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# The quality of management schools and sustainability: The moderating effect of ethical behavior of firms

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ABSTRACT

Purpose: This paper examines the association between the quality of management schools and sustainability and investigates whether ethical behavior of firms moderates relationship between quality of management schools and sustainability.
Design/methodology/approach: The sample consists of 500 country-year observations over the period of 2014-2017. Sustainability is collected from the Global Sustainable Competiveness Index Reports for 2014, 2015, 2016 and 2017, while the quality of management schools and ethical behavior of firms are collected from the Global Competiveness Reports for the same years.
Findings: The findings of this study suggest that the quality of management schools is positively associated with sustainability. When testing for the moderating effect of ethical behavior of firms on the association between quality of management schools and sustainability, results show that the positive association becomes positive and more significant for countries where firms operate with high ethical behaviors, while the association becomes insignificant for settings where firms operate with low ethical behaviors. Findings also show that the quality of management schools and ethical behavior of firms play a complimentary role in improving sustainability.
Social implications: The findings emphasize the role played by business schools and business ethics in improving sustainability. These results may have policy implications for governments aiming to improve sustainability by emphasizing on education for sustainable development in management schools' programs, enforcing standards dealing with business ethics and controlling firms' compliance with them.
Originality/value: The findings of this study highlight the importance of education, as proxied by the quality of management schools, in the development of sustainable societies and economic systems.



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## 1. INTRODUCTION

Sustainability has been gaining momentum as a common concern for stakeholders and policy makers (Guidara et al., 2021). It is generally defined as the capability to respond to human requirements without compromising future generation's needs, economic, environmental and social issues (Tilbury, 2007). Given the increasing concern of policy makers about sustainability, it is crucial to identify its determinants in order to assist governments in their efforts to improve sustainability levels. Recently, there is a common consensus that education plays a critical role in the development of sustainable societies and economic systems (Müller et al., 2020). The global sustainability agenda has called for the establishment of new pedagogies in school education that foster sustainability actions and increase students'awareness about the complexities and uncertainty of the surrounding world (Mogren et al., 2019). Akrivou and Bradbury-huang (2015) suggest that "there is now widespread consensus that conventional business activity needs to be reformed with an essential purpose to genuinely generate new ways of valuing and acting to enable virtue in the economy and the society". Since education may support the development of a more sustainable manner of thinking, working, and living (Müller et al., 2020), examining its effect on sustainability represents an important research question. More specifically, examining the effect of the quality of management education in higher education institutes, as proxied by the quality of management schools, on sustainability may represent an interesting research topic that tries to explore the association between academic to business professional word. While there are some empirical enquiries in the literature that have examined the determinants of sustainability reporting at company level (e.g., Niu, Zhou and Pei, 2020; Kuzey, and Uyar, 2017), country level (e.g.,Koirala and Pradhan, 2020; Guidara et al., 2021), we are not aware about any empirical enquiry that has been specifically devoted to this research topic.

Therefore, the objective of this paper is to examine the effect of the quality of management schools on sustainability and test whether ethical behavior of firms moderates this relationship for a cross-country dataset. Focusing on the quality of management schools is particularly appealing as higher education in business provides any economy with some future actors who may operate as managers, accountants, auditors and businessmen (Khlif and Guidara, 2018). In addition, new business schools graduates will face an economic reality that may diverge from values that have been acquired from the academic world. Therefore, we expect that the environment where they will operate, and more specifically the ethical behavior of firms may affect between the association the quality of management schools and sustainability. In order to test the empirical validity of these theoretical predictions, a sample of 500 country-year observations over the period of 2014-2017 is used. Results show that the quality of management schools is positively associated with sustainability. When testing for the moderating effect of ethical behavior of firms on the association between quality of management schools and sustainability, reported results suggest that the positive association becomes positive and more significant for countries where firms operate with high ethical behaviors, while the relationship becomes insignificant for settings where firms operate with low ethical behaviors. Findings also show that the quality of management schools and ethical behavior of firms play a complimentary role in improving sustainability. Our findings highlight the importance of education, as proxied by the quality of management schools, in the development of sustainable societies and economic systems. These findings also highlight the complementarily between business schools and business ethics in improving sustainability. These results may have policy implications for policymakers aiming at improving sustainability level in their countries through the adoption of education for sustainable development in management schools' programs and the enforcement of standards dealing with business ethics. The rest of the paper is organized as follows. Section 2 develops theoretical bases for the association between quality of management schools and sustainability and how ethical behavior of firms may affect this relationship. Section 3 describes the research design. Section 4 analyses the empirical findings of this study. Finally, section 5 concludes the paper.

## 2. HYPOTHESES DEVELOPMENT

### 2.1 Quality of management schools and sustainability

Education is a key device that offers possibility to young generations to acquire knowledge, attitude and skills for building a

sustainable future (Mahajan, 2020). More specifically, management education is supposed to prepare future leaders and managers for the corporate world (Mahajan, 2020). Business professors focus more on materialistic thinking in their classes (Haski-Leventhal et al., 2017). Nevertheless, this way of teaching and delivering knowledge to business graduates is no longer functional as it fails to serve humanity in ways that are sustainable (Haski-Leventhal et al., 2017). As a consequence, even if ethics and sustainability principles are taught, they are simply referring to business ethics as principles that may be taken into account by future managers in their decisions and not an entire objective to achieve ethical ends (Haski-Leventhal et al., 2017; Choudhury et al., 2020). The call for business schools to emphasize on sustainability and business ethics and to be more than "brain washing institutions educating their graduates only in relatively narrow shareholder value ideology" (Matten and Moon 2004, p. 323) has been gaining momentum after several corporate scandals in both sides of Atlantic (Crossan et al. 2013; Giacalone 2007). In his speech, the president of Texas A and M University, Robert Gates, put more emphasize on sustainability and business ethics in management education after the Enron's collapse: "All of these liars and cheats and thieves are graduates of our universities. The university community cannot avert its eyes and proclaim that this is not our problem, that there is nothing we can do, or that these behaviors are an aberration from the norm" (Gates 2002).

Accordingly, business schools may play an important role in shaping economic attitude towards sustainability as several actors acting within an economy in one country represent the output of management schools including accountants, auditors, managers and some businessmen (Khlif and Guidara, 2018). In this regard, Badea et al. (2020, p. 3) posit that "the evolution of ESD in higher education can be traced by following six levels which address issues related to: (1) policy, administration and planning; (2) education (courses and study programs); (3) research; (4) operation of the university campus; (5) services; (6) evaluation and reporting at the institutional level". The primary objective of management schools is to ensure high degree of mastery of technical knowledge and professional training through the interaction between top researchers in specific fields and professionals with high level of expertise (Khlif and Guidara, 2018). Top business schools have a custom to invite qualified experts to present true case studies that aim at enhancing students'capabilities to understandthe real world of business in terms of professional activities and engagements (Khlif and Guidara, 2018). However, these management schools have received a lot of criticism and have been blamed for their over focus on the concept of "*profits-first*", while neglecting social and environmental issues (Neubaum et al., 2009).Management schools have come under increasing scrutiny as ethical considerations and sustainability in business were neglected in students' training programs (Adler, 2002). In this regard, Rutherford et al. (2012, p. 175) suggest that "the concern seems well-founded given not only the ethical crisis in the business community, but also the fact that business majors make up an increasingly large percentage of undergraduate degrees".

Mogren et al. (2019, p. 1) suggest that "the global sustainability agenda challenges traditional pedagogies and calls for a school education that fosters awareness of the complexities and uncertainty of the surrounding world". Top management schools have responded accordingly by integrating the concept of education for sustainable development in their teaching programs, emphasizing sustainability and education for sustainable development in the everyday life of the school, supporting teaching staff in the application of education for sustainable development, and offering to students the possibilities to launch their own initiatives (Müller et al., 2020).

As sustainability becomes a leadership issue(Müller et al., 2020), high quality management schools encourage reciprocal cooperation with diverse stakeholders to find shared sets of values as an important aspect of education for sustainable development implementation through, for example, fostering students' cooperation with the local municipalities find solutions to the acidification of ecosystems (Mogren et al. 2019). Khlif and Guidara (2018) posit that beyond technical knowledge and professional training, high quality business schools emphasise on business ethics and sustainability issues. Accordingly, highly qualified managers, auditors will reduce the propensity to act opportunistically by prioritizing the overall welfare of their country. This implies that courses specifically dedicated to business ethics and education for sustainable development implementation will give more incentives to current students of management schools, who will be the future actors in the economy, to act ethically and improve sustainability. Badea et al. (2020) suggest that students' sustainable behaviors are mainly influenced by their perception of sustainable campus initiatives and teaching staff involvement in business ethics. They further provide evidence that the awareness of sustainable development-specific concerns acquired through responsible business learning increases students' commitments towards sustainability in the Romanian setting. Based on these theoretical predictions, we expect that a high quality of business schools in one country will increase students' awareness about sustainability through education for sustainable development. As the output of management schools (e.g., accountants, auditors, managers and some businessmen) will represent a significant part of the economic actors in one country, we expect that high quality management schools will positively enhance sustainability effort in one country. Therefore, the following hypothesis is tested:

*H1: The quality of management schools is positively associated with sustainability.*

### 2.2 The moderating effect of the ethical behavior of firms on the association between the quality of management schools and sustainability

Moving from academic atmosphere to a turbulent business world, graduate students will be confronted to an economic reality that can either reinforce the principles of education for sustainable development learned in management schools or diminish their willingness to follow sustainability values (Khlif and Guidara, 2018).The economic environment and more specifically firms where these new graduates operate will play an important role in their behavior. Business ethics represent a cornerstone for any control environment conceived at firm (Guidara et al., 2021). For instance, Lashley (2016, p. 1) suggest that "business ethics provides a potential analytical framework through which to evaluate management practice in general and sustainability in particular". Even if new graduates are educated in high quality management schools where they are alerted about the importance of sustainability in nowadays economy, it is always possible for them make a deviation if they operate within a company that adopts an unethical behavior by prioritizingthe concept of "*profits-first*" at the expense of firm's environment and employees' welfare (Guidara et al., 2021). For example, it is well known that US business schools are among the best ranked worldwide. Nevertheless, Ambrose (2019), the energy correspondent of the Guardian, reports that a large number of companies making environmental sustainability infractions and concealing them are located in USA. Recently, Guidara et al. (2021) document that ethical behavior of firms moderates the association between the strength of auditing and reporting standards and sustainability as the positive association between both variables is more pronounced for countries characterized by high ethical behavior of firms. Accordingly, we expect that the positive association between the quality of management schools and sustainability will be more prevailing for countries characterized by high ethical behavior of firms.Thus, the following hypothesis is formulated:

*H2: The positive association between the quality of management schools and sustainability is more (less) pronounced in settings characterised by high (low)ethical behavior of firms.*

Figure 1 below illustrates the conceptual framework for the associations explored in this study.

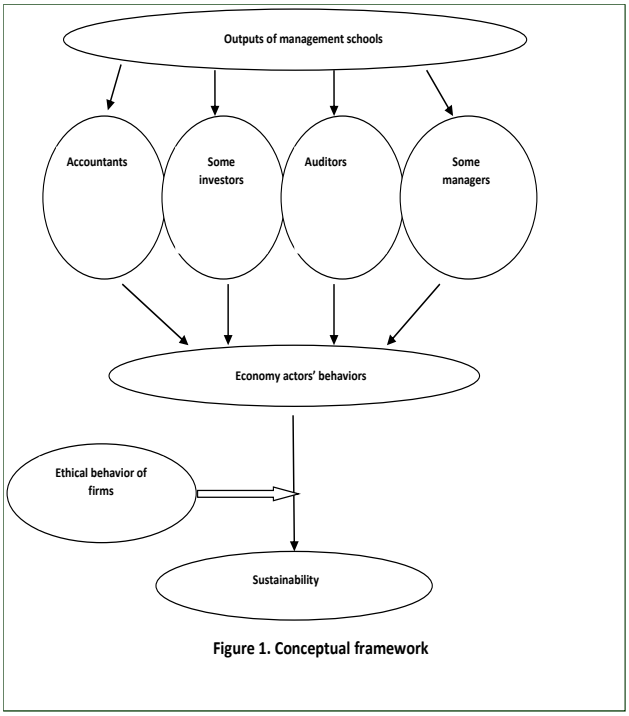


**Figure 1.** Conceptual framework

## 3. RESEARCH DESIGN

Data for this study are collected from a wide range of public sources (e.g., The Global Competiveness reports, the Global Sustainable Competitiveness Index reports). Table 1provides details about the data used to measure the different variables and their various sources.

[Insert table 1 about here]

### 3.1 Sample

The initial sample consists of 138 countries included in the Global competitiveness reports (GCR) for the following years 2014-2015; 2015-2016; 2016-2017 and2017-2018. The Global Sustainable Competitiveness Index reports considered are for 2014-2015-2016 and 2017 and they incorporate 180 countries. Accordingly, we consider 138 countries. We further remove 13 settings which are not included in all the GCR included in our study. Thus, our final sample encompasses 125 countries over the period of 2014-2017 yielding500 country-year observations (125×4).Table 2presents more details about the sample selection process and the list of countries examined in this study.

[Insert table 2 about here]

### 3.2 Dependent variable: The sustainability score

"*The Global Sustainable Competitiveness Index (GSCI) is a measurement for social, environmental and economic development*". (GSCI report 2017, p.8). The sustainability score includes 5 components of equal importance which are: natural capital, social capital, resource management, intellectual capital and governance efficiency. It should be noted that the United Nation General Assembly has focused Sustainability Development Goal as follows: (1) no poverty, (2) zero hunger, (3) good health and well-being, (4) quality education, (5) gender equality, (6) clean water and sanitation, (7) affordable and clean energy, (8) decent work and economic growth, (9) industry, innovation and infrastructure, (10) reducing inequality, (11) sustainable cities and communities, (12) responsible consumption and production, (13) climate action, (14) life below water, (15) life on land, (16) peace, justice, and strong institutions, (17) partnerships for the goals[1].

Since this variable varies from 0 to 100, we divide each score by 10 to be in line with other independent variables that range from 0 to 10.The minimum score is obtained for Taiwan with 2.970 in 2015 and the maximum score is for Sweden and it accounts for 6.090 in 2016.

### 3.3 Independent variable: the quality of management schools score

The Global Competitiveness Reports for 2014-2015; 2015-2016; 2016-2017 and 2017-2018 measure the quality of management schools based on a survey conducted among business leaders who were asked to respond to the following question "In your country, how would you assess the quality of business schools? (1= extremely poor – among the worst in the world; 7= excellent – among the best in the world)". For each country, a weighted average score is computed. The high score for the quality of management schools is for Switzerland in 2017 (6.400) and the lowest score is observed for Egypt (2.000).

### 3.4 The moderating variable: the ethical behavior of firms

The score of ethical behavior of firms (EBOF) is scaled from "1" extremely poor level of corporate ethics to"7"indicating an excellent level of corporate ethics of companies (ethical behavior in interactions with public officials, politicians, and other firms). The lowest value of ethical behavior of firms is obtained for Mauritania (2.400) in 2015, while the highestvalue is observed in 2014 for New Zealand (6.500). The median of score of ethical behavior of firms amounts to 3.900.

### 3.5 Control variables

We consider five control variables including the strength of auditing and reporting standards, the level of corruption, the efficiency of legal framework in challenging regulation, the market size and the strength of investor protection. First, the strength of auditing and reporting standards may increase sustainability level in one country (Guidara et al., 2021).Second, the incidence of corruption may reduce the sustainability effort made by government. For instance, Morse (2006) provides evidence that level of corruption reduces environmental sustainability. Third, the efficiency of legal framework may create a favorable environment to oblige companies to be seriously committed to undertake sustainability actions. Fourth, we control for the level of economic development, as proxied, by the market size. Finally, the level of investor protection can also play an important role in improving sustainability (Herda et al., 2014).

### 3.6 Models specification

To test the empirical validity of the hypotheses formulated above, we conduct a balanced panel data analysis.The following regression model is performed:

$$SS_{it} = \alpha_0 + \alpha_1 QMS_{it} + \alpha_2 EBOF_{it} + \alpha_3 SARS_{it} + \alpha_4 COR_{it} + \alpha_5 EOLF_{it} + \alpha_6 MKS_{it} + \alpha_7 SIP_{it} + \varepsilon_{it} \quad (1)$$

Where:
Dependent variables:
$SS$ = Sustainability score;
Independent variable:
$QMS$ = The quality of management schools score;
Moderating variable:
$EBOF$ = The ethical behavior of firms score;
Control variables:
$SARS$ = The strength of auditing and reporting standards score;
$COR$= Corruption level;
$EOLF$ = The efficiency of legal framework in challenging regulation score;
$MKS$ = Market size;
$SIP$ = The strength of investor protection.

*The moderating effect of ethical behavior of firms on the relationship between the quality of management schools and sustainability level*

To test for the moderating effect of the ethical behavior of firms on the relationship between the quality of management schools and sustainability level (H2), we divide our overall sample into two groups: *(i)* low ethical behavior of firms group (inferior or equal to the median of EBOF) and *(ii)* high ethical behavior of firms group (above

[1] These goals are identified in the following website: https://www.unicef.org/sdgs.

the median). A test of hypothesis H2 consists of observing a significant positive association between the quality of management schools and sustainability level only for high ethical behavior of firms sub-sample, while the same relationship becomes insignificant for low ethical behavior of firms sub-sample. Accordingly, model 2 is constructed as follows for high and low EBOF environments:

$$SS_{it} = \alpha_0 + \alpha_1 QMS_{it} + \alpha_2 SARS_{it} + \alpha_3 COR_{it} + \alpha_4 EOLF_{it} + \alpha_5 MKS_{it} + \alpha_6 SIP_{it} + \varepsilon_{it} \quad (2)$$

A complimentary test has been conducted for the moderating effect of the ethical behavior of firms on the association between the quality of management schools and sustainability level. It consists of using an interaction variable analysis by multiplying the test variable by the moderating one (QMS*EBOF). The higher the values of these two variables, the greater the result of their multiplication will be. Therefore, we expect that the association between the interaction variable (QMS*EBOF) and sustainability will be stronger and more significant. This complimentary test is performed as follows in model 3:

$$SS_{it} = \alpha_0 + \alpha_1 QMS_{it}{*}EBOF_{it} + \alpha_2 SARS_{it} + \alpha_3 COR_{it} + \alpha_4 EOLF_{it} + \alpha_5 MKS_{it} + \alpha_6 SIP_{it} + \varepsilon_{it} \quad (3)$$

## 4. EMPIRICAL RESULTS

### 4.1 Descriptive statistics

Table 3 displays descriptive statistics for all variables included in the model. Sustainability score variable has an average score of 4.375 and varies from 2.970 to 6.090. The quality of management schools has a mean of 4.337 and ranges from 2.000 to 6.400. Ethical behavior of firms has an average of 4.163 and ranges from 2.400 to 6.500.Finally, the means of the strength of auditing and reporting standards, corruption, efficiency of legal framework in challenging regulations, market size and strength of investor protection are 4.729, 9.058, 3.565, 3.983 and 5.629, respectively. Table 3 reports more information about descriptive statistics concerning all variables considered in this study.

[Insert table 3 about here]

### 4.2 Univariate analysis

Table 4 displays univariate analyses. Results show that there is a significant positive relationship between the quality of management schools and sustainability level (0.330). The ethical behavior of firms is positively and significantly correlated with sustainability score (0.319). It should be noted here that the ethical behavior of firms is positively and strongly correlated with quality of management schools score (0.682).Strength of auditing and reporting standards is positively correlated with sustainability level with a coefficient accounting for 0.327. As expected, corruption variable is negatively and significantly correlated with sustainability variable with a Pearson correlation coefficient amounting to -0.263. Finally, the efficiency of legal framework in challenging regulation, market size and strength of investor protection are positively correlated with sustainability score.

[Insert table 4 about here]

### 4.3 Multivariate analyses

Table 5presents the results of multiple regression specified in model (1). Findings show that the quality of management schools is positively and significantly associated with sustainability score (Coeff =0.087;*t*= 2.070[2]).This result provides support for H1 and implies that high quality management schools play an important role in the improvement of sustainability level in one country as they go beyond management technical training and emphasize on education for sustainable development by alerting their future outputs in the economy about the importance of sustainability. In addition, ethical behavior of firms is positively and significantly associated with the sustainability score (Coeff =0.257; *t*= 3.800).This result is in line with that reported by Guidara et al. (2021).

With respect to control variables, strength of auditing and reporting standards, corruption level and the strength of investor protection are not significantly associated with sustainability score, while the efficiency of legal framework in challenging regulations is negatively significantly associated with sustainability level(Coeff = -0.196; $t$ = -3.600). Finally, market size is positively and significantly related to the same variable (Coeff = 0.062; $t$ = 2.830). Controlling for muticollinearity, the variance inflation factors (VIFs) reported suggest that model 1 does not suffer from such a problem since all VIFs are inferior to7.400[3]. The overall explanatory power of the model is significantly high ($F$ = 12.090; $p$< 0.000) and the adjusted-Rsquare accounts for 18.19 %. To check the stability of results, we undertake alternative regressions for model 1 by removing the quality of management schools or ethical behavior of firms. When our test variable is removed, the association between ethical behavior of firms and sustainability remains significant (Coeff = 0.269; $t$ = 3.990). When ethical behaviour of firms is removed, the quality of management schools becomes the most important predictor of sustainability (Coeff = 0.102; $t$ = 2.390). These results imply that the quality of management schools and ethical behavior of firms play a complimentary role in improving sustainability in one country. It is worthy to note here that the strength of auditing and reporting standards becomes positively and significantly associated with sustainability in these two alternative regressions. This implies that the inclusion of both varivables(quality of management schools and ethical behavior of firms) substitutes for the positive effect of the strength of auditing and reporting standards on sustainability.

In order to test the moderating effect of ethical behavior of firms on the relationship between the quality of management schools and sustainability level (H2), the overall sample is sub-grouped into high and low ethical behavior environments based on the median of this variable. For high ethical behavior environments (model 2), the association becomes stronger and more significant as the coefficient moves from 0.030 to 0.179 and it is significant at 1 per cent significance level (Coeff = 0.179; $t$ = 2.730). For low ethical behavior environments (model 2), the findings show that the significant positive association between the quality of management schools and sustainability level reported in model 1becomes insignificant (Coeff= 0.030; $t$ = 0.570). These findings provide support for H2 and confirm that the ethical behavior of firms moderates the association between the QMS and sustainability level. This suggests that ethical behavior of firms plays a critical role in shaping the behaviors of management schools graduates even if they receive a high quality management education emphasizing the importance of sustainability. It should be noted that models 2 do not suffer from multicollinearity problem since maximum VIFs range from 1.610and 3.080. An additional test is performed in model 3[4] by introducing an interaction variable (QMS*EBOF). The findings show a strong positive and significant association between the interaction variable (QMS*EBOF) and the sustainability level (Coeff = 0.035; $t$ = 4.630). This additional test further confirms the moderating effect of ethical behavior of firms on the association between the quality of management schools and sustainability, one the hand, and the complementary role played by the quality of management schools and ethical behavior of in enhancing sustainability, one the other side.

[Insert table 5 about here]

## 5. CONCLUSION

This study examines the relationship between the quality of management schools and sustainability level score and test whether ethical behavior of firms affect this relationship for a dataset of 500 country-year observations over the period of **2014-2017.** Findings show that the quality of management schools is positively and significantly associated with sustainability level. This association is more prevailing in settings characterized by high ethical behavior of firms, while it becomes insignificant for countries characterized by low ethical behavior of firms. Furthermore, the quality of management schools and ethical behavior of firms play a complementary role in the improvement of sustainability level. Findings suggest that high quality management schools play an

[2]The association is significant at 5 per cent significance level.

[3]Multicollinearity is viewed as a serious problem when the VIF exceeds 10 (Neter, Wasserman and Kutner, 1989).

4 In model 3, we exclude the qualiy of mangement schools and ethical behavior as their inclusion will cause multicollinearity problem (in case of inclusion, the VIFs associated with these two variables exceed 10).

important role in the improvement of sustainability level in one country as they go beyond classic management technical training and emphasize on education for sustainable development by alerting future graduates about the importance of sustainability and adopting new pedagogies and programs dealing with environmental and social concerns. Management schools graduates will be more committed to respect sustainability norms if they operate within an economic environment characterized by high business ethics. This paper contributes to sustainability literature in two ways. With respect to policy makers, the empirical findings reported in this study urge governments in developing and emerging economies to adopt programs in higher education institutes that emphasize on the concept of education for sustainable development and establish new pedagogies in school education that increase students'awareness sustainability infractions. In addition, reinforcing business ethic standards will also lead to the improvement of sustainability efforts as these norms will limit discretionary acts undertaken by economic agents. With respect to researchers, this study extends the stream of research examining the determinants of sustainability at country level by integrating a new variable dealing with the quality of management education, as proxied by the quality of management schools, and highlighting its interactions with business ethics in improving sustainability.

This study is subject to some limitations. Firstly, our proxy for the quality of management education may exclude economic agents that have not attended a management school. Therefore, the quality of management schools simply captures a small part of economic actors operating within an economy. However, we are aware not about other proxies linked to quality of business and management education used in international reports. Secondly, variables collected from the Global Sustainable Competiveness Index and the Global Competiveness report are based on survey methods and this may increase the risk of measurement errors (Amara et al., 2020; Richardson, 2006; Guidara et al, 2021).Nevertheless, this is a common limitation of cross-country investigations and data are collected from reputable sources such as the Global Competiveness reports and the Global Sustainable Competiveness Index. Future research may deepen the analysis by integrating a composite index concerning education quality in one country that may include, for example, literacy rate, the percentage of population enrolled in higher education, quality of management schools and their effect of sustainability. This composite index may cover the quality of education of main part of active population within an economy. Testing for the moderating effect of ethical behavior of firms may also represent an interesting research avenue to examine.

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**Table 1. Data description and sources**

| Variable | Description | Source |
|---|---|---|
| SS | The sustainability score is a measurement for social, environmental and economic development.Since this variable varies from 0 to 100, we divide each score by 10 to be in line with other independent variables that range from 0 to 10. | The Global Sustainable Competiveness Index 2014-2015; 2015-2016; 2016-2017; 2017-2018 |
| QMS | In your country, how do you assess the quality of business schools? (1= extremely poor – among the worst in the world; 7= excellent – among the best in the world) | The Global Competiveness report 2014-2015; 2015-2016; 2016-2017; 2017-2018 (country profiles) |
| EBOF | In your country, how would you rate the corporate ethics of companies (ethical behavior in interactions with public officials, politicians, and other firms)? (1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world) | The Global Competiveness report 2014-2015; 2015-2016; 2016-2017; 2017-2018 (country profiles) |
| SARS | In your country, how strong are financial auditing and reporting standards? (1 = extremely weak; 7 = extremely strong) | The Global Competiveness report 2014-2015; 2015-2016; 2016-2017; 2017-2018 (country profiles) |
| COR | The weight of corruption as the most problematic factor in doing business (a percentage). The information is drawn from the 2014, 2015, 2016 & 2017 edition of the World Economic Forum's Executive Opinion Survey (Survey). From a list of 16 factors, respondents were asked to select the five most problematic and rank them from 1 (most problematic) to 5. The results were then tabulated and weighted according to the ranking assigned by respondents | The Global Competiveness report 2014-2015; 2015-2016; 2016-2017; 2017-2018 (country profiles) |
| EOLF | Efficiency of legal framework in challenging regulations In your country, how easy is it for private businesses to challenge government actions and/or regulations through the legal system? (1 = extremelydifficult; 7 = extremelyeasy) | The Global Competiveness report 2014-2015; 2015-2016; 2016-2017; 2017-2018 (country profiles) |
| MKS | The size of the national domestic and foreign market in an index ranging from 0 to 7. | The Global Competiveness report 2014-2015; 2015-2016; 2016-2017; 2017-2018 (country profiles) |
| SIP | Strength of Investor Protection Index on a 0–10 (best) | The Global Competiveness report 2014-2015; 2015-2016; 2016-2017; 2017-2018 (country profiles) |

**Table 2. Sample description**

| Panel A. Sample selection process | |
|---|---|
| Countries included in the GCR 2014-2015 | 144 |
| Countries included in the GCR 2015-2016 | 140 |
| Countries included in the GCR 2016-2017 | 138 |
| Countries included in the GCR 2017-2018 | 140 |
| Initial sample (I) | Minimum (144; 138) = 138 |
| Countries are not available in all GCR | 13 |
| Initial sample (II) after eliminating the countries which are not available in all GCR | 125 |
| Countries reported in the Global Sustainable Competitiveness Index reports | 180 |
| Final sample | Minimum (180; 125) = 125 |

**Panel. B List of countries included in our sample**

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Albania | 19 | Cape Verde | 37 | Georgia | 55 | Kazakhstan | 73 | Mexico | 91 | Philippines | 109 | Switzerland |
| 2 | Algeria | 20 | Chad | 38 | Germany | 56 | Kenya | 74 | Moldova | 92 | Poland | 110 | Taiwan, China |
| 3 | Argentina | 21 | Chile | 39 | Ghana | 57 | Korea, Rep. | 75 | Mongolia | 93 | Portugal | 111 | Tajikistan |
| 4 | Armenia | 22 | China | 40 | Greece | 58 | Kuwait | 76 | Montenegro | 94 | Qatar | 112 | Tanzania |
| 5 | Australia | 23 | Colombia | 41 | Guatemala | 59 | KyrgyzRepublic | 77 | Morocco | 95 | Romania | 113 | Thailand |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Austria | 24 | Costa Rica | 42 | Honduras | 60 | Lao PDR | 78 | Mozambique | 96 | RussianFederation | 114 | Trinidad and Tobago |
| 7 | Azerbaijan | 25 | Croatia | 43 | Hong Kong SAR | 61 | Latvia | 79 | Namibia | 97 | Rwanda | 115 | Tunisia |
| 8 | Bahrain | 26 | Cyprus | 44 | Hungary | 62 | Lebanon | 80 | Nepal | 98 | SaudiArabia | 116 | Turkey |
| 9 | Bangladesh | 27 | CzechRepublic | 45 | Iceland | 63 | Lesotho | 81 | Netherlands | 99 | Senegal | 117 | Ukraine |
| 10 | Belgium | 28 | Denmark | 46 | India | 64 | Lithuania | 82 | New Zealand | 100 | Serbia | 118 | United ArabEmirates |
| 11 | Bhutan | 29 | DominicanRepublic | 47 | Indonesia | 65 | Luxembourg | 83 | Nicaragua | 101 | Sierra Leone | 119 | United Kingdom |
| 12 | Botswana | 30 | Egypt | 48 | Iran, IslamicRep. | 66 | Madagascar | 84 | Nigeria | 102 | Singapore | 120 | United States |
| 13 | Brazil | 31 | El Salvador | 49 | Ireland | 67 | Malawi | 85 | Norway | 103 | SlovakRepublic | 121 | Uruguay |
| 14 | Bulgaria | 32 | Estonia | 50 | Israel | 68 | Malaysia | 86 | Oman | 104 | Slovenia | 122 | Venezuela |
| 15 | Burundi | 33 | Ethiopia | 51 | Italy | 69 | Mali | 87 | Pakistan | 105 | South Africa | 123 | Vietnam |
| 16 | Cambodia | 34 | Finland | 52 | Jamaica | 70 | Malta | 88 | Panama | 106 | Spain | 124 | Zambia |
| 17 | Cameroon | 35 | France | 53 | Japan | 71 | Mauritania | 89 | Paraguay | 107 | Sri Lanka | 125 | Zimbabwe |
| 18 | Canada | 36 | Gambia | 54 | Jordan | 72 | Mauritius | 90 | Peru | 108 | Sweden | | |

**Table 3. Descriptive statistics**

| Variables | Observations | Mean | Standard deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| SS | 500 | 4.375 | 0.564 | 2.970 | 6.090 |
| QMS | 500 | 4.337 | 0.827 | 2.000 | 6.400 |
| EBOF | 500 | 4.163 | 0.919 | 2.400 | 6.500 |
| SARS | 500 | 4.729 | 0.859 | 2.100 | 6.700 |
| COR | 500 | 9.058 | 6.497 | 0.000 | 26.000 |
| EOLF | 500 | 3.565 | 0.912 | 1.200 | 5.800 |
| MKS | 500 | 3.983 | 1.153 | 1.300 | 7.000 |
| SIP | 500 | 5.629 | 1.297 | 1.700 | 9.300 |

Notes: SS: Sustainability score; QMS: the quality of management schools in one country; EBOF: Ethical behavior of firms; SARS: the strength of auditing and reporting standards in one country; COR: the level of corruption in one country; EOLF: the Efficiency of legal framework in challenging regulations; MKS: market size; SIP: the strength of investor protection.

**Table 4. Correlation matrix**

| | SS | QMS | EBOF | SARS | COR | EOLF | MKS | SIP |
|---|---|---|---|---|---|---|---|---|
| SS | 1 | | | | | | | |
| QMS | 0.330*** | 1 | | | | | | |
| EBOF | 0.319*** | 0.682*** | 1 | | | | | |
| SARS | 0.327*** | 0.695*** | 0.780*** | 1 | | | | |
| COR | -0.263** | -0.591*** | -0.738*** | -0.612*** | 1 | | | |
| EOLF | 0.223** | 0.632*** | 0.874*** | 0.707*** | -0.622*** | 1 | | |
| MKS | 0.249** | 0.373*** | 0.246** | 0.330*** | -0.243** | 0.220** | 1 | |
| SIP | 0.195** | 0.310*** | 0.325*** | 0.366*** | -0.221** | 0.300*** | 0.312*** | 1 |

| Notes: SS: Sustainability score; QMS: the quality of management schools in one country; EBOF: Ethical behavior of firms; SARS: the strength of auditing and reporting standards in one country; COR: the level of corruption in one country; EOLF: the Efficiency of legal framework in challenging regulations; MKS: market size; SIP: the strength of investor protection. | |
|---|---|
| *significant at 10%; **significant at 5%; ***significant at 1%. | |

**Table 5. Multivariate regression analysis**

| Dependent variable: SS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | | Model 1 | | Model 1 | | Model 2 | | Model 2 | | Model 3 | |
| | Overall sample | | Overallsample (without QMS) | | Overallsample (without EBOF) | | Low EBOF | | High EBOF | | Overallsample (QMS*EBOF) | |
| | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic |
| Intercept | 2.825 | 11.700*** | 2.955 | 12.640*** | 3.184 | 14.130*** | 3.006 | 9.470*** | 3.696 | 10.590*** | 3.550 | 16.590*** |
| QMS | 0.087 | 2.070** | | | 0.102 | 2.390*** | 0.030 | 0.570 | 0.179 | 2.730*** | | |
| EBOF | 0.257 | 3.800*** | 0.269 | 3.990*** | | | | | | | | |
| QMS*EBOF | | | | | | | | | | | 0.035 | 4.630*** |
| SARS | 0.067 | 1.450 | 0.095 | 2.140** | 0.121 | 2.710*** | 0.161 | 2.930*** | -0.167 | -0.220 | 0.069 | 1.520 |
| COR | 0.002 | 0.510 | 0.001 | 0.200 | -0.006 | -1.280 | 0.006 | 0.930 | -0.021 | -2.650** | 0.004 | 0.080 |
| EOLF | -0.196 | -3.600*** | -0.186 | -3.420*** | -0.052 | -1.310 | -0.119 | -1.930** | -0.023 | -0.340 | -0.160 | -3.400*** |
| MKS | 0.062 | 2.830*** | 0.072 | 3.340*** | 0.057 | 2.550** | 0.062 | 1.780** | 0.072 | 2.370** | 0.054 | 2.520** |
| SIP | 0.015 | 0.810 | 0.016 | 0.850 | 0.020 | 1.050 | 0.063 | 2.310** | -0.003 | -0.120 | 0.015 | 0.810 |
| 2014 | - | - | - | - | - | - | - | - | -0.062 | -0.640 | - | - |
| 2015 | 0.036 | 0.550 | 0.032 | 0.480 | -0.020 | -0.310 | 0.087 | 0.070 | -0.117 | -1.190 | 0.019 | 0.290 |
| 2016 | 0.193 | 2.870 | 0.196 | 2.900 | 0.126 | 1.920 | 0.223 | 2.590 | -0.030 | -0.310 | 0.167 | 2.550 |
| 2017 | 0.239 | 3.620 | 0.243 | 3.670 | 0.192 | 2.920 | 0.319 | 3.780 | - | - | 0.216 | 3.340 |
| F (p-value) | 12.090*** (0.000) | | 12.870***(0.000) | | 11.510***(0.000) | | 6.340*** (0.000) | | 6.190*** (0.000) | | 13.600***(0.000) | |
| Adj R-square | 18.19 | | 17.64 | | 15.94 | | 17.47 | | 14.70 | | 13.60 | |
| Max VIF | 7.40 | | 7.34 | | 2.76 | | 1.61 | | 3.08 | | 5.79 | |
| Number of observations | 500 | | 500 | | 500 | | 228 | | 272 | | 500 | |
| Notes: SS: Sustainability score; QMS: the quality of management schools in one country; EBOF: Ethical behavior of firms; SARS: the strength of auditing and reporting standards in one country; COR: the level of corruption in one country; EOLF: the Efficiency of legal framework in challenging regulations; MKS: market size; SIP: the strength of investor protection. | | | | | | | | | | | | |
| *significant at 10%; **significant at 5%; ***significant at 1%. | | | | | | | | | | | | |