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Multi-Attitude Perspective on Scheme Development: Applicability for Construction Industrial Transformation

Şema Geliştirmede Çoklu Tutum Perspektifi: İnşaat Sanayi Dönüşümü için Uygulanabilirlik

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ABSTRACT

Since the start of the 20th century, the industry has grown steadily which can be attributed to ongoing structural reforms. Since 1992, the growth of the construction industries has outpaced the quantitative increase of inputs, but contribution of productivity to output growth falls after 2001 when we estimate the dynamic frontier sectoral production function in a literature-based review. An analysis method was used to discover that the structural change has significantly contributed to countries' development and production growth but that this contribution has been declining with time. The general trend and sectoral variability of factor allocative efficiency during the industrial transformation process are mainly accounted for by reforms in factor markets and industrial structure according to reports and research evidence. Thus, the importance of public policy in fostering industrial transformation from a low-skilled, imitation-based economy to a high-skilled, innovation-based economy, where technological advancement now comes through the domestic invention of ideas, is examined in this study. Changes in an index of industrial structure, defined as the ratio of imitation- to innovation-based intermediate goods, are the results of industrial transition.

Keywords: Construction industrial, scheme development, transformation

ÖZ

20. yüzyılın başından bu yana, endüstri, devam eden yapısal reformlara atfedilebilecek şekilde istikrarlı bir şekilde büyümektedir. 1992'den bu yana, inşaat sektörlerinin büyümesi, girdilerdeki niceliksel artışı geride bırakmış, ancak literatüre dayalı bir incelemede dinamik öncü sektörel üretim fonksiyonunu tahmin ettiğimizde, verimliliğin çıktı büyümesine katkısı 2001'den sonra düşmeye başlamıştır. Yapısal değişimin ülkelerin kalkınmasına ve üretim artışına önemli ölçüde katkıda bulunduğunu ancak bu katkının zamanla azaldığını keşfetmek için bir analiz yöntemi kullanıldı. Raporlara ve araştırma kanıtlarına göre, endüstriyel dönüşüm sürecinde faktör tahsis etkinliğinin genel eğilimi ve sektörel değişkenliği, esas olarak faktör piyasalarındaki ve endüstriyel yapıdaki reformlarla açıklanmaktadır. Bu nedenle, kamu politikasının, düşük vasıflı, taklit temelli bir ekonomiden yüksek vasıflı, inovasyona dayalı, teknolojik ilerlemenin artık fikirlerin yerli icat edilmesiyle geldiği bir ekonomiye doğru endüstriyel dönüşümü teşvik etmedeki önemi bu çalışmada incelenmiştir. Taklit ve inovasyona dayalı ara mallara oranı olarak tanımlanan endüstriyel yapı endeksindeki değişiklikler, endüstriyel dönüşümün sonucudur.

Anahtar Kelimeler: İnşaat sektörü, şema geliştirme, dönüşüm

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Introduction

The dynamic circle sequence of industries started to revolutionize in the 17th century, which was launched by Great Britain as an industrial revolution nation that transformed and formed the dynamic methodology pattern of actually used production, process, and manufacturing schemes toward game-changer innovation machines that represented the perspective of leading macro-scale industries. As a result, it became globally recognized for its comprehensive innovation in the large-scale enterprise. The emergence of powerful developing nations has created a new challenge in the global competition

for economic growth, development, and progress, which is akin to an ideological concept of development on a life perspective. This article presents an integrative conceptual perspective that typically followed an industrial pattern for the Gradle perception of an industrial idea until the fully developed world-competito r-recognized manufacturing entity. The recognition of the transformative dynamics in the development environment has led to a renewed focus on renewable and efficient production methods since the start of the industrial revolution, which has resulted in a special emphasis on conservation and superior production. Linking the industry innovation gap, construction venture, and transformation scheme lacks all divisions' balance. Exceptional barriers that encounter the philosophy are challenged according to the new obstacle emerging throughout the development cycle within various industries when embracing new schemes.

Some potential benefits of this research could include the following:

1. Improved understanding of the factors that influence transformation in the construction industry: By taking a multi-attitude perspective, the research may be able to identify a range of factors that are relevant to transforming the construction industry, including economic, social, and cultural factors.
2. More effective schemes for transforming the construction industry: By developing a scheme that is informed by multiple perspectives, the research may be able to create a more comprehensive and effective framework for transforming the construction industry. This could ultimately lead to more successful outcomes and greater benefits for stakeholders in the industry.
3. Better alignment of the construction industry with societal needs and values: By taking into account a range of attitudes and perspectives, the research may be able to develop a scheme that is more closely aligned with the needs and values of society as a whole. This could lead to a construction industry that is more sustainable, socially responsible, and responsive to the needs of diverse communities.

This study outlines the processes involved in establishing a developed industry that achieves global recognition, including the implications of long-term industrialization and innovation on different levels of regionalization schemes. The subsequent review would be appraising the industry application perspective to explain how the industry started and is continuously progressing within civilization's frontiers. Present-day nations experience procedure elaborateness in numerous production sectors. Consequently, a frame of the perpetual evolving system for modern industrial endowment or change entails an authoritative benchmark to review any lengthy procedure required at decisive expansion stages in systemic structures.

Construction Development

The construction application and occupation's long history have seen many changes in the form of civilized cities built that were gone in a multiple embodiment integral scheme of primary structures. The provision of welfare facilities that sustain basic human needs is crucial in supporting the growing population, particularly in expanding and developing regions that require construction industry development at a collective humanitarian dimension for human use (Hatem, 2020; Hatem et al, 2019). The processes involved in construction projects, such as labor, funds, methods, and materials, are fundamental elements that must be orchestrated and integrated in a correlated manner to meet the requirements of the project. These particular elements coordinated to produce an outcome that reflects the reality of the following:

1. **Financial growth:** Industrial (economic) advancement has always undergone conventional peculiarities that link with the accretion increase of civil work and physical infrastructure municipality with the support of indispensable productivity extension part in the formation of an outcome typified in up-to-date commodities (buildings) which prevail generally or delineated with economic growth. History records of any economic growth predominate before the industrialization breakthrough started in the 17th century. Hence, any increase in population growth necessitates corresponding development in construction, finance, and humanitarian sectors, whether to meet essential resource needs for survival or to enhance financial assets. It is always concomitant with two roles that precipitate the economic growth of two essential parts of fiscal and monetary functionality. In general, expeditious economic growth is a subside result accompanied by overgrowing remarkable industrial expansion because of its staggered relationship with extravagance growth of resource elements of land, labor, and capital (Morosini, 2004). The transformation of economic entities into a developed industrialized state, as evidenced by increased annual production, financial growth, and global trade, is a typical economic phenomenon. This is described by Lewis (2013) as the conversion of inconsistent elements of constructive economic affiliation, which has substantial impacts on the quantification of economic progress. As a result, with regard to the economic growth subject, Bivens (2012) devised the modern growth theory as an analytical approach of dividing into two fundamentals of capital return and paramount growth flow.
2. **Industrial development:** The portrayal of construction function in industrial development is undeniably vital in achieving any success that portrays a broad range of humanitarian achievements in advancing a nation to steadfast prosperity ages of developing every form of civilian life quality. From a systematic perspective, the formation of perplexing syndicates, collections, and structures between construction activities and industrial development is inclining to a more far-reaching connotation concerning all integral nation's operating prospects (Mohammed Hatem et al, 2021). The effective integration of network connection concepts and industrial corporate patterns can serve as a valuable practice for understanding the industry framework and improving both construction supply chains and development (London & Kenley, 2001). Significant benefits can be derived from adopting approaches based on studies from industrial institutions, especially in terms of acquiring knowledge that enables a logical portrayal and detailed understanding of the interdependence and linkage of functions involved in the process of industrial development. The focal relationship of industrial expansion and its linkages to the diverse nation's intentions toward securing autonomous sovereignty has an evolved economy and progressive technological infrastructure for present and prospective practice. Thus, it is beyond doubt that there is a moderate correlation between any industrial establishment, development, and expansion with a vital part of the construction industry, as described by many scholars and experts in their scientific and practical studies

(Crespin-Mazet et al, 2015; Czamanski & Czamanski, 1977; Jorgenson, 1963; Klepper, 1997; Lewis, 2013; Morosini, 2004; Shutsilin et al, 2019). Moreover, a fully detailed report by the United Nations (UN) explains the value of industrial development in extending to achieving any part of the millennium development objectives. The study broadened to the development influence on eliminating the nations under developing state of mind appertaining to poverty, life expectancy, unemployment, and so on (Binagwaho et al, 2005).

3. **Life-standard modification:** Human civilization standards and requirements have changed considerably over the last centuries, and this course of "modernization" has thoroughly influenced individuals' lives. Moreover, it will continue to overtake any challenges to support its massive infrastructure industries that function as a primary existence for population happiness and life criteria through the support pillar acted by construction initiative drive that serves on a multi-scaled establishment for public needs for forming stable structures, buildings, facilities, welfares, and so on (Abba et al, 2019; Hatem et al, 2019). Quality of life in the society can narrate to advance industries that are committed to the service of human needs of primary factors of sustaining a well-classified living and community happiness (Egbu, 2004). A study (Veenhoven, 2010) examined the staggered industrial modernization by various entities of construction and development that facilitated the setup transformation from a primeval concept of hunter-gatherer lifestyle to a modern metropolitan society. The result prevails that progress industrializing has involved some deterioration during this protracted sophisticated proceeding, yet the subsequent conversion to present-day industrial civilization prompted an overture for the more transcendent visions. The productive infrastructure of the construction industry is instrumental in achieving the long-term optimistic goal of an advanced and developed society that provides sustainable and high-quality living standards for its population. To achieve a healthy and productive industrial transformation, it is essential to adopt a relevant systems approach that manages and observes the anticipatory process of initiating a continuous cycle of methodical transformation. This can be described as an eco-friendly industrial process that aligns with the concept of "the sequel ideology in breakthroughs of contribution towards society standards" (Dubois & Gadde, 2002).
4. **Technology innovation:** With scientific advancement around the world in different applications and theoretical fields, industrial innovation has concurred with the construction industry's relevant tools to achieve the great expectation of discoveries that serve the upgrading needs of industrial globalization. The explicit evidence of this massive progression in civilization discoveries, through the practical shift from the agricultural practice to the long-standing industry to this day, is that the construction industry revolution in the 17th century inaugurated a broad expansion in mechanisms to enterprise means. It was promoting economic maturity and technological competitiveness to complete the goal of becoming a world-recognized civilization that possesses the final yield of technology, industrial, and manufacturing that have driven the whole procedure cycle that consists of inputs, methods, and products (Feller et al, 2002; Schwab & Davis, 2018). Moreover, every construction-industrial enterprise undergoes a prolonged process of innovation aimed at improving essential components such as production, energy efficiency, building design, capital investment, machinery, and recycling of raw materials. The potential limits of more innovations are infinite as the barriers to achieving an excellent product or enterprise are determined and decided by humankind's philosophical ambitions toward cement success (Wang et al, 2021). With this far-reaching theory implanted in civilized humans, "the idea of prospering innovation," the complexity, and challenge will develop with the apparatus of industrial progression; as always, the obstacles will require more constructive ideas to emerge for proper resolution of the existence and futuristic problems. The newly studied and tested advanced technology of construction in several advanced countries (Fourth Industrial Revolution) proposes immense potential. The aim is to transform and reorient existing economies and societies towards more sophisticated and interconnected frameworks based on digital, virtual, smart, and automated principles. This will help create a more productive industry that can effectively cater to all the societal requirements, as outlined in the works of Herweijer et al. (2018) and Schwab & Davis (2018). For instance, the relevant designs of clean technology concepts in building construction power many industrial eco-friendly perspectives that have generated an emerging responsibility that collaborates with public and private programs' interests in reaching this aim. Besides, the modification will commence with permanent ideas and modifications that undertake fundamental common and environmental challenges.
5. Moreover, a further simplistic example is in the domain of construction. Industrial development has brought about notable examples of how the construction industry has evolved, from the traditional reliance on human labor to accomplish tasks such as earthwork excavation, cement casting, and material lifting. From the primeval employment of necessary tools like wagons or animals to complete physical undertaking assignments to the advanced use of modern machinery that achieves double the quantity and more extended sufficient, this is a definite implication of industrial creativity on a construction existence (Becerik-Gerber et al., 2011).

The idea of innovation has long existed in the human cyclic operation theory, facing many constraints or problems leading to thriving solutions introduced to solve these concerns. Even with advancement of humanity, there are still many complex development issues with time and progress that have risen that serve as a threat to the natural process of industries and enterprise activity in delivering products in all disciplines. Many attempts have concluded to overwrite these obstacles by explorers in the practical and scientific world (Biernacki, 2001; Wright, 2016). Despite the numerous socio-economic factors that impact civilization in various aspects, the concept of establishing a sustainable and developed infrastructure for future generations has not been adequately explored and applied in both theory and reality. This is evidenced by the multitude of issues faced by societies, stemming from the outcomes of previous generations' industrial development and advancement. In the past, collaborative efforts across multiple disciplines have proven successful in the study and interpretation of technical projects. This highlights the importance of considering all factors and aspects involved in determining the outcome of a project within a comprehensive framework.

Wright (2016) explained in a report for the World Bank that the specific predicament of innovative construction of the industrial sector practice is related to the tangible perspectives for many countries via both the evolved and the developing community. Innovative initiatives shape quantitative [gross domestic product (GDP)] or qualitative (index) growth. Many scholars have observed that such a system is not feasible for conventional adapted systems in less developed nations, which rely on simple alternatives to achieve specific goals. Consequently, there is a failure to recognize that mismanagement has hindered the ability to provide a decent and satisfactory standard of living for a growing civilization (Rashid et al., 2019). The UN established a structured program after seeing the consequences of the past systems used. Consequently, the establishment of the Development Programme by the United Nations meets structural application to reforms, influencing them as the foremost driving agent of the continuous evolution of the development practice. At the corresponding conditions, these matters of innovative extension transpire moderately to a sequestered accumulation of industrial continuation concerns.

Industrial activities are weighted by their value addition to the industrial operation's whole operation, which results in products resembling revenue, services, and products. Accordingly, those sectors incorporate agriculture, industry, businesses, and other cooperation projects in this process manifest pattern of macroscale venture results. Integrating common industrial subjects such as increasing production, the formation of construction, building demand, the extension of expenditure, primary infrastructure welfare, investments, and outcomes, stability of revenue and debts, and prevailing records among others. Although the importance of industrial development has been highlighted, it is essential to strike a balance between development and environmental sustainability. It is crucial to implement wider measures that offset the negative impacts of industrialization, such as pollution, resource depletion, and degradation (Vertakova & Plotnikov, 2016).

In perceiving the concept involved in a successful scheme for the construction industry or similar industries, a framework is designed to comprehend all the actions synchronized with the development demands and impediments formulated in the industrial cycle. Figure 1 perceives a model of many developed and experienced industries worldwide, where it engages all vital elements that enable significant return. In essence, the concurring characteristics involved in each stage refer to as industrial changes or innovations that exhibit in current and previously evolved industries. In extensive, the process in an idealistic industrial system considers all developed and developing factors that contribute to building a prosperous civilization engaged on economic and social levels. Furthermore, environmental, hence, transformation actions into a unique and innovative era achieved by considering all elements correlated with daily activities in works, systems, and plans. The ultimate aim was to establish a stable and prosperous nation, achieved through a diverse range of industries, services, and resources that were carefully combined to create high-quality final products, reflecting the effectiveness of the overall conscientiousness process.

Evaluate

To start a radical industrialization process and establish a reliable system in terms of effectiveness, renewability, and well-built industrial scheme. A thorough assessment of the current industry activities and their impact on the annual national product is necessary to identify the constraints for launching a successful industry. The impediments that may arise are rooted in a long history of organized awareness of industrial transformation, and it is essential to identify and address them to achieve successful outcomes. Consequently, an adapted followed pattern is assumed to examine any issues encountered in a methodology that utilizes a logic perception to classify and analyze the approach applied to manage the inputs in the conventional project plots. Therefore, it is important to identify the problems that are hindering progress and the constraints that are emerging, such as in the context of a construction project within a specific industry. This can be accomplished through a series of evaluations and the implementation of modern methodologies to effectively manage daily building and construction activities (Kassem, 2022; Li et al., 2022).

To conduct a comprehensive study of large-scale construction industries, specific measurement methods are implemented on tested and researched schemes that involve disciplines related to macroeconomics, construction economics, and industry development as shown in Figure 2. The evaluation solely is not satisfactory to improve the intended strategic goals for construction development. During the evaluation phase, it is essential to identify necessary modifications that align with the development initiatives. This includes identifying the sources and causes of deficiencies, proposing solutions to eliminate difficulties, and strengthening the role of construction as a vital component of monetary policies across all industries and enterprises (Beach et al., 2005; Jordan et al., 1996). The objective recognized should be obvious to select the proper methods for analyzing problems and their main source descriptions. In general, when classifying

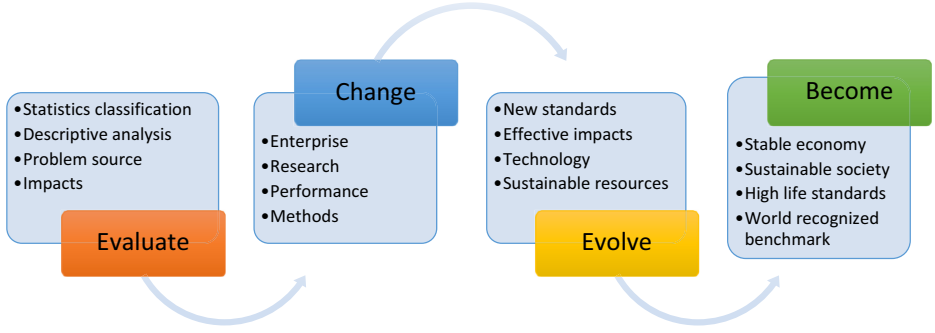

Figure 1.
A Model of Many Developed and Experienced Industries Worldwide.

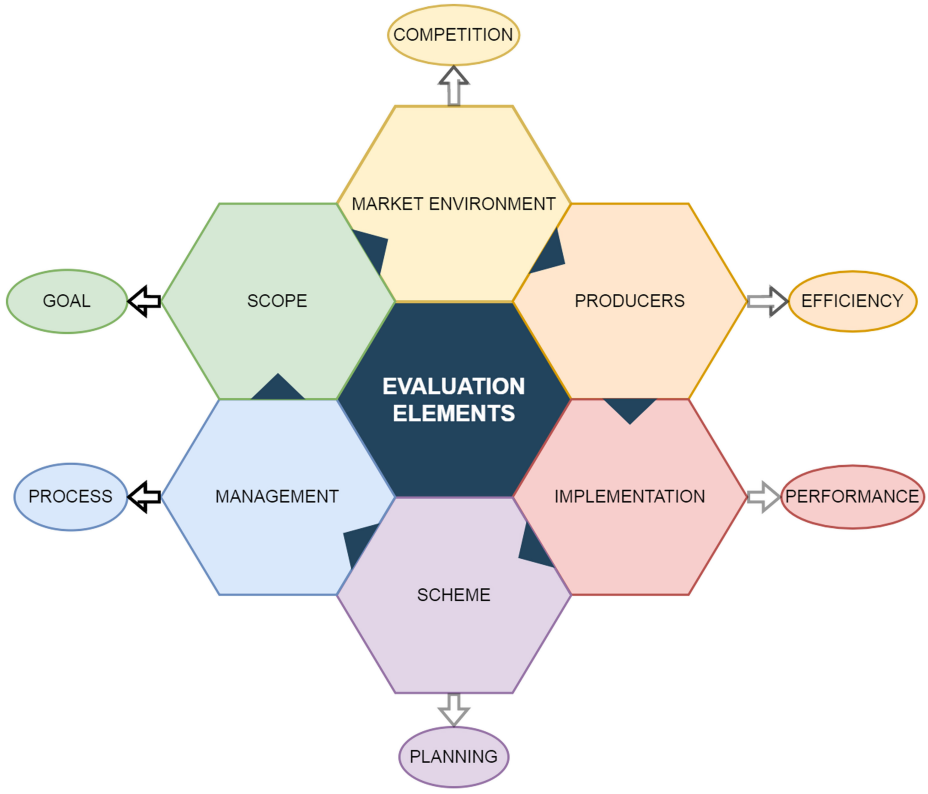

Figure 2.
The Evaluation Process Steps.

and examining based on revaluing, typically, the research includes the forethought on two essential variables—qualitative and quantitative; these variables are identified through mathematical, social, demographical, and so on. To effectively settle this base perception in the conventional construction industry, the following viewpoints of existing cases associated with principal management criteria, industrial evaluation, and fair, most importantly, construction development disciplines in any developing nation succeed within the evaluation process steps shown in Figure 2.

Preparing ahead of any project is a substantial quality in achieving significant production and performance; such action is described as planning that relates to every industry formation enabling the resolution of the quintessence beginning, syndication, and ending process. Outlining the planning components' principles is a well-known arrangement used to ascertain a comprehensive agenda that is inserted and refounded on industrial mutual objects criteria. Moreover, structured and planned policies or principles serve institutions to recognize the faced nature of the primary dynamic markets (Ghaleb et al., 2022; Muzafar et al., 2022; Wang et al., 2022). Adequate outlining and fare instructions expedite the engagement of the entire function of processing ventures into commerce returns and likewise serve in perpetuating certain performance course stages to the consumers.

In particular, at its essence, making a program exemplifies the core of any construction process, consisting of many stages that involve planning to evaluate until the kickoff of the project. Its design reduces the result time, and expenses efficiently coordinate the value of sources and maximize competence. Preplanning is crucial in determining how to approach a project before commencing work. It involves considering a variety of elements, such as the regular activities of workers and the ability to understand performance measures for stakeholders. By implementing a comprehensive assessment preparation procedure, any building concept can reach its full potential. By implementing a comprehensive pre-construction plan that includes an appropriate evaluation preparation process, any building design can maximize its full potential. With the development of targets apprehended, the construction project begins amidst a moderately simplistic concept that continuously builds a different outcome at every interval in development history. Ideally, with this identification, many frameworks have been set by experts and scholars (Gasper, 2000; Geels, 2006; Kathawala & Abdou, 2003; Mark et al., 2017; Shutsilin et al., 2019). The pre-construction plan incorporates both practical and theoretical aspects to create comprehensive designs that are evaluated at each stage to anticipate the outcome of each function and ensure an effective implementation. Pre-construction planning is an initial application of management strategizing that has been produced before a project begins. The aim is to develop or learn the complete scope of a scheme and its terms. An impeccable outlining stage usually incorporates the construction scheme interpretation, classification of possible problems, scheduling and milestones, scope, expense or revenue calculation, external conditions, and overall requirement interpretation. An example of a pre-construction plan for considering the comprehensive parts is illustrated in Figure 3; trailing each stage's flow and evaluating it within specific standards or benchmark implications allow for any project to be reconsidered and adjust any defect that could present a potential issue for future implementation.

Usually, for a complete assessment of operating circumstances in any industry or enterprise prototype, thoroughgoing fundamental

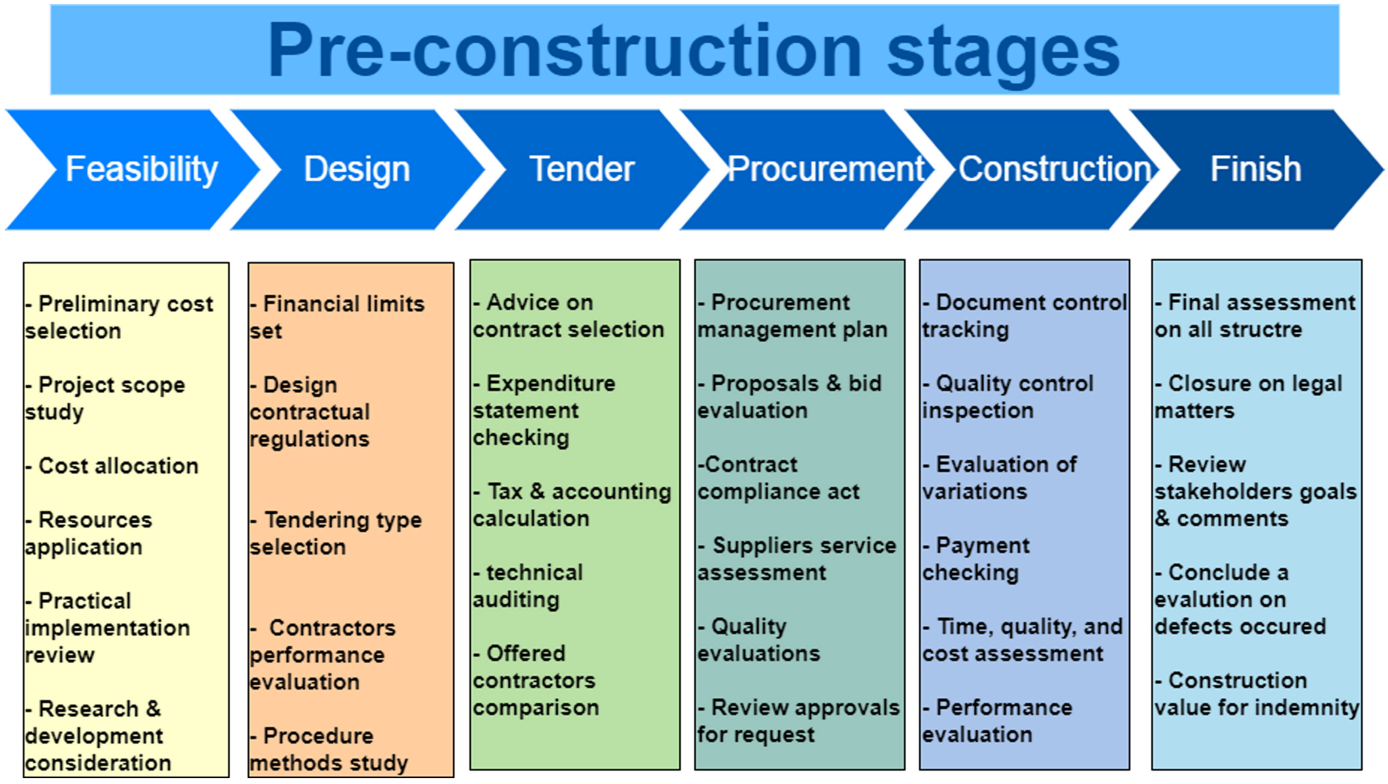

Figure 3.
Pre-construction Schemes Adapted and Modified from Chung (2000), Mbachu (2015), and RICS (1999).

steps are required that provide a reliable framework for uniform, robust, and direct evaluation and display judgment of working plans and policy administration in any practical domain. It is crucial to have a role of an informant in any analysis, inquiry, review, report, or execution process to ensure that the planned strategies and structured schemes are carried out efficiently. This role involves reviewing recommendations and providing feedback for improvement or adjustment, which should be based on practical and scientifically planned strategies and perspectives. For a large-scale evaluation, the construction industry resembles to drive affluence; a write-up is selected for this fitting purpose to base a literature review recognizing knowledge of successful and leading world competitors in the scope of heavy industrial management. As developed countries are modifying to a more flexible changing industrial and planning environment, the evidence progressed from evaluations to different execution scope customs for evaluation raises the resolution delivery of public and private corporations (Meng & Chi, 2018). For heavy industries such as construction, this area continues to be enhanced by the frequent review of how work is proficient in a decisive element of definite production management and liability viewpoints explained in Table 1. Therewithal the main queries are originating in particular aspects that are explored and interpreted for evaluation schemes. The main point questions are separated into the following:

Table 1.
The Decisive Elements of Definite Production Management and Liability Viewpoints

No.	Function	Purpose	Result	Method	Nature
1	Create a database	Organize and sort an assortment of data	Constrain intellect of graphs, figures, and tables	Quantitative and qualitative	Independent
2	Translate and summarize	Explicit details or concepts	Final data access for usage	Delineating implements	Dependent
3	Provide a benchmark	Point of reference for measures	A fixed basis for familiar results	Selecting pinnacle programs	Dependent
4	Assess activities	Produce an initial output data	Valuable outcomes to evaluate	Survey, definition, and regulatory appraise	Independent
5	Reporting findings	Draft data for primal description	Prepare data for analogizing with benchmark	Quantitative tools	Dependent
6	Interpret findings	For summary exhibition	Produce an outcome	Qualitative or quantitative programming	Dependent
7	Planning for improvement	Qualifying for a scheme correction	Prepare for improvement through positive actions	Emphasize and improve defects	Independent

Source: Ahsan (2012); Barnes (2017); Petrillo et al (2018); Zall Kusek and Rist (2004).

I. What are the endeavors required to accomplish an objective?
II. How is progress evaluated narrated to the main imperative aims?
III. Are there any possibilities to enhance the progress or methods that result in a general gain?
IV. Should the current scheme put be ceased or progress with its formal procedures?

A clear description of viewpoints linked to the purpose of technical evaluation of industrial activities can be devised based on the previously established questions and steps. Thus, the responsibility for examining the factors set for managing is a liability descended on the vital developing industries. In this collaboration between all disciplines involved in affirming positive output, an overall framework for examining industry regulations' visible and bodily context is in demand (Thornhill & White, 2007). It is growing a modernized culture that helps individuals involved in the industry upgrade their understanding and skills to suit the challenges and competitions submitted in an increment transformation as time progresses. In so doing, an ideology is created within the industrial environment that establishes basic principles replicated similarly over past occurrences and achievements.

In terms of deliberation, the construction industry examination breakdown is comparable to a typical market study case that resembles the designated industry or enterprise contrasts with others regarding criteria considerations. Therefore, in order to perform a comprehensive evaluation and improvement of an industry, it is necessary to conduct a thorough market analysis of past measures. This includes exploring all aspects of the proposed initiative and comparing it to other top establishments (Figure 4). It is relevant to manage general industry summaries to get the most relevant data for the distinct objective of evaluations. Industry evaluation serves to review the progress, identify problems and limitations, and assess the overall circumstances of a given industry (Jordan et al., 1996; Marsili, 2001; McMichael, 2016). The preliminary qualitative review scheme proposal consists of the fundamental attribution characters:

1. **Strengths:** A simple way to approach the concept is to define the driving factors in the cyclical sequence of a program, taking into account both internal and external details of the initial design. Considering the surrounding environment of operating the management means from the simplest (e.g., worker's happiness, skills, office culture, and incentives) to the most complex apparatus (e.g., agile production, development, standards metrics, and high-tech instruments). Then comes the external factors or subject of prospects that influence the overall contribution to the outcome. Furthermore, an organization's benefits are defined by how it focuses its projects towards achieving results that align with resolution domains such as standardization, financial gains, progress, and quality, as shown in (Figure 4). On this account of awareness, a clear indication will realize the level of severance of low- and high-productive industries, from its proprietary speculation strategy that returns high results in correlation to other contenders. It will determine the industrial perception results that attract new investors and stakeholders.
2. **Weaknesses:** This aspect of the industrial attribute is often seen as the most vulnerable because it requires careful consideration and intention. In other words, it is often viewed as the weakest link in industrial development, but also presents an opportunity to identify and address any internal or external deficiencies within an organization. Most internal factors are related to the fumble with management aspects in maintaining a prosperous organization and shaping the competition and correcting all difficulties. Additionally, Figure 4 shows the weaknesses that emanate to affect the industrial process and should be acknowledged frequently to bypass any depreciation with central stakeholder's viewpoints on

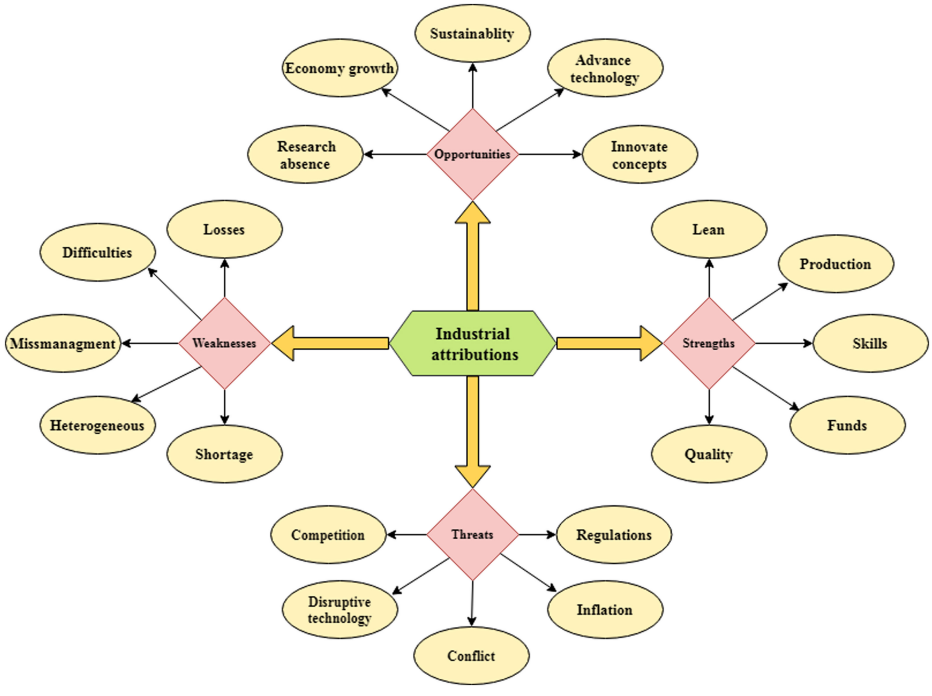

Figure 4.
SWOT Analysis.

the overall scheme running. Suppose there is any apparatus review system established for final products or services. Recognizing and addressing deficiencies in an organization may come with a significant cost, but it can have a positive impact on the organization's performance. Failing to address such issues may lead to even greater losses. Therefore, addressing the shortcomings and implementing a practical plan for improvement can lead to a more prosperous system in advanced industries. It ranged from the means used for the most simplistic approaches via feedback to further more complex techniques via quality inspection.

3. **Opportunities:** The various potentialities of the aftermath of an industrial transformation and the inserted innovation concept are countless, whether with the personal ambitions of stakeholders to achieve more by enjoying the result of the industrial process or the revenue outcome in different domains of development and production. Excelling development is defined as the specific practice of unveiling possibilities that comprise several approaches consolidated to formulate a plot toward a positive outgrowth; therefore, these certain innovative circumstances facilitate industries to start or improve decisions in chronicles of relevant components of product generation on an industrial measure while implementing several chances for enhancements in the overall scheme of efficiency and productivity. For example, introducing the modernist idea of the dynamic industry in advanced and developed countries began to yield challenging perspectives that consider a challenge in all industries. Hence, the all-inclusive modern idea offered opportunities, such as improved power over production, minimized losses, and development of conservative economics and more major sustainable models in designs of generation and recycling inputs or outputs (Figure 4). The significant philosophy of mitigating the set of features to formulate a possible solution is an indispensable quality beginning for industrial innovation. As for the case of construction, the occasions have emerged in ways to serve the most suitable practice on developments that affect the overall thriving industry and to become one of the essential resources in every nation, further extending to an even more quintessential for any progression or development for other industries opportunities.
4. **Threats:** This element, despite its importance, is often seen as a weakness due to the challenges it poses in both internal and external contexts, affecting various factors at each stage of the program. Additionally, it can be prone to misuse or manipulation, resulting in a negative impact on the intended outcomes. Moreover, top industries perceive it as an obstruction for other opponents to prevail. Internal determinations resembled the situations that function in an unforeseen direction or the imminent deviation of valuable means in managing the whole industrial process. External and internal defects can result in numerous varieties from simple minor losses in any project elements to a complete breakdown or dissolution of an organization toward failure. For instance, in infrastructure construction projects that define as an indispensable entity for the country's development and facilities for society's needs, in this profound importance, any mistake or defect will have an outcome that affects most living elements that serve a country, city, or other areas in interrelated practices, i.e., operating, financing, development, and subsistence. Rivals will consider the vulnerable parts that an opponent is suffering from and convert it into a golden opportunity to be ahead in a long race between rivals. As a result, stakeholders should be aware of any leaking problems that can embed without any chance to escalate to a significant gap in industrial or enterprise development and functioning. Deficiencies can range in their impact from minor issues to devastating vulnerabilities. Considering this apparent state, one can infer the potential problems that may arise, as depicted in Figure 4.

Change

Every development process is the synthesis of compelling contributions from four preeminent sectors (i.e., enterprise, technology, government, and employees). The success of any industrial enterprise or project can be accomplished only through approaching cooperation and reciprocal realization between these vital sectors; thus, the need to merge and integer different limitations to narrate a radical solution for either thoroughgoing or partial change is a necessity (Kapliński, 2018; McMichael, 2016; Shutsilin et al., 2019). The prominent involvement for radical change and modern development integration is by creating a solid organizational structure in assembling essential components and elements to stimulate a development execution by transpiring the program's achievement into dynamic industry sections that control everyday activities. When development applies to the construction industry, it usually consists of actions on a large scale that cause a macroeconomic impact. Generally, an industry change depends on various construction activities supplied by either the public or private sectors. With the right technology, method, and understanding of integrating industry development, the potential is not limited to merely economic benefits; it extends to social standards, innovation, and motivation.

At the outset of the 20th century (Desai & Heller, 2020), the industrial era started to shape the world into a sophisticated revolution of demand and supply represented in technology, constraints, operations, and structure criteria. A significant shift occurred in the past century, as societies moved away from an agricultural-based economy towards a more complex, globalized industrial system. As a result, new methods and innovative ideas create continuous challenges that impact the project-planned criteria in a profound approach—consequently causing the acceleration and advancement of mass production at the desired quality. To bring about a significant change, a set of measures must be examined and implemented for future developments to provide a foundation for the next two crucial stages of implementation strategies (Bonanomi & Bonanomi, 2019; Lau et al., 2019). Present-day perspectives are selected to adequately build up and enhance every prospect associated with construction development in a conclusive form to resolve as many topics experienced daily. When new industries are created or improved in underdeveloped areas, an automatic social reaction introduces and builds new settlements to fit industrial organizations. Land use in a sustainable technique associates the management and conversion of natural surroundings or wasteland into a well-erected environment for urban expansion. The positive influence of modern expansion may enlarge even further as it may boost the change of primitive infrastructure of the area or other previously used applications, which conceivably may attract foreign or local investment due to many positive potentialities of economic development outcomes (Maskuriy et al., 2019; Öztürk, 2017).

Evolve

According to the Cambridge Dictionary, the definition of evolving is "To develop gradually, or to cause something or someone to develop gradually." Typically, in the life cycle of any industrial development, an unequivocal phase is involved in the procedure of industry evaluation that is adjudged as growth, revenues, maturity, and expansion. Furthermore, during this particular phase, the construction industry is eminent by the unbroken process of complex construction activities that transformed from ideas, theories, research, and practical experience into physical reality on a large scale of development. The essential aspects of construction development shown in the initial results of the evolution stage reflect the nature of the gradual development. However, it is crucial to evaluate the outcome of a structured framework intended from the beginning of the buildout during this phase and determine whether the process was successful or failed. The function of valuation allows the manager or a responsible person to identify the complications, constraints, and problems well defined throughout the development cycle (Alfadil et al., 2022; Hatem et al., 2022; Li et al., 2022a; Li et al., 2022b; Wang, et al, 2022). Industries often undergo evolution when there is a demand for new and sophisticated products, despite the challenges posed by market size, production intricacies, and major competitors. Hence, expectations of failure are considered even with the many sophisticated calculations for a successful outcome. The new industry has materialized the interest value of rapid demand and slow supply and converted it into an efficient management plan of quantifying, which will serve as a resource and function entity for public usage. Commonly, an adapted and evolved industry illustrate an embellishment expansion in all forms of development portrayed in large corporations, bordering construction, national advancement, sustainable urban development, and megaprojects (Boateng et al., 2012; Merrow et al, 1988).

During the phase of economic prosperity and improvement, the main outcome is primarily from the national resource generation as a financial income for GDP. The source of a nation is highly dependable on the life cycle of various resources that are invested by traditional ways of increasing production even so it ought not to combine the most usage into a sustainable way; so many attempts have been refreshed and accomplished into fully and efficient adoption systems to comprehensively increase the value of the resources without depletion or loss. The completion of such an action can be assessed by a production or performance indicator that demonstrates a nation's institutional capability to initiate an evolution period. This is displayed in the achievements concluded towards regional prospects, indicating the success of the structured framework intended from the beginning of the buildout (Marsili, 2001; Pack & Westphal, 1986). To provide further evidence, the annual income of any country depends on the revenue generated by local or foreign resources, and the construction industry is among these resources. The construction sector also integrates and includes other resources associated with building and construction activities. Nevertheless, many nations are advanced in this aspect, such developed nations invested in research and development by considering advanced construction into increasing revenue and cut many losses in the building industry. Japan is a successful example of how a country can improve and achieve high results in the construction industry. This is because Japan has invested in research and development centers for construction and building. This investment in R&D has resulted in upgrading future revenues and products (Konno & Itoh, 2018; Pathirage et al., 2008).

The economic studies confirm that there is a strong relationship between the resources (natural and industrial) used and GDP (monetary value of a nation) in a developed civilization and well-established (evolved) industries, for it has been suggested that expansion and development are two distinctive aspects. Economic improvement is but a start in the objective toward development—one of preeminent significance, undoubtedly essential to it, but by no means can it be regarded as change itself in the whole scheme process. However, the main elements that needed to be derived and evolved for construction and economic development are

I. **Resources:** This is a vital provision, as the industry establishes transforming unprocessed supplies or manufacture of products. Therefore, resources may be of varied nature and require to be in sufficient abundance. It is divided into 3 categories: (1) natural: wood, oil, wind energy, natural gas, iron, and coal; (2) artificial: electric energy, infrastructure, plastic, metal sheets, glasses, rubber; and (3) human: quality, expertise, labor, culture, skills, and knowledge.
II. **Constitutional/economic:** To initiate and continue the necessary development cycle, stable and suitable conditions are required. Indeed, there cannot be any building or development with a lack of financial, political, and safety guarantees. So, it is an influential precondition for any feasible, long-course industrialization. Consequently, for reliable, long-phase industrial improvement, official support, consisting of secure and nonviolent industrial relationships, jointly with fiscal support and finance and developing administrations, is regarded as a vital action.
III. **Market conditions:** Industrial supply and demand are requested and organized into a secure economic system (market), where the regulations of supply and demand are immediately the production and management of products and supplies. The supply chain is designed in terms of valuation, demand, and fluctuations in products either in the short or in long prospect.

After regarding these aspects and influences in terms of economic practice, industrialization may commence and evolve to become a compulsive opportunity for public or foreign capital investment in a genuine sector or even nation scale, consequently, on the expectation that contemplated products or assets can develop at the considerable expense, satisfactory quality, and steady quantity. It is important to consider other development indicators that are related to industrial prosperity, especially those related to socio-economic values and their cause-effect relationship. The importance of understanding the impact of mega-industries, such as construction, on social and economic standards of living has been emphasized by scholars such as Lopes (2012) and Ofori (2012).

Become

Becoming a world-leading industrial country in terms of civilization development is not easy, especially with the many competitors in the same field, offering many advantages over other apparatuses used in daily activities. Therefore, to stay competitive and prominent for institutions regularly, it is executed only in the production of a development cycle by applying industrial

constraints (financial, time, and quality) (Mark et al., 2017; Susskind, 2018). Finally, final products, services, and enterprise outcomes evaluate an industrial scope of high standards and uniqueness. The aim is to practice and maintain an effective implementation from whatever perspective serves the nation on a financial base or humanitarian development standards. The shift from traditional industrial policy to modern research-based and practical methods has a significant impact on shaping national ideologies. This collaboration fosters a perspective of industrial development based on a set of beliefs or theories grounded in empirical evidence and put into practice. As a result of the numerous systems applied to reach the final stage of development, positive results are exhibited in industrial applications that are interrelated with innovation, exceptional products, local initiatives, and the collaborative work of various communities (Biron et al., 2011; Membrillo-Hernández et al., 2019).

International experiences have shown that successful industrial transformation relies on effective adaptation strategies in both developed and developing countries: United Kingdom, Japan, South Korea, Singapore, Malaysia, China, the USA, and so on. Presently, these nations are leading the world progression progress of technology, products, services, economy, and standards toward furtherer dynamic development and efficient diligence as seen in their modern industrialization outcome toward their civilization (Konno & Itoh, 2018; Shutsilin et al., 2019; Thelen, 2004). The crucial aspect of development has made it the world's leading global center for innovation and progress. However, many challenges arise in their attempt to achieve this, as a result of a series of unforeseen and unconditioned rapid global changes. These challenges necessitate a need for solutions to be provided. A well-distinguished report, "A vision for a transformed, world-leading industry" produced by UK experts and analysts explained ambitious and functional plans to assure the industry's prospects. The application of the point of view will establish a revolutionized and extended industry that proceeds to be world class, exceptionally inventive, digitized, and more adequate to face considerable stakeholders' evolving obligations (Mark et al., 2017).

While the scope for the industry's shift on its own and the responsibility of developing it is on researchers' and officials' shoulders, it will distinctly be effective to amount to its full capability with practical and critical cooperation with government and managers. Consignment of this eye-catching point of view will see the industry embrace innovation and modern technologies to contribute better and further fitted works, services, and products to a certain extent of being a world leader in industrial development, using and wielding resources in a more effective, secure, sophisticated, and sustainable technique for the future. The report also included a mandatory procedure for every step of progress made, a structured plan of action involving economic analysis, and a summary that evaluates the resulting influence of implementing the development plans. It prompted foran expansion of product and services sectors' production competitiveness, change, innovation, and performance, managing an increased supply of various outcomes that have a distinctive quality. Hence, actions taken resulted in additional investment support in industries of £13 billion, or 7%, of gross industry value added in 2019. The current visualized developed framework in the United Kingdom leads to a sustainable expansion worldwide, thus increasing the cultivation of wastelands and contributing to modern advanced metropolitan cities to sustain overall population growth and industry demand (Mark et al., 2017).

Conclusion and Recommendations

The goal of this article was to investigate the role of public policy in construction to promoting industrial transformation from a low-skilled, imitation-based economy, in which technological progress is primarily achieved by copying and adapting foreign ideas, to a high-skilled, innovation-based economy, in which technological progress is primarily achieved by inventing new ideas domestically. Construction industrial transformation was quantified by changes in an index of industrial structure, defined as the ratio of imitation- to innovation-based intermediate goods, using an endogenous growth model. In the model, a knowledge externality linked with learning by doing in the imitation sector is a crucial mechanism by which productivity grows initially in both the imitation and innovation sectors. The demand for high-skilled workers has been proven to rise as a result of the industrialization process, promoting people to invest in knowledge. Knowledge, in turn, achieves long productivity and technological progress in the innovation sector. The approach also highlighted the difference between basic or core infrastructure, which encourages copying, and advanced infrastructure, which encourages innovation. In this context, investing in human capital is not a need for fostering early-stage growth and development. The main objectives achieved in the study are as follows: identifying the key challenges and barriers to industrial transformation in the construction industry, such as low productivity, low sustainability, and resistance to change; developing strategies for overcoming these challenges; evaluating the potential impact of the proposed scheme on various aspects of the construction industry, such as productivity, sustainability, social responsibility, and profitability; assessing the applicability and feasibility of the proposed scheme in different contexts, such as different regions, countries, or construction sectors; developing strategies for adapting the scheme to these contexts; and providing recommendations for policymakers, industry leaders, and other stakeholders on how to promote industrial transformation in the construction industry and achieve the desired outcomes of the proposed scheme. The model was calibrated for a "typical" low-income country and used to test a variety of policy options, including increasing basic infrastructure investment, lowering the cost of training, and improving property rights enforcement. An exemplary composite reform program was also examined, which combined these measures sequentially with advanced infrastructure investment. The findings revealed the relevance of enhanced access to basic infrastructure in the early stages of a growth and development process based on imitation, as well as higher investment in advanced infrastructure later in the process to promote a change to an innovation-based approach. The larger policy ramifications of the analysis were also examined. The lack of skills is not a binding constraint for launching a two-pronged growth strategy, with the first phase promoting the development of labor-intensive manufacturing industries and the second phase promoting skill-intensive domestic innovation, according to our analysis (which is largely supported by evidence). At the same time, our research highlights the need for improved infrastructure and intellectual measure enforcement in achieving the continuation.

Recommendations for Future Research

Conduct empirical studies to test the effectiveness of the scheme: Once a scheme for transforming the construction industry has been developed, it would be important to test its effectiveness in practice. This could involve conducting empirical

studies to evaluate the impact of the scheme on various aspects of the industry, such as productivity, sustainability, and social responsibility.

Explore the role of leadership in industrial transformation: Transformational change in any industry is often driven by visionary leaders who are able to inspire and motivate stakeholders to embrace new ways of thinking and working. Future research could explore the role of leadership in the transformation of the construction industry and identify strategies for developing and supporting effective leaders in this context.

Investigate the potential of emerging technologies for industrial transformation: The construction industry is ripe for disruption by emerging technologies such as robotics, artificial intelligence, and 3D printing. Future research could explore the potential of these technologies to transform the industry and identify strategies for integrating them into the scheme for industrial transformation.

Analyze the impact of cultural and social factors on industrial transformation: The construction industry is highly influenced by cultural and social factors, such as the prevailing attitudes toward safety, sustainability, and innovation. Future research could analyze the impact of these factors on industrial transformation and identify strategies for addressing cultural and social barriers to change.

Consider the role of government policy in industrial transformation: Government policy can play an important role in promoting industrial transformation by providing incentives, setting standards, and regulating industry practices. Future research could explore the impact of government policy on the transformation of the construction industry and identify strategies for maximizing the positive impact of policy interventions.

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