Original Research

Increasing Competitive Advantage: The Context of Inclusive Digital Transformation, Digital Green Economy Culture, Empowerment and Co-Innovation in Millennial Generation Businessmen

Tri Ngudi Wiyatno[1*], Hamzah M. Mardi Putra[2], Yunita Ramadhani Ratnaningsih D.S[3], Arief Teguh Nugroho[4]

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***Corresponding Author, tringudi@pelitabangsa.ac.id**

1- Department of Industrial Engineering, University of Pelita Bangsa, West Java, Indonesia

Abstract
In the Industry 5.0 era, millennial entrepreneurs must navigate unpredictable markets by leveraging inclusive digital transformation, digital green economic culture, empowerment, and co-innovation. This study examines their effects on competitive advantage, including empowerment as a mediator and co-innovation as a moderator. Data were collected through questionnaires, interviews, and focus group discussions with millennial business owners in Jakarta, Bogor, Depok, Tangerang, and Bekasi (Jabodetabek), Indonesia, using purposive sampling for businesses operating over two years. The sample size followed the Lemeshow formula, and data analysis employed Structural Equation Modeling (SEM) with Smart PLS 3.0. Findings are expected to inform policymakers and millennial MSMEs in enhancing technological infrastructure, advancing green digitalization, and empowering entrepreneurs to strengthen competitiveness. The study contributes to academic discourse on digital transformation, green economic culture, and co-innovation in achieving Sustainable Development Goals, supporting Indonesia's economic resilience amid political shifts, recession risks, and the accelerating transition toward a green economy.

Keywords - Inclusive Digital Transformation; Digital Economy Culture; Competitive Advantage; Empowerment; Co-Innovation.

INTRODUCTION

Technological advancements in this world are moving at a rapid pace. Industry 5.0 is one of the challenges we must face in today's digital era. Millennials are the most suitable and relevant generation for this highly sophisticated digitalization, as they are highly adaptable to technology and its developments, which lead to new things [1]. The millennial generation is able to adapt to the potential benefits of technology and this is one of the assets as a businessman.

The independence of millennial generation businessmen also encourages increased digital literacy, which is followed by increased awareness of the importance of having administrative documents to be able to participate in the digital economic

ecosystem. Therefore, it can support millennial generation businessmen in competitive advantage in the era of industry 5.0 with the implementation of inclusive digital transformation [2-3].

This research was conducted to provide a solution to address Indonesia's current low economic growth. The solution is to involve the younger generation in contributing to economic growth in Indonesia through the involvement of millennials in the entrepreneurial/business world [4].

The concept of digital sustainability is currently utilizing the synergistic development of digital transformation in business expansion which has not yet been fully achieved because the internet network and its supporting infrastructure are not yet evenly available [5-6]. This provides a new approach to exploring how this millennial generation can promote the formation of digital green innovation. In fact, previous research has found that in the current digital era, green innovation resources are still not a concern for millennial entrepreneurs, due to the high costs involved; even though paying attention to green innovation will have an impact on risk reduction [7-9]. Therefore, it is interesting to research this further, namely how to develop a digital green economy culture, empowerment and co-innovation to achieve competitive advantage in the industrial era 5.0 [10-11]. Based on initial observations, it was obtained that although business people belonging to millennial generation have a high innovative spirit and digitalization capabilities, there is a need for increased digital transformation through cloud technology, so that it needs an inclusive digital transformation, where human understanding cannot keep up with the size and speed of data needed to manage businesses in the digital economy [2], [12].

Previous researchers have developed concepts and models of inclusive digital transformation with co-innovation and a digital green economy culture [13-15]. Research on inclusive digital transformation, co-innovation, and the digital green economy culture remains very limited, especially when linked to empowerment and competitiveness in the Industry 5.0 era. This research was conducted to support the Indonesian Government's National Economic Recovery Program, which is impacted by global uncertainty and an unbalanced economic structure. Consequently, Indonesia no longer relies solely on foreign investors but also requires new entrepreneurs, particularly the younger generation, to contribute to Indonesia's economic growth.

From the above phenomena, the aim of this research is to conduct tests and analysis related to the following contributions of insights: (1) inclusive digital transformation in millennial businessmen still needs to be strengthened to encourage innovation and digital economic growth in Indonesia, (2) promoting a digital green economic culture in competitive advantage is needed, (3) digital transformation is able to increase empowerment, (4) empowerment influences competitive advantage in millennial generation businessmen, (5) inclusive digital transformation influences competitive advantage by mediating empowerment in millennial generation businessmen, (6) digital green economic culture is able to increase competitive advantage through equal distribution of co-innovation in the millennial generation of businessmen so that they are able to face competitive advantage in the industrial era 5.0.

This research problem is solved using the Green Digital Economy Theory approach [6], [16], which combines psychological and communication science perspectives. This is because it involves economic changes caused by global uncertainty, an unbalanced economic structure, which impacts society's psychology, and communication science in digitalization. This approach is used to propose a Competitive Advantage Enhancement Model: Inclusive Digital Transformation Context, Digital Green Economy Culture, Empowerment and Co-Innovation which will be explained in detail in the research method.

REVIEW OF LITERATURE

The millennial generation who are clever at taking advantage of opportunities, are creative, have extensive technological knowledge, have forward-looking thinking, and have integrity in the business they are involved in will be able to produce high-quality and highly competitive products [17-18]. Digital-inclusive transformation has an important role in competitive advantage in the industrial era 5.0 [19-21].

Several examples of the business excellence models of the millennial generation have been researched by [22] which is supported by [23, 24] which states that the millennial generation has the advantage of personal attitudes, educational support, and social media as a Survival Strategy in their Business. In building competitive advantage, millennial generation entrepreneurs are expected to be able to utilize the resources owned by the company to win the competition and increase the value of a business, where digitalization technology makes it easier for them to be transparent in all matters, including knowing the quality of service and the advantages of the products they have and comparing them with similar services and products before making a purchasing decision. [25].

I. Digital-Inclusive Transformation Towards Competitive Advantage

Digital technology is a supporting factor in the business market, but not many have linked the competitive advantage of millennial businesspeople with inclusive digital transformation. In the current era of Industry 5.0, the growth of digital technology has become a pure necessity that causes major changes in many organizations, so it is often known as digital transformation, which is able to introduce new processes and mechanisms that can affect the main structure of how companies do business [26-27].

Digital-inclusive transformation is about adopting technology, but it goes beyond that and requires the process alignment and cultural transformation that organizations need to meet their agility demands [28]. Millennial entrepreneurs are trying to anticipate significant barriers to digital participation, including limited internet connectivity, the high cost of digital devices, inadequate digital education programs, and bureaucratic inefficiencies in e-government service design [29].

In order to maintain competitive advantage, millennial generation businesspeople must undertake an inclusive digital transformation that involves moving from a conventional business model to a digital model, by rethinking how people, data, and processes organize to create new value [30].

H1: Inclusive digital transformation has a significant influence on competitive advantage.

II.Green Digital Economy Culture Towards Competitive Advantage

Digitalization is not just a nice-to-have, it's a must-have [31-32]. Businesses are interested in investing in digital transformation so they can easily innovate to keep pace with technological and industrial changes and increase their resilience. Digitalization has become a digital economy culture for millennial entrepreneurs. In the current era of Industry 5.0, digital technology is developing rapidly, bringing significant changes to various aspects of life. Digital transformation can expand access to global markets, especially for millennials, enabling them to optimally utilize technology.

The era of digital transformation, which brings about society 5.0, emphasizes the role of technology in society, with a focus on collaboration between humans and technological systems to address social problems by integrating the virtual and real worlds [33-34]. Collaboration between humans and technology as a digital economic culture opens up opportunities to create a more prosperous, sustainable, and human-centered society, thus being able to achieve competitive advantage [35-37].

H2: Digital economy culture has a significant influence on competitive advantage.

III.The Relationship Between Digital-Inclusive Transformation and Empowerment to Competitive Advantage

In the era of the industrial revolution 5.0, digital transformation is often linked to the development of empowerment, where the lean manufacturing process now has the opportunity to be updated in the era of digital transformation [38]. Digital transformation is a process where digital technology gradually transforms a company's overall operational processes, including employee empowerment, which is an important aspect of the company's business model [39-41] state that digital business models and practices are a major challenge in digitalization. Digital inclusion ensures that everyone, regardless of their background or circumstances, has fair and equal access to digital technologies, including the internet, devices, training, and support needed to fully participate in a digital society as well as a critical catalyst for driving future economic growth.

Employee empowerment is the missing piece due to increasing global competition, institutional restructuring, and the importance of service quality and customer satisfaction [42]. Empowerment is giving power to people so that they can make decisions in the organization. However, employees often do not want to face responsibility, so it is necessary to give trust to employees so that they can empower their abilities, and that they are able to be competitive [26].

Employee empowerment is a fundamental and crucial component of success, effectiveness, and development in the workplace [43-44]. Employee empowerment drives employee performance, job satisfaction, organizational commitment, customer satisfaction, productivity, and business growth, thus increasing competitiveness [42, 45].

H3: Inclusive digital transformation has a significant influence on empowerment.

H4: Empowerment has a significant influence on competitive advantage.

H5: Empowerment mediates inclusive digital transformation.

IV.Co-Innovation Towards Competitive Advantage

Millennial entrepreneurs have the ability to innovate in digitally advanced and environmentally friendly ways, which is supported by a culture that values sustainability, and which can significantly enhance their competitive advantage. Green competitive advantage can be achieved by emphasizing an external environmental orientation. Their businesses depend on their ability to build a reputation as environmentally sustainable organizations through the implementation of green innovation [46-47]. They pay close attention to co-innovation in the form of developing unique products, services and processes that set the

company apart from its competitors, thereby improving its market position. This can then significantly influence competitive advantage [48]. Digital technology has become a daily necessity for millennial generation entrepreneurs; as a result, they have the greatest power in building an innovation-friendly society.

In Indonesia, where technology adoption is growing rapidly, innovation has become a part of millennials' lives. Their unique relationship with digital devices stems from their upbringing in a technology-rich world. This has a direct impact on their ability to achieve competitive advantage. The role of millennials in the modern era brings new expectations and preferences regarding innovation [49-50]. Millennials are driven by ideas and optimism, often referred to as the innovators of the future. Innovation often emerges from crises. This is especially true in the era of the 5.0 Industrial Revolution, where millennials are capable of co-innovation to achieve competitive advantage.

H6: Co-innovation significantly moderates the influence of digital-green economic culture on competitive advantage.

RESEARCH METHOD

This research was conducted in Jakarta, Bogor, Depok, Tangerang, and Bekasi (Jabodetabek). Bekasi is the largest industrial city in Southeast Asia [52]. Likewise, Bekasi and Tangerang are cities with the largest millennial population, considering that many urbanites live in these areas and are targeted by investors [53]. The nearest cities are the metropolitan city of Jakarta, Bogor, and Depok. The current millennial generation is also more interested in entrepreneurship/business development, which contributes to economic growth for local governments. Therefore, the population and respondents involved were millennial business owners in Jakarta, Bogor, Depok, Tangerang, and Bekasi (Jabodetabek). The researchers observed several associations of millennial business owners, most of whom conduct their businesses digitally. They are members of the Indonesian Entrepreneurs Association (Apindo). Components related to economic movements, both governmental and non-governmental, continue to strive to ensure that this digitalization continues to spread to all transactions in Indonesia [54]. Not all respondents involved were members of Apindo. The sample size in this study was determined using Lemeshow's theory/formula, considering that the population size could not be determined with certainty. The target number of respondents was 269, thus meeting the criteria for this type of survey. The research model used Structural Equation Modeling assisted by SmartPLS 3.0 software [55-56].

The research model uses Structural Equation Modeling assisted by SmartPLS 3.0 software. The sampling technique was carried out proportionally using random area sampling by (1) selecting potential millennial business clusters in the F&B, Fashion and handycraft sectors sampled from the Jakarta, Bogor, Depok, Tangerang, Bekasi (Jabodetabek) areas. These potential respondents were in urban areas with busy centers, such as malls and shophouses. Meanwhile, those engaged in car or motorcycle repair shops, IT services, and logistics services were selected using random area sampling. (2) Next, a purposive sampling technique was used, with the criteria of being millennial entrepreneurs with monthly sales of at least IDR 3 million and being in the business for at least three years. This aligns with the proposed research theme, which is to examine SME independence in relation to competitive advantage. The data collection method was carried out using primary data (questionnaires, interviews and FGDs) as well as secondary data (related publications from various sources).

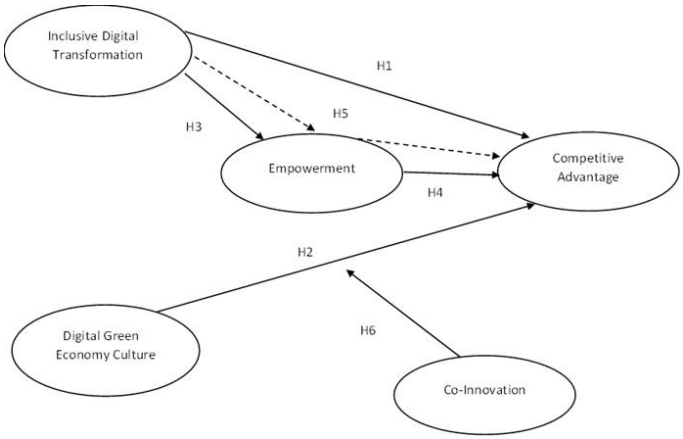

FIGURE 1
FRAMEWORK OF THINKING

I.Variable Measurement

Validity and reliability testing were first conducted through data collection and empirical analysis. The key variables designed in this study are Inclusive Digital Transformation, Digital Green Economy Culture, Empowerment, Co-Innovation, and Competitive Advantage.

The researchers used a Likert scale ranging from 1 to 5 on the questionnaires they distributed. The categories of each scale were developed from [57], namely:

Score 5 indicates strongly agree;

- Score 4 indicates agree;
- Score 3 indicates somewhat agree;
- Score 2 indicates disagree; dan
- Score 1 indicates strongly disagree

After the questionnaires were distributed, data analysis was conducted using Structural Equation Modeling (SEM) with PLS software to determine the relationships between the variables being tested. The variables, operational definitions, indicators, measurement scales, and reference sources are detailed in Table I.

This study used five variables: inclusive digital transformation, digital green economy culture, empowerment, and co-innovation to address competitive advantage for millennial entrepreneurs. The study employed a quantitative approach.

TABLE I
VARIABLE, OPERATIONAL DEFINITION, AND DIMENSIONS/INDICATORS/ITEMS

Variable	Indicator	Items
Competitive Advantage (Y)	*Business Create* (Create/establish/ run a business)	1. My SME consistently creates sustainable products or services through digitalization capabilities. 2. My SME strives to minimize the negative impacts of my business operations by maximizing digitalization capabilities.
	Improving Efficiency	1. My SME is actively developing digitalization that does not negatively impact the environment. 2. My SME strives to use environmentally friendly technology in its production and operational processes, thereby increasing efficiency.
	Having a clear commitment to the environment	1. My SME has a clear commitment to protecting the environment. 2. My SME consistently makes efforts to reduce waste and emissions from its operational activities.
	Having a Significant Potential	1. My SME has significant potential to improve its sustainability performance in the future. 2. My SME has a clear strategic plan for developing the company's sustainability practices.
	Increasing consumer appeal	1. My SME actively cares about environmental issues, which is attractive to consumers. 2. My SME considers candidates' commitment to environmentally friendly practices.
Inclusive Digital Transformation (X1)	Digital Technology	1. Environmental considerations are part of my SMEs' criteria when implementing digitalization. 2. Environmental sustainability is a key concern for my SMEs in both production and sales activities.

Variable	Indicator	Items
	Digitalization improving company value	1. My SME provides training on environmentally friendly practices for employees. 2. In the training provided, my SME emphasizes the importance of sustainable behaviors and work habits.
	Technological innovation	1. My SME promotes innovative technologies in its environmentally friendly initiatives. 2. My SME provides opportunities for employees to contribute ideas and suggestions related to more sustainable practices.
	Digital technologies, including support for technical processes and e-commerce.	1. My SME places high priority on digital technology in both production and marketing systems, contributing to business sustainability goals—particularly through environmentally friendly practices. 2. My SME provides rewards and incentives to employees who demonstrate strong performance in supporting technologies that align with environmentally friendly practices.
	Digital technology has become the preferred solution	1. My SME supports the development of digital technology to enhance employees' skills in environmentally friendly practices. 2. My SME encourages employees to continuously expand their knowledge of digital technologies that address environmental issues relevant to their work.
Digital Green Economy Culture (X2)	Information technology, data processing, and IoT devices are reliably supported.	1. The digitalization practices in my business are environmentally friendly and have enhanced the organization's reputation in the eyes of stakeholders. 2. My SME is regarded by the community as a business that is environmentally conscious and responsible.

Variable	Indicator	Items
	Green digitalization as an attitude	1. The implementation of environmentally friendly practices has helped my SME maintain a responsible attitude 2. My SME's investment in sustainable initiatives has become part of its organizational culture.
	IoT has become a part of our sustainability goals	1. The operational activities of my SME do not have a negative influence on the environment. 2. Digital technologies used in my SME are designed with environmental friendliness in mind to support sustainability.
	Commitment to environmental management	1. My SME regularly conducts environmental management activities, such as emissions monitoring, waste management, and energy efficiency. 2. My SME has implemented a comprehensive environmental management system to minimize negative environmental impacts.
Empowerment (Z1)	Decision-makers aim to motivate employees	1. My SME is confident in its ability to motivate employees to engage in environmentally friendly practices. 2. My SME is confident in encouraging employees to actively participate in environmental conservation efforts in the workplace.
	Increasing allocation of resources toward the growth of organizational functions	1. I am confident in allocating resources to support the growth of organizational functions. 2. I am confident that the skills and knowledge of the human resources in my business can help improve the performance of my SME.
	Communication and interaction with systems	1. I am confident that effective communication and interaction with systems can significantly improve my SME's performance. 2. I am confident that my contribution as a leader can drive rapid improvements through effective communication.
	Fostering positive thinking	1. I am optimistic that I can make a positive contribution in the workplace. 2. I am confident in my ability to influence colleagues to think and act more positively regarding their work.
	Creativity and proactive personality	1. I am confident in my ability to develop creative ideas to improve workplace practices. 2. I am confident that I can play an active role in driving positive change within the company.
Co-innovation	They play a key role in shaping values.	1. The top management of my SME plays a key role in shaping the organization's values and culture. 2. The decisions and actions of my SME's leadership strongly influence the values embraced by all employees.

Variable	Indicator	Items
	Developing business opportunities.	1. I believe that my SME has the necessary capabilities to achieve sustainability goals. 2. My SME prioritizes environmentally friendly performance improvements.
	A business model describes the fundamental principles of value creation.	1. My SME's business model reflects environmentally friendly value creation. 2. My SME is actively engaged in sustainable innovation efforts.
	An innovative business model can help a company remain sustainable.	1. My SME has an innovative and sustainable business model. 2. Top management provides support for and drives environmentally friendly innovation efforts.
	An effective way for companies to achieve co-innovation.	1. The teamwork in my SME effectively carries out sustainable innovation. 2. As the leader of my SME, I actively encourage and reward employees who participate in sustainability innovations.
	New business models have created numerous business opportunities.	1. My SME supports staff who are able to create innovations, giving the business opportunities to remain resilient. 2. Every employee has the opportunity to grow and contribute to collaborative innovation.

RESULT AND DISCUSSION

I. Respondent Characteristics

The characteristics of respondents in this study (Table II) are divided into several categories, namely gender, education level, type of business and years of service.

II. Outer Model Evaluation

II.I. Validity

Outer model analysis was conducted to test the construct's validity and reliability. Validity testing used convergent validity and construct validity. Convergent validity requires an indicator to have a loading factor value of ≥ 0.7 to be considered valid. Construct validity requires an AVE value of ≥ 0.5 to be considered valid. The test results are shown in Table III.

TABLE II
VARIABLE, OPERATIONAL DEFINITION, AND DIMENSIONS/INDICATORS/ITEMS

Characteristic	Amount	Precentage
Gender		
Male	227	80.21%
Female	56	19.79%
Education Level		
Associate Degree (D3)	3	1.06%
Senior high school	81	28.62%
Bachelor's Degree	143	50.53%
Master's Degree	28	9.89%
Doctoral Degree	3	1.06%
Others	25	8.83%
Type of Business		
Production / Product	164	57.95%
Service	119	42.05%
Years of Service		
Under 5 years	205	72.44%
5 - 10 years	36	12.72%
10 - 15 years	11	3.89%
>15 years	31	10.95%

TABLE III
VALIDITY ANALYSIS

Variable	Indicators	Loading Factor	Validity	AVE
Inclusive Digital Transformation	X1.1.1	0.849	Valid	0.757
	X1.1.2	0.842	Valid	
	X1.2.1	0.842	Valid	
	X1.2.2	0.863	Valid	
	X1.3.1	0.869	Valid	
	X1.3.2	0.886	Valid	
	X1.4.1	0.881	Valid	
	X1.4.2	0.881	Valid	
	X1.5.1	0.888	Valid	
	X1.5.2	0.895	Valid	
	X2.1.1	0.858	Valid	
	X2.1.2	0.874	Valid	
	X2.2.1	0.865	Valid	
	X2.2.2	0.864	Valid	
	X2.3.1	0.857	Valid	
	X2.3.2	0.899	Valid	
	X2.4.1	0.863	Valid	
	X2.4.2	0.852	Valid	
Empowerment	Z1.1.1	0.840	Valid	0.758
	Z1.1.2	0.895	Valid	
	Z1.2.1	0.889	Valid	
	Z1.2.2	0.864	Valid	
	Z1.3.1	0.828	Valid	
	Z1.3.2	0.871	Valid	
	Z1.4.1	0.866	Valid	
	Z1.4.2	0.896	Valid	
	Z1.5.1	0.883	Valid	
	Z1.5.2	0.872	Valid	
Competitive Advantage	Y.1.1	0.862	Valid	0.739
	Y.1.2	0.846	Valid	
	Y.2.1	0.854	Valid	
	Y.2.2	0.881	Valid	
	Y.3.1	0.870	Valid	
	Y.3.2	0.866	Valid	
	Y.4.1	0.856	Valid	
	Y.4.2	0.877	Valid	
	Y.5.1	0.852	Valid	
	Y.5.2	0.830	Valid	
Co-innovation	M1.1	0.859	Valid	0.770
	M1.2	0.871	Valid	
	M2.1	0.885	Valid	
	M2.2	0.885	Valid	
	M3.1	0.851	Valid	
	M3.2	0.858	Valid	
	M4.1	0.896	Valid	
	M4.2	0.891	Valid	
	M5.1	0.865	Valid	
	M5.2	0.885	Valid	
	M6.1	0.902	Valid	

II.II. Reliability

The reliability value (Table IV) refers to the required composite reliability value. namely a value of ≥ 0.7 and the required Cronbach alpha value of ≥ 0.6. Reliability analysis is also required in this study. referring to the composite reliability value.

The composite reliability value for all variables indicates a value > 0.7. and the Cronbach's alpha value is ≥ 0.6. thus, concluding that the variables in this study are reliable.

II.III. Inner Model Evaluation

Inner model testing includes several tests. namely the coefficient of determination. goodness of fit. and hypothesis testing. Hypothesis testing was performed using PLS bootstrapping. with the output shown in Figure 2.

II.IV. R Square

The coefficient of determination can be seen in the R-square table by multiplying the R-square value by 100%. The coefficient of determination indicates the extent of the influence of exogenous variables on endogenous variables. The results of the coefficient of determination test are shown in Table V. Table V shows that the Competitive Advantage variable is influenced by exogenous variables by 89.6% and Empowerment is influenced by exogenous variables by 89.8%.

II.V. Goodness of Fit

The GoF index is calculated from the square root of the average communality index and the average R-squared value. GoF = 0.1 means small. GoF = 0.25 means medium. GoF = 0.36 means large. The GOF value can be calculated using the Goodness of Fit formula = √(Communality X R^2) The calculation results are shown in Table VI.

II. VI. Hyphotesis Test

The measurement item used is said to be significant if the T-statistic value is greater than 1.96 and the p-value is less than 0.05 at a 5% significance level. Meanwhile. the parameter coefficient that indicates the direction of the influence is by looking at whether it is positive or negative from the original sample. The results of the hypothesis testing are shown in Table VII. Table VII presents the results of the path analysis in this study, detailed as follows:

1. Inclusive Digital Transformation has a positive and significant influence on Competitive Advantage. This result is supported by a t-statistic value of 6.743 (>1.96) and a p-value of 0.000 (<0.05). thus, the hypothesis is accepted.
2. Green-Digital Economy Culture has no influence on Competitive Advantage. This result is supported by a t-statistic value <1.96 (0.290) and a p-value >0.05 (0.772). thus, the hypothesis is rejected.
3. Inclusive Digital Transformation has a positive and significant influence on Empowerment. This result is evidenced by a t-statistic value > 1.96. namely 6.467. and a p-value < 0.05. namely 0.000. thus, the hypothesis is accepted.
4. Empowerment has a positive and significant influence on Competitive Advantage. This result is evidenced by a t-statistic value > 1.96. namely 3.754. and a p-value < 0.05. namely 0.000. thus, the hypothesis is accepted.
5. Inclusive Digital Transformation has a positive and significant influence on Competitive Advantage through Empowerment. This result is supported by a t-statistic value > 1.96. namely 3.210. and a p-value < 0.05. namely 0.001. thus, the hypothesis is accepted.
6. The moderating effect (Co-Innovation) has no influence on the relationship between Digital Green Economy Culture and Competitive Advantage. This result is supported by a t-statistic value < 1.96. namely 1.212. and a p-value > 0.05. namely 0.226. thus, the hypothesis is rejected.

TABLE IV
RELIABILITY ANALYSIS

	Cronbach's Alpha	**Composite Reliability**
Inclusive Digitral Transformation	0.964	0.964
Green-Digital Economy Culture	0.953	0.960
Empowerment	0.964	0.969
Competitive Advantage	0.961	0.966
Co-innovation	0.973	0.976

TABLE V
R SQUARE

Endogenous Variable	**R Square**
Competitive Advantage	0.896
Empowerment	0.898

TABLE VI
GOODNESS OF FIT MODEL (GOF) RESULT

Construct	Communality	R Square
Competitive Advantage	0.7328	0.896
Empowerment	0.7482	0.898
Average	0.7405	0.897
Gof	0.8149	

TABLE VII
HYPOTHESIS TEST RESULT

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Inclusive Digital Transformation -> Competitive Advantage	0.548	0.551	0.081	6.743	0.000
Green-digital economy culture -> Competitive Advantage	-0.028	-0.031	0.097	0.290	0.772
Inclusive Digital Transformation -> Empowerment	0.495	0.498	0.077	6.467	0.000
Empowerment -> Competitive Advantage	0.374	0.371	0.100	3.754	0.000
Inclusive Digital Transformation -> Empowerment -> Competitive Advantage	0.185	0.184	0.058	3.210	0.001
Moderating Effect (Co-innovation) -> Green-digital economy culture -> Competitive Advantage	0.021	0.021	0.018	1.212	0.226

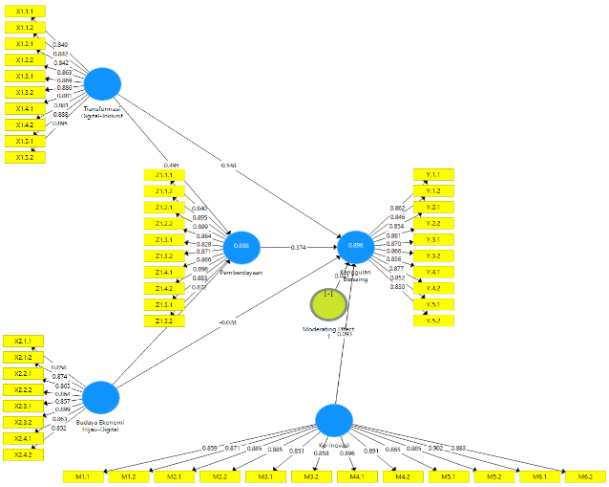

FIGURE 2.
INNER MODEL

DISCUSSION

Currently. several countries are experiencing war. resulting in inflation. including in Indonesia. This is encouraging companies to maintain business sustainablity [58-59]. To combat inflation and gain a competitive advantage. small and medium enterprises (SMEs) must embrace digital transformation. Technological advancements provide opportunities for SMEs to adapt more effectively through digitally inclusive transformation. thereby contributing to closing the digital divide [60-62].

In testing the first hypothesis. regarding the influence of inclusive digital transformation on competitive advantage. the findings of this study showed positive and significant results (H1 is accepted). This means that. even in these uncertain economic times. SMEs can maintain a competitive advantage. The contribution of inclusive digital transformation. characterized by judicious digital adoption and appropriate support. can help SMEs survive and thrive [63-64]. With inclusive digital transformation. SMEs are able to integrate the right information technology (IT) features. so that SMEs produce more efficient business models and can survive in the competitive environment [65-66].

Mastering the green economy is crucial for SMEs. yet socialization of green economic culture remains ineffective. Although green practices are essential for sustainability and competitiveness. many SMEs lack the awareness or resources to fully implement them. Therefore. consumers who care about the environment will be interested in buying environmentally friendly products and those that have a stronger market position [67-68]. However. in the Green-Digital Economy Culture. it does not influence Competitive Advantage. which means (H2 is rejected). This is likely due to a lack of awareness in Indonesia about the digital green economy culture. Several international researchers have stated that the digital green economy culture influences competitive advantage [69-70].

SMEs have indeed been promoting inclusive digital transformation. but the culture within their businesses to focus on the digital green economy is still lacking. Islam et al. [71] state that the digital transformation of SMEs helps improve the implementation of a green economy in Indonesia. Therefore. the active role of the Indonesian government. scientists. and entrepreneurs in promoting the digital green economy to SMEs is crucial.

Indonesian SMEs have been promoting digital transformation. promoting inclusivity and increasing access to knowledge and opportunities. This has led to greater individual and collective empowerment in digitalization [72-73]. The research is supported by previous research. because Inclusive Digital Transformation has a positive and significant influence on Empowerment. H3 is accepted)

Employee empowerment is a planned and systematic process of transferring power. authority. and responsibility from managers to lower-level employees. In organizational hierarchy it is often seen as giving power to people so that they can make decisions in the organization [74]. Empowerment must be upheld and maintained considering that employee empowerment can increase productivity. innovation. customer satisfaction. and ultimately. a stronger competitive position for the organization.
Companies need to work to develop and maintain competitive advantages. Competitive advantages are no longer the company's physical assets. but its non-physical human resources [75]. This development is the reason why researchers try to understand certain factors that companies can achieve in achieving competitive advantage. The research of [42] states that employee empowerment characteristics such as motivation are positive factors in increasing competitive advantage which is supported by research [76] and [74]. Previous researchers support this research that empowerment has a positive and significant influence on competitive advantage. (H4 is accepted).

The rapid development of information and communication technology has enabled organizations to improve customer experiences. streamline operations. and adapt to changing market demands more effectively. An inclusive digital transformation is one that integrates digital technology while promoting equality and inclusion. Agustian et al. [6] state that inclusive digital transformation has fundamentally changed how organizations operate and interact with customers to remain competitive. Today. more organizations are integrating digital technology as an integral part of their business models. This is no longer an option. but a necessity to maintain relevance and competitiveness in the marketplace.
Digital transformation requires employee empowerment in operational aspects and customer interactions. It's important to emphasize that digital transformation isn't just about adopting new technologies but also about empowering employees to integrate them comprehensively and effectively into all layers and strategic perspectives of the company. thereby achieving competitiveness [6].

By empowering employees who are able to innovate in products and services. companies can expand market share. attract new customers. and retain existing customers. so they can maintain a competitive advantage [77-78]. Inclusive digital transformation refers to the unique attributes. strategies. or assets possessed by an organization or business. which enable them to outperform their competitors in a particular market. Competitive advantage is a key factor in achieving and maintaining a strong position in a competitive market [30], [6]. Previous researchers have supported this research that Inclusive Digital Transformation has a positive and significant influence on Competitive Advantage through Empowerment. (H5 is accepted).

Co-creation supports multi-organizational collaboration that enhances resource integration and knowledge sharing. Co-innovation can lead to better innovation performance and value creation [79-80]. The research [80] states that Digital technology opens up opportunities for collaborative innovation. However. this study suggests that co-innovation is unable to moderate the digital green economy culture. as innovation is highly dependent on environmental. social. and institutional changes [5]. Green economic culture is still poorly understood by millennial entrepreneurs due to unequal education. and understanding of green digitalization is also uneven. Research [81] shows that companies can create competitive advantage by moderating innovation capabilities. Previous researchers support this study. stating that the moderating influence (co-innovation) has no influence on the relationship between digital green economy culture and competitive advantage. (H6 is rejected).

CONCLUSION

This research involved millennial business owners in Jakarta, Bogor, Depok, Tangerang, and Bekasi (Jabodetabek) in Indonesia. The criteria for these business owners were small and medium-sized enterprises (SMEs), although most were still small-scale, which may limit the generalizability of the findings. Data collection was conducted using purposive sampling, and the analysis revealed that the influence of Transformational Digital-Inclusive on Competitive Advantage was positive and significant. For millennials, digitalization is deeply embedded in their daily lives, and digital inclusion is already well understood across various economic and educational backgrounds. However, the digital green economy culture showed no significant impact on competitive advantage, likely because understanding of the concept was not evenly distributed among respondents with diverse educational backgrounds. Therefore, socialization efforts from local governments and support from universities are essential to promote the green economic culture within the broader community.

The study also found that Inclusive Digital Transformation has a positive and significant influence on empowerment, as millennials are able to optimize their capabilities—particularly in digitalization—which in turn significantly enhances competitive advantage. Employee empowerment plays a pivotal role in strengthening competitive positioning. However, Co-Innovation was unable to moderate the effect of green economy culture due to the existence of three distinct groups of millennial entrepreneurs in Jabodetabek, differentiated by the impacts of technology, business, and social factors.

These findings carry important implications. Practically, they serve as a guide for both the government and millennial MSME owners to design more targeted green digitalization and green economic initiatives, with a focus on enhancing competitive advantage through inclusive digital transformation, digital green economy culture, empowerment, and co-innovation. For policymakers, the results underscore the importance of strengthening technological infrastructure and expanding access to digital technology—particularly for creative MSMEs in Indonesia—to accelerate the achievement of a green economy through inclusive green digitalization, empowerment, and co-innovation in the Industry 5.0 era. Academically, this study contributes to the literature on transformational inclusive digitalization, digital green economic culture, empowerment, and co-innovation, demonstrating their potential contribution to the Sustainable Development Goals, particularly in advancing an inclusive economy and fostering co-innovation among millennial entrepreneurs.

Overall, this research is particularly relevant given that the majority of Indonesia's population belongs to the millennial generation—innovative, creative, and highly adept in digitalization—making them well-positioned to become independent entrepreneurs who can drive economic growth. Their attraction to challenges fuels their pursuit of competitive advantage, thereby increasing Indonesia's share in national wealth and enhancing its image internationally as a nation of capable, forward-thinking young business leaders.

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