

¹ Erkan Duzgun*² Ozgul Duzgun*³ Nguyen Ngoc-Duy
Phuong⁴ Nguyen Nhu Ty

Sustainable Economic Growth in Vietnam: Exploring Resilience, Global Integration, and Innovation in a Changing Landscape



Abstract: - This article reviews the economic trajectory of Vietnam in light of sustainability, innovation, and global integration. In this context, a survey of 279 company managers from 120 small, medium, and large enterprises in Vietnam has been used to analyze some of the key variables that influence the economic landscape. The survey was done on the Google Forms platform, including companies from both the local and international levels. Our study sheds light on the important functions of innovation and global integration with regard to promoting sustainable development. We investigate the influence of FDI and international trade agreements on the economy of Vietnam by identifying such factors as resource management and competitive compliance. The findings show large obstacles and opportunities for improvement in innovation and sustainability. These include building full policy frameworks, incentives in innovative practices, and strengthening global integration. The findings from this research contribute to informed understanding and position implications that may be useful for academics, policymakers, and business leaders in how Vietnam can address its economic challenges while furthering sustainability and innovation.

Keywords: Global integration, sustainable economic growth, innovation strategies, Vietnam`s development.

I. INTRODUCTION

The transformation of Vietnam from a centrally planned economy to one of the most dynamic markets in Southeast Asia is quite a fascinating story of strategic adaptation and economic restructuring. In the last decades, the country has been elevated into an active player within the global economy due to a combination of factors-the privileged geographic location, highly qualified labor, and a series of successfully negotiated international trade agreements. The above factors, individually or in combination, have helped Vietnam to secure a better position to emerge as an important regional and global supply center. This would attract significant FDI inflow and give Vietnam a stronger economic standing on the international platform [7].

The catching-up economic revolution of Vietnam may be attributed to the Doi Moi reforms inaugurated in 1986. These changes represented a considerable shift from a strict, centrally controlled economy to one that is more flexible and open, often characterized as a "socialist-oriented market economy". Initially, the reforms targeted the agricultural sector, which formed the backbone of the economy of Vietnam in those times. However, the reforms slowly expanded to gradually cover other sectors, thereby laying the path for deep-seated developments in the economy. As Vietnam continued to reform the economy while these initial problems, such as increased unemployment, slow pace of adjustment, and hindrance brought about by high population growth, still prevailed, it was able to produce positive success in the end .

When the early 2000s came, Vietnam eventually obtained considerable pace in its economy. Transition into the market-oriented economy and greater openness to FDI played a crucial role in positioning the country as a major trading hub in the Far East [5]. The inflow of FDI brought along not only capital but facilitated technology transfer, initiated new business concepts, and enhanced human resources, all of which have been crucial for transforming the economy of Vietnam [1]. The economic policies and development plans of Vietnam are now regarded as a critical factor for the world economy, setting a model for other developing nations.

One of the most critical aspects of successful economic performance in Vietnam is the fact that it has developed an appropriate balance between growth and sustainability. Considering the rising tide of global interest in sustainable

¹ School of Business, International University, Vietnam National University HCMC, Vietnam. duzgune27@mp.hcmiu.edu.vn

² Nordex Energy SE & Co. KG, Address: Langenhorner Chaussee 600, 22419 Hamburg, Germany. zgl.duzgun17@gmail.com

³ School of Business, International University, Vietnam National University HCMC, Vietnam. nndphuong@hcmiu.edu.vn

⁴ School of Business, International University, Vietnam National University HCMC, Vietnam. nhutynguyen@gmail.com

* Corresponding Author Email: erkan.ljstk@gmail.com

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development, knowing how Vietnam has kept such a balance becomes significantly important. The government of Vietnam, along with the corporate sector, has undertaken several sustainability initiatives to reduce environmental concerns while promoting economic growth. This covers the inclusion of sustainability in economic planning, the use of green technology, and efforts toward minimizing the environmental impacts of rapid industrialization [3]. However, these cannot fully overcome the problems; there are still clear issues in managing the environmental impacts of fast urbanization and industrialization growth processes [8].

Innovation has also been one of the main driving forces in the development of Vietnam's economy. A set of initiatives in this regard has been developed by the government, focusing mainly on encouraging innovation not only in the public but also in the commercial sectors by spending a large amount on education and research, construction of innovation centers, and encouragement of entrepreneurship [13]. The private sector was responsive, and the use of new technology and business models by Vietnamese enterprises has been intensifying in their effort to become more competitive in the global market place [4]. Supporting innovation within a developing economy can also have challenges. Access to finance is limited; infrequent poor infrastructures and generally low levels of qualified manpower also continue to pose serious barriers to the country's innovation policy [14].

Another significant factor in economic growth has been the integration of Vietnam into the global economy. To this end, their involvement with international trade agreements and openness regarding foreign investment have often played a pivotal role in developing the economy accordingly. New markets have been more accessible, the flow of capital and technology has increased, and all these are factors in Vietnam's producing remarkable competitive advantages in strategic sectors like electronics, textiles, and agriculture [7]. On the other hand, a rise in global interdependence comes with risks, particularly regarding exposure to external economic shocks. The more advanced Vietnam is in its integration with the rest of the world, the more challenges it must overcome to sustain competitiveness in a constantly changing global market [6].

With the complexity and multi-dimensional character of Vietnam's economic growth, this study tries to investigate several key questions. These questions target comprehensive understanding of the variables that have driven the economic change of Vietnam and lessons which may be applicable to other developing nations.

RQ1: How has the economic climate of Vietnam developed over the last several decades, and what have been the main drivers of this transformation?

This question seeks to explain the historical and existing economic policies that have determined the development trajectory of Vietnam. It tries to understand the impact the Doi Moi reforms had, the role of foreign direct investment, and how international trade agreements have influenced the country's economic growth. By answering this topic, the study will contribute by providing an overall review of the structural and policy-driven variables which have supported Vietnam's economic performance.

RQ2: What are the measures put in place by Vietnam in the pursuit of sustainability in its economic growth, and what is the success rate of those tactics?

Moving forward, with the shift in the global focus to encompass sustainable development, it became important to learn what contribution Vietnam has made in integrating sustainability into its economic policies. The question will find out what different initiatives have been taken by both the government and the private sector in Vietnam towards sustainability, and also assess the effectiveness and impacts of such initiatives on the long-term growth of the economy. It calls for an appraisal of embedding sustainability in Vietnam's economic planning, use of green technology, and issues in managing environmental impacts within a rapidly growing economy [3].

RQ3: To what extent innovation contributes to Vietnam's economic growth; what does it mean in terms of challenges and opportunities in the perspective of promoting innovation in a developing economy?

This paper tries to assess the contribution of innovation to Vietnam's economic development. It will review government efforts to promote innovation, the response of the private sector, and the impact of innovation on Vietnam's international competitiveness. In response to this topic, this research contribution would be an understanding of the ways in which innovation has impacted Vietnam's economic performance and to underscore issues and opportunities relevant to promoting innovation in a developing economy.

RQ4: How has the inclusion of Vietnam into the global economy influenced its economic progress, and what are the possible hazards connected with increasing global integration?

This topic deals with the impact of global economic integration on the economy of Vietnam. It will also focus on the influence of foreign direct investment, trade development, and participation in international agreements on the structure and development of the Vietnamese economy. The study also considers the potential risks due to increased integration into the globe: exposure to exogenous economic shock and maintenance of competitiveness in a very dynamic world market.

By answering these research problems, this investigation hopes to provide a more profound understanding of the economic development of Vietnam and give an overview of some practical tactics that have helped the country pursue sustained growth. The findings of the current study are intended to offer practical assistance for the policymakers mentioned, leaders of firms, as well as scholars concerned with the economic vitality, innovation, and sustainability that will be required by emerging countries [9].

The value of the study will lie in its detailed exposition of the forces that drive the economic transition of Vietnam. Indeed, as a country that had navigated through the capricious nature of globalization with relatively rapid economic growth, Vietnam provides an important case study for other developing nations. It attempts to provide insights that may enlighten the development plans of other developing nations, particularly those aiming for sustainable growth amidst a globalizing world [8].

This work also contributes to the wider debate on innovation and international integration as sources of economic growth. The interpretation of Vietnam's experience also underscores that attention needs to be paid to the creation of an enabling climate for innovation and effective integration into the global economy. These lessons are of immense relevance to politicians and corporate executives in developing nations grappling with problems of managing globalization pressures and pursuing long-term economic viability [10].

Finally, the study examines the essential topic of sustainability in the context of economic growth. As the global community grapples with the issues of reconciling economic expansion with environmental preservation, Vietnam's experience provides vital insights. This research intends to provide light on the measures that have enabled Vietnam to pursue economic development while addressing sustainability problems, presenting a model that other rising countries may adapt to their own situations [3].

II. LITERATURE REVIEW

2.1 *Theories of Sustainable Economic Growth in Vietnam*

In Vietnam, the process of rapid industrialization and urbanization along with the rise in the level of international integration has given much attention to economic development on sustainable grounds over the last couple of years. This area of sustainable growth theory has widened from its origins in the works of neoclassical economists such as Solow to involve the environment and social aspects, especially for developing countries. This is important because Vietnam faces an unusual challenge in the south: to achieve economic growth while addressing environmental and social sustainability directly due to its heavy dependence on natural resources, coupled with the hazards of climate change.

The following methodology has been used to implement alternatives that allow economic growth, taking care of the environment and social equity in accordance with the attainment of Sustainable Development Goals as set by the United Nations, focusing on integrating economic, social, and environmental objectives for sustainable development in Vietnam. The Government of Vietnam has already demonstrated its commitment to sustainability through its National Green Growth Strategy, which describes the strategic actions taken by the country towards a low-carbon economy.

2.2 *Innovation as a Driver of Sustainable Growth in Vietnam*

Innovation is increasingly recognized as one of the main factors in attaining sustained economic development in Vietnam. Innovation has been highlighted in the economic development policies of the Vietnamese government, especially through the adoption of Industry 4.0 technology [17]. This would involve automation, digitization, and

advanced manufacturing technologies that are expected to improve productivity while reducing resource use and narrowing environmental impacts, hence promoting sustainable development [21].

Innovation in Vietnam, according to empirical studies, is very closely related to industrialization and modernization processes in the country. For example, digital technologies used in manufacturing contribute to reducing resource inputs and emissions for green growth goals [19]. Innovation for the agriculture sector includes the making of climate-resilient crop varieties and sustainable methods of farming that further help in achieving sustainable economic growth for the country [16].

Government funding for R&D, in addition to promoting the knowledge-based economy, further underlines the connection between innovation and sustainable growth. These programs are meant to create an atmosphere that fosters innovation and where firms can invest in innovative technologies and processes, contributing to sustainability [17].

2.3 *Global Integration and Its Impact on Vietnam's Sustainable Development*

Global economic integration has been among the most important driving forces regarding the economic development of Vietnam, especially after the country joined the WTO in 2007. In such a context, larger exportation, foreign direct investments, and integration in global value chains have brought high economic growth to Vietnam today [19]. However, environmental and social dimensions of global integration raised concerns about the sustainability of this growth.

On one hand, the present research showcases how global integration has benefited Vietnamese economic performance but has also caused the degradation of the environment and increased social inequality [21]. To be specific, export-oriented industry growth has contributed to severe environmental degradation like pollution, deforestation, and loss of biodiversity [19]. Besides, the benefits of global integration have not been equitably distributed because usually the rural areas and vulnerable groups bear the brunt of the environmental and social burdens first [23].

These negative impacts have prompted Vietnam to increasingly incorporate sustainability considerations into trade and investment policy. For instance, the CPTPP and EVFTA make provisions for environmental protection and the encouragement of sustainable enterprise practices [20]. These agreements also provide opportunities for technology transfer and capacity development, which are important in enhancing Vietnam's capacity for sustainable economic growth.

2.4 *Environmental Compliance and Corporate Sustainability in Vietnam*

On the other hand, the compliance of environmental issues is another crucial business sustainability concern in Vietnam, especially when the recent industrialization has seriously affected the nation's environment. The government of Vietnam has reinforced its legislation related to the environment in recent years, where it aims to develop the country sustainably. Such regulations are specifically aimed at ensuring that the businesses adhere to established environmental principles in shrinking their ecological footprint, which in turn will help the nation to achieve its goals regarding sustainability. Evidence shows that companies in Vietnam which apply environmental regulations are likely to experience long-run profitability and competitiveness, especially in foreign markets where there is a greater demand for environmental performance. In addition, the companies applying sustainability initiatives like clean technology and waste reduction meet the demand of customers and investors who consider the environment.

Several factors have been considered in analyzing the success of environmental compliance in promoting sustainability: enforcement of the rules, corporate governance, and public knowledge. Even though the government has gradually succeeded in firming up its environmental rules, their consistent implementation, as well as convincing enterprises to adopt voluntarily the attitude of sustainable development, presents problems. Overcoming these challenges will be a key to Vietnam's transition toward a sustainable economy.

2.5 *Theoretical Framework*

The theoretical framework of this study, anchored on the model of sustainable development, furthers the integration of economic, social, and environmental dimensions as imperatives toward long-term success. This is peculiarly

important in Vietnam, a country in fast economic growth that unfortunately suffers from the dual complication of needs to both sustain economic growth and reduce environmental degradation, ensuring social equity in the process. In the context of unprecedented industrialization and speedy integration with the global economy, the need for an integrated impact of the above three-dimensional feature in one developmental package has obtained increasing importance [18]. Innovation, global integration, and compliance with environmental concerns are proposed here as three interrelated variables that drive sustainable economic growth in Vietnam. These were considered the bases of sustainability in the Vietnamese setting, where a fine balance between economic growth and care for the environment has to be struck.

Innovation-Technological innovation is one of the main drivers of efficiency in output and resources, all parts of healthy economic growth. Innovation allows firms to create more with less and reduces the environmental impact that emanates from economic activities while maintaining or even improving output. For Vietnam, innovation has an especially critical role to play in efforts the country makes to transition from a resource-intensive, export-oriented-based economy towards one that is more knowledge-based and technology-driven [17]. As such, this shift is foreseen to contribute towards sustainability in several dimensions, including supporting improved modes of production, reducing wastes, and contributing to resource use efficiency.

Global integration, through both global value chains participation and international trade, has been one of the main drivers behind the economic growth of Vietnam. Particularly, this merger does not come without its attendant challenges, especially in areas touching on natural health and social justice. Whereas on one hand, global integration allowed for the sharing of technology and knowledge that may improve sustainability, on the other hand, it has meant increased environmental pressure as a result of an increase in industry activities and the abuse of natural resources [19]. With the fact that global integration affected the sustainability of Vietnam both positively and negatively, there is an immense need for the careful considerations of its benefits and downsides.

Environmental compliance involves obedience to environmental laws as well as the adoption of sustainable practices by businesses in ensuring that economic growth does not come at the expense of the environment. The government of Vietnam has adopted a range of environmental laws aimed at lowering waste, protecting natural resources, and promoting healthy growth. The importance of this law is in the decrease of negative environmental impacts of economic activities, particularly in sectors such as industry and agriculture, which are major drivers of environmental pollution. In addition, companies that freely adopt sustainable practices often find that such a practice leads to long-term benefits, including cost saves, a better image, and increased competitiveness.

These three aspects-innovation, global integration, and environmental compliance-interrelate and together influence the capability of Vietnam to sustain growth. Innovation can enhance the effectiveness of environmental compliance by proposing new tools and methods that have less impact on the environment. On the other side, global unity might facilitate best practices in sustainability, yet it also ensures some risks if the laws concerning the environment are not applied as they should be. The approach of this theory therefore provides the basis for investigating the specific processes by which these factors contribute to sustainability in Vietnam.

2.6 Hypotheses

Based on the theoretical framework and the literature assessment, the following hypotheses are offered. Each hypothesis is aimed to study the link between the major criteria mentioned in the framework and sustainable economic development in Vietnam.

H1: Innovation Positively Impacts Sustainable Economic Growth in Vietnam by Enhancing Productivity and Resource Efficiency.

The innovation would now contribute positively to sustainable economic development through improved productivity and better use of the resources. Innovation is critically important in Vietnam, a country whose economy is currently undergoing transition from low-value, resource-based industries to higher-value, knowledge-based industries. Implementing modern technologies and further optimization of the production process means higher output can be achieved with smaller inputs, hence less waste and less environmental impact [17]. That theory means that the more creative the company or an entire economy is, the more likely it would reach sustainable growth. Indeed, some empirical analyses have shown that in industries where technical innovation is high, such as in the

case of industry and agriculture, increases observed in both economic performance and environmental sustainability are quite significant [21].

H2: Global Integration Has a Dual Impact on Sustainable Economic Growth in Vietnam, Contributing to Economic Development While Posing Environmental and Social Challenges.

While global integration through trade and investment has been among the most significant factors behind Vietnam's rapid economic growth, there are also a set of associated environmental and social challenges. On one hand, global integration encourages the inflow of capital, technology, and management expertise, which increases productivity and promotes sustainability. On the other hand, export-oriented companies arising may involve greater pollution and deforestation, with social complications of worker exploitation and economic inequality. This hypothesis thus suggests that while global integration has a positive effect on economic growth, its consequences upon sustainability are mixed and perhaps need regulations to balance out the deleterious effects. For example, stringent environmental regulations and the development of green technology will have the effect of reducing the environmental impact of increased industrial activities [20].

H3: Environmental Compliance Is Positively Associated with Sustainable Economic Growth in Vietnam, as It Encourages Businesses to Adopt Sustainable Practices and Reduce Their Environmental Footprint.

The continued economic development of Vietnam will, therefore, depend much on environmental compliance. The imposition of stronger environmental restrictions by the government, on one hand, drives companies to pursue ways of reducing their imprint on the environment. Such measures may include emission reduction, waste management and water and energy conservation. Compliance not only helps preserve the environment but in fact also prepares organizations for long-term success by meeting the ever-growing needs of customers and investors for sustainable goods and processes. It claims that such an organization will achieve sustainable development easily because they do not face various risks that occur due to non-compliance, like being fined, brought to court, or being stigmatized. It may even spur innovation in cases where environmental compliance offers a wide avenue for new ways of reaching regulatory requirements while continuing to ensure profitability.

H4: The Interaction Between Innovation and Environmental Compliance Amplifies the Positive Impact on Sustainable Economic Growth, as Businesses That Innovate While Adhering to Environmental Regulations Are More Likely to Achieve Long-Term Sustainability.

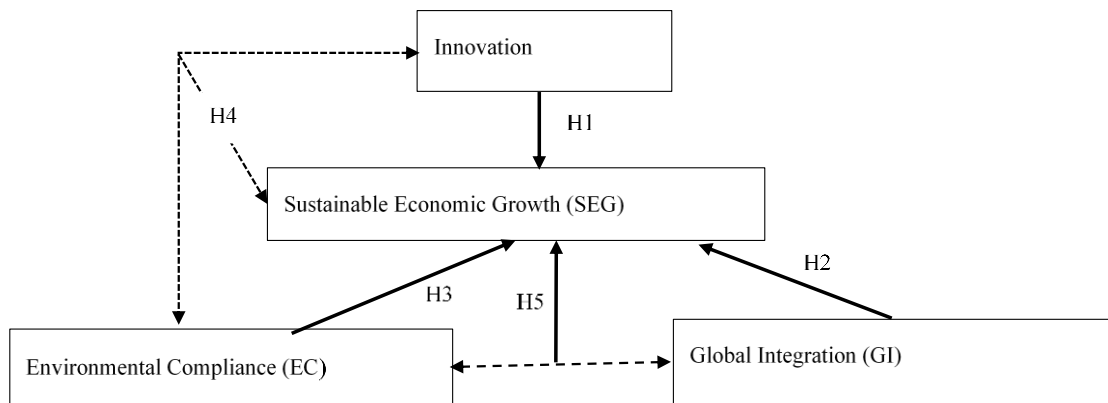


Fig.1. Research Model

The combination of innovation and environmental compliance is predicted to have a synergistic impact on sustainable economic development. Firms that innovate while simultaneously complying with environmental rules are likely to see enhanced advantages, since innovation may allow them to satisfy regulatory requirements more quickly and effectively [16]. For example, a firm that invests in energy-efficient technology not only complies with requirements on energy consumption but also decreases its operating expenses and increases its competitiveness. This theory posits that the combination of innovation and compliance produces a virtuous cycle that supports sustained growth. In Vietnam, where regulatory enforcement is growing stricter, enterprises who are proactive in both innovation and compliance are better positioned to succeed in the long run.

H5: The Impact of Global Integration on Sustainable Economic Growth Is Moderated by Environmental Compliance, with Stricter Enforcement of Environmental Regulations Mitigating the Negative Environmental Impacts of Global Integration.

In this regard, global integration may positively and negatively affect sustainable economic development to varying degrees, depending on the stringency of environmental compliance. This line of argumentation will be supported by the assumption that stricter enforcement of environmental standards can mitigate the adverse effects of global integration, such as pollution and natural resource depletion, since it would ensure that enterprises operate only within practices that are truly sustainable even in the course of expansion.

In Vietnam, for example, whose integration into the global economy is getting intensified by the day, a sound regulatory framework has to be in place as a balance between economic growth and protection of the environment. According to this theory, countries that are integrated into the global economy with good care for the environment have a better prospect of achieving sustainable development. For instance, compliance of enterprises with international standards on environmental protection may enhance their competitiveness in overseas markets while contributing concurrently to the local sustainability goals.

In all, this enlarged theoretical framework, and hypotheses provide a sound basis on which to explore the complex interrelations among innovation, global integration, environmental compliance, and sustainable economic development in Vietnam. Each hypothesis deals with another aspect of such interactions, with the need for balancing economic progress by environmental and social sustainability. This framework lays the foundation for further empirical research which will then test these hypotheses and yield useful information about what policymakers, entrepreneurs, and other stakeholders can do to help Vietnam in its quest for sustainable development.

III. RESEARCH METHODOLOGY

3.1 *Research Design and Approach*

Quantitative research design has been adopted for the study, using a structured survey for empirical data collection from the managers of the firms in Vietnam. Quantitative research was adopted in that it enables investigation of relationships among variables in a systematic manner, hence rigorous hypothesis testing that innovation, global integration, and environmental compliance act as drivers in the sustainable economic development. It will be especially suitable when the research questions are best addressed using numerical data and related statistical analysis, which can indicate the presence of patterns and correlations among the data [30].

The method of survey is used because of its efficiency in gathering data from a large and diverse respondent group, which is very significant for generalizing results. In this study, where such multi-dimensional variables are considered, like innovation, global integration, and environmental compliance, a structured survey enables the valid measurement of these firm facets [29].

3.2 *Survey Design*

The questionnaire was designed based on the theoretical framework and objectives of the study. It consisted of 10 key questions, all measured using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

This scale is adopted because it is one of the best known for measuring the intensity of opinions or attitudes that the respondents have in relation to general statements, as it allows the full vision of their opinion.

These questions fell into three main categories: Innovation, Global Integration, and Environmental Compliance. Each category was intended to measure an important aspect of the company's operations that could contribute to or hinder sustainable economic development. The questionnaire was designed with the use of Google Forms, a technology specifically renowned for its ease of use and efficiency in data collection. The use of Google Forms further facilitated the process of distribution and automated data collation, thereby fastening the process of data collection.

3.3 *Sampling Strategy*

The objective of the sampling strategy was to ensure representative enterprise responses to capture the business environment in Vietnam, targeting a sample size of 120 enterprises in both SME and larger-scale international corporations. It included organizations that were important to the focus of the study in relation to innovation,

integration with the global economy, and compliance with environmental standards. Therefore, the variety of the sample enables generalization of results for different kinds of enterprises operating in Vietnam [32].

In each organization, the questionnaire targeted those at the management or technical decision-making level, such as departmental heads and senior executives. It aimed to obtain data from at least five experts in each organization to ensure that the information provided was representative of the company's procedures and policies. This approach was meant to eliminate individual biases and give a broader view of the activities involved in each organization [34]

3.4 Data Collection

Data collection was done over a period of four weeks. The link of the survey was forwarded to around 600 professionals in those 120 companies so as to achieve wide coverage and increase the probability of receiving considerable numbers of responses. The total data set consisted of 279 fully completed questionnaires, which is approximately 46.5% of the total responses. This response rate is considered strong for online surveys, especially in the context of business research where busy professionals may be less willing to engage.

Obtained data was exported from Google Forms and processed for analysis in Stata—a widely used statistical software application in academic and professional research. Stata was selected because it is one of the broadest packages of statistical tools, able to handle huge sets of data effectively. Data preparation would entail coding of replies, verification of missing values, and making sure that inputs of data were correct and consistent.

3.5 Data Analysis

Data analysis was performed using Stata, based on correlations of the variables represented by the theoretical framework of the study. Descriptive statistics were used to begin the study with an overview of the data—including measures of central tendency and variability for each of the variables involved. This first step helps in understanding the distribution of the responses and builds on the identification of outliers that may exist [33].

Accordingly, regression analysis was the centerpiece of the investigation into the influence of Innovation, Global Integration, and Environmental Compliance on SEG. Interaction effects between Innovation and Environmental Compliance were studied, and the role of Environmental Compliance in moderating the relationship between Global Integration and Sustainable Economic Growth was examined. The studies gave an insight into how these factors combine to determine economic outcomes in Vietnam.

3.6 Hypothesis Testing:

H1: The analysis investigated the direct influence of Innovation on Sustainable Economic Growth.

H2: The direct influence of Global Integration on Sustainable Economic Growth was explored.

H3: The direct influence of Environmental Compliance on Sustainable Economic Growth was evaluated.

H4: The connection between Innovation and Environmental Compliance was investigated to determine whether it magnifies the beneficial influence on Sustainable Economic Growth.

H5: The moderating impact of Environmental Compliance on the connection between Global Integration and Sustainable Economic Growth was also studied.

3.7 Ethical Considerations

Ethical issues were a major element of the study procedure. All participants were told about the goal of the research and granted their permission before participation. This procedure was developed to guarantee openness and respect for the participants' autonomy. Confidentiality was carefully maintained, with all replies anonymized, to safeguard the identity of the participants and their respective firms. The data was securely maintained, available only to the research team, and utilized strictly for the objectives of this study [35]

3.8 Limitations

While the study design and methods were strong, certain limitations must be addressed. First, the dependence on self-reported data may induce bias, as respondents could supply socially desired responses rather than their genuine

thoughts. Additionally, the concentration on enterprises in Vietnam restricts the generalizability of the results to other situations.

These limitations imply that future research might benefit from including other data gathering techniques, such as interviews or case studies, and broadening the geographic scope of the study [36].

IV. EMPIRICAL RESULTS

4.1 Descriptive Statistics

The descriptive statistics (Table 1) provide a summary of the data collected from 279 respondents, focusing on various aspects of innovation, global integration, and environmental compliance within companies operating in Vietnam. The mean values of the variables indicate that, on average, companies report moderate to high levels of innovation and compliance. For instance, the mean score for innovation productivity is 3.53, with a standard deviation of 1.187, suggesting a moderate level of technological innovation within the surveyed companies.

Table I: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Innovation productivity	279	3.53	1.187	1	5
Innovation resource	279	4.004	1.189	1	5
Trade impact	279	4.247	1.063	1	5
Technology transfer	279	3.735	1.295	1	5
Environmental Compliance	279	4.079	1.106	1	5
Cost savings	279	4.057	1.002	1	5
Innovation regulation	279	4.007	1.106	1	5
Technology compliance	279	3.384	1.354	1	5
Regulation mitigation	279	4.201	.946	1	5
Compliance competes	279	3.928	1.139	1	5

Table II: Summary statistics

	Mean	Std. Dev.	p25	Median	p75
Innovation productivity	3.53	1.187	2.000	4	4
Innovation resource	4.004	1.189	4.000	4	5
Trade impact	4.247	1.063	4.000	5	5
Technology transfer	3.735	1.295	3.000	4	5
Environmental Compliance	4.079	1.106	4.000	4	5
Cost savings	4.057	1.002	4.000	4	5
Innovation regulation	4.007	1.106	4.000	4	5
Technology compliance	3.384	1.354	2.000	4	5
Regulation mitigation	4.201	.946	4.000	4	5
Compliance competes	3.928	1.139	3.000	4	5

The summary statistics (Table 2) further reveal that the data is relatively centered around the median, with many variables displaying minimal skewness. For example, the median for the "Trade impact" variable is 5, indicating that a substantial proportion of respondents believe that participation in international trade has significantly benefited their economic performance. The 25th and 75th percentiles for this variable also suggest a concentration of responses towards the higher end of the scale, confirming a positive perception of trade's impact on economic performance across the sample.

These statistics provide a foundational understanding of the dataset, highlighting the variability and central tendency of key variables that will be further examined in the subsequent regression analysis.

4.2 Reliability Test (Cronbach's Alpha)

Table III: Reliability Test (Cronbach's Alpha)

Test scale = mean (unstandardized items)
Reversed item: Environmental Compliance
Average interitem covariance: .1602927
Number of items in the scale: 10
Scale reliability coefficient: 0.5822

To assess the internal consistency of the survey items, we conducted a reliability analysis using Cronbach's Alpha. The overall scale, consisting of 10 items, yielded a Cronbach's Alpha coefficient of 0.5822, indicating moderate reliability. The average inter-item covariance was 0.1603. It is noteworthy that the item "Environmental Compliance" was reverse-coded to ensure consistency in the direction of responses. Although the reliability coefficient is slightly below the commonly accepted threshold of 0.70, it suggests that the items are moderately consistent in measuring the underlying constructs. This level of reliability may be considered acceptable for exploratory research, though future studies could benefit from refining the survey items to enhance internal consistency.

4.3 Correlation Matrix

Table IV: Correlation Matrix analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Innovation productivity	1.000									
(2) Innovation resource	0.215 *	1.000								
	(0.000)									
(3) Trade impact	0.141 *	0.330 *	1.000							
	(0.019)	(0.000)								
(4) Technology transfer	0.148 *	0.127 *	0.233 *	1.000						
	(0.013)	(0.034)	(0.000)							
(5) Environmental comp.	-0.037	-0.033	-0.075	0.017	1.000					
	(0.533)	(0.583)	(0.213)	(0.775)						
(6) Costs savings	0.080	0.169 *	0.223 *	0.297 *	-0.082	1.000				
	(0.182)	(0.005)	(0.000)	(0.000)	(0.172)					
(7) Innovation regulation	0.109	0.194 *	0.188 *	0.220 *	0.032	0.418 *	1.000			
	(0.068)	(0.001)	(0.002)	(0.000)	(0.596)	(0.000)				
(8) Technology compliance	0.063	-0.050	-0.046	0.099	-0.020	0.103	0.130 *	1.000		
	(0.293)	(0.405)	(0.443)	(0.098)	(0.736)	(0.086)	(0.030)			

(9) Regulation mitigation	0.187 *	0.159 *	0.076	0.082	-0.056	0.253 *	0.198 *	0.195 *	1.000	
	(0.002)	(0.008)	(0.208)	(0.173)	(0.348)	(0.000)	(0.001)	(0.001)		
(10) Compliance competes	0.169 *	0.048	0.050	0.075	0.044	0.145 *	0.086	0.155 *	0.284 *	1.000
	(0.005)	(0.424)	(0.402)	(0.213)	(0.459)	(0.015)	(0.152)	(0.009)	(0.000)	

*** p<0.01, ** p<0.05, * p<0.1

The correlation matrix above displays the correlations between the variables in the research. Significant associations are shown by asterisks, indicating the degree of significance (*p<0.1, **p<0.05, ***p<0.01). Notable results include a substantial positive association between "Innovation Productivity" and "Innovation Resource" (r = 0.215, p<0.01), demonstrating that technical innovation is related with greater resource usage. Similarly, "Trade Impact" is highly connected with both "Innovation Resource" (r = 0.330, p<0.01) and "Cost Savings" (r = 0.223, p<0.01), demonstrating the favorable influence of international commerce on economic performance and cost efficiency.

However, "Environmental Compliance" does not strongly correlate with most other factors, which might imply a lesser direct association with economic performance indicators. Interestingly, "Regulation Mitigation" shows significant positive correlations with "Innovation Productivity" (r = 0.187, p<0.01), "Innovation Resource" (r = 0.159, p<0.01), and "Compliance Competes" (r = 0.284, p<0.01), suggesting that mitigation of environmental regulations enhances both innovation and competitiveness.

Based on these connections, assumptions linked to the favorable influence of innovation and global integration on sustainable economic development (H1, H2) are supported, but the direct role of environmental compliance (H3) may be less obvious. The interaction hypotheses (H4, H5) could require additional testing using regression analysis to assess the moderation and amplification effects.

4.4 Regression Analysis

The regression study assessed the influence of several independent factors on "Innovation Productivity" among the organizations surveyed. The model displays an R-squared value of 0.102, suggesting that about 10.2% of the variation in innovation productivity can be explained by the model's predictors. The whole model is statistically significant (F-test = 3.395, p = 0.001).

Among the predictors, "Innovation Resource" (β = 0.163, p = 0.009) and "Compliance Competes" (β = 0.127, p = 0.047) are significantly positively associated with innovation productivity, suggesting that better resource utilization and compliance with standards that improve competitiveness positively influence innovation. Additionally, "Technology Transfer" (β = 0.095, p = 0.095) and "Regulation Mitigation" (β = 0.144, p = 0.071) are marginally significant, indicating the favorable benefits of technology and regulatory frameworks on innovation.

However, other variables like "Trade Impact," "Environmental Compliance," "Cost Savings," "Innovation Regulation," and "Technology Compliance" did not show a significant relationship with innovation productivity, indicating that these factors may not play a direct role in enhancing productivity in the surveyed companies.

The constant term is significant (β = 1.374, p = 0.015), indicating that there are additional unexplained variables impacting innovation productivity that are not incorporated in this model.

Table V: Regression Analysis

Innovation Productivity	Coef.	St.Err.	t-value	p-value	[95% Conf Interval]	Sig
Innovation resource	.163	.062	2.62	.009	.041 .286	***
Trade impact	.059	.071	0.83	.408	-.081 .198	
Technology transfer	.095	.057	1.68	.095	-.017 .207	*

Environmental Compliance	-.036	.063	-0.58	.562	-.16	.087	
Cost savings	-.066	.08	-0.83	.408	-.224	.091	
Innovation regulation	.036	.07	0.51	.612	-.103	.174	
Technology compliance	.02	.053	0.38	.704	-.084	.124	
Regulation mitigation	.144	.079	1.81	.071	-.012	.301	*
Compliance competes	.127	.064	2.00	.047	.002	.252	**
Constant	1.374	.563	2.44	.015	.266	2.483	**

Mean dependent var	3.530	SD dependent var	1.187
R-squared	0.102	Number of obs	279
F-test	3.395	Prob > F	0.001
Akaike crit. (AIC)	876.261	Bayesian crit. (BIC)	912.573

*** p<.01, ** p<.05, * p<.1

V. DISCUSSION

These findings of the study highlight some important insights on how different variables impact innovation productivity within organizations in Vietnam. The positive significant influence that "Innovation Resource" and "Compliance Competes" have on innovation productivity underlines the importance of resource management with competency and compliance to norms of competitiveness. Companies using resources more and meeting compliance standards might score higher outputs with their innovation.

The marginally significant effects of "Technology Transfer" and "Regulation Mitigation" also hint that while the technology transfer and regulatory frameworks have a positive effect on the productivity of innovation, its impact may be considered less strong than resource management and competitive compliance. This means that these traits may require additional context or more support to fully exert their effect on creativity.

The analysis showed no significant association between "Trade Impact," "Environmental Compliance," "Cost Savings," "Innovation Regulation," and "Technology Compliance" with innovation productivity. Otherwise stated, the result would suggest that those factors may not directly influence innovation productivity or perhaps their influence runs through some other indirect pathways not measured in this study.

These findings are in agreement with the broader literature on innovation productivity, which indicates that resource management and competitive positioning are significant issues related to the creation of innovation. However, the absence of significant results for other factors shows the complexity of innovation processes and the need for more study to investigate these linkages in greater detail.

VI. CONCLUSION AND RECOMMENDATIONS

Conclusion: This research investigated the influence of numerous variables on innovation productivity among enterprises in Vietnam, utilizing a sample of 279 answers.

Results have shown that good resource management and competitive compliance can have a great impact on innovative productivity. Other variables, other than technology transfer and regulatory reduction, which resulted in marginally significant impacts, did not show direct effects.

Recommendations:

Improve Resource Management: Companies should go for improving their resource management and utilization to further enhance innovative productivity. The investment in resource-efficient technologies and methods could pay huge returns in terms of innovation outputs.

Improve Compliance Measures: Competition standards and requirements of compliance must be met by firms. This can only create a more competitive stance and, therefore, indirectly benefits the innovative activities.

Encourage Technology Transfer: Firms have to be actively involved in the technology transfer and knowledge sharing programs for the use of external breaks to integrate into the operation.

Strategize on Regulatory Changes: Firms should remain opportunistic towards changes in regulation and use them to offset any negative impact on their innovative activities.

Avenues for Further Research: Future studies need to focus on indirect effects of trade impact, environmental compliance, and cost savings on productivity of innovation. Longitudinal studies and industrywide studies might throw more light on these associations.

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