# Improving the Industrial Institution Quality and Human Capital for Sustainable Economic Development

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**A B S T R A C T:**

The role of human capital capacity and the quality of fair and strong industrial institution in the modern economy is increasingly needed to improve community welfare. Strengthening human capital is important to maximize all potential values as productive and innovative assets, which in turn improves the quality of industrial institution in promoting sustainable development goals (SDGs). Therefore, this study aims to explore the phenomenon of human capital as an intangible asset and the interaction with the industrial institution quality. A descriptive interpretive method was used with a phenomenological approach to explore the potential value of human capital in the context of intangible assets. Data were collected through semi-structured surveys in labor-intensive manufacturing industries, particularly textile and related products. The results showed a causal relationship between human capital capacity and the quality of industrial institution. This suggests that human capital, as an intangible asset, can adapt, be skilled, innovative, collaborate, and communicate well, making it easier to obtain decent work. Furthermore, the complementarity between human capital capacity and the industrial institution quality increasingly drives the achievement of the SDGs. In conclusion, quality education (SDGs-4) with fair and strong institutional quality (SDGs-16) is expected to foster industrial innovation (SDGs-9), which in turn, will facilitate the attainment of decent work and sustainable economic growth (SDGs-8).

*Keywords: Institutional Quality, Human capital, Intangible assets, and Sustainable development*

## 1. Introduction

The interconnectedness of human capital and institutional quality is a crucial factor increasingly needed in modern socio-economic development. According to previous studies, institutional reforms that ensure development for all parties must be continuously implemented through human capital and institutional enhancement (Kudaisi, 2025). This implies that efforts to improve institutional quality and human capital capacity must be more effective in driving the growth of industrial sectors (Ologbenla, 2020). Institutional policy quality has been shown to significantly increase regional human capital per capita (Bai, 2025), while incentive policies created by preferential quotas can improve human capital and long-term economic outcomes (Xu and Adhvaryu, 2024). However, human capital enhancement in driving industrial development still depends on the level of institutional quality (Zhou 2018). These industrial policies are often constrained by institutional governance capacity, a key feature of failure in modern political economy (Juhász and Lane, 2024). According to previous studies, society has been trapped in a complex causal relationship stemming from a "wrong" culture, poor governance, and high inequality (Kyriacou, 2025; Iqbal et al., 2025).

Institutional quality has been shown to complement human capital in driving the growth of advanced manufacturing industries (Zhou, 2018; Prasetyo and Kistanti, 2020; Prasetyo et al., 2025). The problem lies in the fact that although institution are the main determinants of economic growth, the critical points of institution are subject to change and are not precisely defined. Consequently, industrial policies are

generally ineffective or counterproductive (Callen et al., 2024; Juhász et al., 2024). Policies to increase human capital for less productive industrial workers will impact the aggregate stock and economic growth (Han and Lee 2020). Human capital enhancement also has a substantial impact on improving employee performance in the engineering industry (Talha and Abiddin, 2024). It directly influences inclusive growth and indirectly through innovation (Mutiu et al., 2021). Therefore, modern industrial institutional policies must be implemented in a deliberately sustainable, welfare-oriented, and innovation-led manner (Mazzucato and Rodrik, 2023).

The main question is why weaknesses in institutional governance continue to be a major obstacle to modern industrial policy. The problem formulated is how to explain the role of human capital as an intangible asset in influencing the suitability of industrial institutional quality policies. Therefore, this study aims to describe and interpret the role of human capital as an intangible asset and the interaction with the quality of industrial institutional governance in efforts to foster innovation and the Sustainable Development Goals (SDGs). The urgency of this study presents a new challenge to further explore the potential value of human capital as an intangible asset, given that the quality of industrial institutional governance remains low and is a major obstacle. Investment in intangible assets is also limited, and the significance has not been fully recognized (Harada et al., 2025).

The benefits of human capital in promoting inclusive growth will remain "elusive" unless there is a significant improvement in weak institutional governance structures (Oyinlola et al., 2021; Ofori et al., 2024). Previous studies have also emphasized the need to closely examine the mechanisms underlying changes in institutional governance quality (Adams-Kane and Lim, 2014). In addition, intangible asset management remains low, resulting in no significant association with economic performance (Marsal, 2020). Therefore, the novelty of the human capital study in this article lies in the broad, simple definition of intangible assets. The contribution of this study is expected to explain the potential association between human capital as an intangible asset and the quality of industrial institutional governance structures as a catalyst for economic growth and SDGs achievement.

The potential capacity of human capital is broadly defined in this study as the accumulation of socio-economic values, knowledge, experience, skills, health, characteristics, discipline, honesty, adaptability, productivity, creativity, innovation, collaboration, trustworthiness, and other personal characteristics and qualifications that can help increase socio-economic values through innovation and productivity. In short, human capital is a socio-economic asset that provides significant economic value and social equity. Meanwhile, human capital stock is defined as the total value of socio-economic assets, which require capital/costs and comprise sacrificial transactions. These assets can be a primary source of sustainable industrial competitive advantage that is difficult to imitate. From a modern economic perspective characterized by the significantly increasing role of the service sector, human capital is the collective socio-economic knowledge of employees in an industry. This study hypothesizes that by increasing the potential capacity of human capital, sustainable competitive advantage in complex industries can be realized. In essence, the main goal of development is to build individuals and society in a sustainable, continuous manner.

## 2. Literature Review

Human-capital theory has long been used as a foundation for studies (Sweetland, 1996; Cappelli et al., 2025). However, industries that are relatively more human-capital-intensive experience relatively lower output prices (Gillman, 2021). This well-established theory has contributed significantly to increasing industrial productivity and sustainable economic development, and is increasingly useful in developing

institutional policies (Yedigaryan, 2023; Auerbach and Green, 2025). Furthermore, the new institutional economics (NIE) theory is increasingly used in modern sustainable economic development projects (Douglass North, 1990; Yung, 2015; Prasetyo et al., 2023; Acemoglu and Robinson, 2022). However, the study of the causal link between human capital and institution in industry and entrepreneurship has only recently become a center of attention (Prasetyo and Kistanti, 2020; Qin and Kong, 2021; Epure et al., 2024; Storz et al., 2025; Roxas, 2025). Theoretically, in the new paradigm, institutional quality, human capital, and transaction costs are closely intertwined, as strong, fair institutional quality reduces transaction costs. Furthermore, the quality of human capital will drive higher productivity and economic growth. This is because high-quality institution create a stable, sustainable business environment and can reduce transaction costs. In other words, human capital capacity can influence transaction costs and overall productivity.

Market-based human capital theory can act as a catalyst for economic growth, but the positive impact is limited to entrepreneurs with specific human capital (Epure et al., 2024; Storz et al., 2025). This means that in a modern economic system, human capital investment no longer relies solely on traditional physical factors such as education, health, and training, but informal education and experience (Tian and Tóth, 2024). Although physical human capital is a strong predictor of economic development today, the importance in the Industrial Revolution is often underestimated. Therefore, the capacity measurement dimension in this study, namely human capital, is broadly defined as intangible assets. Market-based human capital is directed toward increasing productivity, creating competitive employment opportunities, and achieving sustainable, high economic growth.

In modern economic theory, industrial productivity and high-quality growth are determined primarily by transformative, productive technology, innovation, adaptability, and the accumulation of human capital (Prasetyo and Kistanti, 2020; Acemoglu and Lensman, 2024; Lashkari et al., 2024). Theoretically, human resources are distinct from human capital. Human resources focuses more on management processes related to employee procurement and payroll, as well as the potential of employee talent, which is more easily measured physically. On the other hand, human capital tends to emphasize efforts to optimize all potential employee capacity values, such as discipline, development, experience, skills, health, education, training, loyalty, and other character capacities that are generally quite difficult to measure, leading to the categorization as intangible assets. However, both are fundamental theoretical concepts frequently used together to increase productivity and maximize added value. To facilitate explanation, this study tends to use the economic value dimension of all capacities and potentials. This implies that intangible assets must also have the capacity to contribute directly and indirectly to driving sustainable development. The primary advantage of human capital lies in the fact that other resources, such as land and physical capital, would be of little use without it. Therefore, the theoretical concepts used integrate the basic concepts of human capital theory and NIE theory.

Investing in human capital has high economic returns throughout childhood and young adulthood (Deming, 2022). Increasing investment in human capital capacity as an intangible asset constitutes a significant and growing portion of the capital stock of industrial companies in modern economies (Corrado et al., 2022; Crouzet et al., 2022). Therefore, the economic theory of intangible assets is crucial in creating productivity and sustainable competitive advantage based on human capital (Madhani, 2012; 2023; Nichita, 2019; Corrado et al., 2022; Crouzet et al., 2022**).** Intangible assets are non-rivalrous, and the framework naturally embraces the endogenous factors emphasized by modern economic theory (Corrado et al., 2022). The measurement dimension of intangible capital assets is market prices (Ewens et al., 2025). However, differences in results can be explained by the measurement dimensions of human capital and the approaches used (Deming, 2022; Abraham and Mallatt, 2022). This underscores the need for more

studies to develop theories and measurement paradigms that enable direct assessment of the skills and knowledge required to improve decision-making. In this study, human capital is considered an intangible asset representing the accumulated value of knowledge, experience, skills, creativity, and other competencies, including attitude, intelligence, health, and good mental and character traits. The primary function of human capital as an intangible asset is expected to improve performance, productivity, competitiveness, and sustainable economic growth in the long term.

Theoretically, there are three approaches to measuring human capital investment as an asset in a modern economy, namely the indicator (output), cost, and income approaches (Abraham and Mallatt, 2022; Oanh et al., 2023). The indicator approach uses a single measure, such as average years of schooling, or an index combining multiple measures. The cost approach measures human capital investment based on expenditures or the cost of acquiring knowledge. Finally, the income approach assesses human capital investment in terms of the benefits individuals receive from increasing expected or earned future income. The cost and income approaches can be considered to have significant advantages in terms of consistency, hence, both are used as the theoretical basis for this study. Measures based on the income approach typically produce significantly higher estimates of human capital value than those dependent on the cost approach (Abraham and Mallatt, 2022). Meanwhile, David J. Deming (2022) described four facts about human capital. One point is that high-level skills such as problem-solving and teamwork are increasingly valuable, yet the technology that develops these skills is not well understood (Deming, 2022). This phenomenon often underscores the underlying problem in which industry institutional governance capacity is a major policy constraint (Juhász et al., 2024; Yang et al., 2025). This is because natural resources, human resources, institutional quality, and industrial entrepreneurial activity are inherently complex and inseparable (Medase et al., 2023; Prasetyo et al., 2025; 2024).

Industrial policy can further strengthen industrial institution and labor unions in the service economy (Tucker et al., 2024). Policy reforms that reduce barriers to entrepreneurial innovation attract entrepreneurs with greater specific human capital than before the reforms (Grilli et al., 2023). Theoretically, deepening of resources in the human capital investment sector can occur during contraction, while deepening of physical capital in the goods sector occurs during expansion (Benk et al., 2024). Considering this study was conducted during a period of contraction, namely, deindustrialization, which led to increased layoffs, it is more relevant to apply the human capital approach as an intangible asset. Meanwhile, the basic theoretical model uses the investment value and income approach to examine human capital capacity and the quality of institutional policies in the industry.

## 3. Method

This study aims to explore and explain the role of human capital as an intangible asset and the interaction with the industrial institution quality. The measurement dimension of human capital emphasizes efforts to optimize the full potential value of the workforce or employee capacity. Meanwhile, the measurement dimension of human capital capacity as an intangible asset is the accumulation of value, development, experience, skills, health, education, training, loyalty, discipline, trust, as well as other mental and character traits. Therefore, the relevant method, designed to address the main problem and objectives in the initial stages, used a qualitative design that is collaborative and phenomenological. The purpose of using a phenomenological approach, along with more in-depth analysis and more efficient costs, is the potential to integrate mixed methods (Martiny et al., 2021; Adeniran and Oluwadamisi, 2024; Flick and Creamer, 2025; Creamer et al., 2025).

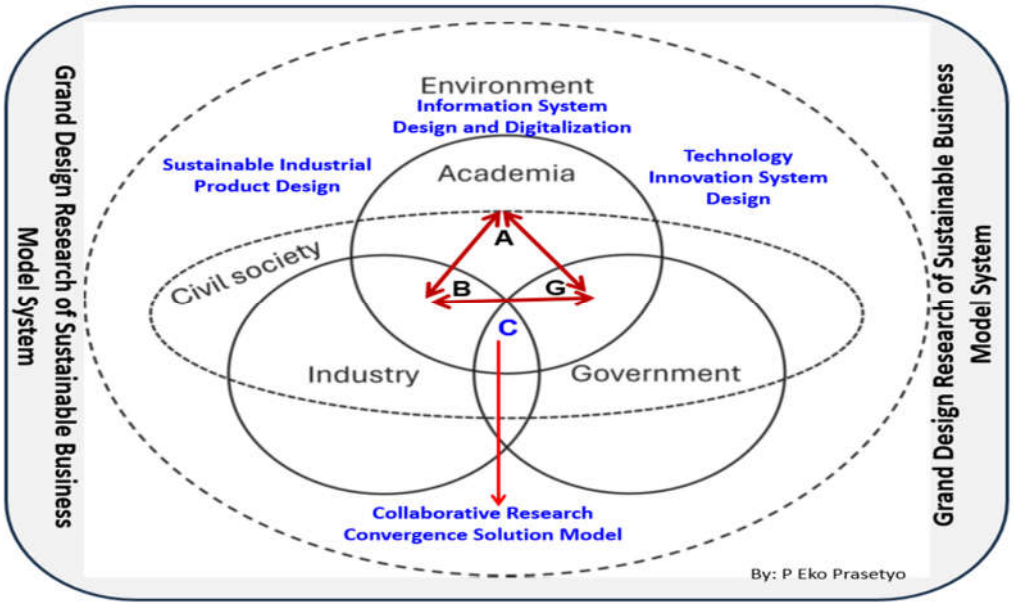


Figure 1: Grand Design: The Five-fold Helix Collaboration Model of Institution

In a large-scale grand design, a two-step mixed-methods has been developed. This comprises an exploratory and an explanatory design, using a five-fold helix collaboration model including related institution, namely environment, civil society, academia, industry, and government (Figure 1). Considering this is an initial publication, the results are more descriptive and presented qualitatively as the main intangible industrial assets most important for improving innovation and productivity performance, because the implications of mixed-methods extend beyond simply aligning new data and findings. However, finding a more relevant approach allows for integration with experimental methods in subsequent stages (Flick and Creamer, 2025; Creamer et al., 2025). In the initial stage, only an exploratory design approach was presented, complemented by a phenomenological collaborative analysis to describe five institutional quality activities. The analysis was more focused on exploring key variables, namely the role of human capital capacity and the quality of industrial institutional governance. The activities of industrial employees were examined within a collaborative model. This study focused on investigating how human capital capacity within the intangible asset dimension plays a crucial role in driving industrial institutional quality, innovation, productivity, and sustainable development.

The analysis required primary data sources obtained through flexible, semi-structured interviews guided by a questionnaire. The next stage focused on a phenomenological study method with 75 representative respondents. The objective was to allow for a more in-depth exploration of the relationship between human capital and industrial institutional governance. Furthermore, focus group discussions (FGDs) were conducted to explore the phenomenon in more detail. To complement data collection, along with validity and reliability, observations were conducted throughout the study. These observations were conducted with both partisans and non-partisans. In this context, observations with non-partisans specifically used documentation of behavioral patterns and interactions related to the main object. In addition, secondary data was used to supplement the study.

Specifically, within the qualitative method of the phenomenological approach, five stages of activities were established to identify the phenomena significant to the object. These five stages of study activities are as follows.

1) Bracketing and Phenomenological Reduction.

In the bracketing and phenomenological reduction stage, rational objectivity was achieved by setting aside preconceptions and a priori biases to avoid misunderstandings. Participants perspectives and experiences were better understood and more trusted, increasing the accuracy and credibility of the results and ensuring valid data. This action also served as a phenomenological reduction to describe and interpret the role of key variables in human capital capacity in each related institution.

2) Intuition and Describing Units of Meaning
In the intuition stage, the focus was on the meaning of the main variables related to the role of human capital, particularly governance quality in industry and related institution. At this stage, phenomenological collaboration was carried out to align perceptions of the true meaning contained within, resulting in more efficiency, effectiveness, accuracy, and reliability. The limitations of the data variants were conveyed while continuously deepening the participants knowledge of the phenomenon until the strongest understanding is achieved.

3) Analysis and Grouping of Meaning Units and Themes
The analysis for this qualitative design was conducted from the beginning of the study through completion. However, the specific stage of analyzing and grouping meaning units was carried out after the bracketing and intuition stages. In this process, coding was performed to categorize and identify the most important meanings to facilitate understanding. The focus of this phenomenological analysis was the participants understanding of the implications of related institutional policies, both top-down and bottom-up. This method used a semi-structured interview and observation approach to foster a deeper understanding. The unstructured interview process was supplemented with memos, essays, and field notes. However, for efficiency reasons, the interview focused more specifically on experts in the fields and relevant stakeholders within the institution.

4) Validation, Description, and Modification
In the validation, description, and modification process, each interview result was summarized based on the coding above. Subsequently, validation, reliability, verification, and description were carried out, with minor modifications to avoid misinterpretation. The purpose of this process was to achieve credibility, transferability, reliability, trustworthiness, and data confirmation. Transferability means that good results can be applied with certainty and consistency to other relevant contexts and/or institution. For invalid data, reconfirmation or logical modification was carried out, verified through a triangulation approach to primary data sources.

5) Extraction and Summary
In the extraction and summary process, general and specific themes were extracted from all primary interviews and observations. The objective was to obtain a composite of the most active or innovative measurement dimensions of the variables. A specific summary was then created, including limitations and recommendations. The primary goal of this study is to more accurately describe and interpret the phenomenon and to attempt generalizations. However, it must remain concise and easy to understand, adhere to the predetermined basic framework, and remain true to the facts.

## 4. Results and Discussion

Human capital capacity is the most important asset in improving the industrial institution quality to encourage innovation, increase productivity, and sustainable competitiveness. This is because human capital has been recognized as the strongest predictor of current and future modern economic development. The results will explain which human capital capacities contribute significantly to the industrial revolution, as well as current and future modern economic development. This study also intends

to explain the role of human capital capacity as an intangible asset and the relationship with industrial institutional-quality policies as catalysts for sustainable economic development.

Previous studies have shown that increasing human capital potential drives industrial growth, depending on the level of institutional quality (Zhou, 2018). However, the novelty of the results suggests a causal relationship between human capital capacity and the industrial institution quality. The complementarity between human capital capacity and the industrial institution quality strengthens innovation and productivity, thereby accelerating the achievement of SDGs. This means greater human capital will improve the capacity of industrial institution and quality levels, and vice versa. The capacity of industrial institutional quality governance has also strengthened development, increasing sustainable industrial productivity. This causal relationship arises from the philosophical link, fostering the industrial institution quality, because institution have provided opportunities for each individual to continue developing independently. In quality governance, industrial institution tend to develop further when opportunities are provided for each individual. Each increase in human capital capacity will foster the industrial institution quality to become fairer and stronger.

There is a significantly positive and strong correlation between human capital and institutional entrepreneurship in driving quality economic growth. Human capital also plays a crucial role as a key driver of sustainable development (Prasetyo dan Kistanti, 2020). These previous studies have explained the strong, positive correlation between human capital in the physical dimensions and productivity, competitiveness, and the quality of economic growth. However, the role of human capital capacity as an intangible asset dimension in contributing to productivity growth and driving the achievement of the SDGs has not been examined. The novelty of this study further emphasizes that human capital capacity is the primary key and strongest predictor of increased productivity and competitiveness in sustainable development. The contribution is strengthened by integration and complementarity between human capital capacity and institutional quality, thereby further streamlining transaction costs. Therefore, these results reinforce previous studies stating that when institutional quality interacts with human development, the impact on financial development can be strengthened (Nguyen, 2025). In the long term, the integration and collaboration mechanisms of the two variables capacities will become stronger in driving the achievement of the SDGs (Prasetyo et al., 2025).

Contributions to sustainable economic growth will continue to drive increased productivity and innovation, built on more educated, skilled, and experienced human capital. As human capital gains in skills and experience, it will produce more effective and efficient output, resulting in improved overall productivity. Furthermore, this group of capacities is better prepared to adapt and innovate, leading to higher output performance and improved efforts to achieve SDGs. The contribution grows stronger when driven by the higher-quality, complementary institutional governance, thereby providing opportunities for continued development. However, the accumulation of this intangible asset does not occur automatically. This process occurs through the integration and collaboration of more effective and better-qualified institutional governance decisions, and is driven by the basic conditions as well as unique characteristics of human capital, suggesting that the quality of new institution, human capital capacity, and transaction costs are closely interrelated both theoretically and empirically. The integration of institutional quality and human capital capacity can reduce transaction costs more efficiently and further enhance overall productivity.

The results can help explain why many labor-intensive industries have "failed" to achieve high productivity and growth. It can be hypothesized that these industries suffer from fundamental weaknesses in the context of poor institutional governance, thereby providing fewer opportunities for each individual to continue developing innovation and creativity. However, this weakness is understandable, given the

lack of a collaborative helical model between related institution (industry, education, government, the environment, and civil society). The institutional weakness may manifest in decisions about setting basic wages and worker rewards. Furthermore, many workers are still found in jobs that do not match educational qualifications, making development even difficult. This difficulty becomes more apparent in industrial institution with low-quality governance, demonstrating that human resources are often viewed solely as a factor of production and lack a holistic approach. The quality of educational institution directly influences worker productivity. However, when the quality of governance is poor, human capital potential cannot be optimized through increased experience and skills.

Although the impacts explained are direct, the indirect influence of the intangible asset dimension of human capital is positive. Aside from influencing the quality of other intangible assets, it also further optimizes the capacity of tangible human capital. The results confirm that the positive indirect impacts include increased innovation and creativity, improved social capital, and strengthened institutional organizational capital, thereby further enhancing industrial resilience and sustainable economic performance. However, previous studies did not find a significant correlation between economic performance and intangible asset management (Marsal, 2020). This empirical study was probably conducted in the financial and banking industry, known to have asymmetric information, leading to "moral hazard" and a "potential conflict of interest," which resulted in a sharp separation between principal and agent in shaping institutional governance. Another study also stated that intangible assets classified as innovation competencies (R&D and Patents) had no positive impact on company growth in the Romanian stock exchange (Ionita and Dinu, 2021). Meanwhile, the study was conducted in an industry labor-intensive and characterized by high levels of shared institutional ownership. This implies that intellectual capital, as an intangible asset derived from human capital, significantly contributes to the creation of superior product and service innovations to improve industry performance. Therefore, the empirical results tend to support recent study that emphasizes the complementarity of intangible assets in the manufacturing industry and recommends comprehensive policies (Uribe, 2025). Previous studies suggest that the potential of human capital is more capable of creating greater efficiency, effectiveness, creativity, innovation, and productivity (Prasetyo and Kistanti, 2020).

Theoretically, this study further supports modern growth theory, stating that intangible assets are non-rivalrous because the production process is long and comprises various endogenous factors emphasized by modern economic theory (Corrado et al., 2022). These non-rivalrous properties allow intangible assets to be used simultaneously across various production flows, thereby optimizing the use of other resources and reducing transaction costs. From a cost approach, intangible human capital assets can make transaction costs more efficient. Meanwhile, from an income approach, intangible human capital assets provide numerous benefits, both individually and institutionally, as well as other benefits, both direct and indirect. Integrating greater human capital capacity with better, fairer, and stronger industrial institutional governance further enhances total productivity and the competitiveness of sustainable economic development. However, slow and corrupt institution further worsen the achievement of the SDGs. Theoretically and empirically, the industrial institution quality and human capital capacity are the main fundamental determinants of economic performance. The results provide various new ideas and concepts for policy implications and institutional perspectives useful for the development of NIE theory.

The results are increasingly interesting and reinforce the new explanation that when measured from the dimension of accumulated potential spiritual values, solidarity, and socio-economics (SSE), human capital capacity becomes stronger, growing social capital as mitigation and resilience, and encouraging organizational capital of industrial institution. The spiritual and SSE values of intangible human capital assets represent the accumulated dimensions of mental attitude, talent, skills, experience, intelligence,

education, training, discipline, and employee loyalty used to optimize potential (Prasetyo et al., 2022; Prasetyo and Setyadharma, 2025). Considering these measurement dimensions tend to be qualitative in nature, the results were only reported qualitatively. However, the issue of human capital capacity can still be considered an important asset in every industrial organization. There is a causal relationship between human capital capacity and the quality of industrial institution. Based on the results, human capital, an intangible asset with the ability to adapt, innovate, collaborate, and communicate effectively, contributes to the increased ease of obtaining decent employment. The complementarity with the industrial institution quality further strengthens the achievement of SDGs.

Another increasingly interesting empirical result is the close relationship between quality education (SDGs-4) reflected in the intangible human capital dimension, namely, the ability to adapt, communicate, and collaborate well, which is an important dimension for more quickly obtaining decent work and subsequently driving sustainable economic growth (SDGs-8). The relationship between SDGs-4 and SDGs-8 tends to improve for workers in the Millennial generation and earlier. Meanwhile, the relationship is actually decreasing and negative for young workers belonging to the Generation Z group. This is because industrial employees in the Generation-Z group tend to lack collaboration, adaptation, and communication skills. The social and organizational skills are also poor, hence, Generation-Z are less able to support the institutional capacity of the industry. This means that the population lacks soft skills as good intangible assets. Therefore, active learning models through creativity training and soft-skills innovation capacity by universities and industry are crucial and needed in the future (Gomez, 2025; Rincón et al., 2023). However, the unique phenomenology still needs to be studied further with a broader and more comprehensive sample because Generation Z has great potential to be a driving force for change in a better and more sustainable digital era. Workers who possess technical skills should be balanced with good character, able to adapt and communicate well for complete competencies to acquire better and more decent job opportunities. In the modern economic era, the requirements for achieving efficiency and effectiveness alone are not enough without strong adaptive and problem-solving abilities.

Human capital capacity is not sufficient simply to possess technical expertise. Despite being prestigious higher education graduates and possessing strong technical skills in their field, workers may find it difficult to survive and drive sustainable performance in the absence of adaptation, problem-solving, good collaboration, and communication skills, as well as a lack of discipline. Therefore, this phenomenon presents a new challenge for future studies and policymakers in various related institution to manage human capital to achieve greater impact. Impactful higher education policy can be achieved through the application of the helink collaboration model from the various related institution.

## 5. Conclusion

In conclusion, modern economic development requires innovation and technological capacity. Innovation and technology are crucial for driving economic growth and sustainable competitiveness. New innovations are undoubtedly created by strong human capital, which uses ideas and concepts as intangible assets. This study aims to examine human capital capacity in the intangible asset dimension in relation to the industrial institution quality to promote sustainable development. The results suggest a causal relationship between human capital capacity and institutional quality. Industrial institutional quality plays a key role in paving the way for the accumulation of potential human capital value, which in turn drives the growth of technological innovation and the achievement of SDGs. Higher quality industrial institution further optimize human capital capacity in driving the growth of technological innovation and productivity, and vice versa. However, low industrial institutional governance does not correlate with productivity and SDGs achievement. This is because low productivity cannot contribute to increasing the accumulation of

human capital capacity in driving sustainable economic growth. Therefore, industrial institutional structures should be continuously improved to increase quality and contribute to sustainable economic growth. The main policy implications for the future of the economy are related to the capacity of high-quality industrial institutional structural governance.

Empirically, the results show that intangible assets from human capital strengthen the achievement of SDGs between generations and can serve as a model for mitigating the negative impacts of sustainable development. The low human capital capacity and institutional quality in modern economic development reflected in creativity, innovation, adaptiveness, and problem-solving capacity, underscores the need for significant investment in the long-term process. Based on the phenomenological method, this study has unique and specific advantages, along with the weakness of being difficult to generalize. Scientifically, generalization can be measured only in the dimensions of tangible and intangible assets. Meanwhile, other unique and specific phenomena that are difficult to measure and imitate are limited. To achieve generalization, a larger survey data source and comprehensive experimental model testing, both geographically and quantitatively, are needed.

**Conflict of interest statement**: The authors declare that this article is free from any conflict of interest, either individually or collectively.

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