Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4, 145-162
2024
Publisher: Learning Gate
DOI: 10.55214/25768484.v8i4.1107

Fostering environmental, social and governance-oriented startups: Accessing the moderating effect of universities on entrepreneurial leadership

Nouran Ajabnoor
Management Department, Applied College, Jazan University, Saudi Arabia; nyusuf@jazanu.edu.sa (N.A.).

Abstract: This study explores the complex factors influencing the achievement of Environmental, Social and Governance (ESG) companies. This study examines the impact of several antecedents such as Entrepreneurial Leadership Programs (ELP), Incubator and Accelerator Support (IAS), Access to Mentorship and Network Opportunities (AMNO) and Availability of Funds and Financial Resources (AFFR) on the development of ESG startups drawing upon the theoretical framework of Resource-Based View (RBV). A cross-sectional survey design was used to collect data from academic institutions in Saudi Arabia including state and private universities. Three public and private universities from various geographic locations were chosen for this study. The results suggest a favorable relationship between ELP and the establishment of ESG startups. This highlights the significance of education and the cultivation of skills in fostering entrepreneurial endeavours. The analysis revealed no statistically significant relationship between IAS and ESG startup performance. However, a positive relationship between AMNO and the establishment of ESG startups underscoring the importance of networking and mentorship was found. The research findings also indicate universities' substantial influence in shaping these associations highlighting the need for additional exploration of the factors that motivate university participation in ESG entrepreneurship. The findings significantly contribute to the overall comprehension of the elements and interactions that impact the growth of ESG startups. Moreover, they offer vital insights for policymakers and practitioners involved in the realm of socially responsible entrepreneurship.

Keywords: *Entrepreneurial leadership, ESG startups, Higher education, RBV theory, Students, University role.*

1. Introduction

The integration of environmental, social and governance (ESG) principles with entrepreneurial pursuits has emerged as a novel paradigm for socially responsible and sustainable enterprises in contemporary business environments [1]. ESG-focused startups motivated by their dedication to mitigating global issues while creating financial gains significantly influence the trajectory of economies on an international scale [2]. They are distinguishable from conventional business activities by their focus on environmental sustainability, ethical conduct and societal values. Gaining prominence in ESG-oriented startups necessitates a critical understanding of the dynamics that facilitate their expansion and achievement [3]. It is important to examine whether colleges can reduce the effects of entrepreneurial leadership on the ESG startup ecosystem in considering these circumstances.

Although the literature on ESG-oriented startups and entrepreneurship is expanding relatively little is known about the influence of universities on entrepreneurial leadership. Critical research on understanding how universities shape and influence the leadership practices of entrepreneurs in ESG-focused startups is lacking and this study seeks to fill this void.

History: Received: 14 February 2024; Revised: 2 May 2024; Accepted: 13 May 2024; Published: 17 May 2024
Correspondence: nyusuf@jazanu.edu.sa

The present study has substantial implications for both academic and practical spheres by filling the research void concerning the impact of universities on entrepreneurial leadership. This study enhances our understanding of how ESG principles are incorporated into the entrepreneurial journey. This study also investigates the impact of this integration on sustainable business development which is a pivotal factor in tackling current global issues.

1.1. Research Questions

- How do universities oversee entrepreneurial leadership in ESG-focused startups?
- What are the implications for the sustainable development of these enterprises?

2. Theoretical Framework

In this study, the Resource-Based View (RBV) theory [4] was identified as the most suitable for accessing and evaluating the current research objectives. The rationale for employing the RBV theory is supported by its relevance to the critical variables being assessed. The significance of the contribution of valuable resources and capabilities to an organization's success and competitive advantage is heavily emphasized in the RBV theory. Incubators and accelerators, entrepreneurial leadership programs, financial assets, mentorship and networks are critical in facilitating innovation, sustainable practices, and the expansion of ESG-focused startups. In addition, the RBV provides a framework for understanding how these resources influence mediating factors such as green innovation behavior and Employee Self-Efficacy (ESE) which impact the performance of ESG startups [5]. According to Figure 1, the RBV theory was used to build the framework of the study to evaluate the influence of universities' provision of resources and the possible moderating effect they may have on the facilitation of ESG entrepreneurship. This study elucidates the complex interplay between resources, capabilities and the formation of ESG startups in the academic entrepreneurial ecosystem by applying the RBV theory.

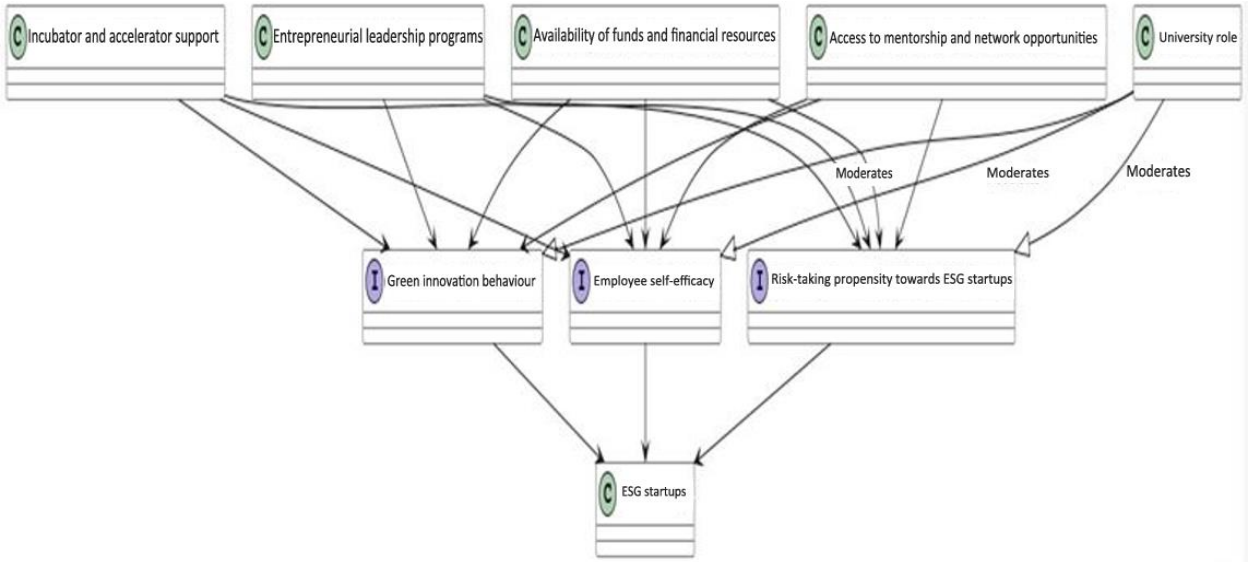

Figure 1.
Framework of study by the author.

3. Literature Review

A successful establishment of a new firm requires several criteria and resources. This literature review evaluates previous research and examines how entrepreneurial leadership programs, incubators and accelerators, mentoring and networking opportunities and other factors affect new business development. This review also examines how these factors affect corporate growth.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 145-162, 2024
DOI: 10.55214/25768484.v8i4.1107

3.1. Incubator and Accelerator Support

Participating in incubator and accelerator programs provides startups with a valuable ecosystem instrumental in their early development [6]. Additionally, Rocha et al. [7] state that these programs offer an array of resources, mentorship from experienced entrepreneurs and unparalleled networking opportunities, equipping startups with the tools needed to thrive. A study conducted by underscores the profound impact of incubator and accelerator support on the fate of startups. The findings indicate that firms that engage in such programs not only have a higher likelihood of surviving in the early stages but also tend to experience accelerated growth. However, it is vital to approach these findings with a discerning eye. Critics have raised concerns about the external factors that might influence the outcomes observed [7, 8]. Multiple elements such as market circumstances and competitive pressures may impact a startup's chances of success or failure regardless of whether it is part of an incubator or accelerator program [9].

The particular procedures by which these programs contribute to startup success are still a topic of active research, even though it is apparent that they play an essential role in supporting companies [10]. We can improve their efficacy and provide targeted assistance to new businesses in their formative stages by delving into the working mechanisms of these initiatives. Incubator and accelerator programs are helpful for entrepreneurs [11].

3.2. Entrepreneurial Leadership Programs

Aspiring business owners may learn about theory and practice in the dynamic world of entrepreneurship through entrepreneurial leadership programs Awad and Salaimeh [12]. Tan et al. [13] demonstrated how such programs have changed people. They found that program participants had stronger entrepreneurial ambitions and were more likely to start new businesses. This indicates that entrepreneurial leadership training may shape young entrepreneurs' goals and behaviors. However, further studies and initiatives must be critically examined. The difficulty of measuring program participants' long-term impact and performance has been a major criticism [14]. Attributing long-term success to program participation may be difficult because entrepreneurial paths are unpredictable [15].

Entrepreneurial leadership programs may inspire and support entrepreneurs but they must be evaluated. Knowing the intricacies of long-term results and participant bias helps balance their influence in the entrepreneurial environment [16].

3.3. Availability of Funds and Financial Resources

The potential for a new business to be established is strongly influenced by the accessibility of financial resources [17]. Startups, businesses and other entrepreneurial endeavors frequently require sizable starting funds, ongoing operating funds and expanded capital. Capital and financial resources boost inexperienced businesses' chances of success [18].

Several studies have linked access to capital to increase the chances of creating a successful new business. Entrepreneurs need access to financing to spend on areas such as product development, marketing, talent acquisition and infrastructure to increase their chances of success in the difficult early phases of business growth [19, 20]. Financial resources including accounting skills, financial management tools and credit are as crucial as capital for fledgling businesses. Research shows that financial literacy and management abilities can maximize limited resources.

A comprehensive understanding of this connection is required due to the intricate relationships among funding sources, the long-term effects of financial benefits and the requirement to solve deficiencies in resources [21, 22]. Entrepreneurial ecosystems should continue to prioritize initiatives to close resource gaps and encourage financial inclusion to ensure that prospective business owners have equal opportunities to succeed [23]. Understanding the multifaceted nature of financial resources in new ventures is essential for creating policies and support systems that foster a thriving entrepreneurial landscape [24].

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 145-162, 2024
DOI: 10.55214/25768484.v8i4.1107

3.4. Access to Mentorship and Network Opportunities

Mentorship and networking are universally acknowledged as essential components of an entrepreneurial journey. They provide invaluable guidance, resources and connections that can significantly enhance entrepreneurs' chances of successfully launching and growing a new venture. The research conducted by Dagnino et al. [5] underscored the pivotal role of access to mentorship and networks in facilitating successful new venture creation.

Although the benefits of mentorship and networking are evident, valid critiques deserve consideration. One primary challenge lies in establishing clear causal relationships between mentorship, networking and entrepreneurial success [25]. Ventures with inherently higher potential for success may naturally attract more mentors and network opportunities [26]. This confounding factor can make it difficult to discern whether mentorship and networks themselves are driving success or if they are merely coincidental outcomes of a venture's inherent promise [27].

Moreover, the impact of mentorship and networking may vary depending on the stage of the entrepreneurial journey [28]. Although mentorship and networking are beneficial in the early stages of the entrepreneurial journey, their effects on later-stage ventures are less pronounced [29]. The significance of mentorship and networking in entrepreneurship cannot be overstated. However, a detailed understanding of their involvement in entrepreneurial success requires addressing the challenges of demonstrating causality and the possibility that their influence may change as a business evolves [18]. Based on the literature review, the following hypotheses are suggested for further results and conclusions:

H_1: Entrepreneurial leadership programs are positively and significantly associated with successful new venture creations.

H_2: Incubator and accelerator support are positively and significantly associated with successful new venture creations.

H_3: Access to mentorship and network opportunities is positively and significantly associated with successful new venture creations.

H_4: The availability of funds and financial resources is positively and significantly associated with successful new venture creations.

4. Moderating Effect of Universities

The synergy between universities and entrepreneurial ecosystems including incubator and accelerator support, entrepreneurial leadership programs, the availability of funds and financial resources, and access to mentorship and network opportunities has gained significant attention in recent years [30]. This literature review provides a critical analysis of previous studies that investigated the growing influence of universities as moderators in the relationship between these factors and the establishment of successful new businesses [31].

4.1. Moderating Effects of Universities on Incubator and Accelerator Support and Successful New Venture Creation

University-affiliated incubators and accelerators support new businesses by offering funding, guidance and connections. These attempts were designed to accelerate the maturation of new businesses and increase their success rates. Here, universities play a moderating role and their impact is complex [32, 33]. Universities can link new businesses with faculty members, researchers and other professionals in the sector by establishing and hosting accelerators and incubators [34]. Considerable research has been conducted on how colleges affect the results of incubator and accelerator programs. However, there are many difficulties in comparing the effectiveness of programmes affiliated with or unaffiliated with universities. Furthermore, there is a possibility of selection bias since university-affiliated programs may attract businesses that have a greater potential for development. It is necessary to conduct additional studies on the elements that make these projects

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 145-162, 2024
DOI: 10.55214/25768484.v8i4.1107

successful such as university networks and aligning programme objectives with university research capabilities.

4.2. Moderating Effect of Universities on Entrepreneurial Leadership Programs and Successful New Venture Creation

University programs on entrepreneurial leadership provide students with the tools required to succeed in the business world. Measuring their success remains difficult despite the impact of colleges on entrepreneurial leadership programs. Distinguishing the unique contributions of institutions from the programme contributions is a prevalent research problem [35]. Furthermore, producing generalizable conclusions is challenging because of the variety of entrepreneurial leadership programs offered by institutions. The effects of university culture and the extent to which universities may modify programs to meet the demands of distinct entrepreneurial environments are two factors that require further investigation regarding how universities determine program results.

4.3. Moderating Effects of Universities on Availability of Funds and Financial Resources as well as Successful New Venture Creation

There is a complicated relationship between the availability of capital and financial resources and the success of new venture formation. Universities play a crucial role in mediating this relationship [36]. Entrepreneurs' paths can be greatly affected by their diverse participation in entrepreneurial ecosystems. There is no denying the positive impact of colleges yet there are still obstacles to overcome [37]. Their moderating influence might be stronger or less dependent on factors such as the level of development of the local entrepreneurial environment and the degree to which universities and businesses work together [38]. Further investigation into the methods through which colleges control the relationship between financial resources and new venture success is required.

Academic institutions play a vital role as intermediaries by strengthening the link between financial support and the launch of successful new businesses [39]. Their impact is evident in many areas, including access to capital, financial education and the provision of platforms for incubators and accelerators [40]. A more thorough comprehension of their moderating roles is necessary to capitalize on them and contribute to the development of a stronger entrepreneurial ecosystem.

4.4. Moderating Effect of Universities on Access to Mentorship and Network Opportunities and Successful New Venture Creation

Universities are natural hubs for mentorship and networking, connecting students, faculty, alumni, and external partners. Access to mentors and networks is recognized as a crucial factor in entrepreneurial success [41]. Universities play a moderating role by facilitating access to these resources through formal mentoring programs, entrepreneurship centers and alumni networks [42]. Although universities facilitate access to mentorship and networks, their impact as moderators requires careful consideration. Establishing causality between university involvement and entrepreneurial success is challenging because external factors can also influence venture outcomes [43]. Moreover, the diversity of mentorship and network opportunities within and across universities necessitates a more in-depth exploration of the specific elements that contribute most significantly to success. There is also limited research on the potential diminishing returns of network size because access to a vast network may not necessarily lead to greater success.

4.5. Further Hypotheses

The following hypothesis was developed for further analysis based on the literature review:

H_5: Universities, as moderators have a positive and significant impact on entrepreneurial leadership programs and successful new venture creation.

H_6: Universities, as moderators have a positive and significant impact on incubator and accelerator support and successful new venture creation.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 145-162, 2024
DOI: 10.55214/25768484.v8i4.1107

H_7: Universities, as moderators have a positive and significant impact on access to mentorship and network opportunities and successful new venture creation.

H_8: Universities, as moderators have a positive and significant impact on the availability of funds and financial resources as well as successful new venture creation.

5. Mediating Factors

5.1. Green Innovation Behaviour

Green innovation behavior refers to proactive actions taken by individuals or organizations to develop and implement environmentally friendly practices and technologies [44]. Green innovation behaviour pertains to the inclination to engage in innovative practices that promote sustainability. The mediation of the relationship between antecedents and the formation of ESG startups is observed. Antecedents can stimulate and facilitate environmentally conscious innovative behavior by providing information, resources and networks [45].

5.2. Self-Efficacy

This refers to an individual's perception of their competence in carrying out duties and effectively dealing with obstacles. According to Clementino and Perkins [46] self-efficacy increases entrepreneurial initiative. The provision of entrepreneurial leadership programs, incubator and accelerator support, mentorship and financial resources has the potential to promote ESE through training and support. This, in turn, drives entrepreneurial initiatives in the ESG sector [47]. The impact of these antecedents on ESE may differ among individuals and circumstances indicating the need for additional empirical investigation [9].

5.3. Risk-Taking Propensity

Risk-taking is a subject of interest in various academic disciplines. Risk-taking propensity refers to an individual's inclination or readiness to embrace situations characterized by ambiguity and engage in measured risk-taking [48]. The ESG industry marked by distinct problems serves as a mediator between the antecedents and the emergence of ESG businesses. According to Sitkin and Pablo [49] risk-taking plays a pivotal role in achieving success in entrepreneurship. The argument is that the current education system is ineffective and requires reform. Entrepreneurial endeavors frequently involve exploring unexplored areas particularly within ESG considerations [48]. Factors such as the provision of support through incubators and accelerators and access to financial resources can serve as antecedents that foster measured risk-taking behavior. Entrepreneurs' risk-taking degrees are subject to variation with excessive risk associated with unfavorable consequences. It is imperative to strike a balance between risk and caution [5].

6. Research Methodology

A cross-sectional survey design was used for this study. Academic institutions in Saudi Arabia, including both state and private universities were selected for data collection. Three public and private universities from various geographic locations were chosen for this study. The data collection questionnaire for this study was tailored to the goals of the investigation while drawing on previous research. The first section of the questionnaire examined research factors while the second half provided demographic information such as gender, age, educational attainment and monthly income.

6.1. Sampling and Population

This study used a purposive sampling technique to select the institutions for the study. Purposive sampling guarantees diversity. Selecting colleges from various geographical areas ensures regional representation and may reflect unique regional contexts for sustainability. A power analysis was performed to determine the sample size by considering the number of variables, targeted degree of accuracy and projected impact size. 512 samples were chosen for analysis as a result. A self-

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 145-162, 2024
DOI: 10.55214/25768484.v8i4.1107

administered survey questionnaire was used to gather the data. The purpose of the questionnaire was to collect information on the variables identified in this study. The survey included multiple-choice, open-ended and Likert 5-point scale items.

An online survey was conducted to improve speed and accessibility. The statistical program, SMART PLS4 was used to evaluate the data collected in this study. The properties of the study variables were described using descriptive statistics such as means, frequencies, percentages and standard deviations. The hypotheses were tested using inferential statistics, including regression, correlation, mediation and moderation analyses.

6.2. Ethics-Related Matters

The study complied with ethical principles including informed consent, data protection and confidentiality. Before data collection, the participants provided informed consent. Only the researcher had access to the acquired data which was kept private. Secure online systems for data collection and storage will ensure data protection.

6.3. Analytical Strategy

A descriptive data analysis was performed using Smart PLS 4. The consistency and reliability of the research tool were evaluated using an alpha test. Multicollinearity tests, means, standard deviations, frequencies and percentages were included in the statistics. A structural equation model was executed using this software. The bootstrapping functionality of SMART PLS4 was also used in this study. The convergent and discriminant validities of the scales were assessed. The goal of convergent validity is to ascertain whether items measure the same concept. According to Dijkstra and Henseler [50] and Hair, et al. [51] composite reliability levels exceeding 0.70 and average variance extracted (AVE) values surpassing 0.50 are deemed suitable. P-values, t-statistics, confidence intervals, and coefficient values were calculated to create a structural model to test the hypotheses.

Table 1.
Construct reliability and validity.

Items	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
AFFR	0.843	0.882	0.903	0.757
AMNO	0.907	0.914	0.942	0.843
ELP	0.804	0.81	0.884	0.718
ESE	0.860	0.861	0.934	0.877
ESG Ups	0.885	0.889	0.946	0.897
GIB	0.943	0.945	0.964	0.898
IAS	0.804	0.811	0.884	0.718
RTPES	0.893	0.896	0.934	0.824

7. Data Analysis, Results and Discussion

Cronbach's alpha is a widely used measure of construct reliability as indicated in Table 1. This measure quantifies the degree of correlation among the elements within each concept. A higher Cronbach's alpha coefficient which approaches a value of 1 signifies a stronger degree of internal consistency among the items. For example, when examining the construct labelled "IAS" and its Cronbach's alpha coefficient of 0.943, it indicates that the items or questions employed to assess the construct of "Incubator and Accelerator Support" exhibit a high level of internal consistency and effectively reflect the notion of assistance provided by incubators and accelerators within the realm of ESG startups.

Composite reliability denoted by rho_a and rho_c represents additional indicators of construct reliability. These numbers evaluate the degree to which the concept is devoid of errors in measurement. Table 1 demonstrates that all structures exhibited composite reliability values that exceeded 0.88

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 145-162, 2024
DOI: 10.55214/25768484.v8i4.1107

thereby suggesting robust internal consistency and reliability. Construct validity concerns the extent to which the measures employed in evaluating a construct accurately represent the underlying concept and are distinguishable from the other constructs examined in the study. This process ensures that the construct accurately reflects the intended concept and is designed for assessment.

AVE is a metric used to assess construct validity. The information provided indicates the extent to which the variability in items can be attributed to the latent component. Values greater than 0.70 are commonly regarded as acceptable in the context of AVE. Table 1 demonstrates that all constructs possess AVE values that surpass the threshold of 0.70. This suggests that the items linked to each construct were strongly associated with the underlying concept.

Discriminant validity, a component of construct validity was evaluated by examining the relationship between AVE values and squared inter-construct correlations. When the AVE of a construct exceeds the squared correlation between that construct and others, it indicates that the construct is distinct and exhibits minimal overlap with the others. The significance of this lies in its ability to ensure that every construct evaluates a distinct facet of the phenomenon under investigation.

Hence, the establishment of reliability and validity is important in the field of research. The researchers verified that the measurements employed in the study exhibited consistency, reliability and validity thereby enabling them to derive meaningful and correct conclusions regarding the constructs under investigation. In this context, Table 1 exhibits notable levels of reliability and validity indicating that the measurements employed to evaluate the many facets associated with ESG startups is robust and dependable. These findings establish a solid basis for future research in this domain.

Table 2.
Fornell-Larcker criterion.

Items	AFFR	AMNO	ELP	ESE	ESG Ups	GIB	IAS	RTPES	TC	UNIS
AFFR	0.870									
AMNO	0.609	0.918								
ELP	0.670	0.828	0.847							
ESE	0.633	0.659	0.713	0.936						
ESG Ups	0.628	0.727	0.695	0.776	0.947					
GIB	0.696	0.687	0.66	0.802	0.864	0.948				
IAS	0.718	0.859	0.732	0.560	0.681	0.661	0.848			
RTPES	0.625	0.688	0.684	0.578	0.725	0.754	0.722	0.908		
TC	0.571	0.741	0.702	0.658	0.833	0.836	0.681	0.881	0.932	
UNIS	0.630	0.708	0.719	0.802	0.810	0.747	0.729	0.678	0.741	0.890

The Fornell-Larcker criterion as depicted in Table 2 serves as a beneficial instrument for evaluating the discriminant validity of constructs in a research investigation specifically in the realm of comprehending variables associated with ESG startups. The process entails the comparison of the square root of the AVE for each construct with the correlations observed between the said construct and all other constructs. The findings in Table 2 provide reassurance. The diagonal elements which indicated the square root of the AVE for each construct regularly exhibited high values. This indicates that a significant proportion of the variability in the construct indicators can be attributed to the construct itself indicating a high level of reliability in the measurement. Moreover, a closer examination of the off-diagonal elements that denote the relationships between distinct constructs revealed that the square root of the AVE for each construct surpassed the correlations with other constructs. This confirmed the discriminant validity of all the notions. From a practical standpoint, it can be observed that the factors being examined, namely Availability of funds and Financial Resources (AFFR), Access to Mentorship and Network Opportunities (AMNO), Entrepreneurial Leadership Programs (ELP), Employee Self-Efficacy (ESE), ESG Startups (ESG Ups), Green Innovation Behavior (GIB), Incubator

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 145-162, 2024
DOI: 10.55214/25768484.v8i4.1107

and Accelerator Support (IAS), Risk-Taking Propensity towards ESG Startups (RTPES), Total Commitment (TC) and University Role (UNIS) exhibit distinct characteristics and do not exhibit significant overlap in terms of variance.

The measurement model is essential for statistical approaches as shown in Figure 2 especially those that use Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM).

Determining the accuracy and reliability of numbers requires examining all the relationships between the observable concepts and the theories that support them. This approach enables researchers to study latent constructs which are mental representations of wider concepts. Researchers may be assured of the reliability and validity of their measurement model as they efficiently capture distinct aspects of the intricate domain of ESG startups. This confidence in the robustness of the measurement model enhanced the credibility and dependability of the research findings.

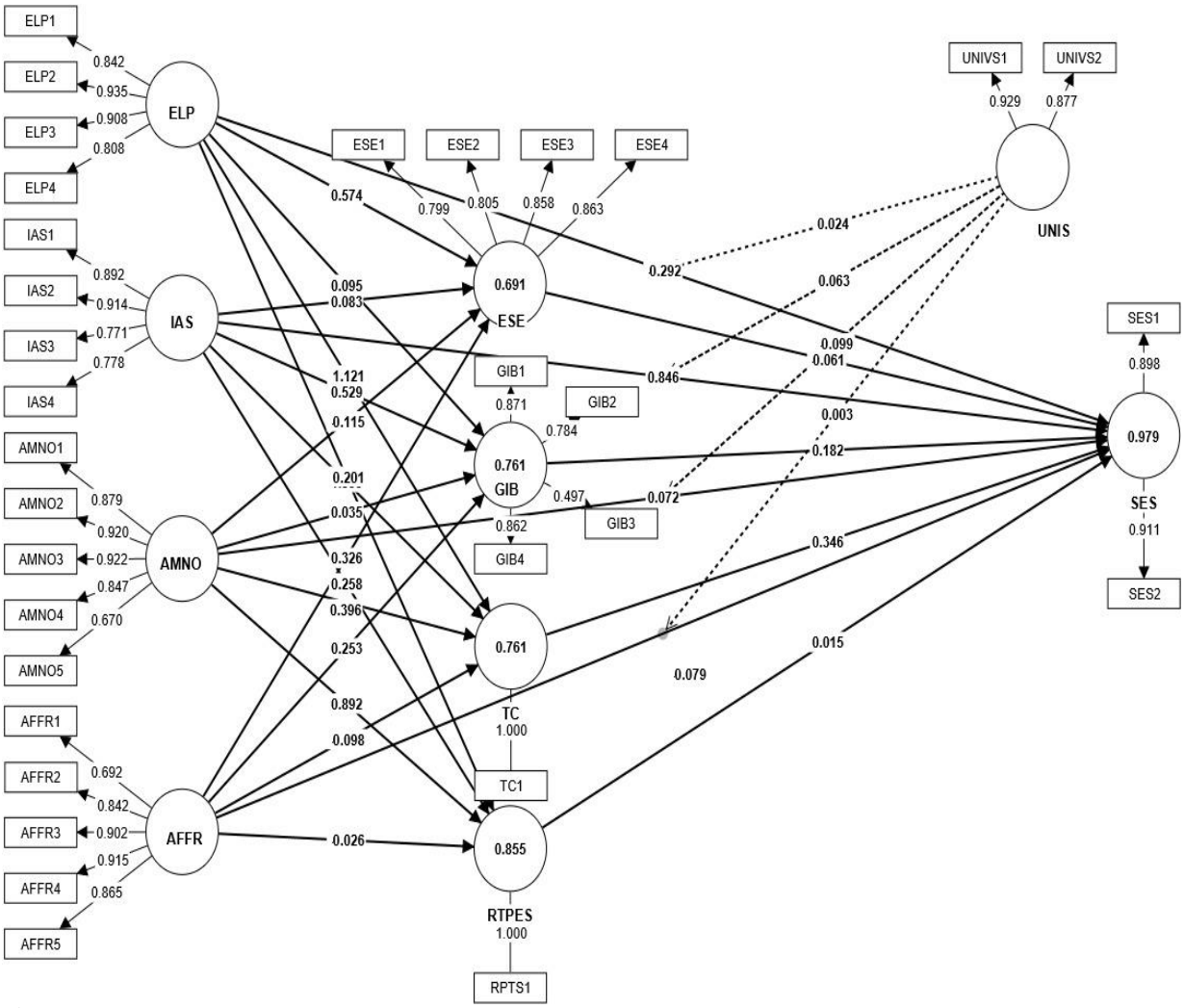

Figure 2.
Measurement model.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 145-162, 2024
DOI: 10.55214/25768484.v8i4.1107

Table 3.
Hypotheses testing.

Hypotheses	Items	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T- statistics (|O/STDEV|)	P values	Results
H1	ELP -> ESG UPs	0.095	0.092	0.047	2.001	0.045	Accepted
H2	IAS -> ESG UPs	-0.045	-0.041	0.055	0.811	0.417	Rejected
H3	AMNO -> ESG Ups	0.276	0.276	0.068	4.03	0.000	Accepted
H4	AFFR -> ESG Ups	0.214	0.214	0.036	5.888	0.000	Accepted
H5	UNIS x ELP -> ESG UPs	0.025	0.026	0.036	0.684	0.494	Rejected
H6	UNIS x AMNO -> ESG UPs	0.101	0.099	0.089	1.128	0.259	Rejected
H7	UNIS x AFFR -> ESG UPs	0.155	0.159	0.048	3.246	0.001	Accepted
H8	UNIS x IAS -> ESG UPs	-0.279	-0.282	0.107	2.611	0.009	Accepted

7.1. Measurement Model

Table 3 presents a complete overview of the results obtained from hypothesis testing related to the elements that influence the establishment of ESG startups. Hypotheses (H1–H8) examined the distinct correlations or interactions among the variables.

Commencing with the primary heading (H1), this study examined the relationship between Entrepreneurial Leadership Programs (ELP) and ESG startups (ESG UPs). The analysis demonstrated a significant positive correlation with an observed value (O) of 0.095 exceeding the sample mean (M) of 0.092. Moreover, the t-statistic of 2.001 and the statistically significant p-value of 0.045 support the adoption of the hypothesis indicating a substantial positive relationship between ELP engagement and the establishment of ESG businesses.

This study examined the relationship between Incubator and Accelerator Support (IAS) and ESG startups. The findings revealed no significant correlations among the variables under investigation. The observed value (O) of -0.045 and the corresponding p-value of 0.417 lead to rejection of the hypothesis indicating that the influence of IAS on the development of ESG startups was not statistically significant.

This study investigated the relationship between the availability of mentorship and network opportunities (AMNO) and the success of ESG companies. The analysis revealed a strong positive correlation as evidenced by the observed value (O) of 0.276 which surpassed the sample mean (M) of 0.276. The high t-statistic of 4.03 and a p-value of 0.000 strongly supported this hypothesis indicating a significant and positive relationship between AMNO and the creation of ESG startups.

H4 does not yield a definitive finding regarding the Availability of Finances and Financial Resources (AFFR) for ESG startups rendering the results inconclusive.

In the subsequent sections, namely, H5 and H6, the analysis focused on investigating the interaction effects arising from the combination of the university role (UNIS) with other factors (ELP and AMNO) concerning ESG launches. Both hypotheses were rejected indicating that there was no statistically significant interaction impact between UNIS and the parameters about the development of ESG companies.

H7 investigated the interplay between the UNIS and AFFR uncovering a noteworthy positive interaction effect. This finding was substantiated by an observed value (O) of 0.155 which surpassed the sample mean (M) of 0.159. The outcome in conjunction with a statistically significant p-value of 0.001 supported the hypothesis that there is a significant positive relationship between the role of universities and the availability of money and financial resources in promoting the formation of ESG startups.

This study examined the relationship between the UNIS and IAS in the context of ESG startups. The findings revealed a noteworthy adverse interaction effect as evidenced by an observed value (O) of -0.279. The observed value exhibited a significant disparity when compared to the sample mean (M) of -

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 145-162, 2024
DOI: 10.55214/25768484.v8i4.1107

0.282. The hypothesis was accepted based on statistical evidence with a t-statistic of 2.611 and a p-value of 0.009. This finding highlights the intricate relationship between the university role and incubator and accelerator support in terms of their impact on the formation of ESG startups.

Therefore, the findings of these hypotheses' tests provide a comprehensive understanding of the complex network of connections and interplay among different variables within ESG entrepreneurship. The accepted hypotheses demonstrate notable consequences whereas the rejected hypotheses indicate a lack of major impacts or interactions. These findings provide useful information for policymakers and stakeholders seeking to make well-informed decisions in ESG startup development.

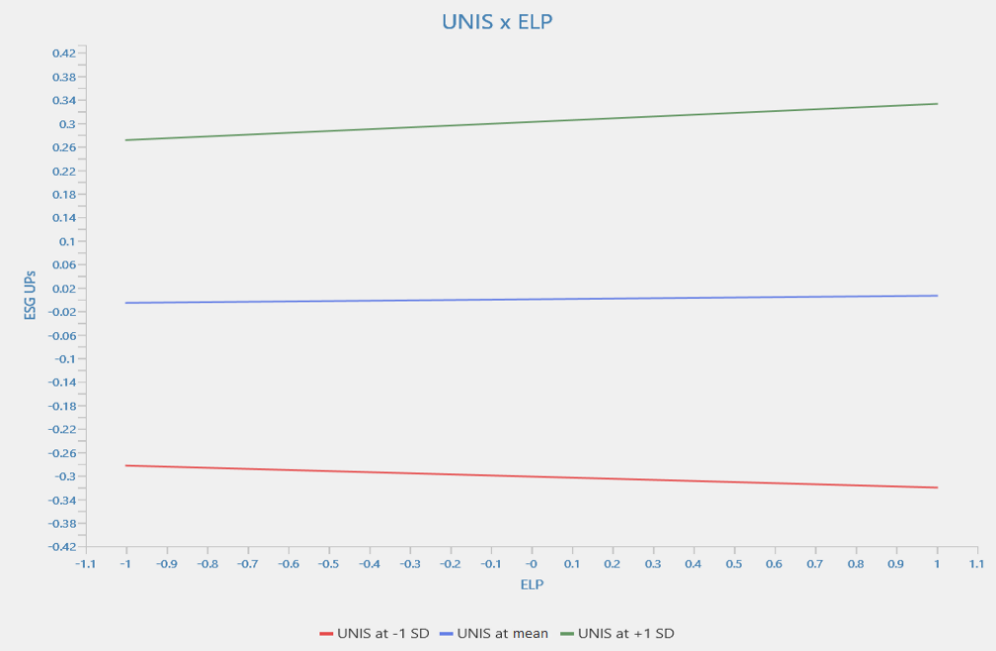

Figure 3.
Slope analysis: University role and entrepreneurial leadership.

7.2. Slope Analysis

In the context of partial least squares structural equation modelling, Figure 3 illustrates the path coefficient (slope) of 0.025 pertaining to the relationship "UNIS x ELP -> ESG Ups" which signifies the estimated influence of the interplay between university role and entrepreneurial leadership programs on the creation of ESG startups. This positive indication implies that augmenting this interaction is likely to result in a favorable transformation inside ESG startups. Nevertheless, a comprehensive understanding of this relationship necessitates an examination of both the statistical significance and practical meaning of the observed impact.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 145-162, 2024
DOI: 10.55214/25768484.v8i4.1107

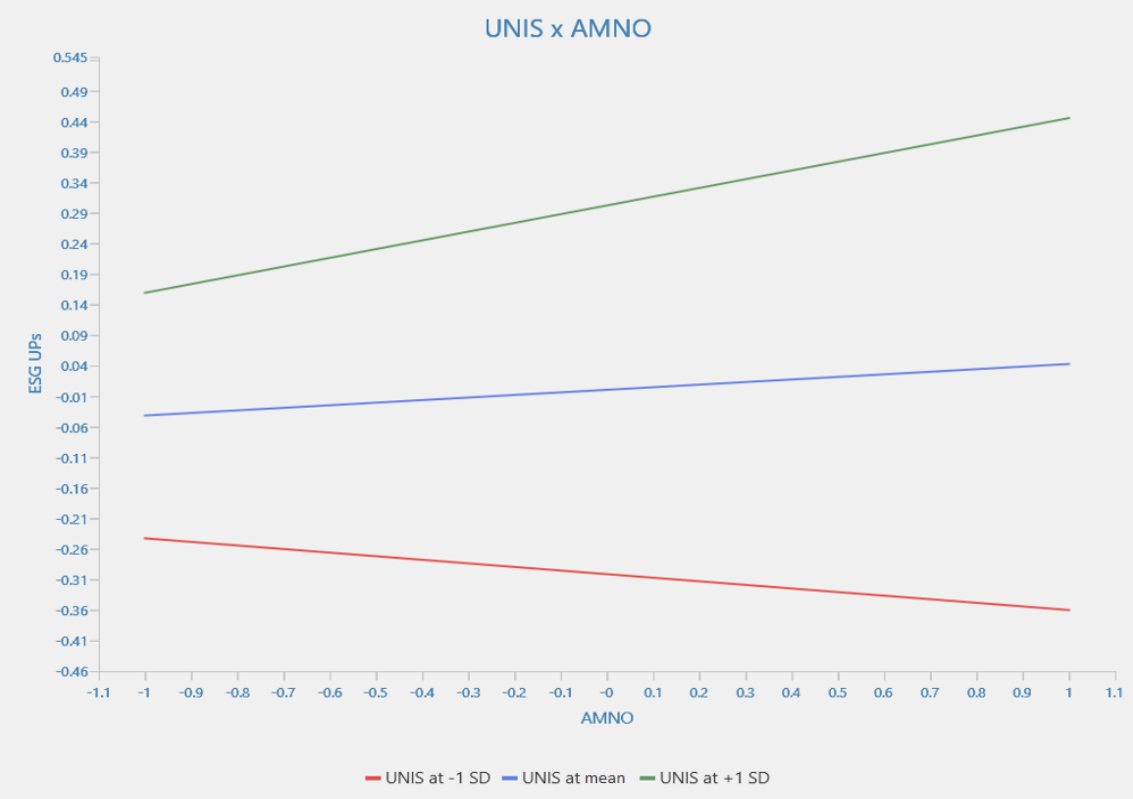

Figure 4.
Slope analysis: University role and access to mentorship and network opportunities.

The significance of the observed relationship represented by a coefficient of 0.101 relied heavily on the related p -value of 0.259. In the context of hypothesis testing, if the p-value exceeds the predetermined significance level (e.g., 0.05), it indicates that there may not be a statistically significant relationship. As shown in Figure 4, the observed path coefficient (slope) of 0.101 indicates a statistically significant positive relationship between the combined effect of university roles and access to mentorship and network opportunities and the likelihood of ESG businesses being established. Nevertheless, a p-value of 0.259 suggests that the observed relationship may lack statistical significance when evaluated against a conventional threshold. Achieving statistical significance is critical but determining practical relevance is equally essential. Although a link may lack statistical significance, it might nonetheless hold practical relevance if the impact size specifically the slope coefficient has important consequences in real-world scenarios.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 145-162, 2024
DOI: 10.55214/25768484.v8i4.1107

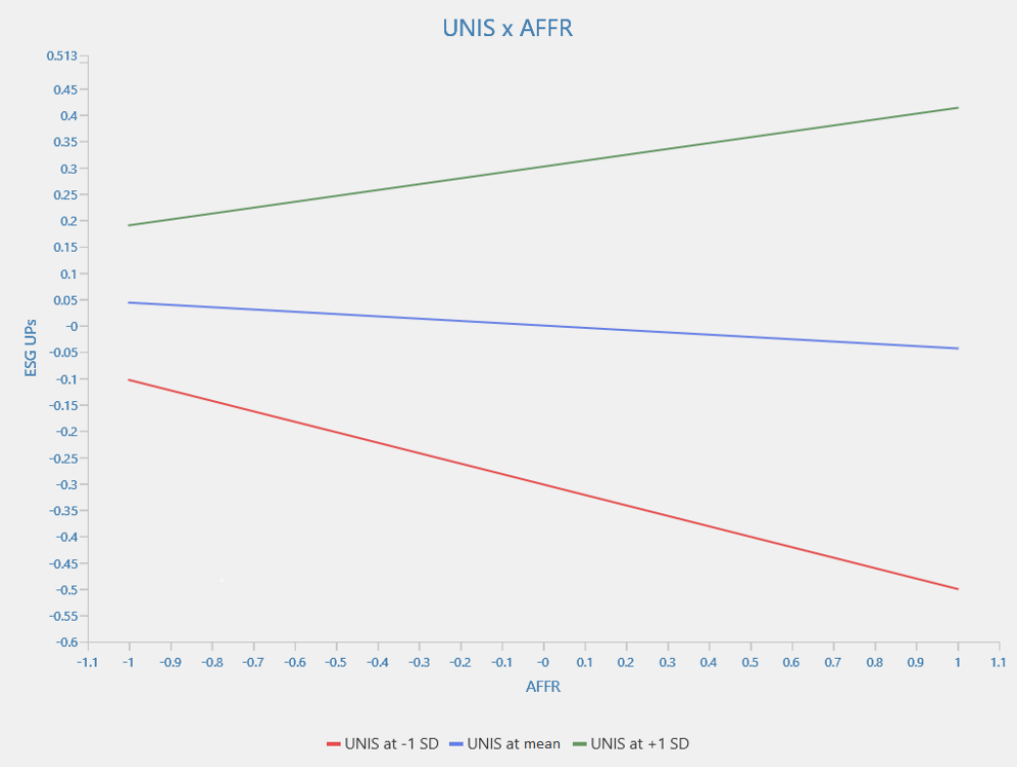

Figure 5.
Slope analysis: University role and availability of funding.

The observed path coefficient of 0.155 indicating the relationship between the interaction of university role and availability of funding (UNIS x AFFR) and the creation of ESG startups (ESG UPs) implies a favorable association. However, a comprehensive understanding of this relationship would be enhanced by considering both statistical and practical significance concerning the research goals. Figure 5 illustrates the slope coefficient (0.155) which indicates the degree of responsiveness of "ESG Ups" to variations in the interaction between "UNIS" and "AFFR." It provides information on the anticipated magnitude of the change in "ESG Ups" resulting from a one-unit alteration in the interaction term. However, it is crucial to consider the specific units and scales of these factors to achieve a more accurate and nuanced assessment.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 145-162, 2024
DOI: 10.55214/25768484.v8i4.1107

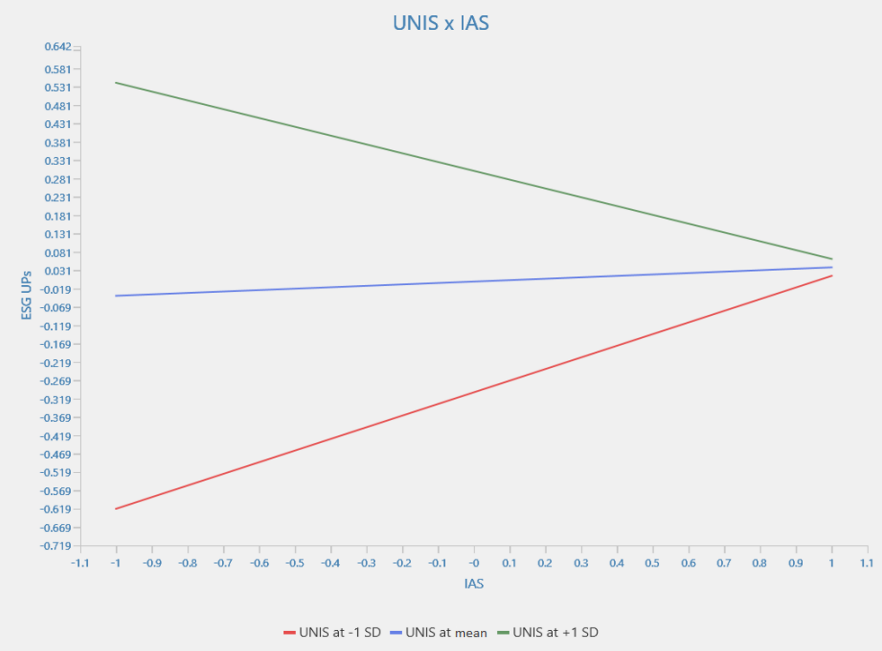

Figure 6.
Slope analysis: University role and incubator and accelerator support.

The observed path coefficient of -0.279 represents the relationship between the interaction of the university role and incubator and accelerator support (UNIS x IAS) and the formation of ESG startups (ESG UPs) indicates a negative relationship. This finding suggests that when the combined effect of these two issues intensifies, there is a concomitant detrimental effect on the growth of ESG startups. Nevertheless, it is crucial to thoroughly analyze the relationship between variables by considering not only their statistical significance but also their practical significance concerning the research aims.

As shown in Figure 6, the slope coefficient (-0.279) indicates the degree of responsiveness of "ESG Ups" to variations in the interaction between "UNIS" and "IAS." More precisely, it provides information on the anticipated magnitude of the change in "ESG Ups" resulting from a single-unit modification in the interaction term. However, it is crucial to consider the specific units and scales of these factors to achieve a more accurate and nuanced assessment.

7.3. Major Findings of the Study

The results of this research provide a thorough understanding of the complex network of connections and exchanges that occur among different elements that impact the formation and prosperity of ESG enterprises. It was found that participation in entrepreneurial leadership programs is significantly and positively associated with the initiation and growth of ESG-oriented ventures. This finding highlights the importance of entrepreneurship education and training in the ESG sector. No statistically significant relationship was observed between incubator and accelerator support and the growth of ESG startups. This suggests that the mere existence of such initiatives does not ensure success in the ESG sector. Therefore, additional investigation is required to elucidate their precise mechanisms. The correlation between access to mentorship and network opportunities and the establishment of ESG firms was robust and favorable highlighting the pivotal significance of mentorship and networking in promoting the expansion of ESG-focused enterprises. Nevertheless, the correlation between the success of ESG startups and the availability of funds and financial resources remains equivocal indicating that a more comprehensive understanding of the influence of financial

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 145-162, 2024
DOI: 10.55214/25768484.v8i4.1107

resources on ESG entrepreneurship is required. The research also emphasized the substantial moderating influence of universities (UNIS) on the associations between different antecedents and the formation of ESG startups; universities moderated the relationship between UNIS and AFFR in a positive direction but not between UNIS and IAS in a negative direction. In a nutshell, this study provides valuable insights into the multifaceted dynamics of ESG entrepreneurship emphasizing the significance of education, mentorship and networking while also casting light on the potential role of universities as key influencers in the ESG entrepreneurial landscape. Additional investigations are necessary to comprehensively examine the fundamental mechanisms and enduring viability of ESG enterprises.

8. Conclusion

Within the realm of ESG-focused startups, this study sheds light on the importance of different mediating mechanisms including ESE, risk-taking tendencies, team cohesiveness and green innovation behavior.

The conclusion of the study is consistent with and builds upon those obtained from the review of relevant literature. They provide further understanding of the intricate dynamics that influence the formation and prosperity of ESG ventures. The research findings corroborate the significance of education and training in the field of entrepreneurship consistent with the results of a literature review that identified a positive relationship between ESG venture formation and participation in entrepreneurial leadership programs. This highlights the ongoing applicability of the RBV theory to comprehend the importance of valuable resources including skills and education in promoting ESG entrepreneurship [47].

These results underscore the critical importance of mentorship and networking which is consistent with the existing body of literature that identifies these factors as fundamental constituents of entrepreneurial achievement. This highlights the significance of developing a nuanced understanding of the intricacies involved in establishing causality and recognizes that the influence of mentorship and networking may change over time as an ESG venture progresses, a concern highlighted in the literature.

The complex and uncertain correlation between the availability of funds and financial resources and the success of ESG startups underscores the multifaceted characteristics of financial resources during the establishment of new ventures. This highlights the necessity of considering external variables and the dynamic characteristics of financial support which is consistent with the recommendation of the academic literature for a more thorough and long-term examination of the effects of financial resources.

The investigation conducted on the moderating impact of universities on ESG entrepreneurship is consistent with the literature showing that universities are increasingly exerting power within the entrepreneurial ecosystem. The study revealed that universities moderate the connections between antecedents and the formation of ESG startups in both positive and negative ways. This finding supports the notion that universities serve as vital intermediaries between new businesses, faculty, researchers, and industry experts. However, universities also face difficulties in accommodating diverse entrepreneurial environments and avoiding selection bias in their programs.

This study aligns with the findings of the literature review and contributes to a more comprehensive understanding of the intricate connections and interplay between the diverse elements that impact ESG entrepreneurship. These insights provide policymakers, practitioners and researchers in the field of sustainable and socially responsible entrepreneurship with valuable guidance on how education, mentorship, networking and university involvement influence ESG startup formation and growth.

Funding:

This study received no specific financial support.

Institutional Review Board Statement:

The Ethical Committee of the Jazan University Saudi Arabia has granted approval for this study on 19 June 2023 (Ref. No. 44/11/715).

Transparency:

The author confirms that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

Competing Interests:

The author declares that there are no conflicts of interests regarding the publication of this paper.

Copyright:

References

[1] M. K. Linnenluecke, "Environmental, social and governance (ESG) performance in the context of multinational business research," *Multinational Business Review*, vol. 30, pp. 1–16, 2022. https://doi.org/10.1108/MBR-11-2021-0148

[2] B. Kim, J. Jung, and S. Cho, "Can ESG mitigate the diversification discount in cross-border M&A?," *Borsa Istanbul Review*, vol. 22, pp. 607–615, 2022. https://doi.org/10.1016/j.bir.2021.09.002

[3] L. H. Pedersen, S. Fitzgibbons, and L. Pomorski, "Responsible investing: The ESG-efficient frontier," *Journal of Financial Economics*, vol. 142, pp. 572–597, 2021. https://doi.org/10.1016/j.jfineco.2020.11.001

[4] S. A. Zahra, "The resource-based view, resourcefulness, and resource management in startup firms: A proposed research agenda," *Journal of Management*, vol. 47, pp. 1841–1860, 2021. https://doi.org/10.1177/01492063211018505

[5] F. M. Dagnino *et al.*, "The ESG project: A blended learning model for teaching entrepreneurship through serious games," in *In Proceedings of the European Conference on Innovation and Entrepreneurship*, 2015.

[6] A. K. Edwards, K. Raheem, and D. G. Dampson, "Strategic thinking and strategic leadership for change: Lessons for technical universities in Ghana," *Malaysian Online Journal of Educational Management*, vol. 6, pp. 53–67, 2018. https://doi.org/10.22452/mojem.vol6no1.4

[7] A. K. L. Rocha, G. H. S. Moraes, A. I. Voda, and R. Quadros, "Comparative analysis of entrepreneurial intention models: Self-efficacy versus entrepreneurial characteristics," *RAM. Revista de Administração Mackenzie*, vol. 24, p. eRAMG230209, 2023. https://doi.org/10.1590/1678-6971/eRAMG230209.en

[8] F. Jamil, K. Ismail, N. Mahmood, N. U. Khan, and M. Siddique, "Technology incubators and institutional development," *Jurnal Teknologi*, vol. 77, pp. 113–120, 2015. https://doi.org/10.11113/jt.v77.6702

[9] J. Gao, Z. Guo, and Y. Xiao, "Research on cultivation of innovation and entrepreneurship ability of applied talents under the concept of "new engineering," *In ACM International Conference Proceeding Series*, pp. 757–759, 2021. https://doi.org/10.1145/3456887.3457060

[10] S. Lubik and E. Garnsey, "Entrepreneurial innovation in science-based firms: The need for an ecosystem perspective," *In Handbook of Research on Small Business and Entrepre-neurship*, pp. 315–332, 2014. https://doi.org/10.4337/9781849809245.00028

[11] W. M. Purcell, "A conceptual framework of leadership and governance in sustaining entrepre-neurial universities illustrated with case material from a retrospective review of a university's strategic transformation: The enterprise university," *In Developing Engaged and Entre-preneurial Universities: Theories, Concepts and Empirical Findings*, pp. 243–260, 2019. https://doi.org/10.1007/978-981-13-8130-0_13

[12] I. M. Awad and M. K. Salaimeh, "Towards an entrepreneurial university model: Evidence from the Palestine Polytechnic University," *Journal of Innovation and Entrepreneurship*, 2023. https://doi.org/10.1186/s13731-023-00280-5

[13] T. S.-M. Tan, M. A. Uy, and E. Y. L. Sam, "Using the EPL framework to understand career prefer-ences of STEM researchers," *In Entrepreneurship-Professionalism-Leadership: A Multi-dimensional Framework for Human Capital and Career Development in the 21st Century*, pp. 209–226, 2020. https://doi.org/10.1007/978-981-15-3121-7_11

[14] C. A. Vallas and W. A. M. Williams, "Enhancing the future of America's competitiveness through entrepreneurial engineering," in *ASEE Annual Conference and Exposition, Conference Proceed-ings*, 2011.

[15] B. J. Tromberg *et al.*, "Biomedical optics centers: Forty years of multidisciplinary clinical translation for improving human health," *Journal of Biomedical Optics*, vol. 21, no. 12, p. 124001, 2016. https://doi.org/10.1117/1.JBO.21.12.124001

[16] R. Smilor, N. O'Donnell, G. Stein, and R. S. Welborn, "The research university and the develop-ment of high-technology centers in the United States," *Economic Development*, vol. 21, pp. 203–222, 2007. https://doi.org/10.1177/0891242407299426

[17] R. Rothwell and M. Beesley, "The importance of technology transfer," *In Barriers to Growth in Small Firms*, pp. 87–104, 2016. https://doi.org/10.4324/9781315563510

[18] D. L. Bodde, J. N. Skardon, and E. J. Byler, "The autoVenture forum: Demonstrating a new process for managing automotive innovation," *In Proceedings of the 1st International Technology Management Conference, ITMC* pp. 964–968, 2011. https://doi.org/10.1109/ITMC.2011.5995991

[19] M. S. Cohen, "Enhancing surgical innovation through a specialized medical school pathway of excellence in innovation and entrepreneurship: Lessons learned and opportunities for the future," *Surgery*, vol. 162, pp. 989–993, 2017. https://doi.org/10.1016/j.surg.2017.06.012

[20] A. Steiber and S. Alänge, "Silicon valley: A cradle of management innovation," *In Man-agement for Professionals*, vol. 581, pp. 37–51, 2016. https://doi.org/10.1007/978-3-319-24921-6_3

[21] H. Etzkowitz, A. Mack, T. Schaffer, J. Scopa, L. Guo, and T. Pospelova, "Innovation by design: SPARK and the overcoming of stanford university's translational "valley of death" in bio-medicine," *Managerial and Decision Economics*, vol. 41, no. 6, pp. 1113-1125, 2020. https://doi.org/10.1002/mde.2966

[22] J. N. Itri *et al.*, "Entrepreneurship in the academic radiology environment," *Academic Radiology*, vol. 22, pp. 14–24, 2015. https://doi.org/10.1016/j.acra.2014.08.010

[23] C. Trevitt, A. Steed, L. Du Moulin, and T. Foley, "Leading entrepreneurial e-learning development in legal education: A longitudinal case study of "universities as learning organisations," *Learn Organ*, vol. 24, pp. 298–311, 2017. https://doi.org/10.1108/TLO-03-2017-0027

[24] R. D. Van Schalkwyk and R. J. Steenkamp, "A hypothetical improvement of the quadruple helix model of innovation," *Acta Commercii*, vol. 22, no. 1, pp. 1-10, 2022. https://doi.org/10.4102/ac.v22i1.1037

[25] S. Ekman and A. Ekman, "Designing an entrepreneurial mindset in engineering and management," in *In DS 58-9: Proceedings of ICED 09, the 17th International Conference on Engineering Design, Vol. 9, Human Behavior in Design, Palo Alto, CA, USA, 24.-27.08. 2009*, 2009, pp. 179-190.

[26] S. Naz, C. Li, U. Zaman, and M. Rafiq, "Linking proactive personality and entrepreneurial intentions: A serial mediation model involving broader and specific self-efficacy " *Journal of Open Innovation: Technology, Market, and Complexity*, vol. 2020, no. 4, pp. 1–21, 2020. https://doi.org/10.3390/joitmc6040166

[27] T. Andersson, M. G. Curley, and P. Formica, "Entrepreneurial and corporate universities," *In Innovation, Technology and Knowledge Management*, pp. 153–161, 2010. https://doi.org/10.1007/978-1-4419-1188-9_11

[28] A. I. Paz Marcano, J. A. Salóm Crespo, J. García Guiliany, and H. B. Suarez Barros, "Entrepreneurial profile in Venezuelan university education," *Revista Científica en Ciencias Sociales*, vol. 26, pp. 161–174, 2020.

[29] R. Birds, "Entrepreneur-managers in higher education: (How) do they exist?," *Journal of Higher Education Policy and Management*, vol. 36, pp. 62–73, 2014. https://doi.org/10.1080/1360080X.2013.844663

[30] A. Aldawod, "Identifying the entrepreneurial environmental challenges in developing countries context: A study of public universities in Kurdistan Region – Iraq," *Journal of Entrepreneurship in Emerging Economies*, vol. 15, pp. 1089–1112, 2023. https://doi.org/10.1108/JEEE-06-2021-0255

[31] S. Laughlin, S. Magids, and D. Barbe, "University of maryland's ventureaccelerator," in *A.S.E.E. Annual Conference and Exposition, Conference Proceedings*, 2007.

[32] M. Almansour, "Business incubators and entrepreneurial training: Leveraging technological innovations and digital marketing," *IEEE Transactions on Engineering Management*, pp. 1–12, 2022. https://doi.org/10.1109/TEM.2022.3180212

[33] J. E. Nielsen, V. Stojanović-Aleksić, and A. Bošković, "Promoting entrepreneurship in HEIs: Leading and facilitating university spin-off ventures," *In Handbook of Research on Enhancing Innovation in Higher Education Institutions*, vol. 2022, pp. 216–238, 2020. https://doi.org/10.4018/978-1-7998-2708-5.ch010

[34] E. F. Pietrovski, E. I. Schneider, D. R. Reis, and D. R. Dos Reis Junior, "Analysis of the entrepre-neurial potential of undergraduate students: From theory to practice," *Innovar*, vol. 29, pp. 25–42, 2019. https://doi.org/10.15446/innovar.v29n71.76393

[35] L. Zi, "Influence of flexible management on students' entrepreneurial competency in private universities," *ACM International Conference Proceeding Series*, pp. 664–670, 2022. https://doi.org/10.1145/3556089.3556200

[36] P. Kutinlahti, "Universities approaching market intertwining scientific and entrepreneurial goals," *V.T.T. Publ*, vol. 589, pp. 3–187, 2005.

[37] K. H. Mok, K. M. Yu, and Y.-W. Ku, "After massification: The quest for entrepreneurial universities and technological advancement in Taiwan," *Journal of Higher Education Policy and Management*, vol. 35, pp. 264–279, 2013. https://doi.org/10.1080/1360080X.2013.786857

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 145-162, 2024
DOI: 10.55214/25768484.v8i4.1107

[38] D. H. Valera-Loza, J. G. D. JUNCO, and B. Palacios-Florencio, "Conceptual model about the entrepreneurial university: Design and validation with the PLS methodology," *Anais da Academia Brasileira de Ciências*, vol. 93, p. e20200494, 2021. https://doi.org/10.1590/0001-3765202120200494

[39] R. Evans, J. Parks, and S. Nichols, "The idea to product® program: An educational model uniting emerging technologies, student leadership and societal applications," *The International Journal of Engineering Education*, vol. 23, no. 1, pp. 95-104, 2007.

[40] N. Raghunath, G. Koronis, and A. Silva, "Creativity, entrepreneurship, innovation, leadership and professional motivations: Comparing design students in different levels of undergraduate ed-ucation," *In Proceedings of 2020 IEEE International Conference on Teaching, As-sessment, and Learning for Engineering*, pp. 77–82, 2020. https://doi.org/10.1109/TALE48869.2020.9368467

[41] B. C. Sanyal, "The entrepreneurial university in financing of higher education: Traditional approaches and innovative strategies." Singapore: Springer Nature Singapore, 2023, pp. 47-60.

[42] M. Jalal and H. Anis, "The impact of students' grit & project ownership on students' learning outcomes in maker-based cornerstone engineering design courses," in *ASEE Annual Conference and Exposition, Conference Proceedings*, 2022.

[43] S. Leih and D. Teece, "Campus leadership and the entrepreneurial university: A dynamic capabili-ties perspective," *Academy of Management Perspectives*, vol. 30, pp. 182–210, 2016. https://doi.org/10.5465/amp.2015.0022

[44] R. Hassan, W. M. D. W. Zaki, H. Kamaruddin, N. Othman, S. Md Sum, and Z. Mohamad, "Entrepreneurship education in UKM: Essential skills for first-year students," *In Springer Proceedings in Business and Economics*, pp. 675–685, 2017. https://doi.org/10.1007/978-3-319-43434-6_59

[45] M. Uhl-Bien, "Complexity leadership and followership: Changed leadership in a changed world," *Journal Change Manag*, vol. 21, pp. 144–162, 2021. https://doi.org/10.1080/14697017.2021.1917490

[46] E. Clementino and R. Perkins, "How do companies respond to environmental, social and governance (ESG) ratings? Evidence from Italy," *Journal of Business Ethics*, vol. 171, no. 2, pp. 379-397, 2021. https://doi.org/10.1007/s10551-020-04441-4

[47] M. Bhatnagar, S. Taneja, and E. Özen, "A wave of green start-ups in India—The study of green finance as a support system for sustainable entrepreneurship," *Green Finance*, vol. 4, no. 2, pp. 253-273, 2022. https://doi.org/10.3934/gf.2022012

[48] Y. H. Al-Mamary and M. Alshallaqi, "Impact of autonomy, innovativeness, risk-taking, proactiveness, and competitive aggressiveness on students' intention to start a new venture," *Journal of Innovation & Knowledge*, vol. 7, no. 4, p. 100239, 2022. https://doi.org/10.1016/j.jik.2022.100239

[49] S. B. Sitkin and A. L. Pablo, "Reconceptualizing the determinants of risk behavior," *Academy of Management Review*, vol. 17, no. 1, pp. 9-38, 1992. https://doi.org/10.5465/amr.1992.4279564

[50] T. K. Dijkstra and J. Henseler, "Consistent and asymptotically normal PLS estimators for linear structural equations," *Computational Statistics & Data Analysis*, vol. 81, pp. 10-23, 2015. https://doi.org/10.1016/j.csda.2014.07.008

[51] J. F. Hair, M. Sarstedt, and C. M. Ringle, "Rethinking some of the rethinking of partial least squares," *European Journal of Marketing*, vol. 53, pp. 566-584, 2019. https://doi.org/10.1108/EJM-10-2018-0665