented leadership behavior, team members will know how their communication works [39,44,103,114] and how motivation leads to better team performance. As a result, the organization gains a competitive advantage due to its knowledge-oriented culture and structure [10]. Knowledge-oriented leaders stimulate a sustainable competitive advantage [115] by promoting learning knowledge, attaining external knowledge, openness, and mature employee behavior in pursuit of organizational goals [116]. Conversely, when knowledge-oriented leadership leaders adopt the same behavior in a university context, it improves the efficiency of team performance.

We found that knowledge-oriented leadership improves innovation speed and innovation quality. The results are parallel with prior studies; likewise, Zia [12] revealed that knowledge-oriented leadership significantly contributes to the innovation behaviors of employees. Similarly, Donate and de Pablo [10] also found that knowledge-oriented leadership is essential for speedy exploitation and innovation activities in firms. Besides, we found that innovation (speed and quality) improves team performance in HEIs. The results correspond to Dreu's [117] finding that more significant innovation illustrates enhanced team performance. Similarly, our findings favor the results of [72,73], which show that innovation significantly contributes to team performance.

Furthermore, we found innovation speed's mediating influence on knowledge-oriented leadership and team performance. The results endorse earlier research which disclosed that leaders with knowledge expedite innovation that leads to performance [118], and in particular, learning institutions particularly require innovation. The current research results underscore that knowledge-oriented leaders help increase innovation in HEIs. The knowledge-oriented leadership approach is a significant and influential feature that provokes innovation in HEIs. Continuing the argument, our research involving knowledge-oriented leadership that contains the basics of transformational and transactional leadership promotes innovation by rewarding ideas for innovativeness [9,10,107,119]. In contrast to our argument, we did not find the innovation quality role to mediate between knowledge-oriented leadership and team performance in HEIs. Our findings illustrate that knowledge-oriented leadership emphasizes innovation speed rather than innovation quality. This result is not entirely related to Wang and Wang [71] and Wang and Sharma [27], who revealed that innovation speed and quality mediate the path flanked by knowledge sharing and organizational performance. However, our findings indicate that leaders with knowledge-oriented leadership do not significantly consider innovation quality but focus on innovation speed to improve their team's performance in HEIs.

We have learned the impact of team performance on sustainable competitive advantages, both positively and significantly. Previous empirical studies [88,98,108,120] showed that performance positively correlates with a competitive advantage. Likewise, when department leaders communicate with team members, they share their tacit knowledge. According to Adhikari and Shrestha [9] Donate and de Pablo [10], tacit knowledge is hard to codify and imitate. When higher education institutes work in teams, they become more

likely to innovate, which requires incentives for motivation [109,121,122]. This, in turn, becomes the basis of team performance and sustainable competitive advantages in HEIs.

5.1. Theoretical Contributions

Our study enriches theory and research on knowledge, innovation, and sustainable competitive advantages. We demonstrate that leadership is necessary for knowledge-based organizations, particularly within HEIs. Knowledge-oriented leadership is a unique type of "leadership", which gained the growing consideration of researchers after its initiation in previous studies [11,12,115,123]. Researchers have suggested doing more research on knowledge-oriented leadership [14]. Therefore, this research considers knowledge-oriented leadership for filling the target gap. Second, knowledge-oriented leadership and its linkage with team performance in HEIs have yet to be explored. Therefore, existent exploration adds a value worth mentioning to the literature by exploring the concept of interrelationships. Previously, product and process innovation has been examined over knowledge-oriented leadership and performance in HEIs [25,26].

Consequently, this study focused on filling the gaps by examining the mediation of innovation (speed and quality) between knowledge-oriented leadership and team performance in HEIs. Third, we explore the relationship between team performance and sustainable competitive advantages in HEIs. Our study endeavors to bridge the gaps and add value by focusing on the literature on the KBV that draws attention to knowledge. Hence, under the consideration of the KBV, knowledge-oriented leadership has an exceptional leadership style and changes the structure of the company in such a way that team members communicate within departments and with other departments to generate new knowledge that enhances innovation (speed and quality), which leads to better team performance. Similarly, when the members of a team share and discuss their tacit knowledge, the team's performance leads to a sustainable competitive advantage for HEIs. Hence, our research explores relationships that may contribute to the literature. The results of our study exemplify that knowledge-oriented leaders in research universities can foster innovation that enhances team performance, which leads to a sustainable competitive advantage.

5.2. Implications for Practice

Drawing from the insights of this research, we propose several practical contributions for knowledge-based organization administrators, university policymakers, and the "Higher Education Commission" based in Pakistan. This research holds the potential to foster sustainable development within the education sector, facilitating the achievement of educational goals. Therefore, the Higher Education Commission of Pakistan may consider revising its policies to encourage knowledge-oriented leadership behaviors within higher education institutions (HEIs). Furthermore, this study offers valuable insights to public and private university policymakers on enhancing team performance through adopting knowledge-oriented leadership styles. Thus, university policymakers should initiate training and development programmers that promote knowledge-oriented leadership within their institutions.

Additionally, our research explored innovation in terms of speed and quality as mediators between knowledge-oriented leadership and team performance. Empirically, it was demonstrated that knowledge-oriented leadership behaviors promote innovation speed in HEIs by fostering the implementation, development, and generation of new ideas. To encourage innovation, universities should align their policies accordingly. From a human resources perspective, university administrators should prioritize the recruitment and selection of leaders based on the traits associated with knowledge-oriented leadership behaviors. Universities may also consider implementing incentives to promote these characteristics.

However, there is a need for further investigation into how innovation quality can be improved to enhance team performance. We recommend that HEIs explore additional leadership styles that can positively impact innovation quality, thereby enriching team performance and sustainable competitive advantages.

Lastly, recognizing that team performance forms the most vital link to a sustainable competitive advantage in knowledge-intensive organizations, HEIs must prioritize team performance to attain a sustainable competitive advantage. Consequently, HEIs should consider hiring individuals who exhibit knowledge-oriented behaviors for leadership positions, as these leaders can motivate faculty members within teams to achieve better performance.

5.3. Limitations and Future Directions

When interpreting the findings, it is essential to acknowledge certain limitations that merit consideration and offer guidance for future research endeavors. Firstly, our study chose a convenience sampling method to collect HEI data. Enhancing the study's depth could involve adopting a longitudinal method, enabling a more comprehensive exploration. Secondly, the data was solely collected from public and private Pakistani universities. Additionally, Pakistani culture and the workplace are dominated by male authority. Most men in Pakistan work and women are chosen to be housewives. The ratio of men to women in Pakistan is 1.06, but the ratio of working women is meager, especially in higher education institutions. Taking into account the Hofstede cultural dimensions of masculinity and femininity [124], in Pakistan, masculinity is connected to the difference in the role of gender [125]. 24.60% [126] of females are working women, and most work in healthcare and primary education. Currently, the ratio between men and women is more significant in HEIs in Pakistan. Therefore, the sample size for women is low as compared to men. This could limit the generalizability of the findings due to inherent cultural distinctions among HEIs across different countries. To cultivate a broader perspective, including both gender and generalizability, future investigations should encompass diverse nations. Lastly, it is imperative to note that this study exclusively pertains to the academic sector; broadening its scope to include other sectors would provide valuable insights into the applicability of the findings. Furthermore, future studies could consider incorporating in-depth interviews and examining other types of organizations to validate the results.

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