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Collaboration of Green Entrepreneurship and Institution Quality as a Catalyst for Sustainable Development

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ABSTRACT

This research aims to explore the potential of green entrepreneurship and institution quality collaboration as a catalyst for sustainable development. The research design uses mixed methods to adopt a holistic approach to socio-economic development prioritizing long-term sustainability over short-term profits. Collaboration of green entrepreneurship with institution quality is important to mitigate the impacts of global climate change and is a catalyst for the transmission of sustainable development goals (SDGs). In ensuring successful collaboration, more proactive and adaptive green development technology innovation is required to integrate different interactions in balancing SDGs achievements. The results confirm the existence of complementary relationships, human capital, institution, and quality economic growth remain consistent in strengthening collaboration. Furthermore, the relationship strengthens control over institution quality and has a positive impact on achieving SDGs. This research indicates a two-way causality between institution quality, green technology innovation, and economic growth. Research limitations are related to the behavioral patterns of family dynamics and entrepreneurship locally in developing countries. The contribution of this research is expected to analyze adaptive global climate change.

1. INTRODUCTION

Innovation is expected to be directed to green technologies, such as entrepreneurship in mitigating climate change [1, 2]. In this context, green entrepreneurship has been developed as an important new force driving innovation and sustainable economic growth, as well as reducing environmental pollution [3, 4]. The latest research on sustainability business shows that spatial and institution concentration of knowledge production is increasingly significant [5]. The results of empirical research related to innovation confirm that institution and green entrepreneurship are positively related to sustainable conservation entrepreneurial intentions [6-8]. However, regulatory support is still needed to promote green entrepreneurship and sustainable development [9]. This shows that green entrepreneurship and institution collaboration are closely related to the short and long-term socio-economic innovation ecosystem in sustainable manner. The problem is that related research pays limited attention to the method of green entrepreneurship collaboration and institution quality as a catalyst for sustainable development.

Green entrepreneurship is more focused on analyzing the past and possesses a longer future time perspective [10]. The potential has become a new innovative power solution to environmental problems and a major driver of sustainable development goals (SDGs), efficiency, new job opportunities, as well as local and global competitiveness [2, 11]. Meanwhile, the potential of formal and informal institution has interacted with each other to become the most important part of the new economics perspective as the main key driver of sustainable development and unemployment reduction as well as other performance successes [2, 12-14]. The main problem is related to collaboration and integration of these two potentials to provide more optimal benefits. This is because institution emptiness has become a major obstacle to achieving SDGs and reducing entrepreneurial productivity [15-19]. Institution quality is considered a threshold for price distortion of factors affecting ecological efficiency [20].

However, research on green entrepreneurship and institution collaboration requires real quality participation to optimize development according to community needs [21]. Institution quality increases green economic growth, but there is still limited research examining the relationship [22]. Previous research recommended the importance of improving institution quality to promote economic growth, openness to trade, finance, and industrialization, and the achievement of SDGs [23-25]. Therefore, the potential for collaboration is becoming increasingly urgent and important to be analyzed.

The urgency of the main problem is that the research on the potential for collaboration has not been analyzed in more depth and used optimally. The partial potential of institution and green entrepreneurship was examined in promoting economic growth and SDGs [26, 27]. The complementary potential of human capital and institution in enhancing SDGs with the complexity of institution and social innovation has not been explained [28-30]. Recent research related to the previous one only focused on partially examining the role of institution potential and social entrepreneurship as the main drivers of business opportunities and competitiveness [26]. In addition, there has been no new research related to integrating and collaborating on theoretical and empirical problems. This collaborative research novelty is to examine and explain the problems as well as efforts to optimize the potential role. The contribution is expected to explain the potential relationship between green entrepreneurship and institution quality as a dimension of technological progress used to increase efficiency in driving the achievement of SDGs, specifically in developing countries.

Previous research confirmed that entrepreneurship and institution had a positive and significant influence on sustainable economic growth oriented towards green economy [28, 31]. Aspirations, attitudes, and capabilities of conservation entrepreneurship contribute positively and significantly to institution quality [6]. Even though the contribution is not optimal, strategic implications are provided for institution policies and collective awareness relevant to mitigating the impacts of global climate change and promoting the achievement of SDGs [6]. Based on the human capital theory, this research aims to explain the direct and indirect as well as total effects of green entrepreneurship in collaboration with institution quality as a catalyst for sustainable development. The empirical contribution is expected to provide a comprehensive, adaptive, and humanistic institution policy model as a catalyst for sustainable development. The theoretical contribution is the development of complementary literature as well as facilitates practical models and directions for institution policy change by integrating new institution economics (NIE) and sustainable entrepreneurship theory.

2. LITERATURE REVIEW

2.1 New institution quality and sustainable development

Institutionalism is a complex new theory, with many concepts and methods [30, 32, 33]. However, NIE theory remains a powerful tool for understanding real-world phenomena [34, 35]. The theory can be connected to sustainable economic development through social, economic, environmental, political as well as cultural channels and globalization [36]. Empirical research has proven the important role of institution in determining economic growth [37, 38]. Formal and informal institutions are important determinants of sustainable economic development dominating other explanations [2, 35]. The results of the literature confirm that institution quality is a key factor in sustainable economic development and other performance [39, 40]. Weak, low-quality systems, and racism are real facts in various developing countries and the main source of human misery globally [32, 36, 41]. Extremely weak and backward institution elements in the digitalization system had a negative impact on the high cost of business transactions [41]. The results of empirical research show that low institution quality is detrimental to poverty alleviation [42]. Therefore, developing countries should continue to focus on research to improve institution quality and promote economic growth through effective human capital investment [43].

Formal and informal institutions are in principle complementary. However, the role of informal institution is often more rapid in contributing and prominent [2, 6, 44]. New institutionalist literature research had viewed institution quality as dynamic and not static [45-48]. The implications of this analysis for NIE theory are explored by the potential for building a dynamic institution theory of long-term economic change. Static systems and weak institution quality often affect the community [15]. Therefore, the theory of dynamic institution change is important for further progress in social science in general and economics [49, 50]. Further research is recommended to use regional institution quality measures made for countries outside Europe [51]. Based on the description above, this research requires more dynamic and humanistic institution change innovation. The premise is based on the hypothesis that there is a strong correlation and positive influence of institution quality on green entrepreneurship activities and SDGs achievements. Furthermore, economic freedom is needed to carry out various dynamic quality changes.

High economic freedom can create maximum scope for industrial entrepreneurs to experiment with institution in improving the relationship between social status and intrapreneurship [52-54]. Institution quality and economic freedom are interrelated and important but can be affected by long-term foreign investment [55, 56]. In this context, freedom of expression should be built to make innovative, productive, and resilient changes as a basis for public policy. The results found that regulation, as well as cognitive and normative institution, had a more effective influence in developed countries [46]. Macroeconomic institution factors have a more effective influence on entrepreneurial activity in developing countries [57]. The results show the dual role of institution environment, with the weakening of regulatory turbulence and the support of policies through image-making capabilities [58]. Therefore, dynamic governance behavior patterns determined by the domestic market and entrepreneurial institution should be adopted [59].

The fundamental concept of NIE and previous entrepreneurship theory has been embedded as a guideline for thinking to build the quality of formal and informal institution in a humanistic manner [2, 6, 21]. Improving institution quality can increase productivity and entrepreneurial activity [39]. Institution quality is important in increasing environmental efficiency for high-income countries [60]. Sustainable orientation management and institution quality of entrepreneurs form more productive entrepreneurial activities [61]. These results show a significant positive correlation and influence between institution quality, economic growth, and SDGs achievement [28, 62]. However, the inverse relationship or causality between institution quality and SDGs achievement must be analyzed [23]. Even though the problem is understandable, this positive relationship is often strengthened in institution environment with high social costs of failure [63].

2.2 The relationship between green entrepreneurship and institution quality

Green entrepreneurship was carried out to achieve

innovative strategic goals. However, now entrepreneurs prefer to be included in green entrepreneurship to meet more idealistic expectations [11, 64]. The potential for dynamic capabilities is increasingly urgent as an innovative solution to solving environmental problems with economic shifts, institution interactions, and community initiatives [64, 65]. In addition, the role of opportunities and resources integrated into the process cannot be ignored [66]. This shows that the novelty of this research does not integrate NIE and entrepreneurship theory for sustainable development. The concept complements the shortcomings of green entrepreneurship theory and provides practical guidance for new entrepreneurs.

Based on the description above, green entrepreneurship has been interrelated with social entrepreneurship. The interests of social and solidarity economy (SSE) of the community and ecological environment should be considered [2, 67]. The concept is certainly not free from the problem of efforts to achieve profit. However, green and social entrepreneurship have the same basic principles, prioritizing the goals of achieving SSE and sustainable ecological environment [2]. The potential for institution quality significantly explains the possibility of becoming social entrepreneurs [68]. The theoretical urgency is aimed at transforming changes in social innovation technology that are more humanistic and have implications for the practical formulation of institution policies, as well as the development of green entrepreneurship. The argument is that government support has been found to strengthen the impact of green innovation on entrepreneurial success [69]. Furthermore, institution quality and GDP per capita have a positive and significant impact on green growth [70].

The results of related research explained that green transformation leadership and entrepreneurship orientation had a significant impact on innovation directed towards sustainable company performance and the manufacturing industry [71]. However, the basic conceptual theory refers to the fundamental thinking of North's institution theory [72], which focuses more on the model of rules for institution change in the community and the performance of economic development [73]. North [70] emphasized that institution was needed because of the uncertainty in human interaction. The aim of exploring the potential for dynamic changes in institution theory build the quality of long-term sustainable economic development performance. This theory is used as a basis to explain the importance of green entrepreneurship collaboration and related institution quality. Therefore, green entrepreneurship collaboration due to technology innovation and institution quality are assumed to be effective mechanisms used to mitigate the impacts of global climate change and a catalyst for achieving SDGs.

2.3 Theory of institution change and sustainable development

Institution Change theory shows that diversity is increasingly relevant, broad, and critical with new development theory [72, 74, 75]. Therefore, the theory can be analyzed with various interesting topics [22, 75-78] and explains the rules of the game as well as new expectations regulating human interaction and development paths in the community [72, 74-78]. In the future, institution theory will provide more effective, useful, and efficient results in explaining the relationship between sustainable development and institution organization [75].

The implementation of institution change theory is individualistic and collaborative [79]. Previous research recommended institution change supporting stronger social protection with faster technology diffusion [80]. Furthermore, innovation must be directed to green technology to combat climate change without sacrificing long-term economic growth [1]. Green entrepreneurship as a form of social innovation of new technological change is used to mitigate global climate change and is a catalyst for sustainable development. The concept needs the inclusion of potential institution quality to exploit development according to needs [2]. This is because the transition of cultural values and community behavior patterns creates dynamic complementarities affecting green transition [81]. The adoption of new technologies tends to be slow [69, 82] and social transformation technology change is offered as a new practical insight for policymakers [69]. Therefore, the novelty in this research tends to use a social innovation method to produce innovative, adaptive, and dynamic solutions.

Pluralism of institution change effectively supports the community but is not effective in providing learning to government institution in building sustainable mechanisms [83]. The adoption of external knowledge has supported the impact of corporate strategies oriented toward sustainability and environmental regulation [84]. The influence of changes in institution quality varies across countries [22] but the implications state that the quality increases green economic growth [22]. Therefore, an agenda for implementing new models and dynamic policy strategy stages is needed to achieve better community development goals in the long term. Collaborative method is theoretically necessary to combine logic theory with institution configuration perspective [85]. The importance of institution quality increases when the economy becomes more complex [86]. The direction of collaborative research is increasingly urgent and important to advance understanding as well as promote innovative and adaptive solutions. This argument is based on recommendations that exploring the intersection of green entrepreneurship and new technologies is a promising area [87].

3. METHODOLOGY

Maintaining the appropriateness of the method with the objectives is the most important aspect to ensure validity. Based on the objectives, this research is designed with a convergent and collaborative mixed methods model [88-90]. The purpose of using convergent mixed methods is to compare statistical results with the latest qualitative results to better understand the problems authentically and validly. This method helps the team obtain stronger, more valid, and efficient evidence to collaborate on previous results [2, 26, 28]. The focus of in-depth qualitative investigation uses an action method. This convergent method is selected because previous research has used an exploratory and explanatory mixed model [2, 26, 28]. Therefore, the model is more complex and collaborative in the context of the implementation [91-94]. Collaboration model tends to be based on a team that respects each other and coordinates to maximize results [91].

The team focuses on better understanding the impact of new social innovation in relation to the adaptation process and integration of institution changes. The argument is to adopt various holistic behavioral patterns to SSE development that

prioritize long-term sustainability over short-term benefits. Meanwhile, the novelty includes a combination of theoretical framework and literature review to explore the relationship and influence between green business sustainability and social innovation technology based on complementary resources between institution quality and human capital. Recent research recommended that the advancement of technological innovation and green entrepreneurship could be used to improve efficiency and drive development in various developing countries [95]. An important topic needs to be analyzed in more depth through the implementation of the research.

The previous research stage uses triangulation based on interviews, observations, and structured surveys, while the sampling method adopts a simple random side method [2, 26, 28]. In this context, 125 respondents of green entrepreneurship household samples are obtained representatively and analyzed quantitatively. Furthermore, this research tends to focus more on using the theory triangulation method by adopting previous data sources. The next novelty to advance the mixed methods design is by integrating NIE theory and the latest data sources as a research characteristic [93]. The basic theoretical framework explained that alliance was developed by integrating NIE and entrepreneurship theory as a catalyst for sustainable development. However, the focus of implementation ensures that the value of institution change and social behavior patterns can be obtained objectively.

According to the mixed model convergent with collaborative action from institution perspective, this method can be understood in the form of a triple helix collaboration as represented in Figure 1. Part A is the quality of the academic/university institution shown by the research team. Meanwhile, part B is the quality of the analyzed business/industry and entrepreneurship institution. Part G is the quality of related government institution with policy regulations. Part C is the central point of the new collaborative strength in the new integration model as the final value of the expected institution quality. This shows that part C is an area of collaboration and investigation serving as the best basic choice for making recommendations or regulations for institution quality change policies. Therefore, action research is necessary for understanding various situations and conditions of socio-cultural behavior patterns to provide added value for better and more adaptive positive social innovation changes.

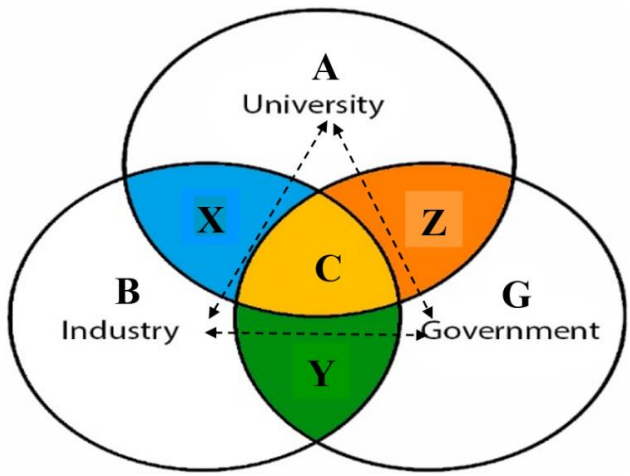

Figure 1. Three helix collaboration model; three institution perspective research

The next stage is to compile mixed methods in maintaining the efficiency and validity of the research. Therefore, the in-depth activity of implementing action research uses a more phenomenological ethnography method [96]. The aim is to improve the ability to validate information and authenticate new results as well as to obtain dynamic, adaptive, and comprehensive holistic understanding. The specific research stages use snowball sampling through the semi-structured interview method. In the implementation, 10 core representative respondent samples are used. The specific purpose of adopting the ethnographic method is to explore the dynamics of sociocultural political behavior in the dimension of measuring institution change and related social innovation. The phenomenological method creates awareness of detailed phenomena and eliminates the bias of subjective priori assumptions to obtain valid, comprehensive, in-depth, meaningful, authentic, and objective results. Therefore, a difference is reported by creating a mutual collective awareness between the three institutions (ABG). These stages increase the meaningfulness of the results since the quantitative method is more than data collection and statistics. The formulation of the result should be carried out through a structural equation path analysis model to enhance easy understanding. The basic model of the structural system equation path analysis in question is arranged as follows.

$$Y1 = \rho_{Y1.}X_1 + \rho_{Y1.}X_2 + \varepsilon_1 \quad (1)$$

$$Y2 = \rho_{Y2.}X_1 + \rho_{Y2.}X_2 + \varepsilon_2 \quad (2)$$

$$W = \rho_{Z.}X_1 + \rho_{Z.}X_2 + \rho_{Z.}Y_1 + \varepsilon_3 \quad (3)$$

$$W = \rho_{Z.}X_1 + \rho_{Z.}X_2 + \rho_{Z.}Y_2 + \varepsilon_4 \quad (4)$$

$$W = \rho_{Z.}X_1 + \rho_{Z.}X_2 + \rho_{Z.}Y_1 + \rho_{Z.}Y_2 + \varepsilon_5 \quad (5)$$

$$Z = \rho_{Z.}Y_1 + \rho_{Z.}Y_2 + \rho_{Z.}W + \varepsilon_6 \quad (6)$$

$$Z = \rho_{Z.}X_1 + \rho_{Z.}X_2 + \rho_{Z.}Y_2 + \rho_{Z.}W + \varepsilon_7 \quad (7)$$

$$Z = \rho_{Z.}X_1 + \rho_{Z.}X_2 + \rho_{Z.}Y_1 + \rho_{Z.}Y_2 + \rho_{Z.}W + \varepsilon_8 \quad (8)$$

The dimension of the measurement value in all variables uses the modified Gini ratio index (IGx) model. This is because the general basic formula of IG value ratio is widely known and cannot be written in detail [28].

$$IGx = 1 - \sum_{i=1}^{n} f_i\,(Y_i - Y_{i-1})$$

The main Xn variables used in this research are measured by Human_Capital Index (HC), Social_Capital Index (SC), Quality_Institution Index (QI), Green_Entrepreneurship Index (GE), Quality_Economic Growth Index (QEG), and Global_Competitiveness Index (GC). Specifically, GC variable is a measuring dimension of long-term sustainable development capacity. The final index value ranges from zero to one and is appropriate to the original Gini ratio index value standard. The path analysis diagram uses a dual system model selected based on the experimental results through several stages appropriate to the urgency of the main problem and objectives. The main variable of institution quality depends on dimensional change indicators, and the capacity of equality,

socio-economic justice, democracy, governance capability with firmness. The main variable of green entrepreneurship results from social innovation oriented toward SSE to achieve sustainable socio-economic equity welfare.

4. RESULTS AND DISCUSSION

Results and discussion to explain the objectives are presented in tables and diagrams based on the structural equation model test. This research refers to the main problem and the objectives proposed to be analyzed in detail. Based on Table 1, the main variables of human capital (HC) and social capital (SC) provide a significant positive contribution to institution quality and green entrepreneurship. In terms of determinants, HC and SC factors provide good and strong contributions to promoting institution quality and green entrepreneurship, respectively. Based on Tables 1, 2, and 3, these results are consistent with previous research stating that HC is the main key to driving quality economic growth directly and indirectly. Meanwhile, SC is stronger as a driver of global competitive resilience [28]. The role of SC tends to promote innovation in green entrepreneurship as decisions of the new socio-economic institution and SSE is selected based on consequences.

Table 1. Results of institution quality (QI) and green entrepreneurship driving model GE)

Model	Unstandardized Coefficients		Standardized Coefficients	t-stc.	Sig.
	B	Std. Error	Beta		
(Constant)	.191	.023		8.459	.000
Human_Capital (HC)	.399	.047	**.492**	8.574	.000
Social_Capital (SC)	.419	.051	.472	8.215	.000
(Constant)	-.088	.041		-2.162	.033
Human_Capital (HC)	.393	.084	.333	4.668	.000
Social_Capital (SC)	.655	.092	**.507**	7.101	.000

Model-1. Dependent Variable: Quality_Institution (QI)
Model-2. Dependent Variable: Green_Entrepreneurship (GE)
Source: Primary data processed by researchers

Table 2. Results of the quality economic growth (QEG) driving model

	Model	Unstandardized Coefficients		Standardized Coefficients	t-stc.	Sig.
		B	Std. Error	Beta		
3	(Constant)	.037	.032		1.171	.244
	Human_Capital (HC)	.574	.070	.556	8.219	.000
	Social_Capital (SC)	.246	.084	.218	2.941	.004
	Green_Entreprenurship (GE)	.136	.069	.156	1.971	.051
4	(Constant)	-.045	.039		-1.162	.248
	Human_Capital (HC)	.481	.080	.466	6.029	.000
	Social_Capital (SC)	.182	.086	.161	2.117	.036
	Quality_Institution (QI)	.366	.123	.287	2.986	.003
5	(Constant)	.142	.021		6.882	.000
	Human_Capital (HC)	.294	.043	.362	6.836	.000
	Social_Capital (SC)	.252	.070	.284	3.612	.000
	Quality_Institution (QI)	.241	.038	.331	6.277	.000
	Green_Entrepreurship (GE)	.199	.071	.192	2.794	.006

Model:3-5. Dependent Variable: Quality Economc Growth (QEG)
Source: Primary data processed by researchers

HC factor still consistently provides the largest positive contribution significantly to quality economic growth. The role of HC is still very dominant when green entrepreneurship has not collaborated with institution change. However, the role decreases slightly after collaboration and increases significantly in driving quality economic growth. The development of SSE innovation mutually reinforces the role of driving quality economic growth. The result is particularly evident in Model 5, which shows the increasingly strengthening role of SC, QI, and GE in driving quality economic growth. In this context, HC potential remains a key predictor significantly positive in supporting the success of green entrepreneurship and institution quality to drive quality economic growth and competitiveness. The result supported previous research where HC and SC served as the main key determinants of entrepreneurial success [28, 53]. The complementary role is increasingly strong in driving quality economic growth and sustainable competitiveness.

There are interesting results based on Tables 1 and 2 concerning the complementary relationship between consistent human capital, institution, and quality economic growth [28]. In Table 2, the impact of HC and control on institution quality is empirically dominant. Additionally, the complementary results of human capital with institution quality increasingly promote quality economic growth. In the next stage, the results in Table 3 show that the impact of HC has decreased slightly and remains significantly positive. However, the impact of institution quality on quality economic growth and competitiveness as a measuring dimension of long-term sustainable development continues to grow. This empirical research supports the new theory presented by Acemoglu et al. [97], since the results are not biased in terms of variables. Table 4 shows that the results are not biased in terms of determinants. Historically, human capital and control over institution have a strong impact on long-term development. The estimated impact of HC is greatly reduced and becomes consistent with the micro estimate [97].

These results strengthen the argument for the importance of

collaborating institution quality with green entrepreneurship in promoting quality economic growth and sustainable development. As economists, social innovation method is used to explore the important role of SSE in promoting SDGs achievements. Therefore, this research provides a special framework as presented in Table 3 and Figure 2. The explanation uses a new perspective on social innovation results from various qualitative interactions in Tables 1, 2, and 3. The mobility, as well as interaction of SSE and institution quality increasingly strengthen the important role of SDGs achievements. However, large social mobility also disrupts institution quality, which can cause policy inefficiency. Maintaining the consistency of institution quality function is important and must be carried out in various developing countries such as Indonesia.

Based on Table 2, human capital and institution quality are the main fundamental factors driving sustainable economic growth. These results support research stating that institution quality and human capital are the main drivers of innovation [98]. The dimension of institution-change into quality, as well as social innovation in the form of green entrepreneurship and SSE, are considered. Therefore, this research aims to empirically explain the complementary interaction of institution change identified in green entrepreneurship social innovation process. Exploratory research has examined the potential strength of formal and informal institution quality in driving quality economic growth and SDGs [2, 28]. The integration of local wisdom as well as the potential of green entrepreneurship and GESI community institution in the social innovation process has also been analyzed [21, 65, 67]. Research on various governance of local wisdom potential directs the occurrence of change dimensions into institution quality toward increasingly better expectations sustainably in the short and long term. In the innovation process, there is a positive synergy between green innovation, community technology potential, institution change, and entrepreneurial behavior to strengthen SDGs. Therefore, institution change has been attached to the social innovation process through the achievement of shared goals in SDGs. To achieve better sustainability goals, institution quality efforts, and SSE potential are needed in the process of new social innovation. The results should be supplemented with explanations from qualitative research. This is because institution change occurs before and after social innovation [99].

Based on the description above, this research suggests that the problems of corruption and slow, expensive, inefficient bureaucracy should be prevented and eliminated through a culture of socio-economic innovation and just democracy. However, clear, firm, and serious legal rules are needed to eradicate corruption due to high social costs. Related research explained that corruption has a negative effect on financial development and long-term causality in developing countries [100]. This qualitative research identifies various types of corruption. Resolution can be carried out with SSE model when the concept is due to a lack of necessities for life, such as the needs of the poor. Meanwhile, resolution can only be enforced with justice as well as correct, firm, clear, fair, and consistent legal rules when corruption is caused by greed and violation of the standard rule system. This type of corruption is often carried out by rich people who are greedy, lack social ethics, and have low integrity.

Table 2 shows that the role of HC tends to decline but remains dominant. Critical features on the slight decline indicate an increasing equality of potential. This is because institution quality and green entrepreneurship factors drive the quality of economic growth. In the phenomenological process, there has been penetration of new social innovation that collectively enhances a culture of new social innovation with an even distribution. According to the research and quantitative logic, there appears to be a decrease in the value of the role of HC. However, equality can be spread through the capacity of human capital possessing a collective awareness and togetherness in all lines of community life to build new sustainable hopes. This shows that institution quality can increase shared welfare due to the capacity of governance. Based on Tables 2 and 3, the role of HC is still consistently high since the potential for institution quality tends to be stronger and more dominant. The results are consistent with previous research, where low institution quality is detrimental to poverty alleviation [42]. There is no change in the role of HC when institution quality remains low in the community.

Based on the description above, institution quality has proven to be important for increasing economic growth and driving competitiveness. In developing countries such as Indonesia, the variable is often considered because of "generosity". This assumption can often be misleading since institution quality is not just generosity but refers to the capacity of correct governance capabilities based on ethics and norms. Institution quality can mitigate environmental impacts efficiently and effectively based on the orientation of existing ethical values and moral norms to improve performance. Therefore, correct and good institution quality can increase environmental efficiency and performance to drive SDGs in the long term. This shows that policy regulations are more capable of mitigating the negative impacts of global climate change and increasing the efficiency of performance. The condition may differentiate the meaning of institution quality in developed countries based on the capacity of human capital capabilities. Institution quality of developing countries is also oriented towards "pseudo-generosity".

Table 5 shows that the tendency of the correlation strength is positive and negative as well as more complex and dynamic with a tendency for a two-way causal correlation. Therefore, the success of green entrepreneurship collaboration concept and institution quality can integrate the concept of inequality and new entrepreneurship to improve sustainable local economic performance. The results strengthen previous research that the relationship between entrepreneurship is not solely characterized by positive and negative correlations, but is a dynamic interaction [101]. This empirical research confirms that dynamic interaction occurs because of broader social innovation. Social norms and institution quality underlying SSE practices are increasingly rooted in the community to drive SDGs performance. The results increasingly support research that shows a complex dynamic correlation between regulatory power and broader social norms, as well as normatively balanced expectations to promote sustainability [102, 103]. In this context, normative power plays an important role in the cultural-cognitive power of the community through leadership practices to strengthen the interaction [102]. The influence of macroeconomic factors is more effective in entrepreneurial activities at an early stage in developing countries. However, cognitive, normative, and regulatory institution factors have a more positive influence on entrepreneurship in developed countries [57].

Table 3. Results on the model of various main factors driving global competitiveness (GC)

Model		Unstandardized Coefficients		Standardized Coefficients	t-stc.	Sig.
		B	Std. Error	Beta		
6	(Constant)	-.151	.039		-3.818	.000
	Quality_Institution (QI)	.796	.127	**.646**	6.268	.000
	Green_Entrepreurship (GE)	.237	.064	.250	3.686	.000
	Quality_Economic Growth (QEG)	.347	.064	.359	5.422	.000
7	(Constant)	.004	.027		.143	.887
	Human_Capital (HC)	.197	.075	**.198**	2.634	.010
	Sosial_Capital (SC)	.257	.075	.235	3.449	.001
	Green_Entreprenurship (GE)	.149	.060	.176	2.471	.015
	Quality_Economic Growth (QEG)	.371	.078	.384	4.744	.000
8	(Constant)	-.146	.038		-3.803	.000
	Human_Capital (HC)	.343	.079	**.361**	4.321	.000
	Sosial_Capital (HC)	.152	.071	.139	2.153	.033
	Quality_Institution (QI)	.682	.132	**.554**	5.152	.000
	Green_Entrepreurship (GE)	.201	.114	.208	1.761	.081
	Quality_Economic Growth (QEG)	.298	.072	.308	4.108	.000

Model: 6-8. Dependent Variable: Global Competitiveness (GC)
Source: Primary data processed by researchers

Table 4. Results of the determinant model of factors influencing the increase in sustainable competitiveness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.838[a]	.702	.697	.111859	.702	143.848	2	122	.000	1.871
2	.735[a]	.540	.533	.202197	.540	71.657	2	122	.000	1.987
3	.816[a]	.666	.658	.151460	.666	80.441	3	121	.000	2.255
4	.808[a]	.653	.644	.154480	.653	75.765	3	121	.000	2.237
5	.886[a]	.785	.778	.095899	.785	109.351	4	120	.000	1.910
6	.853[a]	.728	.718	.132900	.728	80.110	3	121	.000	1.961
7	.882[a]	.777	.768	.120674	.777	83.042	4	120	.000	1.820
8	.895[a]	.802	.793	.113853	.802	96.228	5	119	.000	2.176

Model 1: Predictors: (Constant), Human_Capital; Social_Capital. and Dependent Variable: Quality_Istitutional (QI)
Model 2: Predictors: (Constant), Human_Capital; Social_Capital. and Dependent Variable: Green_Etrepreurship (GE)
Model:3-5. Dependent Variable: Quality_Economc Growth (QEG)
Model: 6-8. Dependent Variable: Global Competitiveness (GC)
Source: primary data processed by researchers

Table 5. Research results of the correlation matrix of green entrepreneurship and institution collaboration

Model	Variable	GC	HC	SC	GE	QI	QEG
Pearson Correlation Matrix	**GC**	1.000	.713	.688	.695	**.841**	.788
	HC	.713	1.000	.510	.592	.733	.759
	SC	.688	.510	1.000	.677	.723	.607
	GE	.695	.592	.677	1.000	**.854**	.632
	QI	**.841**	.733	.723	**.854**	1.000	.746
	QEG	.788	.759	.607	.632	.746	1.000
Data	N Survai	125	125	125	125	125	125

Source: Primary data processed by researchers

The novelty model theory based on Tables 2 and 3 shows that the important role of human capital activity is decreasing in line with new institution quality in promoting long-term sustainable economic development. Therefore, the role of human capital and institution potential is exogenous and endogenous factors. Based on Table 5, human capital potential has a strong two-way causal correlation with institution quality and economic growth. This is because inequality is reduced through increased quality reflected in the dimensions of capacity, equality, socio-economic justice, democratic and governance capabilities, as well as assertiveness. Social capital tends to have a stronger causality with green entrepreneurship and sustainable competitiveness. The results emphasize that institution quality is the main fundamental cause of driving economic growth and increasing sustainable competitiveness. However, decreased institution quality in developing countries has an impact on economic growth that remains low in quality and competitiveness, as well as high inequality. The main cause is the high level of corruption, as well as a complicated, slow, less democratic, and inefficient bureaucracy. Democracy expected to improve institution quality tends to be very expensive and possesses a negative impact on the public financial sector following the inability to produce just SSE community equity. Corruption reduces institution integrity and increases inequality.

The limitations of this research cannot explain the tendency for the size of entrepreneurs to form a stronger response to regulatory pressure in the practice of institution quality leadership in macroeconomics. The concept of green entrepreneurship is related to local freedom and individual

economic welfare [67, 68]. Green entrepreneurship is increasingly forming institution patterns and tends to be an informal concept [2]. Meanwhile, the adoption of these patterns is determined by domestic market institution through dynamic small businesses and determinants of patterns [59]. Sustainable socio-economic benefits occurring through the formation of SSE patterns are getting stronger. However, this integration is still weak and only an informal institution without receiving strong support. Previous research confirmed that digitalization technology for entrepreneurship in rural areas could increase new job opportunities but did not reduce inequality [104-106]. The success of good quality institution is formed to overcome inequality. Formal and informal institution can complement each other and strengthen the policy regulations issued [2, 44]. Therefore, the integration of inequality with new entrepreneurship in rural areas continues to be an interesting research trend in the future [101].

Figure 2 describes the potential strength of integration and collaboration of green entrepreneurship with institution quality to drive stronger quality economic growth and sustainable competitiveness as a dimension of measuring SDGs performance. Direct potential tends to be more dominantly driven by the strength of the three potential institution quality factors. The results are in line with previous research that weak, backward, and poor-quality institution elements have an impact on an expensive and ineffective digitization system [41]. High institution quality can also increase entrepreneurial productivity through the power of social innovation [2, 39, 107]. However, institution emptiness has reduced entrepreneurial activity [39]. High social and green entrepreneurship performance is achieved through the integration and collaboration of formal and informal institution rather than individually [2, 26, 85, 108].

The empirical success of performance is more driven by the potential role of gender-equity and social inclusion (GESI) institution as the main key [21]. An important indicator is the increasing controllability of corruption and good governance [109]. High cost, complicated, and corrupt bureaucracy, and democracy are the main causes of low institution quality. Other research has confirmed that the problems of corruption, ineffective, unaccountable government, and weak rule of law, contribute negatively to economic growth [110]. Meanwhile, strong institution quality can significantly increase gender inclusion and improve economic performance [2, 108]. The potential strength of governance and institution quality as well as GESI are the main drivers of green entrepreneurship and SDGs [21, 84, 111]. This positive correlation and integration often occur in institution environments with high social costs of failure [112].

Economic freedom is low when institution environment fails to create high social costs. Therefore, high economic freedom is needed to make institution changes to become quality and dynamic. Recent literature confirms that economic freedom is interrelated with institution quality [46, 52, 53]. In this context, there is a positive relationship between economic freedom and growth [113]. A close relationship is also reported between human capital capacity, economic freedom institution quality, economic growth, and sustainable competitiveness. The fundamental microeconomic research describes high local economic freedom based on individual welfare. The impact can make informal institution changes better than the formal counterpart. Based on the 2024 macroeconomic freedom index data category, Indonesian economic freedom score is 63.5, or in the "fairly free" category. Since the formal institution quality dimension tends to weaken, achieving quality and dynamic SDGs becomes difficult.

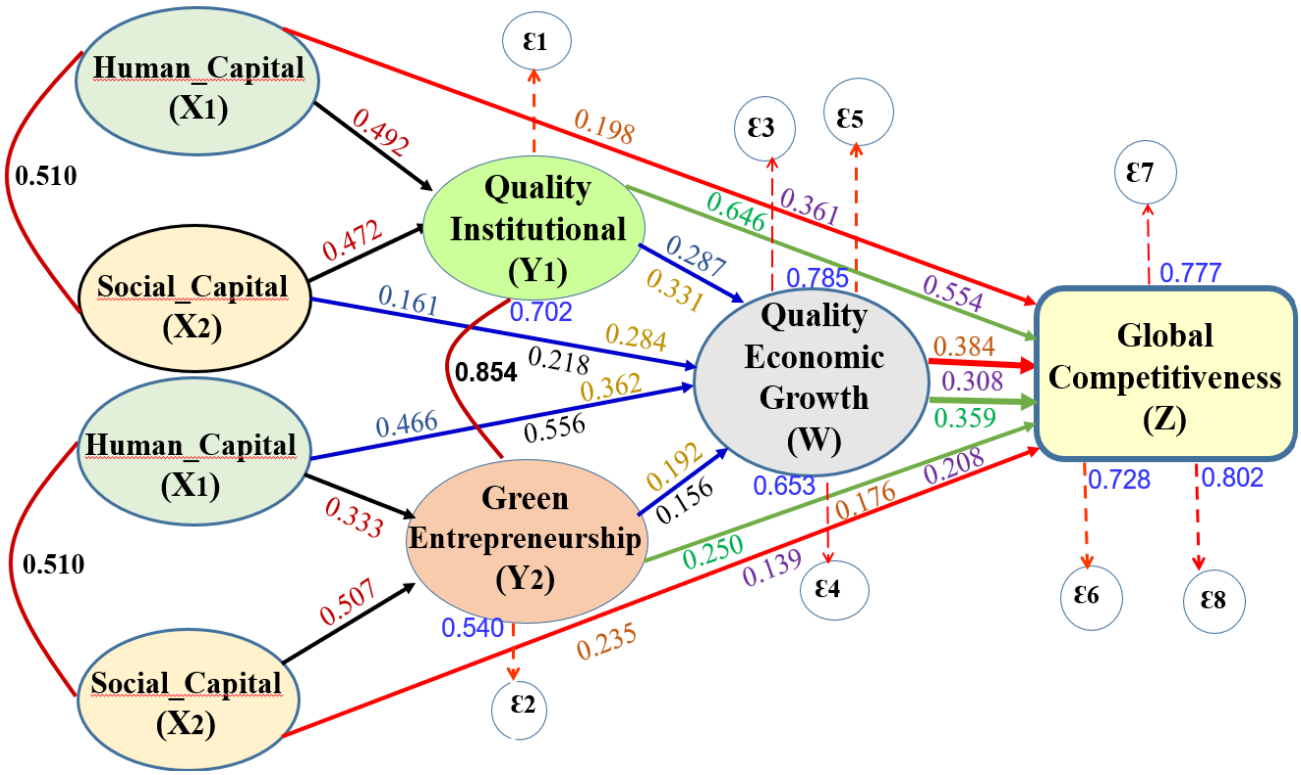

Figure 2. Results of the path analysis model of correlation form
Source: Tables 1, 2, 3, 4, and 5 (processed by researchers)

Figure 3. The category of Indonesia's economic freedom in 2024
Source: OECD, 2024

Figure 3 shows that government spending and tax burden scores are very high. The freedom of the government in managing finances is very good but appears low when analyzing integrity, property rights, and judicial effectiveness scores. The macroeconomic data further strengthens the weakness of formal institution quality due to the large amount of corruption. The indicators report that formal and informal institution should complement each other in the absence of corruption. High-cost reform cannot overcome the structural weaknesses of formal institution since national competitiveness remains low. Therefore, the efforts should increase regional efficiency and competitiveness. The results have shown that the relationship between human capital, economic freedom, and regional government performance to growth is high. Factors such as government performance and economic freedom mediate the correlation between human capital and growth [114]. Institution quality has good causality with entrepreneurship as a catalyst for SDGs performance [103].

5. CONCLUSION

In conclusion, collaboration of institution quality and green entrepreneurship promoted sustainable economic development in the long term. Economic growth quality was reported as a sufficient requirement for achieving sustainable development goals. Meanwhile, the potential for collaboration of institution quality strongly integrated with green entrepreneurship was also considered in achieving the best economic growth. More proactive and adaptive green development technology innovations were required to integrate various interactions of resource potential in line with different SDGs achievements. Innovation and highly relevant policy institution quality were also needed to support SDGs. The novelty of this research explained the complementary relationship between human capital, institution, and quality economic growth that remained consistent in strengthening collaboration. The relationship strengthened control over collaboration of related institution quality and had a positive impact on SDGs. This research showed that there was a two-way causality between institution quality and complementary green technology innovation with economic growth. Therefore, institution quality reflected a model of correct and good governance behavior patterns to regulate change toward sustainable development. The results confirmed that there was a strong two-way causality between the variables.

Policy implications: Institution quality as a dimension of correct, good, just, and democratic governance capabilities should be maintained and used properly as a sufficient requirement. Therefore, policy implications are realized to promote quality economic growth and sustainable competitiveness.

Research limitations/implications: The limitations lie in the focus of in-depth research related to family dynamics and entrepreneurship behavior patterns in developing countries. The uniqueness is difficult to generalize even though the practical policy implications are good regionally. For global policy institution regulations, collective awareness is needed to build bigger and stronger green development technology innovation.

Recommendations: Future research related to the integration of institution quality towards reducing poverty and unemployment and reducing inequality in various lines of life should be carried out. Collective awareness is needed globally even though SSE method can reduce inequality.

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