Sustainable leadership in higher education institutions: social innovation as a mechanism

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Abstract

Purpose – Considering the vital role of higher education institutions (HEIs) in accomplishing sustainable development goals, this study aims to examine how and when sustainable leadership (SL) influences sustainable performance by examining social innovation (SI) as a mediating mechanism and managerial discretion (MD) as a boundary condition based on upper echelon theory.

Design/methodology/approach – This study is cross-sectional in nature. The authors adopted a cluster-sampling approach to collect data from 500 employees of HEIs in Pakistan and China. The response rate for this study was 52.63%. As the proposed model is complex, the authors used structural equation modeling (SEM) to analyze the research hypothesis.

Findings – The empirical findings confirm the presence of SI as a competitive partial mediator between SL and sustainable performance. Nevertheless, the findings of this study do not suggest a higher positive effect of SL on SI in the presence of high MD.

Research limitations/implications – The study evaluated the role of SL and SI in fostering sustainable performance from the perspective of employees in HEIs in China and Pakistan. Before the empirical evidence can be generalized, there is a need to conduct similar studies in other parts of Asia and Western countries as well.

Practical implications – This study presents implications for higher education leaders and policymakers at the national level to foster the sustainable performance of their institutions.

Social implications – The current evidence reveals the effectiveness of SL in achieving the social goals of HEIs through SI. The recommendations presented in this study can have an impact on society, providing it with a sustainable future.

Originality/value – This study is the first of its kind to examine the mediating role of SI on the relationship between SL and sustainable performance. The present study also provides pioneering empirical evidence about the negative effects of MD in the context of HEIs.

Keywords University, Sustainable development, Green leadership, Innovation, Asia, Sustainable HRM

Paper type Research paper

1. Introduction

Sustainable development has been defined by the World Commission on Environment and Development as development that "meets the needs of the present generation without compromising the ability of future generations to meet their own needs"(WCED - World Commission on Environment and Development, 1987). Higher education institutions (HEIs) are among the different types of organizations that are responsible for creating a sustainable future (Wright and Horst, 2013). They should contribute to sustainable development by teaching students and researching sustainability, knowledge dissemination and integration with industry (Bayuo *et al.*, 2020; Cetindamar, 2016; Martins, 2019). They develop the future generation of leaders, policymakers and decision-makers in the area of sustainable development more than any other single sector of society. Universities exert a multiplier effect for disseminating sustainable development goals through their moral responsibility to integrate such goals into their curricula (Caeiro *et al.*, 2020; Hansen and Lehmann, 2006). However, some research has revealed a lack of progress among these organizations toward implementing sustainability initiatives due to the attitudes and behavior of their leaders (Puig *et al.*, 2019). As de Paula Arruda Filho *et al.* (2019) stated, "a structural change is needed to [. . .] ensure educational institutions make sustainability an intrinsic value in their mission statement" (p. 859). Sustainable development requires changes in many organizational fields, including leadership and innovation (Wright and Horst, 2013).

Although the literature on the subject distinguishes many types of leadership, the most helpful in this case is an emerging type called sustainable leadership [SL (Iqbal and Hazlina, 2021)]. The aim of SL is to lead an organization toward sustainable development by implementing socially responsible activities (Iqbal, Hazlina and Hasliza, 2020; McCann and Holt, 2010). SL is in line with such concepts as reflexive and participative leadership (Gerard *et al.*, 2017), responsible leadership (Pless *et al.*, 2011), ethical leadership (Wu *et al.*, 2015), transformational leadership (Waldman and Balven, 2014) and value-based leadership (Brandt, 2016), and shared leadership (Pearce *et al.*, 2014). Sustainable leaders inspire and encourage subordinates, define the working atmosphere, and align the needs of subordinates and the organization (Gjerde and Ladegård, 2019), thus increasing the sustainable performance of employees and organizational sustainable performance (SP). The latter – in general – reflects the set of measurable economic, social and environmental results (Keeble *et al.*, 2003). In the case of HEIs, SP is associated, among others, with the sustainable impacts of university administration, operation, education and research (Alghamdi *et al.*, 2017).

SL requires a fostering of systematic innovation (Avery and Bergsteiner, 2011; Iqbal, Hazlina, Li, and Li, 2021). At this point it is worth emphasizing that social innovation (SI) – which includes changes to the structures of society which improve its economic and social performance Heiskala (2007) and enhances "the capacity of people to lead lives they have reasons to value" (Arocena and Sutz, 2021) (p. 3) – is growing in importance and is becoming connected with the achievement of sustainable development goals (Bayuo *et al.*, 2020; Eichler and Schwarz, 2019). Therefore, sustainable leaders may influence the SP of their organizations by adopting SI as a strategy.

The overall performance of any organization depends on the effectiveness of the managers' performance (Hargreaves and Fink, 2012). However, according to upper echelon theory (UET), the importance of leaders' attributes is proportional to how much managerial discretion (MD) – or the latitude given to managers for their actions – is present in a given organization (Hambrick, 2007). The assumptions of UET may be transferred to the case of sustainable leaders and their outcome in the form of SI.

Previous research on leadership in HEIs focused on the level of SL (Gerard *et al.*, 2017), the factors which influence SL, the structure of SI leadership (Milley and Szijarto, 2020), and

the practices undertaken for SL (Farooq, 2018). In turn, research conducted in business settings addressed the relationships between SL, innovation, and company performance, but focused only on environmental sustainability (Bahzar, 2019).

Waldman and Balven (2014) suggested exploring how alternative forms of responsible leadership (SL can be treated as such an alternative) lead to organizational performance. As Burawat (2019) stated, there is a need to explore the mediating and moderating variables between SL and SP. This constitutes a gap to be filled in this study – taking into account that SI and its effects also need further exploration (do Adro and Fernandes, 2020), especially in the context of HEIs (Bayuo *et al.*, 2020).

This study examines the relationships between SL and SI, and between SI and SP, assuming that SI has a mediating role between SL and SP. The exploration of a moderating role of MD between SL and SI – based on UET – is another purpose of this study. For these purposes, the authors used literature studies and empirical research conducted in Pakistan and China. Presently, China is investing heavily in Pakistan by developing the China–Pakistan Economic Corridor (CPEC). Pakistan lies in the Frontier Asia Region (Iqbal *et al.*, 2021), which is facing the worst environmental degradation and rising humidity levels and temperatures. Under CPEC, China intends to initiate and develop myriad projects in Pakistan, including the construction of power plants. Therefore, it is worth examining the position of universities in these countries and how they contribute to sustainable development. Furthermore, HEIs still rely on reductionist and mechanistic paradigms, which makes it difficult for them to incorporate sustainability aspects into theory and practice (Leal Filho *et al.*, 2017; Lozano *et al.*, 2015).

This study contributes to the literature in a few ways. Firstly, the author provides a description of hypothetical relationships between SL, SI, SP and MD. Secondly, it presents the link between the above-mentioned conceptual framework and the empirical research. Thirdly, the results of this study help provide a better understanding of the mechanism by which organizational SP is achieved and the conditional impact of SL on SP in the presence of MD in HEIs. It contributes to empirical studies, which are based on UET. Finally, the authors formulate directions for further research.

The remaining parts of the article are organized as follows. Section 2 presents the literature background, focusing on the theoretical connections between SL, SI and SP. The issue of MD is discussed in this section as well. Section 3 describes the methodological aspects of the study. Section 4 presents the results, followed by a discussion and both the practical and theoretical implications. The conclusion, Section 5, includes the major findings from the research as well as its limitations and directions for further research.

2. Literature background and hypotheses
2.1 Sustainable leadership and social innovation
The SI process includes cooperating with other actors; detecting niches; building interactive learning spaces; and giving autonomy to teachers, researchers and students (do Adro and Fernandes, 2020; Arocena and Sutz, 2021; de Souza João-Roland and Granados, 2020). It requires time, financial resources, facilities, university-specific expertise (e.g. accounting staff or technology transfer officers) and most of all managers/decision-makers (Cunha and Benneworth, 2020). The latter are associated with an appropriate leadership style because SI emerges in the culture of partnership, knowledge management, and people's motivation to innovate (Pasricha and Rao, 2018; Svensson *et al.*, 2020).

In their conceptual paper, Gerard *et al.* (2017) grouped actions associated with SL such as creating long-term objectives from short-term goals, developing strategic measures of success, involving and developing people, retaining staff, valuing staff, considering

stakeholders, promoting cohesive diversity and sharing the knowledge and personal characteristics of leaders – such as psychological intelligence, reflection on action, decision-making, team orientation, trust, passion, personal humility and professional will.

As SL is based on transformational leadership, sustainable leaders intellectually stimulate their employees and help them think in new and innovative ways (Christensen *et al.*, 2014). SL enhances organizational learning, psychological safety, and well-being (Avery and Bergsteiner, 2011; Iqbal and Ahmad, 2020). As responsible, empowering leaders, they treat their followers as unique stakeholders and thus increase both motivation and creativity (Zhang and Bartol, 2010). They "create opportunities for people to come together and generate their own answers – to explore, learn, and devise a realistic course of action to address sustainability challenges" (Ferdig, 2007) (p. 32). As indicated above they also stimulate knowledge sharing, which is critical for knowledge creation and results in innovation (Doh and Quigley, 2014). It was also empirically proven that responsible leaders, through support given to their subordinates, help them to create innovative sustainability-oriented solutions (Ramus and Steger, 2000).

As indicated in the Introduction, SL has so far been directly linked with environmental innovation in business (Bahzar, 2019; Iqbal *et al.*, 2021), but to the best of the authors' knowledge, there is no empirical evidence on the relationship between SL and SI. Therefore, this study developed the following hypothesis:

H1. Sustainable leadership influences social innovation.

2.2 Social innovation and sustainable performance
When assessing their SP, HEIs should considering the role they play in society's transition toward sustainable development and involving different stakeholders in sustainability decision-making (Godemann *et al.*, 2014). Many approaches and tools have been dedicated to measuring SP in HEIs (Alghamdi *et al.*, 2017). No matter how SP is defined, the literature on the subject indicates that for sustainable development, and thus innovation, to occur, the divide between traditional disciplines must be overcome and integration must span different functional areas (Disterheft *et al.*, 2015). Previous research also concluded that there is a substantial impact of sustainability-oriented innovation on the SP of manufacturing firms (Fatoki, 2019).

Some authors state that each innovation is inherently social because innovation is frequently the product of modifying others' output and because successful innovations are acquired by others (Rawlings and Legare, 2020); however, the notion of SI emphasizes meeting social goals rather than bringing profits for the innovators. The concept of innovation "is fundamental to social organizations such as schools" (Bogotch *et al.*, 1995) (p. 6). Moreover, innovations in learning and teaching that emerge from universities are by nature a public good (Pol and Ville, 2009), which means that they are focused on social issues. One of the main roles of a university is taking part in generating and diffusing SI (Cetindamar, 2016). Innovation brings legitimacy for public universities and increases institutional performance and development for both public and private schools (Cunha and Benneworth, 2020).

SI improves both the quality and quantity of life, which refers to the social and economic performance of a given society (Pol and Ville, 2009). It delivers improvement by creating societal capacity (Cunha and Benneworth, 2020). SI plays a key role in processes of social change, balanced between the values of solidarity, equality and economics and contributes to social inclusion and sustainable development (Cunha and Benneworth, 2020). Although SI is associated mainly with social performance (Altantsetseg *et al.*, 2020), it could also be

considered as the natural outlet of efforts to achieve sustainability as a whole (Bayuo *et al.*, 2020; Piccarozzi, 2017) because there is interplay between the three pillars of SP (Iqbal *et al.*, 2021). This leads to the following hypothesis:

H2. Social innovation significantly influences sustainable performance.

2.3 The mediating role of social innovation

Innovation is treated as a strategy for organizational performance. As McCann and Holt (2010) stated, a sustainable organization is a knowledge-based and knowledge-creating unit. In order to achieve sustainability-oriented goals, leaders must become innovation managers (Bossink, 2007). Sustainable development needs SI and cannot be achieved without it (Diepenmaat *et al.*, 2020). SI contribute to important public values such as safety, health, education and life quality (Piccarozzi, 2017). Fulfilling these values, in turn, produces long-lasting social and economic vitality. Therefore, as indicated in Section 2.2, SI contributes to sustainability, achieved either holistically or in one of the aspects of sustainable development.

It has been empirically proven that organizational learning (knowledge sharing and creation) mediates the relationship between SL and SP (Iqbal and Ahmad, 2020). SI – treated as a process – involves many actors and requires multi-sector collaboration. This process allows new knowledge to be collected, shared, and – finally – created, and this knowledge will be turned into new, socially oriented solutions. Moreover, the process of involving stakeholders may change the "rules" and social relationships between them. Stakeholders participate in not only the phase of creating solutions but also the diffusion of an innovation. By promoting active stakeholder participation in university activities, sustainable leaders can better meet their expectations while improving organizational SP.

Taking all this into account, one can state that SI can be used as an effective tool for improving SP. SL significantly affects SP through SI, which is incorporated into the following hypothesis:

H3. Social innovation mediates the relationship between sustainable leadership and sustainable performance.

2.4 The moderating role of managerial discretion

Although it is generally expected that SL positively influences SI, which in turn impacts SP, UET states that MD strengthens the extent to which a top manager is relevant to organizational strategies and outcomes (Hambrick, 2007). When top executives have more discretion, their influence on their organizations is stronger (Li and Tang, 2010; Wu *et al.*, 2015).

Numerous studies have applied UET to address the moderating role of MD (Aragón-Correa *et al.*, 2004; Iqbal *et al.*, 2021). Sharma and Vredenburg (1998) stated that MD is a driver for sustainability-related innovation. In turn, Aguinis and Glavas (2012) identified a positive influence of MD on sustainability initiatives, and thus on organizational SP.

The successful implementation of changes – e.g. innovation process – initiated by the leaders themselves depends on how much authority they have within the organization. SI is a challenging process that requires the participation of many actors. Managerial autonomy is needed to build and cultivate trustful and sustainable relationships with stakeholders (Iqbal *et al.*, 2021). Thus, authors propose the final hypothesis:

H4. Managerial discretion moderates the relationship between sustainable leadership
and social innovation, presenting a directly proportional impact on it.

2.5 Research framework
Since the role of a researcher is to create "a sense of coherence in the relationships among the
variables and processes in the proposed model" (Sparrowe and Mayer, 2011, p. 1098), a
research model was designed based on the factors outlined above (Figure 1).

3. Research methodology
This study takes HEIs of China and Pakistan as the study population. It was rather
challenging to gather data from the whole population of China and Pakistan due to time,
financial, and networking constraints. Hence, by employing the cluster sampling approach,
Pakistani and Chinese HEIs were grouped into different clusters based on their location. The
HEIs in Beijing, China and Islamabad, Pakistan were selected for data collection purposes
through the simple random sampling approach. In this study, the application G*Power was
used to calculate the minimum sample size of 107 respondents based on the following
criteria: two predictors, an effect size of 0.15, and a significance power of 0.80 (Faul *et al.,*
2009).

In order to better comprehend the representatives of HEIs, the survey form was
translated into the national languages: Urdu for Pakistan and Mandarin for China. The
triple translation protocol was adopted to translate the survey questionnaire used in this
study. The face and content validity of the survey was assessed by two language experts –
one each from the language department of Beijing Foreign Studies University in China and
the National University of Modern Languages in Pakistan – and four academic experts from
various HEIs in those countries. Based on the data retrieved from 30 respondents, a pilot
study was conducted to investigate the reliability and validity of the survey questionnaire.
With the help of local faculty members in the two countries, a Google form was
disseminated to representatives of HEIs.

Data were collected from employees in managerial positions at HEIs in Pakistan and
China. Assuming 35.5% as an adequate average response rate in social research (Iqbal and
Ahmad, 2020), 500 questionnaires were distributed among the local faculty members of
different universities in Beijing and Islamabad. In total, 263 completed and valid responses
were collected out of the 500 questionnaires, thus resulting in a 52.63% response rate. This
sample size is acceptable for data analysis with structural equation modeling (SEM) using
partial least squares path modeling (PLS-SEM). SPSS software was used to run frequency
and descriptive analysis at the individual level. In this study, 63.12% of the respondents
were men and 36.88% women. The largest group of respondents (48.29%) were 29–36 years
old and had 6–10 years' experience. Most of the respondents were from Pakistan (65.78%),
whereas the 90 respondents from China constituted 34.22% of the sample.

The study measured SL with the 15-item scale developed by McCann and Sweet (2014).
Iqbal and Ahmad, (2020) found this SL measurement scale to be highly reliable. To measure
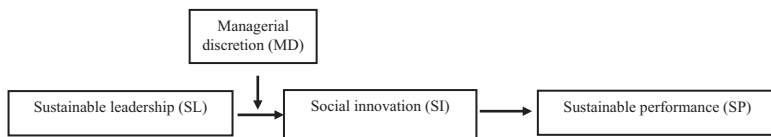SI, the study adopted eight items from Pasricha and Rao (2018).

Figure 1.
Research model

There are numerous tools in the literature to assess the sustainable performance of HEIs (Caeiro *et al.*, 2020). The Sustainability, Tracking, Assessment and Rating System Reporting Tool (STARS) (Association for the Advancement of Sustainability in Higher Education, 2019) is one of most famous tools for sustainable performance in HEIs. In the organizations surveyed, sustainable performance is a Type II reflective-formative measurement model with five lower order reflective constructs: academic, engagement, operations, planning and administration, and innovation and leadership. The study adapted the STARS scale from Alghamdi *et al.* (2017) to measure the SP of HEIs in China and Pakistan. As it is difficult to directly measure MD (Hambrick, 2007), the study adapted all three measurement items from the study by Iqbal *et al.* (2021).

Before sharing the questionnaire with potential respondents, the authors shared it with four professors and two PhD scholars of sustainable development from top business schools in Pakistan and China. This panel of experts from HEIs was also well versed with the context of this study. This practice ensured the content validity of the measurement scale. Using their feedback, the authors performed minor changes to make the questionnaire more readable. Later, the authors also collected data from 30 respondents in HEIs – who did not take part in the final survey – to investigate the reliability of the questionnaire.

The survey used in this study is comprised of five sections: SL, SI, SP, MD and demographic information of the respondents. The study used a Likert scale, which – despite being very popular among scientists – can cause reduced quality and processing overload for researchers through possible acquiescence bias responses (Revilla *et al.*, 2014). Robinson (2018) claimed that higher categories of agree/disagree Likert scales lower data quality; he recommended using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Therefore, the present study used a five-point Likert scale to collect data from the respondents.

This study also used an independent sample *t*-test to evaluate any significant differences among the respondents from Pakistan and China. As there was no statistically significant difference in the mean values of MD ($t = -1.822$, $p > 0.05$), SL ($t = -0.540$, $p > 0.05$), SP ($t = 0.522$, $p > 0.05$), and SI ($t = -1.718$, $p > 0.05$) between respondents from Pakistan and China, the *t*-test confirmed the absence of a response bias issue in the data.

Before conducting an analysis, it is imperative to screen the data. Data screening revolves around missing values, outliers, normality, the test of differences (*t*-test) and common method variance. As all questions in the survey were marked as mandatory across the form, the present study is free of missing values. The Z-score analysis revealed an absence of outliers, since its values across all responses were less than 3.29 (Tabachnick and Fidell, 2007). To deal with any common method bias issue, the procedural remedy was used, wherein different scales were used to collect responses for different variables, as recommended by Podsakoff *et al.* (2012). Furthermore, Harman's single factor test was conducted to reveal any common method variance. Following the recommendations of Harman's single factor test (Podsakoff *et al.*, 2012), because a single factor accounts for 30.04% of the total variance, the current study is free of common method bias. Moreover, the normality of data was assessed by monitoring the values of skewness and kurtosis (Hair *et al.*, 2020). Data which are normally distributed return values of skewness and kurtosis in the range of $+3$ to -3 (DeCarlo, 1997).

This study is explanatory in nature and the research framework is comprised of a direct effect, a conditional effect, and a mediating mechanism, so it is complex in nature. In such a situation, variance-based SEM, which is also known as partial least squares structural equation modeling (PLS-SEM), is deemed more appropriate and delivers more authentic results than covariance-based structural equation modeling (CB-PLS) (Henseler *et al.*, 2015; Ringle *et al.*, 2020). Therefore, the authors used PLS-SEM analysis in this study. PLS-SEM evolves around measurement model analysis and structural model analysis.

Before conducting structural model analysis, it is necessary to assess the measurement model, the analysis of which checks indicator reliability, internal consistency reliability, and construct validity for reflective constructs (Hair *et al.*, 2020). In this study, SL, SI, MD and the first-order dimensions of SP – academic, engagement, operations, planning and administration, and innovation and leadership – are reflective constructs. Items with loadings greater than 0.50 are acceptable (Chin, 1998), while those with less than 0.40 are recommended to be deleted from the construct in the measurement model. Cronbach's alpha and the composite reliability are the lower and upper bounds, respectively, of internal consistency reliability. Cronbach's alpha and composite reliability indicate acceptable internal consistency reliability provided their values are greater than 0.70 in explanatory studies (Hair *et al.*, 2020). The discriminant validity was assessed against the Fornell–Larcker criterion, which indicates the presence of sufficient discriminant validity when the square root of the AVEs of a variable is higher than their inter-construct correlation (Henseler *et al.*, 2015).

In this study, the SP of HEIs is a second-order construct – a Type II reflective-formative model – whose first-order reflective construct is comprised of academic, planning and administration, operations, engagement, and innovation and leadership development performance. The two-stage approach is more favorable than a hybrid or repeated indicator approach for estimating hierarchal latent variables in the presence of an uneven number of indicators (Becker *et al.*, 2012). Usually, Mode A denotes a reflective construct while Mode B symbolizes formative constructs (Henseler *et al.*, 2015). Based on the recommendations of Ringle *et al.* (2020), this study used a two-stage approach with Mode B measurement and the inner path weighting scheme to estimate the validity and reliability of sustainable performance as a hierarchical latent variable. Moreover, this study used a variance inflation factor (VIF) to assess the presence of multicollinearity. The VIF values greater than 5.0 indicate the presence of multicollinearity (Hair *et al.*, 2020).

4. Results and discussion

Two items of SL and one item of SI were deleted in this study because their loadings were less than 0.40. In the present study, all indicator loadings are higher than 0.50 (Figure 2), so there is acceptable indicator reliability. In this study, the Cronbach's alpha and composite reliability values of all reflective constructs – SL, SI, MD, academic, engagement, operations,
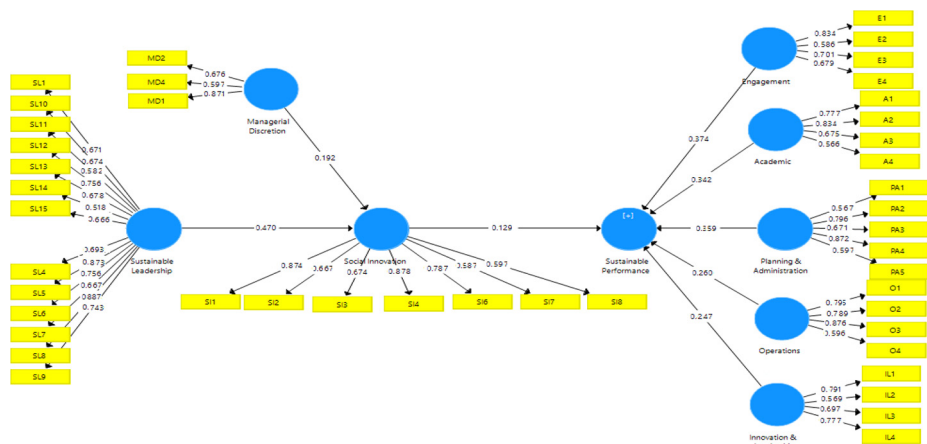

Figure 2.
Measurement analysis of proposed framework

planning and administration and innovation and leadership – are greater than 0.70, so there is enough internal consistency reliability (Table 1).

The lower-order construct (reflective construct) of SP had values beyond the standard acceptable values for indicator loadings, composite reliability, discriminant validity, and AVE. The loadings of the second-order latent variable are treated as path coefficients between the first-order construct and itself (Figure 2). The values of indicator weights, the significance of the weights, and the multicollinearity (VIF <5) Hair *et al.* (2020) are reported in Table 1 to assess the second-order formative latent variable, SP. Table 1 presents the measurement items of all variables in this study. The data analysis confirmed the absence of multicollinearity in this study, as the VIF values against all predictors were lessothano5.0.

Regarding sustainable performance, the authors did not report reliability values because indicators do not reflect latent variables in the context of a formative construct (Diamantopoulos and Siguaw, 2006). Convergent validity has an acceptable calculated value of average variance extracted (AVE) of >0.50 and a construct reliability of >0.70 (Hair *et al.*, 2020). In this study, SL, MD, academic, planning and administration, operations, engagement, and innovation and leadership development performance had AVE values greater than 0.50 in the presence of factor loadings higher than 0.40 (Table 1). Therefore, these constructs have enough convergent validity. The square root of the AVEs of SL, MD, SI, economic performance, social performance, and environmental performance in the model were greater than their correlations with other constructs, which indicates sufficient discriminant validity.

On a five-point Likert scale, mean values are considered low if they are equal to or less than 2.99, moderate if they range from 3 to 3.99, and high when greater than 4 (Sekaran and Bougie, 2016). The mean value of SL was 3.20, which indicates that there was a moderate presence of SL practices in the organizations. A previous study measured the level of SL in Jordanian HEIs and the reported results were much higher than those of this study (Iqbal and Ahmad, 2020).

The organizations under study try to focus their moderate efforts on SI (M = 3.50), SP (M = 3.20), and MD (M = 3.49), suggesting a moderate level of organizational effectiveness and efficiency in this aspect. Moreover, the mean values of all measurement items apart from two items of SL and one dimension of SP stand in the range of 3 to 3.99 (Figure 3), which indicates their moderate presence in the HEIs of China and Pakistan. Two items of SL have mean values below 2.99 (Figure 3), which is a sign of their limited existence in the HEIs of Pakistan and China. Regarding these two items, the top management of HEIs needs to foster and monitor relevant activities to introduce a sustainable transformation and ensure communication of such requirements across all stakeholders within their jurisdiction. Moreover, planning and administration under SP also had a low presence (M = 2.966) in this study (Figure 3). Thus, there is a need to promote sustainability-related decision-making, integration of all stakeholders, and allocation of resources and to bring diversity in the human resources of the HEIs in these two countries.

The results of hypothesis testing are presented in Table 2. The structural analysis in this study revealed that SL significantly influenced SI (β = 0.470; p < 0.05) in the HEIs. Therefore, *H1* was accepted. Previous research showed that charismatic managers using strategic, instrumental, or interactive leadership styles substantially contributed to the development of SI (Bossink, 2007). This study contributes to the body of knowledge about the "leadership style – SI" relationship and shows that SL characterized by a strong "sense for moral purpose" (Hargreaves and Fink, 2012), stimulating organizational learning and creativity Avery and Bergsteiner (2011), Iqbal and Ahmad (2020), Ramus and Steger (2000), Zhang and Bartol (2010) is also necessary for SI.

Construct	Item	Loading	Mean	Cronbach's alpha	Composite reliability	AVE
SL	SL1	0.671	3.437	0.668	0.929	0.506
	SL2	0.756	2.997			
	SL3	0.674	3.434			
	SL4	0.667	3.372			
	SL5	0.582	3.115			
	SL6	0.693	3.213			
	SL7	0.756	3.331			
	SL8	0.678	3.494			
	SL9	0.518	3.347			
	SL10	0.666	2.983			
	SL11	0.873	3.473			
	SL12	0.887	2.987			
	SL13	0.743	3.532			
SI	SI1	0.874	3.131	0.713	0.888	0.537
	SI2	0.667	3.128			
	SI3	0.587	3.501			
	SI4	0.597	3.678			
	SI5	0.674	3.678			
	SI6	0.787	3.576			
	SI7	0.879	3.645			
Academic	A1	0.566	2.819	0.745	0.809	0.519
	A2	0.675	3.436			
	A3	0.777	4.223			
	A4	0.834	3.160			
Planning and Administration	PA1	0.597	2.947	0.785	0.832	0.501
	PA2	0.567	2.691			
	PA3	0.872	3.266			
	PA4	0.796	2.872			
	PA5	0.671	3.053			
Operations	O1	0.795	3.021	0.762	0.852	0.594
	O2	0.789	3.394			
	O3	0.876	3.266			
	O4	0.596	2.957			
Engagement	E1	0.834	3.266	0.658	0.796	0.500
	E2	0.679	3.638			
	E3	0.586	3.021			
	E4	0.701	2.926			
Innovation and leadership	IL1	0.569	3.319	0.739	0.804	0.510
	IL2	0.791	3.553			
	IL3	0.777	3.160			
	IL4	0.697	3.053			
MD	MD1	0.676	3.523	0.741	0.763	0.524
	MD2	0.597	3.234			
	MD3	0.871	3.734			

Formative Construct	Items	Outer Weight	t-value	VIF	Mean
Sustainable Performance (SP)	Academic	0.342	7.386	1.366	3.410
	Planning and Administration	0.359	3.133	1.175	2.966
	Operations Performance	0.260	7.390	1.197	3.160
	Engagement	0.374	8.812	1.350	3.213
	Innovation and Leadership	0.247	5.101	1.622	3.271

Table 1.
Convergent validity
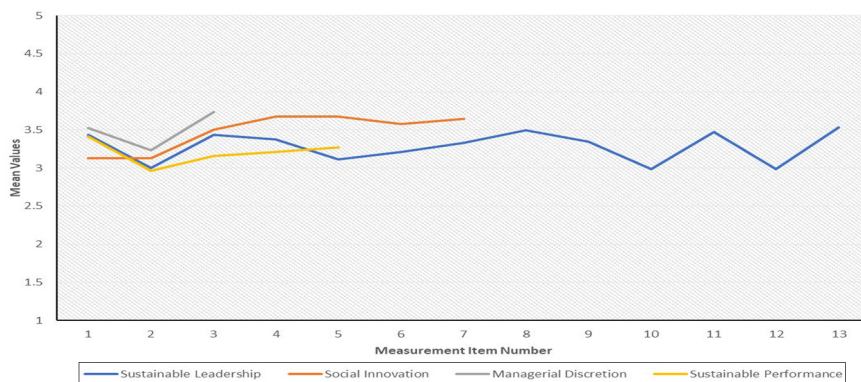
Figure 3.
Mean values of
measurement items
of constructs

Hypothesis	Coefficient	S.D.	t-value	p-value	LLCI	ULCI
SL -> SI	0.470	0.131	3.588	0.000	0.213	0.727
SI -> SP	0.129	0.047	2.745	0.006	0.037	0.221
SL*MD -> SI	−0.421	0.054	−7.796	0.000	−0.527	−0.315

Notes: SL = sustainable leadership; SI = social innovation; SP = sustainable performance; MD = managerial discretion

Table 2.
Results of hypothesis
testing

Gadenne *et al.* (2012) found that social responsibility practices (activities related to sponsorship, donations and community engagement) significantly impact organizational SP. In turn, research conducted by Iqbal and Ahmad, (2020) proved that organizational learning stimulates organizational SP. The current data analysis reveals that SI significantly affects SP (β = 0.129; p < 0.05) among HEIs in China and Pakistan. This confirmed *H2* and is in line with research presented by Bossink (2007) and Diepenmaat *et al.* (2020).

Previous research showed that psychological empowerment Iqbal *et al.* (2021) as well as organizational learning (Iqbal and Ahmad, 2020), psychological safety, environmental innovation and frugal innovation Iqbal *et al.* (2021) mediate the relationship between transformational/ SL and organizational SP. In the manufacturing industry the implementation of lean management practices was identified as a successful mediator between transformational leadership and organizational SP (Burawat, 2019). This study posits that SI also mediates the relationship between SL and SP. Regarding the mediating impact, Table 3 indicates that SL significantly affects SP through SI (β = 0.061; p < 0.05). Therefore, *H3* was accepted. Thus, it is concluded that sustainable leaders substantially influence SP though SI in HEIs.

In the presence of any intervening variable between an independent and a dependent variable, there is either partial mediation or complete mediation (Iqbal and Ahmad, 2020). According to Maxwell *et al.* (2011), the presence of significant direct and indirect effects indicates partial mediation. In cases where a direct effect is non-significant, there is complete

mediation. Moreover, Carrión *et al.* (2017) stated that there is complementary partial mediation when a direct effect and an indirect effect are in the same direction. In another scenario, it demonstrates the presence of competitive partial mediation. As shown in Table 3, both the direct (β = 0.019) and indirect effects (β = 0.061) are in the positive direction, but the former is non-significant (p > 0.05). Accordingly, there is a competitive partial mediation of SI on the relationship between SL and SP in HEIs in Pakistan and China.

Finally, *H4* posits that MD can amplify the impact of SL on SI. However, the significant negative coefficient (β = −0.420; p < 0.05) on the variable for interaction (combining SL and MD) does not support this hypothesis. This finding is contrary to both the results obtained by Sharma and Vredenburg (1998) and the assumption that the context of innovation, often associated with uncertainty, requires significant MD (Strobl *et al.*, 2020), however, it is in line with results reported by Iqbal *et al.* (2021) on the moderating role MD has on the relationship between SL and environmental innovation. Taking the results into account, *H4* was rejected in this study.

To elaborate the conditional impact of MD, the authors drew a graph of the interaction effect (Figure 4). This graph clearly shows that the slope appears steeper in the presence of low MD, which means that university leadership with greater discretion is more likely to work for their own interests, based on agency theory. High MD may also create an environment that allows managers to develop their incompetence (Espedal, 2015).

Hypothesis	β	S.D.	t-value	p-value	LLCI	ULCI
Direct effect						
SL>SP	0.019	0.032	0.594	0.553	−0.044	0.082
Indirect effect						
SL>SI> SP (H3)	0.061	0.021	2.905	0.003	0.020	0.102

Table 3.
Mediating analysis

Notes: SL = sustainable leadership; SI = social innovation; SP = sustainable performance; MD = managerial discretion

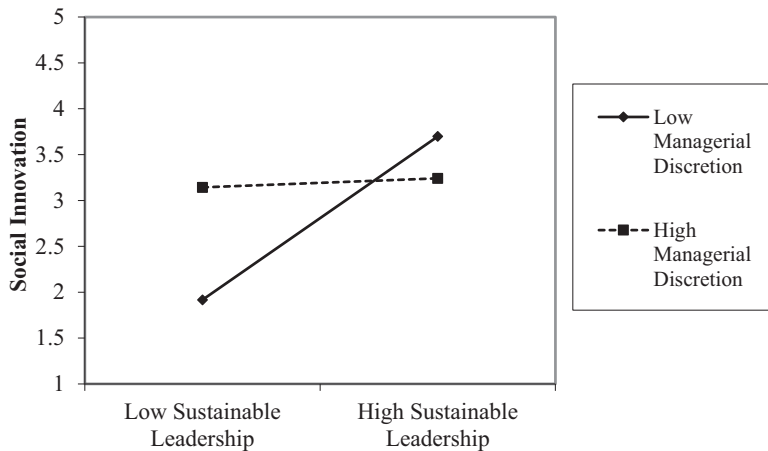**Figure 4.**
Moderating effect of MD

As indicated in the theoretical part of this paper, researchers such as Aguinis and Glavas (2012) found a positive correlation between MD and SP. The present study revealed that higher MD weakens the relationship between SL and SI. Meanwhile, this relationship must be strengthened in order to increase SP. This finding emphasizes the contextual impact of MD. Since MD may negatively, positively, or neutrally effect organizational performance as defined mainly by financial outcomes (Wülferth, 2013), it may also have a negative influence on SP.

4.1 Practical implications

The findings from this study have several implications. Firstly, managers in HEIs should encourage SI. As stated in the literature on the subject, the sustainability of HEIs in Pakistan is in the preliminary and the introductory stage, taking into account all its areas (research, curriculum, faculty, governance and stakeholder engagement). Implementing SI may help overcome barriers to sustainable development of the organizations under study.

A sustainable higher education leader should provide new faculty members with induction programs to help them understand the system and its functioning, further develop the potential of faculty members, encourage them to join interdisciplinary research and consult with businesses, and empower them to extend the scope for innovation (Mahajan, 2020; Wright and Horst, 2013). Based on enhanced commitment level among students, a collaborative work environment also contributes to knowledge creation, which is needed for innovation. Moreover, the provision of solutions that are shaped by the nature of the issues at stake and collaborative learning, which focuses on real-life situations, is needed.

Secondly, HEIs in both of the countries under study need sustainable leaders to create and implement SI, and thus to increase their SP. This entails choosing appropriate methods for candidate selection when deciding whom to employ or promote to managerial positions and/or developing SL competencies among current managers. The candidates for sustainable leaders should be familiar with natural and health sciences, engineering, and social sciences (Earth Institute, 2008) and have the potential to solve problem areas when building a sustainable organization (Mahajan, 2020). This requires knowledge about "the systems in which sustainable development takes place, the strategies used to intervene in that system, and the implications of alternative interventions" (Hull *et al.*, 2016). When selecting candidates for promotion to university leaders, one may focus on the individual-level characteristics because interpersonal competencies and empathy are crucial (Wesselink *et al.*, 2015). At this point, it is worth mentioning that the material presented in this study also has educational value. In particular, it provides knowledge on the mechanism between SL and SP.

This study also reveals that SI strengthens the relationship between SL and SP. As, the main focus of education managers still is the maximization of shareholder value. Leaders of HEIs should implement SI that involves many stakeholders and takes into account the values that all the stakeholders experience (Cunha and Benneworth, 2020). As far as educational programs are concerned, higher education has many possibilities for promoting students as agents of social change. Successful university initiatives for developing future sustainable leaders were presented by Pless *et al.* (2011), de Paula Arruda Filho *et al.* (2019) and Hull *et al.* (2016), but new country-specific solutions are needed (Mahajan, 2020; Periac *et al.*, 2018).

Thirdly, policymakers (government bodies and national education boards) should monitor the level of MD in educational organizations because – as the research shows – the optimal situation for SI entails high SL and low MD. To be transformative, HEIs have to transform themselves. MD should diminish with increasing sustainability-

related legislation and certification (Iqbal *et al.*, 2021). In this context, the problem to be resolved is the underrepresentation of Asian universities in sustainability ratings (Abubakar, 2019).

Finally, fulfilling the above postulates will have an impact on society. The mission of HEIs is to create caring and thoughtful generations who are motivated and skills to help advance economic, environmental, and social development.

4.2 Theoretical implications

This study contributes to the body of academic knowledge by integrating higher education, sustainable development, leadership, and innovation lines of enquiry. Consistent with previous research (Iqbal *et al.*, 2021; Iqbal and Ahmad, 2020), this study confirms the direct impact of SL on SP. However, this is the first study to explain the process by which sustainable leaders impact SP with the use of SI as mediator. It demonstrates the presence of a competitive partial mediation of this variable.

The findings of the present study reinforce the idea that further conceptual models need to be developed that acknowledge that relationship between SL and SP is not direct and straightforward. On the contrary, in this case this relationship is not only partially mediated by SI, but also moderated by MD. The latter, however, has a negative impact on this relationship, which was unexpected given the assumptions of UET. This advances the understanding of the theory of SL as well as its role in achieving the goals of sustainable development in educational settings. In doing so, this study responds to the call by Burawat (2019), do Adro and Fernandes (2020), and Bayuo *et al.* (2020).

From an empirical point of view, the present study fulfills the rigor of quantitative empirical examination to understand the mechanism of how and when SL influences SP. Researchers may use these research assumptions and methods to extend the current state of knowledge in organizations other than HEIs.

5. Conclusions and limitations

This study emphasizes that HEIs are responsible for creating a sustainable future. It aids in understanding the mechanism by which they can achieve high sustainable performance. In particular, it demonstrates that SL significantly influences SI in educational institutions. In turn, SI has a significant impact on the sustainable performance of HEIs. SI also partially mediates the relationship between SL and sustainable performance. However, a high level of MD (as a moderator between SL and SI) may hinder sustainable performance.

This study contributes to the academic knowledge not only by elaborating the above-presented mechanism but also by integrating such research domains as sustainable development, higher education, leadership and innovation. Moreover, it also contributes to empirical studies, which use the UET. This study provides both methodological and theoretical foundations to develop further conceptual models on the relationship between SL and sustainable performance in HEIs. Moreover, since the presented research revealed a low level of sustainable performance and moderate presence of SL, SI and MD among the surveyed HEIs, this article presents numerous practical implications for university managers, policymakers and society. They cover: the selection of proper candidates for university leaders, stimulation of SI though shaping collaborative work environment and involving many stakeholders, implementation of educational programs for developing future sustainable leaders and the use of monitoring of the level of MD given to university leaders.

5.1 Limitations
It must be acknowledged that this study has limitations, although they can provide avenues for future researchers. Being cross-sectional in nature, this study might not have fully explained the proposed relationships. Future studies are recommended to adopt a longitudinal approach to investigate the same model. The present study was based on a non-probabilistic sample. In the future, researchers may also employ representative samples, larger sample sizes, and multiple sources of data to validate these empirical findings. This study analyzed the moderating effect of MD treating it as a coherent phenomenon and based on UET. Future studies are suggested to investigate the conditional effect of MD based on agency theory. Since MD has different dimensions (e.g. discretion in hiring or introducing new services (Wülferth, 2013)), further research should also attempt to identify their moderating impact. Finally, each country and region has its own culture and culture may have influenced the current findings. Therefore, researchers could conduct studies to validate the proposed model in Western and developed countries as well.

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20

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