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SOCIAL AND COGNITIVE DETERMINANTS OF SUSTAINABILITY-ORIENTED ENTREPRENEURSHIP: A CROSS-NATIONAL ANALYSIS FROM THE GLOBAL ENTREPRENEURSHIP MONITOR

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ABSTRACT
This study investigates the relationship between national institutional conditions and the sustainability orientation of new ventures, relying on data from the 2021 Global Entrepreneurship Monitor (GEM) Expert Survey for 43 countries. Grounded in social psychological theory—particularly the Theory of Planned Behaviour and value–belief–norm perspectives—this study examines how entrepreneurs' attitudes, perceived social norms, and perceived behavioural control shape sustainability-oriented decision-making. Using expert data from the 2021 Global Entrepreneurship Monitor (GEM) across countries, the analysis tests whether cultural values, inclusivity norms, and perceived institutional support predict entrepreneurs' intentions to integrate environmental goals into new ventures. Results show that favourable attitudes toward sustainability, strong normative approval, and high self-efficacy significantly enhance sustainability orientation, while self-financing and low perceived control weaken it. These findings extend social psychological models of prosocial and moral behaviour to the entrepreneurship context and reveal that sustainable start-up activity depends on collective belief systems and perceived social legitimacy as much as on resources or policy incentives.
Keywords: Venture capital, National Framework Conditions, Institutional Theory, Government Support, Social Norms, Sustainability, Perceived Behavioural Control

INTRODUCTION

The twenty-first century has brought about a wide-spreaded international initiative toward sustainable development that has shifted the environment in which new businesses are created and produced. (1). Simply put, entrepreneurship has emerged as one of the most available instruments that may be exploited by individuals, groups, and government organizations to drive economic progress (2). With the emergence of environmental crises and the United Nations Sustainable Development Goals urging action, several young companies today are marketing themselves as change-makers whose business model is based on environmental and social stewardship (3). These firms are in the attempt to balance both the financial gains and positive environmental and societal outcomes and therefore the traditional profit-oriented mode is extended into a more emanate scope of intentions based business. (4, 5). This has seen environmental conscious and socially responsible practices becoming the top in the list of corporate social responsibility of all organisations (big and small) in the world. (3). In one social psychology perspective, this global change also reflects deeper change in individual thoughts, moral norm and perceived social norm towards environment responsibility.

The group perceptions, beliefs as well as normative pressures that prevail in the society also play a vital role in the establishment and growth of such businesses (6). On one hand, the entrepreneurs interpret the support by the government, open market, good education using social cognition, perceived opportunity, fairness, and environmental responsibility in the environment. These conditions are the availability of formal and informal finance, quality of the regulatory rules, supporting government schemes, the level of educating the entrepreneurial institution, open markets and the existing cultural attitudes towards risk and innovation (7, 8). By looking at how these factors affect sustainable entrepreneurship, the policymakers will be able to provide an environment that would foster sustainable growth that would be not only inclusive, sustainable but also sustainable. Although startups can be used to drive growth, it can also be characterized as having to endure extreme difficulties, including the inability of capital, overly complex rules and regulations, and potentially shifting customer needs on a weekly or monthly basis. (9).

Recent evidence shows that governments that set clear rules, a wide range of funding options-equity, venture capital, and green bonds-and strong entrepreneurship training together boost the birth and growth of businesses focused on sustainability. (8, 10). Cultural and social norms, frequently ignored, can also encourage or discourage green innovation, a factor that matters even more in developing nations. (11).

Sustainability and entrepreneurship are no longer treated as separate conversations; the two now sit at the heart of most national growth agendas. Researchers define sustainable entrepreneurship as the practice of creating ventures that guard ecological limits while delivering market value, and evidence suggests that such activity flourishes where strong leadership, supportive institutions, and a culture of long-term thinking work in tandem. The researcher explains how national structures- government incentives, sustainability-driven trainings and visionary

governing- precondition the appearance of business models that survive, by examining comfort mobility startups in Turkey (12, 13).

Cases of large market and growing economies indicate that founders that incorporate sustainability in their mission attract more green capital and better institutional partners(14). Researcher also writes further that rewards-tax breaks among ecosystem levels, sustainability-tied loans, and clean-tech grids-are essential in getting these ideas out of the lab and into large-scale markets (15,50,70).

The Global Entrepreneurship Monitor (GEM) is probably one of the most prosperous sources of data on the ways people perceive entrepreneurship and the extent to which each national ecosystem is conducive or restrictive. Under GEM, the National Expert Survey (NES) is compiled on the firsthand information on the local experts and discloses the country-related motives and challenges that define the process of sustainable startups in finer details (16). The information on these conditions of the framework can assist researchers and policymakers map out the institutional and economic landscape that sustenance efforts are launched and fostered (7, 17).

The study will be founded on the GEM 2021 NES data set and will take into account the establishment of new ventures oriented on the sustainability in the conditions of the impact of the national framework. The paper seeks to answer the main question: what country-level drivers are the most likely to drive sustainable entrepreneurship forward by mapping the differences between countries and correlating the characteristics of an ecological mission with these characteristics?

Insights from the study enhance scholarly discourse while offering actionable guidance for policymakers, ecosystem builders, and impact investors intent on accelerating green innovation. In addition, the findings highlight ways that conducive framework conditions can shift norms and incentives, easing the transition from profit-centred models to broader, sustainability-driven forms of entrepreneurship worldwide.

This study thus repositions sustainable entrepreneurship as a social-psychological phenomenon. Based on the Theory of Planned Behaviour, it investigates how attitudes towards sustainability (attitudinal component), perceived social support (subjective norms), and perceived institutional support (behavioural control) collectively affect entrepreneurs' environmental commitment. By bringing these constructs together within a cross-national framework, the study situates sustainability entrepreneurialism within the psychology of moral and prosocial behaviour, broadening the understanding of how belief systems and perceived norms are converted into sustainable economic action.

LITERATURE REVIEW

Definitions and Typologies of Sustainable Entrepreneurship

In the context of sustainable entrepreneurship, the discovery, evaluation and exploitation of opportunities to generate economic and socio-environmental value is often defined. It goes beyond traditional entrepreneurship, which often prioritises financial returns, by embedding sustainability goals into the core of the business model (5, 18). By converting market-based solutions into vehicles for systemic change, such enterprises seek to tackle pressing problems like climate disruption, social inequity, and critical resource shortages (4, 19). Over time, researchers have offered classification schemes that highlight the different motivations and aims within this type of enterprise. Ecopreneurs emphasise green outcomes, social entrepreneurs target community well-being, and hybrid founders strive to weigh profit alongside both social and ecological benefits (20).

Significantly, sustainable entrepreneurship frequently arises in settings where government services and supportive institutions are underdeveloped, a reality common in many emerging economies. In these environments, new firms not only pursue profitability but also fill gaps typically addressed by the state, inventing solutions that stabilize markets and enable social mobility (5, 71). This lens casts sustainable founders as unofficial institutional builders, reshaping society even as they maneuver through uncertain markets (21,65).

Integrating Institutional and Social Psychological Perspectives on Sustainable Entrepreneurship

Institutional theory offers a structural basis for understanding entrepreneurship's emergence in formal and informal systems. Social psychological explanations supplement this by explaining how people internalise or reinterpret these institutional signals through values, attitudes, and perceived control over behaviour. Scott (1995) argues that the institutions consist of regulative, normative, and cognitive elements that provide social life with order and meaning. All these pillars together amount to a pointer of the kind of business undertaking that is seemingly valid, attractive or even viable. It is in this sense that the sustainable entrepreneurs are working within the existing structures and, at the same time, trying to modify but without the reach to change the logics which follow the short-term profits at the cost of social and environmental gains in the long-term (22).

North in 1990 serves as a reminder that formal rules including property rights, courts are not isolated but they are combined with informal practices and cultural beliefs to help in informing the economic performance and entrepreneurial performance. This interaction is especially significant when it comes to sustainable ventures, the models of which usually focus on hidden costs, work together and are more likely to explore different terrain of the policy (23). Bruton and co-authors (2010) also state that to set up companies in places that have weak institutions, a special form of agency is required that incorporates both commercial interests and the explicit social agenda (24). The combination of institutional and psychological mechanisms means that action limits are defined by structures, yet the attitudes, self-efficacy and social norms of entrepreneurial people determine whether they act sustainably within these structures.The planned behavior theory assumes that the attitudes, subjective norms concerning social approval and behavioral control give the entrepreneurial individuals the confidence of their

ability to act (72). At the same time, the value theory identifies the universalism and benevolence values as the drivers of prosocial and environmental behaviors that are moral. The synthesis of these strategies makes entrepreneurs as social actors whose decisions about the environment are made as a result of cognitive appraisal, moral norms and perceived feasibility and not institutional conditions alone.

The entrepreneurial ecosystems concept builds on the institutional theory by demonstrating that entrepreneurship occurs within an interconnected network of forces. A healthy ecosystem is a blend of finance, talented individuals, market, advisory services, physical infrastructures and a conducive culture hence developing a fertile ecosystem where start ups can be started and grown (25, 26). When such pieces fit well they reduce cost, reduce risk, provide credibility and provide resources that ventures need to sustain themselves. More recent studies, in particular, (27), observes that accelerator programs, green-investment networks, and policy incentives have to be sensitive to the particular objectives of founders who are sustainability-oriented, in order to be effective (73).

Social and Cultural Norms in the GEM Framework

Global Entrepreneurship Monitor (GEM) provides a multidimensional view of the impact on the national social conventions, cultural expectations and perceived institutional support on the entrepreneurial attitudes and behaviors; the prism is reflected in the model of national Framework Conditions, or NFC. Based on the data collected during the National Expert Survey, GEM structures its analysis in terms of nine discrete yet interrelated dimensions: finance to start-ups, stream and quality of public policy, dedicated government entrepreneurship programmes, entrepreneurship centered education, efficient transfer of research and development, a conducive commercial and legal environment, openness to domestic and foreign markets, reliable physical infrastructure and cultural and social attitudes towards risk and innovation. Taken in combination, these dimensions indicate the incentives, opportunities, and competencies that can be employed by new founders in any given country (7, 28, 72).

Since the NFC framework is institutional in scope, it can be particularly beneficial when examining the topic of sustainable entrepreneurship a field where ambitions tend to live longer than any reason of short-term economic rationality, and where start-ups depend on external conditions in order to survive (51). Take finance: when capital at the initial stage is much in excess and much specialised upon the conventional returns, ecological benefits projects on a long-haul basis are unable to raise even seed funds (1, 4). On the same note, the lack of sustainability-oriented education and pipelines of R&D that cannot introduce clean technologies to commercial prototyping protracts the spread of environmentally quality practices. Lastly, the policies of the government and the existing cultural standards that anticipate social and environmental objectives not only approve such activity but, on the contrary, promote further movement of the wave of sustainability-interested founding (17). The GEM framework can be seen through a social psychological perspective and this perspective not only emphasizes systemic resources but also includes the collective belief systems and normative climates that encourage or inhibit sustainability-oriented behavior among entrepreneurs.

Previous Studies Using GEM on Sustainability or Green Start-ups

GEM data has become a go-to resource for researchers investigating the institutional and contextual factors that foster sustainable and green entrepreneurship. A consistent body of work shows that country-level conditions-especially supportive institutions, pro-environmental culture, and targeted education-determine the extent to which entrepreneurs pursue eco-conscious ventures.

Gupta and colleagues reported that nations boasting robust institutional frameworks and favourable public attitudes toward sustainability record elevated rates of green entrepreneurial activity (29). Building on that, Caputo et al. harnessed GEMs National Expert Survey (NES) to show that green innovation thrives when entrepreneurs perceive ample opportunities and possess self-confidence, especially alongside vigorous public R&D and user-friendly government programmes (30).

Meek and associates stressed that entrepreneurial training and strong normative legitimacy predict a countrys incidence of environmental start-ups (31), a conclusion that parallels Kuckertz and Wagner, who identified accessible financial backing and proactively enforced green policies as critical drivers of new venture creation in the sector (32).

More recently, Vuorio et al.underscored the pivotal role of entrepreneurial self-efficacy in shaping intentions to launch green firms, observing that this link is markedly moderated by high-quality, ecosystem-level educational and advisory services (33).

Duygu Hıdıroğlu has examined how social entrepreneurship, sustainability, and institutional settings interact in developing countries, strengthening the argument that these factors do not operate in isolation (34). In a paper, she calls for flexible policies, inclusive innovation paths, and targeted financing so that sustainability-minded enterprises (67), particularly those led by women or rooted in local communities, can thrive (12). This line of inquiry urges scholars and policymakers to embed social entrepreneurship within wider sustainability assessments, echoing the Global Entrepreneurship Monitor's holistic lens on national ecosystems.

Gaps in Existing Research

Although scholars and policy-makers now pay closer attention to sustainability-driven entrepreneurship, important research gaps still persist. Existing studies typically concentrate on a single new venture type or on firms located in one nation, which hinders more far-reaching conclusions. The GEM dataset is hardly ever utilized in the literature to determine the interaction of multiple institutional factors in the process of determining sustainable start-up activity (68). Entrepreneurship education is seen as a crucial variable, but it rarely appears in

the large-scale cross-country research. Similarly, funding that is geared towards green or impact objectives has not been empirically defined and quantified in most projects.

The weakness in another way is that GEM analyses have seldom drawn on institutional theory as their primary interpretation framework. We are sure that such talk in this frame would enhance our image of how the entrepreneurs maneuver or lean on systemic barriers and incentives. The scholarly articles by Duygu Hidiroglu and others emphasize the significance of structural and system-wide factors in the process (52). According to her research on digital sustainability and innovation leadership and environmental resilience in the post-pandemic shift, new ventures are rarely individual activities; rather, they are carried out by broader cultural and institutional constellations (12, 35,66).

METHODOLOGY

Research Design

The given research has a quantitative cross-sectional research design to test the correlation between the National Framework Conditions (NFCs) and the sustainability-oriented start-ups per country. It also uses individual-level expert scales based on the 2021 Global Entrepreneurship Monitor (GEM) National Expert Survey (NES) dataset, which is a large scale and provides the perspective of experts in entrepreneurship in over a hundred countries.

The first and foremost aim is to determine what characteristics of the national entrepreneurial systems either promote or inhibit sustainable new venturing. To achieve this, the authors apply statistical regression models alongside a descriptive review of selected ecosystem indicators.

Data Source

This study utilizes the GEM 2021 NES dataset, which features 1,092 expert-level responses collected from 25 countries classified as high, upper-middle, or lower-middle income. The NES tool is specifically designed to receive contexted intonations of the point of view of a wide group of national experts-academics, businesspeople, policy-makers and consultants who understand deeply the entrepreneurship environment in their country. Respondents evaluate prevailing institutional conditions by marking a 10-point Likert-scale that runs from "completely false to completely true".

Table #1: Distribution of Corresponding Experts, Region, Country and Income Wise.

Region	Countries	Income Group			
		High	Lower Middle	Upper Middle	Total
Asia	India		72		72
	Japan	37			37
	South Korea	68			68
	Turkey			36	36
Europe & North America	France	50			50
	Germany	74			74
	Greece	37			37
	Hungary	36			36
	Italy	36			36
	Mexico			37	37
	Netherlands	38			38
	Norway	27			27
	Poland	39			39
	Romania			36	36
	Russia			39	39
	Spain	36			36
	Sweden	36			36
	Switzerland	37			37
	United Kingdom	36			36
	USA	48			48
Latin America & Caribbean	Brazil			46	46
	Chile	48			48
	Colombia			45	45
Middle East & Africa	Egypt		61		61
	South Africa			37	37
	Grand Total	683	133	276	1092

Variable Selection & Operationalization

Dependent Variable

The dependent variable of the present research is that of "Sustainability Orientation of the Start-ups (SOS)" which measures the extent to which newly established and growing companies pursue environmental objectives over

profit or speedy growth. The question indicates the potential motivational change and is rated using a ten point Likert scale with higher scores indicating more commitment to green practices. By so doing, SOS is a cross-national proxy of entrepreneurship, driven primarily by the ecological issues.

Independent Variables

Independent variables in this case are realized in the social-psychological context in accordance with the theory of planned behavior. Perceived behavioral control is what is referred to as financial and policy environments- the level at which the entrepreneurs believe that they can deliver their best within the implicit limitations of institutions. Entrepreneurial self-efficacy is a quality of education, which is the belief in the possibility to initiate and sustain sustainability-oriented projects. Such variables of culture as gender inclusivity and risk-taking are the markers of subjective norms, which implies social approval and normative pressure that enhances or discourages sustainable entrepreneurship. These variables are the combination of which predicts the attitudinal orientation towards sustainability-motivated entrepreneurial action. Specifically, the variables follow institutional, financial, education, infrastructure, and cultural dimensions on which the theory proposes influence the emergence of sustainability-oriented start-ups.

The indexation of financial support was based on the ratings of the experts on the equity funding options available, as well as government grants, venture capital and access to seed-money by early-stage entrepreneurs. The institutional quality was gauged on measures regarding pro-entrepreneurial policy, efficient public program, and general tax burden perception. Educational support indicated the level at which primary and tertiary systems provide individuals with skills and attitude to start up businesses.

The quality of infrastructures was determined using the impressions of experts on the quality of physical facilities-roads, power and broadband- on which new firms depend daily during their operations. The items used to capture cultural legacies on the variables of degree to which national norm applauds risk-taking, failure tolerance, and gender parity in the world of entrepreneurship. The indicators were all based on a 10-point Likert scale and were analyzed as continuous data.

Data Cleaning and Pre-Processing

Before any statistical tests were conducted, all responses marked 97 ("Don't know"), 98 ("Not applicable"), and 99 ("Missing") were dropped, since they fall outside the meaningful range of the Likert scale and would skew the resulting numbers. Consequently, these entries were handled as missing data and were omitted from the subsequent computations of means, correlations, and regression models.

Ethical Consideration

Since the present study relies on publicly accessible, secondary data, it did not require formal ethical approval. The GEM NES database itself is assembled according to standard protocols and obtains informed consent from all contributing participants.

Data Analysis

The analytical model was augmented to read regression and correlation results in terms of relationships between attitudes, perceived control, and social norms as predicted by the social-psychological model of behavioral intention. The data analysis proceeded in two clear phases. In the initial phase, descriptive statistics-such as means, standard deviations, and correlation coefficients-were calculated to outline basic sample features and variable patterns. These summary measures provided a first look at how national framework conditions (NFCs) related to the sustainability orientation of startups. Following this, linear regression was used in the second phase to test how strongly specific NFC factors predicted the sustainability focus of newly formed and expanding firms. This two-stage analysis thus not only quantifies institutional impacts but also identifies how social-psychological factors—attitudes, perceived social support, and perceived behavioral control—collectively contribute to sustainability orientation across settings.

RESULTS

The study draws on expert-level data from the 2021 Global Entrepreneurship Monitor (GEM) National Expert Survey to examine how national framework conditions shape the sustainability focus of entrepreneurship and young firms. Social-psychologically, the relationships between education quality, gender sensitivity, and sustainability focus show deep normative and cognitive behavior determinants. This tendency makes sure that the prosocial entrepreneurial intention is based on shared values and social approval perception, and that it is not based on the economic rewards only. The main issue that the research aimed to determine was that institutional characteristics (access to finance, education quality, government endorsement, and cultural standards) presume the level of emphasis on environmental sustainability of start-ups. Descriptive summaries are used to detect the trends across countries, as well as to test the primary question that the research is based on.

Table 2: Summary Statistics of National Framework Conditions and Sustainability Orientation of Startups

Variable	Mean ± SD	Median	Mode	Skewness	Kurtosis
Equity Funding	4.51 ± 2.48	4	3	0.09	-0.68
Govt Subsidies Availability	4.77 ± 2.75	5	7	-0.06	-0.95

Venture Capital Funding	4.4 ± 2.66	4	5	0.04	-0.84
Seed Capital Access	3.93 ± 2.38	4	3	0.31	-0.48
Favorable Govt Policies	3.84 ± 2.47	4	3	0.23	-0.73
Govt Policy Support for Startup Priority	4.61 ± 2.73	5	6	-0.03	-0.97
Tax Not a Burden for Startup	4.32 ± 2.93	4	0	0.11	-1.1
Adequate Govt Programs	4.96 ± 2.64	5	5	-0.16	-0.8
Competent Agencies to Support Startups	4.3 ± 2.73	5	5	-0.02	-1.02
Govt Supporting Programs are Effective	4.42 ± 2.47	5	6	0.02	-0.83
Teaching creativity, self-sufficiency, and personal initiative	3.24 ± 2.51	3	0	0.52	-0.52
Education (College) For Starting Up and Growing New Firms	4.38 ± 2.37	4	5	-0.02	-0.71
Supportive Physical Infrastructure	5.92 ± 2.73	6	8	-0.44	-0.69
Risk-Taking National Culture for Startup	4.22 ± 2.52	4	3	0.24	-0.65
Gender-Inclusive Culture	4.28 ± 2.9	4	3	0.26	-0.9
Sustainability Orientation of Startups	3.51 ± 2.51	3	0	0.25	-0.71

Table 2 summarizes the main descriptive statistics, offering insight into the institutional context believed to shape sustainable entrepreneurship. On a 0-to-10 Likert scale, most averages sit near the midpoint, signalling only moderate, rather than robust, institutional backing. Physical infrastructure emerges as the best-rated component (Mean = 5.92, SD = 2.73), whereas primary and secondary education aimed at fostering creativity receives the lowest mark (Mean = 3.24, SD = 2.51), pointing to a shaky educational foundation for nascent ventures.

Financial support indicators—equity investors, public grants and venture capital—mirror this moderate access, although seed-stage capital is judged harder to obtain. Similarly, cultural and policy clues such as a willingness to accept risk, gender-inclusive programmes and pro-entrepreneurial regulations yield modest averages yet carry wide dispersion across regions.

The sustainability orientation of startups—the dependent variable—records a low mean value of 3.51 and a mode of zero, revealing that in many countries environmental goals receive little attention in new firm's strategic agendas.

Taken together, the evidence paints a mixed institutional picture: solid infrastructure coexists with glaring gaps in early-stage finance and educational quality, both of which are likely to constrain the growth of sustainable ventures.

Table 3: Regional Comparison of Sustainability Orientation of Startups

Region	**Mean ± SD**
Asia	3.70 ± 2.37
Europe & North America	3.67 ± 2.47
Latin America & Caribbean	3.42 ± 2.45
Middle East & Africa	3.10 ± 2.66
Overall	3.51 ± 2.51

Table 3.1: Regional Variances in Sustainability Orientation by ANOVA

Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between Groups	2.4410	1	2.4410	71.53	2.92×10^{-5}	5.32
Within Groups	0.2730	8	0.0341			
Total	2.7141	9				

Descriptive statistics in Table 3 reflect distinct regional variations in the way startups conceptualize sustainability. Asian startups record the highest mean orientation score of 3.70, albeit with their high standard deviation of 2.37 reflecting extensive internal variation. Europe and North America trail closely with a score of 3.67 but with a

somewhat higher spread of 2.47. Latin America and the Caribbean score in the middle at 3.42 and have an equivalent spread of 2.45, followed by the Middle East and Africa with a mean of just 3.10 and the highest SD of 2.66. Overall, the scores suggest that companies in wealthier, better-credentialed markets introduce environmental objectives into plans more consistently than those with newer, less stable economies.

To determine whether differences observed are statistically significant, an analysis of variance (ANOVA) was conducted in table 3.1. The result reveals a strong effect between the groups: F (1, 8) = 71.53, p 0.001, far larger than the critical value of F-sub-crit = 5.32. This result provides strong support for the notion that a particular region has an impact on how much startups prioritize sustainability. The extremely low p-value also indicates that the observed differences in means are unlikely if, in fact, regional context is not linked to sustainability orientation.

Table 4: Correlation Matrix between National Framework Conditions and Sustainability Orientation of Startups

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Equity Funding	1.000															
2. Govt Subsidies Availability	**0.153**	**1.000**														
3. Venture Capital Funding	**0.185**	**0.434**	**1.000**													
4. Seed Capital Access	**0.157**	**0.491**	**0.522**	**1.000**												
5. Favourable Govt Policies	**0.113**	**0.457**	**0.343**	**0.434**	**1.000**											
6. Govt Policy Support for Start-up Priority	**0.097**	**0.494**	**0.328**	**0.406**	**0.687**	**1.000**										
7. Tax Not a Burden for Start-up	**0.090**	**0.304**	**0.186**	**0.291**	**0.369**	**0.395**	**1.000**									
8. Adequate Govt Programs	**0.101**	**0.579**	**0.370**	**0.421**	**0.493**	**0.575**	**0.360**	**1.000**								
9. Competent Agencies to Support Start-ups	**0.070**	**0.398**	**0.231**	**0.309**	**0.457**	**0.469**	**0.320**	**0.577**	**1.000**							
10. Govt Supporting Programs are Effective	**0.108**	**0.523**	**0.321**	**0.398**	**0.537**	**0.596**	**0.390**	**0.665**	**0.692**	**1.000**						
11. Teaching creativity, self-sufficiency, and personal initiative	**0.139**	**0.308**	**0.262**	**0.332**	**0.381**	**0.374**	**0.294**	**0.372**	**0.400**	**0.454**	**1.000**					
12. College's preparation for starting up	**0.099**	**0.288**	**0.245**	**0.320**	**0.369**	**0.356**	**0.285**	**0.423**	**0.405**	**0.435**	**0.495**	**1.000**				
13. Supportive Physical Infrastructure	**0.133**	**0.361**	**0.213**	**0.265**	**0.278**	**0.344**	**0.328**	**0.369**	**0.382**	**0.379**	**0.303**	**0.255**	**1.000**			
14. Risk-Taking National Culture for Start-up	**0.113**	**0.182**	**0.261**	**0.280**	**0.342**	**0.307**	**0.261**	**0.290**	**0.305**	**0.333**	**0.456**	**0.432**	**0.260**	**1.000**		
15. Gender-Inclusive Culture	**0.072**	**0.205**	**0.143**	**0.205**	**0.273**	**0.284**	**0.225**	**0.285**	**0.317**	**0.324**	**0.337**	**0.310**	**0.308**	**0.379**	**1.00**	
16. Sustainability Orientation of Start-ups	**0.034**	**0.240**	**0.254**	**0.252**	**0.270**	**0.264**	**0.165**	**0.285**	**0.287**	**0.315**	**0.285**	**0.291**	**0.209**	**0.278**	**0.24**	**1.00**

A bivariate Pearson correlation analysis was used to give a tentative relationship between the National Framework Conditions (NFCs) and sustainability orientation. The patterns which were observed give preliminary reasons in favor of the fact that the institutional factors influence sustainability-oriented entrepreneurship.

In the financial sector the venture-capital funding (r = 0.254), ease obtaining seed capital (r = 0.252) and even the mere availability of public subsidiies (r = 0.240) were moderate and positively correlated with startups

sustainability orientation. Such coefficients suggest that organized, convenient funding sources will enable emerging companies to offset the environmental objectives with traditional development objectives.

Institutional variables directly controlled by government also revealed meaningful ties. Supportive policy frameworks (r = 0.270) and stakeholders confidence in program effectiveness (r = 0.315) correlated positively with sustainability orientation, underscoring how robust regulatory and administrative infrastructures can incentivize greener entrepreneurial conduct.

Educational conditions registered similar positive associations with the outcome. Specifically, entrepreneurial curricula at the tertiary level (r = 0.291) and creativity-enhancing pedagogy in primary and secondary schools (r = 0.285) demonstrated moderate links to sustainability orientation, indicating that values and skills for responsible business may be nurtured throughout the education continuum.

In contrast, equity financing drawn from the founder's own savings showed almost no link to an environmental mindset (r = 0.034), suggesting that relying solely on personal funds is unlikely to spark greener business ideas. When viewed as a whole, the correlation patterns highlight how much institutional backing and targeted education matter in turning new ventures toward sustainability.

Table 5: Overview of the Significance of Regression Model and ANOVA

Regression Statistics					
Multiple R	0.425664				
R Square	0.18119				
Adjusted R Square	0.175228				
Standard Error	2.276894				
Observations	2076				
ANOVA					
	df	SS	MS	F	Significance F
Regression	15	2363.218	157.5478	30.38972	1.23E-78
Residual	2060	10679.55	5.184247		
Total	2075	13042.77			

The regression analysis examines how well a set of National Framework Conditions (NFCs) accounts for the sustainability orientation of newly established and expanding firms. It uses 15 predictor variables and draws on responses from 2,076 experts in the 2021 GEM NES dataset.

Model Fit

The multiple correlation coefficient (Multiple R) sits at 0.426, suggesting a moderate linear relationship between the NFCs and firms sustainability focus. The R^2 of 0.181 implies that roughly 18.1 percent of the variation in sustainability orientation is attributable to the included institutional and ecosystem factors. The adjusted R^2, at 0.175, corrects for the number of predictors and offers a slightly more cautious estimate of fit. A standard error of 2.28 conveys the average distance between observed values and the predicted regression line.

Model Significance

ANOVA results further validate that the regression model as a whole is statistically significant. An F-statistic of 30.39, paired with a p-value under 0.0001, confirms that the group of independent variables explains substantially more variance in sustainability orientation than a model lacking predictors. This finding reinforces the idea that the chosen NFC indicators genuinely shape sustainability-minded entrepreneurial behaviour.

In summary, the model shows a statistically significant but relatively small capacity to predict sustainability orientation based on ecosystem and institutional conditions, lending empirical weight to the theory that supportive frameworks play a key role in shaping green entrepreneurial activity.

Table 6: Determinants of Sustainability Orientation of Start-ups by Evaluating National Framework Conditions of the Countries.

Variables	**Coefficients**	**Std. Error**	**t Stat**	**P-value**
Intercept	0.942411	0.166313	5.666497	1.66E-08
Equity Funding	-0.04644	0.020718	-2.24165	0.02509
Govt Subsidies Availability	0.014841	0.025084	0.591661	0.554143
Venture Capital Funding	0.102976	0.023199	4.438781	9.53E-06
Seed Capital Access	0.038959	0.027388	1.422515	0.155028
Favourable Govt Policies	0.034061	0.02979	1.143382	0.253013
Govt Policy Support for Start-up Priority	0.00598	0.028246	0.211692	0.832369
Tax Not a Burden for Start-up	-0.02235	0.019617	-1.13915	0.254772
Adequate Govt Programs	0.015097	0.02902	0.520203	0.602978
Competent Agencies to Support Start-ups	0.052515	0.026731	1.96454	0.049602
Govt Supporting Programs are Effective	0.069404	0.03386	2.049735	0.040517

Teaching creativity, self-sufficiency, and personal initiative	0.058264	0.025451	2.28923	0.022167
Education (College) For Starting Up and Growing New Firms	0.090328	0.026498	3.408857	0.000665
Supportive Physical Infrastructure	0.029076	0.021409	1.358133	0.17457
Risk-Taking National Culture for Start-up	0.085191	0.024368	3.496031	0.000482
Gender-Inclusive Culture	0.073481	0.019693	3.731345	0.000196

The regression analysis explores how national institutional conditions shape the sustainability orientation of startups-that is, the extent to which new ventures choose long-term environmental goals over short-term profit. The observed variance in this dependent variable directly reflects differences in national policy, finance, culture, and education.

Several independent variables reached statistical significance at the 5 percent threshold. Venture-capital funding emerged as the strongest predictor ($\beta = 0.103$, $p < 0.001$), suggesting that ample risk capital empowers founders to pursue greener business models. Likewise, well-designed government support ($\beta = 0.069$, $p = 0.0405$) and competent public agencies ($\beta = 0.053$, $p = 0.0496$) correlate positively, implying that effective administration counts more than merely having policies on paper.

Educational influences also proved relevant: primary and secondary curricula that foster creativity and initiative ($\beta = 0.058$, $p = 0.0221$) and entrepreneurship training at the university level ($\beta = 0.090$, $p < 0.001$) boost sustainability focus. Cultural factors matter, too; a generally risk-taking national ethos ($\beta = 0.085$, $p < 0.001$) and a gender-inclusive environment ($\beta = 0.073$, $p < 0.001$) both amplify the green orientation, highlighting the weight of shared values and inclusive opportunity.

Equity funding displays a statistically significant negative association with green behaviour ($\beta = -0.046$, $p = 0.025$), suggesting that founders financing their ventures primarily from personal reserves may prioritize immediate survival over longer-term environmental objectives.

Contrastingly, government subsidies, tax breaks, transportation services and explicit regulation were not significant and this highlights that deep rooted cultural possessions and material resources influence behavior more so than do headline policies.

DISCUSSION

This study shows that sustainability orientation of entrepreneurs is greatly influenced by psychological and social norms that exist within national settings. Based on the results of the GEM national survey of experts in 25 economies in 2021, we demonstrate that formal institutions, such as the availability of finance and governmental effectiveness, combined with informal norms, such as risk-taking attitudes and inclusivity, and the quality of the education system, have a cumulative impact on the likelihood of a nascent venture having environmental targets. The connection of these factors expands on traditional institutional theory Scott, 1995; North, 1990 and demonstrates that both structural and normative pressures influence a start-up commitment to the ecological responsibility (22, 23).

Among the key conclusions of this research is that the type of funding that a young firm is receiving has varied effects on its compliance to sustainability. The founders with the power to pursue ambitious, long-horizon environmental goals, even in the face of high technical or market risk, are most consistently predicted by venture-capital support to the positive ones, which confirms the thesis statement that patient, professionalized money gives founders power to pursue ambitious, long-horizon environmental goals (36, 37). Equity raised on founder assets, on the other hand, is related to a lower sustainability orientation, meaning that self-financed entrepreneurs are preoccupied with survival in the day and in the instant collections (38). These ruptured tendencies demonstrate a greater pecking order in entrepreneurial capital: the access to institutional capital can be used to make an environmental experiment, which can not be even considered by bootstrapping founders. Such evidence aligns with the theory of perceived behavioral control, which states that the perceived capacity to execute sustainability intentions is supported by institutional and financial resources available to the entrepreneurs.

Although accessibility to finance is an important factor, according to our findings, the quality of the institutions and the competence of the public agencies have even stronger weights to the founders. Monetary assistance, in the form of grants, tax breaks, etc. was not effective at predicting whether or not a venture would take a sustainability mindset, instead the factor that predicted it was the perceived effectiveness of such programs in the eyes of the business owner and the perceived competence of the officials they dealt with. Such trend is consistent with those of Autio et al and Terjesen et al who claim that credible, properly implemented institutions bring much more value than a simple policy menu. Businessmen will immediately flock toward plans as soon as they believe that they support working schemes and create actual benefits. When a good governance is sailing on smooth waters, the environment is fertile and the hope on sustainable development transforms the wishful thinking to realistic possibility (39, 40).

Culture we learned is a process enabling factor and two features were exceptional predictors. Calculated risk was also reliably associated with national predisposition that tolerates calculated risk but gender-inclusive social structure, which portrays that green entrepreneurship extracts extensively based on deeper cultural undercurrents (41, 42). Nascent firms are just more eager to integrate environmental objectives in their business models in an environment that tolerates failure (53,54), rewards a wide range of leadership, and engages in equity promotion.

Additionally, the gender-balanced entrepreneurial ecosystem involves diversifying the team perspectives and strategies, which in many cases contributes to the stakeholder-view of sustainability (12, 43). In this case, subjective norms would take center stage, as social norms endorse risk-taking and openness, people begin to view pro-environmental action as socially acceptable, which facilitates intention and downstream action.

There is a third interesting discovery that refers to the primary and long-lasting contribution of education to the formation of sustainability-oriented projects (49, 61) . The close connections between creativity enhancing primary and secondary education and the rigour provided by university level incubation has the implication that sustainable entrepreneurship is planted in the growing values and cognitive behaviour of the young learner. In line with this, Schaltegger and Wagner along with Wals et al. evidence that the exposure to ecological principles is pre-emptive, which conditions the pro-environmental attitudes and deliberate decision patterns later on (5, 44). Adding nuance, Ploum et al. and Lans et al. highlight that competencies in ethics, systems thinking and long-term foresight-emphatically learnt through (55) hands-on cross-disciplinary projects-prove indispensable for ventures aimed at social or planetary repair (45, 46). This evidence stands in stark contrast to prevailing entrepreneurship curricula (56) still fixated on business plans or balance sheets, urging reform that blends ecological literacy, critical reflexivity and stakeholder consciousness (47, 48). Taken together, these assessments imply that development is not a stage but a spectrum, obliging policymakers to weave sustainability thinking through every tier of schooling, from kindergarten to doctoral programs. Influences in education support self-efficacy, a mental precursor to long-term pro-environmental action. This is consistent with social cognitive theory, which emphasises that belief in one's ability is the key to the translation of intention to action.

Although policy-makers routinely place infrastructure (63)and regulatory tools at the centre of growth agendas, our analysis finds that these factors bear no meaningful link to a firms sustainability orientation (58, 69). Roads, high-speed internet, or temporary tax holidays are evidently helpful in launching ventures, yet they appear insufficient to redirect entrepreneurial purpose toward long-term environmental and social outcomes (57). This observation aligns with recent critiques from Stam, Roundy et al., and Acs et al., who remind researchers and practitioners that bricks, bytes, and border rules represent only one strand of the entrepreneurship ecosystem (7, 26, 27).More decisive, and arguably more decisive, are relational and cognitive aspects: the trust that is inherent in institutions, the cultural legitimacy of innovative risk-taking, and social capital that links founders to various sources of learning. In this sense, infrastructure can be viewed as a threshold condition; it maintains firms in business, but does not predict the ability to respond to issues as complicated as climate change or inequality (59). After the existence of the basic utilities and regulations, the quality of governance, stimulation of goal-focused education, and an ethos of accepting failure are all indicative of why some entrepreneurs tend to be sustainability conscious and some are not (8, 42, 60). This makes the policy packages that make heavy investments in network of concrete and code questionable unless they are run concurrently with the programmes (62) that embed the institutional coherence and civic ability within the same entrepreneurial textile.

In other words, the findings indicate that the concept of sustainability-based entrepreneurship is not the outcome of isolated situations but a mutually self-reinforcing network of finance, government, education, and culture. These factors support each other: risk-taking cultures can be more influenced by venture funding; restrictive educations can be more successful when they are consistent with normative inclusion (61,64); and policy can be effective when a competent agency supports it. The article therefore provides empirical evidence of sustainability and entrepreneurship co-evolution as institute.

Study Limitations

Every research project has its flaws and the given analysis is not an exception. To start with, the readers should be skeptical of the ability to make arguments concerning the cause and effect relationships and detect the trends over time since the study depends on the cross-sectional data collected in the course of the GEM National Expert Survey. In addition, although the level of expert of perceptions are quite useful in terms of putting into perspective the broader institutional context, they bear a similar touch of subjectivity, which may not be a reflection of the realities that most entrepreneurs are grappling with in their day-to-day life. The following question is based on the next one, and it concentrates the primary attention on the country-wide conditions, which is a dangerous decision to make without taking into account major differences, which are formed at the regional or industry-related levels. Finally, the study concludes the sustainability orientation by perception alone, and this leaves an open question on how the same are converted to actual environmental or economical outcome-hurdles, which in the future research, should be aimed at eliminating such hurdles by future researchers.

CONCLUSION

This paper develops a social-psychological rationale of sustainable entrepreneurship. It demonstrates how attitudes towards sustainability, social norms perceived, and behavioral control of environments by entrepreneurs are the main factor in their commitment to the environment. These constructs in combination as per the theory of planned behavior are what leads to the rationale of sustainability as a conscious and socially justified behavior and not as an incident of policy or infrastructures. Instead of viewing sustainability as a generalist founder obsession, the statistics indicate that it rises or falls with the quality of the local ecosystem. When the venture capital flows freely, governance is moderate, schools are planned to take enterprising approaches, and cultural

beliefs are likely to promote inclusion and long-term orientation, much more likely to be included in the businesses are the green objectives.

Together, the results confront policymakers to surpass the lists of laws or the lists of the facilities and to a bigger and more comprehensive vision of the ecosystem maturity. Factors of institutional trust, plausible leadership and ambitious educational vision are more significant than a funding increase or incentive. The added value to this argument is that the global society is requiring a green shift and it is not difficult to remember that the development of sustainable entrepreneurship presupposes not only capital but also a positive cultural and cognitive environment.

As the countries are going through interdependent environmental and economic crisis, the progress of sustainability-oriented entrepreneurship is planned to go through the reforms aimed at better institutions development, increasing access to opportunity and developing ecological awareness of education and culture. This work provides a premise of evidence on active design of policies and scholarly studies by quantifying these relations within a range of economies. The future research should adopt psychometric validation and longitudinal designs of approaches employed to measure the attitude, social norms and perceived behavioural control to the actual sustainability behaviours of the entrepreneurs.

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