1. Introduction to the *Research Companion to Construction Economics*

*George Ofori*

**INTRODUCTION**

*This Research Companion*

A review of the literature on construction economics shows that a new, comprehensive reference book on the body of knowledge of the subject is needed. The reasons are: there is a debate on many of the aspects of the field of knowledge, including many of the topics it covers, such as its main concern, the construction industry; and there is a need for effort to systematically build up the subject in order to enable it to claim the status of a separate field of knowledge. To fill this gap, the required reference book will have to be a compendium of existing knowledge which also reviews the origins of the subject, explores new ideas, and contributes to the development of new knowledge on the overall field. This Elgar *Research Companion to Construction Economics* seeks to fulfil this need.

The *Research Companion* presents a picture of the state-of-the-art of the subject. It creates a platform for presenting, discussing and challenging the existing theories and concepts, and the existing paradigms of the field. It enables a critical examination of complex issues in the field to be undertaken. It also provides the opportunity for some new issues and underexplored ones in the field to be discussed.

The book comprises original chapters authored by specially invited globally recognised experts on the particular topics. This is an influential collection which represents a broad-ranging coverage of the field of construction economics.

**Aim and Objectives of the Book**

The aim of the book is to present a state-of-the-art review of construction economics and indicate possible new directions for the subject. It is intended to be an authoritative reference text on the subject. The objectives of the book are to:

1. present a comprehensive review of the literature on the main topics which comprise the body knowledge of construction economics;
2. explore the fundamental issues and underpinnings of the subject of construction economics such as its philosophy; its history; its nature, boundaries and linkages to related areas such as segments of mainstream economics; its theories and main concepts; and the methods of analysis it uses;
3. propose new topics and subtopics to be explored with the view to enabling the subject to grow;
4. draw the outline of the future of the subject of construction economics.
Producing the Book

The carefully selected authors of the chapters were provided with a guide which set out the rationale for the book; outlined its aims and objectives; and indicated the timeline for the production of the book. Each author was given a topic on which they had a solid body of work, together with a brief outline of the possible content prepared by the editor. The authors were given the flexibility to suggest possible fine-tuning of the topics or the guidance notes. The first draft of each chapter was peer reviewed by one of the other authors, as well as the editor.

Nature of the Chapters

Each chapter of the book presents a thorough scholarly analysis of the selected topic. Each chapter analyses the existing knowledge on the topic, compares the various views on it, and presents a reference point for further advanced research leading to further development of the subject. This first chapter of the book provides an introduction of the book, and presents a synopsis of the various chapters.

Each chapter of the book presents and discusses current definitions and the main concept of the topic; considers historical development and current state; discusses likely future development; and proposes aspects for further research and further development of the field of knowledge. As each chapter forms part of an important reference book intended for researchers, students, teachers and practitioners, it is based on a strong review of the literature. Each chapter presents the state of the art of the topic it covers. Each chapter is an authoritative and enduring piece on the topic. Each chapter is an important addition to the body of knowledge on construction economics.

SYNOPSES OF THE CHAPTERS

A synopsis of each of the chapters in the book is now presented.

Chapter 2 by George Ofori

Ofori writes the first substantive chapter in the book. It has the title: ‘Construction economics: its origins, significance, current status and need for development’. Ofori notes that construction economics should be an essential field of knowledge and research because of the uniqueness of the construction industry, process, procedures and products. The completed items are necessary for other economic and social activities which lead to economic growth, long-term development and improvement in quality of life. Ofori observes that, despite this importance of construction, construction economics has not yet been established as a distinct field of knowledge, or branch of economics. It is not recognised as a scientific discipline in its own right. Ofori states that the aim of the chapter is to discuss responses to these key questions on the subject of construction economics. What is construction economics? How has it developed? What are some of its principles, theories and concepts? What are its techniques, which are applied in research and practice? What is its status, such as its position among the established bodies of knowledge? What is its future?
First, Ofori discusses the nature of construction economics with a brief review of the historical development of the subject, which considers some of the major milestones and driving forces. Second, he analyses the components of construction economics, at the industry, company and project levels, and outlines the main themes and techniques of these components, putting the focus on some of the major contributors and the key works. He presents examples from various countries. Finally, Ofori suggests that there is a need to develop the subject, and highlights some possible areas which such developmental efforts should cover.

Chapter 3 by Stephen Gruneberg and John Kelsey

In the chapter entitled ‘The philosophy of construction economics’, Gruneberg and Kelsey set out a number of issues in which they subject issues in construction economics to philosophical consideration. They note that to enable readers to understand the nature of the philosophy of construction economics, a number of preliminary steps are necessary. The first step taken by Gruneberg and Kelsey is to define philosophy. The second is to define economics; the third is to define construction economics; and the fourth is to define the philosophy of economics. They then address the main task, and take up the discussion of the philosophy of construction economics. Gruneberg and Kelsey set out the conditions for a construction industry that steers a course that is positive and inspiring. They suggest that central to this approach are six principles of construction: an industry that is competitive; an industry that is productive and embraces innovation; an industry that produces a quality output; an industry that is efficient and whose output is efficient; an industry that employs a workforce that is professional in its attitude, behaviour and skills; and an industry that has an excellent reputation and has confidence and pride in itself.

Gruneberg and Kelsey note that in a single chapter it is only possible for them to direct the reader to a number of potential areas of debate. Therefore, they note that they consider it necessary to state the key issues rather than carrying out in-depth analysis of the issues. They observe that the questions they address draw attention to other matters which may be explored in the future, and which are considered in the concluding chapter of this book.

Chapter 4 by Gerard De Valence

In the chapter on ‘The nature of construction economics’, De Valence suggests that it is challenging to define construction economics because of the range of topics associated with the production and maintenance of the built environment, the economic role of the construction industry, and the porous boundaries between the subject and related disciplines such as urban and regional economics, housing economics, cost engineering and, in particular, construction management.

De Valence discusses the interrelated propositions about the definition, boundaries and historical development of construction economics. He reviews construction economics research across the segments of the field: the construction process, the construction firm and the construction industry. De Valence considers three periods: 1966 to 1989 is one of emergence and establishment, as themes and topics are investigated and the literature develops; 1990 to 2007 covers the expansion of construction economics as new approaches such as transaction cost economics are applied to construction; and 2008 to 2020 brings the story to the present. In each period, research contributions to the three areas and the topics that research has covered are
discussed. This is followed by an assessment of the development of construction economics across the areas and topics in the literature, along with issues such as the availability and quality of relevant data, which has constrained empirical research on construction economics. Gruneberg concludes the chapter with the argument that the scope of construction economics is a strength because it reflects the nature of an evolving economy and a construction industry which can be defined in various ways. The openness of construction economics to ideas from economics has led to important insights into construction firms, markets, and the relationship between the industry and the wider economy.

Chapter 5 by Jan Bröchner

Bröchner addresses the topic, ‘Construction economics in antiquity’. He reviews the current state of research on the economics of the construction industry in ancient Greece and Rome. Bröchner notes that the sources for construction costs and the role of construction in the economy are literary texts, inscriptions and other archaeological finds. Grain and olives for prehistoric building workers are recorded in Linear B texts on clay tablets from 13th century BC Pylos in the southwest Peloponnese. Bröchner points out that, in the 5th century BC, Herodotus provides insights into the economic aspect of major building projects. Athenian democracy was an audit society, and there are detailed inscribed data for Acropolis temples because of the need for permanent and displayed accounts related to public procurement. He mentions that in Aristotle’s *Politics*, tyrants are considered to have reasons to keep the people poor and occupied through large public construction projects.

Bröchner reveals that in ancient Rome there was less concern with public scrutiny of projects, while both the Republic and the Empire were able to finance huge investments in building. The Romans developed new construction technologies, and although we lack original data on work rates for specific tasks, cost effects of innovative technologies for wall construction and concrete vaulting have been estimated. Finally, Bröchner shows that Diocletian’s Price Edict of AD 301 includes maximum wages for categories of construction workers and prices for construction materials, clearly indicating a command economy with a large bureaucracy, trying to reduce inflation.

Chapter 6 by Jorge Lopes

Lopes considers the topic, ‘Construction in the economy and in national development’. He notes that buildings and other construction assets constitute a significant part of a country’s physical and economic infrastructure, and that construction infrastructure plays a role as a capital input into the production and wealth generation. The economic impact can be transformative, especially at low-to-middle levels of income per capita. Lopes suggests that the close association between physical capital and different measures of the national economy is one of the reasons why physical infrastructure has been considered a powerful engine of economic growth and development. However, a significant number of studies have not shared the generalised view on the positive role of construction investment, that is, on the magnitude of investment and the direction of causality between construction investment and economic growth.

Lopes reviews the main strands in the literature on the role the construction sector plays in the national economy and in economic development. He also assesses the development
pattern of the construction sector in two groups of sub-Saharan African countries pertaining to the middle-income status of economic development, for the period between 2000 and 2018. Lopes concludes that the results of the study show that the share of construction (measured as a proportion of construction value added in gross domestic product) revolve around a norm that is determined by a country’s level of built assets prior to the period of reference.

Chapter 7 by Nii A. Ankrah and Emmanuel Manu

Ankrah and Manu write on the topic, ‘Construction project economics’. They explain that, at the project level, the body of knowledge of construction economics has largely focused on showcasing tools and techniques that support decision-making throughout the life cycle of a project. Specifically, techniques such as cost–benefit analysis, option appraisal, project budgeting, cost analysis and planning, cost modelling, estimating of building costs, and whole life costing have been the bedrock of construction project economics, and have supported the management of the economic problem of making optimal choices regarding the allocation and use of scarce resources such as land, labour, capital, equipment, time and management on construction projects. In the chapter, Ankrah and Manu discuss the main concepts underpinning these techniques, and consider their historical development and limitations, and current thinking regarding their application.

Ankrah and Manu note that some emerging global trends are driving the development for application of a new approach to construction project economics by shifting the focus from cost and financial value to increasing emphasis on the environmental implications and social value contributions of construction projects. These trends include circular thinking, carbon accounting, social accounting, natural capital accounting, new procurement methodologies, and application of smart off-site manufacturing approaches in construction. Ankrah and Manu explore some of these trends, their likely future development, their implications for the optimal utilisation of project resources, and the tools and techniques needed to embed them into standard project practice. They highlight the connections to mainstream economics thinking throughout the discussion in the chapter. Based on the current gaps in knowledge around these issues which are identified, Ankrah and Manu propose aspects for further research to support more informed and rational decision-making in relation to construction projects.

Chapter 8 by Mohan Kumaraswamy and Gangadhar Mahesh

In the chapter on ‘Dynamics of construction industry development’, Kumaraswamy and Mahesh note that imperatives for improving construction industry performance have triggered high-powered reports with promising recommendations in many countries in the recent past. However, the resulting improvements have rarely met expectations. They suggest that the reasons for these shortfalls have been traced to various root causes, including: a lack of system-level understanding of construction industry linkages with the environment in which it operates; institutional inertia; and a resistance to shift industry culture and mindsets from adversarial to collaborative working modalities in fragmented teams.

In the chapter, Kumaraswamy and Mahesh probe the failure of decision-makers to appreciate and leverage the linkages between the construction industry and the national economy, from the dual perspectives of: (1) construction economics; and (2) the overarching goal of national development, which itself needs a reliable and efficient construction industry. For
example, lack of work continuity disrupts the development of high-performing construction organisations, personnel and technologies. Kumaraswamy and Mahesh note that to address these for the longer term, policy-makers should be appraised of an important construction industry–national economy nexus that may be better appreciated through a dual macro–micro construction economics ‘bifocal’ lens. Such an overview could inform policy development, for example, to justify providing alternative work opportunities in public infrastructure augmentation, and rehabilitation during troughs in demand for construction. Kumaraswamy and Mahesh also provide insights into industry issues previously identified in Australia and the Netherlands; and lessons learned when implementing landmark industry reform reports around the turn of the century, in the Hong Kong SAR, Singapore and the United Kingdom. They provide examples of other important issues and proposed remedial measures in developing construction industries: a recent development initiative in India, and previous exercises in Sri Lanka.

Chapter 9 by Abdul-Rashid Abdul-Aziz and Afzan Binti Ahmad Zaini

Abdul-Aziz and Zaini consider the topic, ‘Applications of mainstream economic theories to the construction industry: transaction costs’. They note that, at its core, transaction cost economics, which was pioneered by Williamson in the 1970s, addresses the make or buy decision. It posits that the optimum governance structure (that is, the hierarchy or the market) is the one that achieves economic efficiency through minimisation of transaction costs. External transaction costs arise whenever goods or services are procured through the market as opposed to internally. They cover search and information costs, bargaining and decision costs, and policing and enforcement costs. Abdul-Aziz and Zaini explain that transaction cost economics employs concepts such as ‘bounded rationality’, ‘asset specificity’ and ‘opportunism’. They note that there has been refinement since it was first introduced, notably the recognition that potential arrangements can be a market hierarchy hybrid that occupies anywhere along the continuum between the two extremes. They observe that transaction cost economics has influenced scholars in many disciplines such as politics, management, business and social sciences, and there has been increasing interest in it among construction researchers.

Abdul-Aziz and Zaini note that some construction economics scholars opine that transaction cost economics has limited explanatory power for various practices of the construction industry. The most significant reason those critics give is that so many issues are excluded from the framework. However, the limitations highlighted have not stopped other scholars in construction from still applying transaction cost economics when undertaking studies such as analysing subcontracting, supply chains, public–private partnerships, alliancing and even project delays. One way to compensate for the shortcomings of the concept is to use it in combination with other theories to obtain more credible theoretical lenses for investigation of specific construction economics phenomena.

Chapter 10 by Alex Opoku

In the chapter on ‘Construction industry and the Sustainable Development Goals (SDGs)’, Opoku notes that the 2030 Agenda for sustainable development, which set out 17 Sustainable Development Goals, 169 targets and 232 indicators, is a major global initiative towards socio-economic development in all countries. The construction industry has a critical role to
play in achieving the SDGs; it can influence the realisation of the SDGs by formulating policies and regulatory frameworks that drive the adoption of sustainable construction practices. The SDGs provide the construction industry with a new lens through which global needs and desires can be translated into business solutions. The SDGs provide a framework for all types of construction business organisations to play a crucial role towards the realisation of the SDGs by embracing the opportunities they present.

Opoku explores the role of the construction industry in achieving the 2030 Agenda for sustainable development. He suggests that, to successfully deliver the targets of the 2030 Agenda, the industry should engage with construction businesses in aligning business strategies with the SDGs. He suggests that the companies in the construction industry should integrate the SDGs into their long-term business strategies; and companies and practitioners should collaborate with government agencies, industry peers and policy-makers to attain the SDG targets and the broader objectives of the 2030 Agenda for sustainable development.

Chapter 11 by Obas John Ebohon

Ebohon addresses the topic, ‘Sustainability economics and the construction industry’. He notes that, like the concept of sustainability, sustainability economics is an evolving concept that has its roots in ecological or environmental economics. Thus, it has been approached from different perspectives. Nevertheless, these perspectives have in common the emphasis that sustainability economics places on the problem associated with economic growth and attendant pollution, and the challenges posed to sustaining economic growth given the insatiable demands on environmental resources on the one hand, and the exhaustible, non-renewable and finite nature of natural resources on the other. Ebohon notes that concerns about potential trade-offs and conflicts between equity and economic efficiency in the pursuit of economic growth remain the focus of sustainability economics.

Ebohon observes that there is intense debate about the existence of such conflicts: whether human-made capital can replace natural capital, economic growth continues and attendant pollutants can be managed and contained – the ‘weak sustainability’ concept. However, there are some natural capital services, such as the ecosystem, that human capital cannot replace; hence the view is that natural capital and man-made capital are complimentary but not interchangeable. Ebohon notes that, this being the case, it is necessary to decouple economic growth from natural resources, reducing the consumption intensity in order to enhance the absorptive or regenerative capacity of the natural environment. Considering the disproportionate amount of natural resources construction accounts for, the predominant share in total global solid wastes generated, and the huge volume of carbon emissions, this debate is critical to the survival of the construction industry.

Ebohon critically examines the case for adopting the strong sustainability approach to construction activities. He also analyses the indirect risks posed to the natural environment and the global ecosystems, but also the direct risks to the construction industry itself, if it continues with the ‘business as usual’ or weak sustainability approach in its activities.

Chapter 12 by Jim Meikle and Asheem Shrestha

On the topic, ‘International construction data: a critical review’, Meikle and Shrestha note that construction is a difficult economic activity to measure and record. As a result, construction
data is often unreliable and analyses over time and across countries are particularly problematic, although data is an essential element of much research on construction, so researchers should understand and be able to deal with its shortcomings.

Meikle and Shrestha describe the availability and characteristics of both official statistical data and other quantitative data on international construction and discuss the more important economic indicators and ratios that emerge from it. Meikle and Shrestha focus on data that support analysis of construction in the economy, construction prices and construction productivity, but also comment on other construction-related data, including on building and infrastructure stock, housing production numbers and construction materials consumption, data that can help indicate construction volume. The final section of their chapter concludes with a review of the existing situation and makes recommendations for future work by construction researchers and others.

Chapter 13 by Rick Best

Best writes on ‘Measuring and comparing construction costs in different locations: methods and data’. He reviews the issues related to measuring and comparing construction costs between countries and within countries, with emphasis on measurement at the levels of projects, types of work and industries. Best notes that while cost is often a key parameter in productivity and other studies, and cost comparisons are often attempted, there are many factors that complicate such attempts, and researchers are constantly searching for more robust methods that alleviate or eliminate at least some of the complexities.

The topics addressed by Best in the chapter include: the nature of construction, mainly the lack of homogeneity across types of items and individual projects; comparison methods – a summary of previous studies and current exercises; the link between spatial and temporal cost comparisons, the Law of One Price; sources of construction cost data and their reliability; methods for converting international costs to a common base – purchasing power parity, ‘real’ exchange rates; comparability and representativeness of the components of cost comparison exercises; and a summary of the strengths and weaknesses of existing methods.

Chapter 14 by Hongbin Jiang

Jiang addresses the topic, ‘New trends in international construction’. He notes that international construction is in a state of transformation; the future will require innovation, collaboration, optimisation and an understanding of the trends that will shape the industry. He reviews the main concepts of international construction and analyses the current and future trends. Jiang notes that international construction has long been complementary to studies on international economics. He revisits the main analytical frameworks for international construction in the contemporary global market, and presents the current profiles in terms of growth capacity, market coverage, business modalities and sector presence. He proposes a new framework which has six dimensions: the endogenous catalysing factors (Catalyzer), the hindering factors (Hinderer), the ownership essentials (Owner), the regulatory factors (Regulator), the disruptive exogenous factors (Disruptor) and the synergizing factors (Synergizer). He uses this new CHORDS framework to analyse trends in international construction.

Jiang observes that the disruptions of technology, environmental issues, energy transition, and so on, have big implications for the long-term global trends including demographic
and social change, shifts of global economic power, rapid urbanisation, climate change and resource scarcity. He identifies six major trends which he expects to emerge in international construction: (1) consolidated connectivity in the physical domain, information and financial flows; (2) continued high-tech disruption in process transformation, smart facilities, and information and communication (ICT) expansion; (3) demanding resilience in environmental, operational and financial sustainability; (4) synergized diversification in business models, sector presence and financing modality; (5) improved standardization in technical standards, procurement and legal procedures; and (6) sophisticated oligopoly of firms and nations in the midst of the frictions of the trends in both globalization and deglobalization.

Jiang discusses three major current schemes: the Belt and Road Initiatives advocated by China from 2013; the Global Infrastructure Programme launched by UK Prosperity Funds in 2018; and the Blue Dot Network established by the United States government in 2019. Jiang analyses the potential future impacts of these schemes in the international construction arena. He makes proposals for further research and further development of the field of knowledge of construction economics.

Chapter 15 by Anita Cerić

Cerić writes on the topic, ‘Economics of trust in construction’. She notes that the thesis that trust is central to construction projects comes from both empirical research and theoretical foundations of related fields of social science, such as economics, sociology and psychology. However, much of the work in construction management studies trust empirically, without theoretical foundations in economics, sociology or psychology. Cerić provides an overview of the principal–agent theory (which is part of the new institutional economics) and its application to the construction management field. She notes that the theory provides a framework for the interplay of economics, sociology and psychology in research on the relationships between the project owner, the contractor and their respective project managers. According to the theory, information asymmetry occurs between project participants, which leads to communication risk. Trust minimises information asymmetry and it thus reduces the communication risk. Thus, building trust and creating a reputation for trustworthy behaviour is valuable for every project. In construction projects, the role of trust is even more important as non-contractual relationships outnumber contractual ones.

In the chapter, Cerić presents a framework for investigating trust. Trust involves project participants interacting at interpersonal and interfirm levels. Trust involved in interfirm relationships falls mainly into the domain of economics, but both sociology and psychology can contribute to the study; trust involved in intrafirm relationships relies chiefly on sociology, but economics and psychology are also relevant to its study; and trust involved in interpersonal relationships falls mainly in the domain of psychology, but both sociology and economics can also contribute to the study. Cerić suggests that research on trust in construction projects needs to focus on both empirical research and its theoretical foundation, and there should be a close relationship between researchers and practitioners which is conducive to the advancement of both theory and practice.
Chapter 16 by Edmundo Werna and Jeroen Klink

Werna and Klink address the topic: ‘The builders of cities: prospects for synergy between labour and the built environment’. They analyse labour in construction in the context of urban development, stressing the importance of research and policies on the connection between the construction workers who build cities and towns, and the settlements they produce. Werna and Klink note that the rapid urbanisation throughout the world is forecast to continue; thus, the already significant number of construction workers in urban settlements is due to increase. Construction is a major provider of employment in urban areas directly or indirectly, especially for the poor. Thus, the quality and quantity of employment in construction have a significant impact on urban development and urban poverty alleviation. Trends in urban development also have an impact on the construction industry and its workers. Werna and Klink point out both complementarities and gaps between construction economics and mainstream urban economics. Whereas mainstream urban economics works with concepts such as Marshallian economies of agglomeration, there is not much research on the strategic contribution of the construction industry to the generation of positive agglomeration effects in urban centres. Werna and Klink observe that changes in labour in construction are related to the rapid changes in the industry. Also, paradigms for urban growth and blueprints have emerged including the SDGs, especially number 11 (about cities) and number 8 (about employment), the New Urban Agenda of the United Nations, and the construction and urban agendas of the World Economic Forum.

Werna and Klink observe that given the labour–construction–cities nexus, the research questions are: Do these trends combine or clash? Is their mutual impact a vicious or virtuous cycle? What is happening in the interface between labour economics, construction economics and urban economics? Many challenges need to be better understood. Cities and towns have never had as much wealth and innovation as now. However, there are huge poverty deficits and socio-economic differences, in both the Global North and the Global South. It is not clear how the panacea paradigms of ‘smart cities’, ‘sustainable cities’ or ‘resilient cities’ will bridge the inequalities. Cities usually include the epitome of cutting-edge construction. The construction industry is embracing the 4th industrial revolution, with cyber-technology. Yet, there is no evidence that construction using the advanced technologies adopted will trickle down to the slum areas.

How do the challenges faced by urban construction workers impact on their capacity to deliver quality products? How are they rooted in urban development? What are the main features of the construction industry that are necessary to build the cities and towns according to the new urban paradigms? What is the necessary profile of the construction workforce to serve the industry and build the cities of tomorrow? Recommendations made by Werna and Klink of initiatives for promoting decent work in construction may be significant for urban development in general, and urban poverty alleviation in particular.

Chapter 17 by Samuel Laryea

In the chapter on ‘Economic principles of bidding for construction projects’, Laryea discusses economic principles and considerations influencing the bidding price of a construction project; the way that certain factors influence the economic behaviour of client and contractor in the bidding process; and some of the theories and principles that have been used to explain
bidding behaviour in construction. He notes that most contracts in the construction industry are awarded through a tender or bidding process used by clients to obtain an economic price from competing contractors. Bidding is a complex process of interaction and exchange between a client and the competing contractors. The bidding approach of contractors is influenced by both micro-level economic needs and macro-level economic factors. While bidding contractors aim to cover their costs, they also try to gain a competitive advantage with their pricing, balancing their pricing needs with other realities that may constrain perfect rationality in deciding the final price. The microeconomic theory of the behaviour of individual competitive markets suggests that a bidding price may depend on the market in which it takes place, and a firm’s particular circumstances.

Laryea notes that a contractor’s bidding process comprises: the commercial review process, which helps to make a bid/no-bid decision; estimating, where the actual project costs are considered; and the adjudication process, where the directors of a firm take a commercial view of the estimated cost in the context of the firm’s particular circumstances, market conditions and risk. The directors ultimately try to pitch the bidding price between cost and value in order to win the work. Laryea highlights key economic considerations at play at each stage of the bidding process. The relationship between cost, price and value ultimately influences the final bidding price that is negotiated and agreed between the client and contractor. In closing, Laryea highlights the increasing adoption of more strategic procurement and contracting approaches by clients to engage contractors in longer-term partnering relationships to achieve better value and outcomes. Current global economic conditions will increase clients’ demand for better value and improved outcomes. This requires innovative and more efficient supply models from contractors. Further studies should develop better understanding of the leadership role of the client in achieving project economy and ways to enhance project information, communication among parties, pricing data and procurement processes required to develop and achieve accurate, cost-effective and reliable bids.

Chapter 18 by Ron Watermeyer

Watermeyer writes on the economics of ‘Procurement and delivery management’. He notes that the construction industry delivers its products in a project-specific environment, which on every project involves: (1) different combinations of funders, clients, professionals, site conditions, materials and technologies, general contractors, specialist contractors, skills, workforces, client requirements and stakeholders; and (2) risk events that can significantly impact on project outcomes during the protracted delivery process. Watermeyer notes that client procurement and delivery management practices (the client buying functions) are central to the performance of the construction supply chain and have a direct impact on the realisation of the client’s value proposition for the project, that is, the promise of measurable benefits. He states that procurement is the process which creates, manages and fulfils contracts, while delivery management is the critical leadership role played by a knowledgeable client to plan, specify, procure and oversee the delivery of projects. Delivery management is required to translate the value proposition associated with a business case into project outcomes. Watermeyer notes that there is often a significant gap between what was planned and what was achieved. Research has found that the root causes of project failures commonly relate to a lack of governance and poor procurement and delivery management practices, all of which are under the control of the client.
Watermeyer describes the role of the client, examines the reasons for poor project outcomes, and outlines client practices aimed at consistently delivering value for money. Such practices focus on client governance and organisational ownership, the provision of chief executive officer (CEO)-level client leadership, and strategic and tactical approaches to procurement, all of which support effective implementation.

Chapter 19 by Suraya Ismail

Ismail discusses the topic, ‘The economics of housing policy and construction: developing a responsive supply sector’. She notes that in their housing policies, most nations attempt to overcome the problems of severe housing shortages and lack of affordability created by prevailing market conditions. The underlying assumptions of utility-maximising households and profit-maximising firms create market inefficiencies such as speculative purchases, sub-standard housing, high vacancy rates, and rapid house price escalations leading to decreased affordability for a significant proportion of society.

Ismail observes that housing affordability is a function of both house prices/rent and income within a specific housing market area. This infers an analysis into the demand and supply of local housing conditions which is shaped by a country’s social and institutional context. She notes that the policy response usually covers: (1) the demand side, for example, tenure policies, taxation, interest and mortgage rates; and (2) the supply side, such as land and property rights, spatial planning and the firms in the construction industry. Ismail provides evidence to show that enhancing the efficacy of the supply side will render the provision of housing generally more affordable to different segments of society.

Ismail proposes that the problem of inadequate supply of housing be framed from the perspectives of both the institutional arrangement and the governance of firms in the construction project coalition. This involves analysing the national business systems as manifested by the temporal clustering of firms within the procurement routes. She suggests that improvements at the micro-analytical level of construction projects will increase the general affordability, and hence enhance the production and consumption of houses.

Chapter 20 by Ezekiel Chinyio, Sukhtaj Singh and Subashini Suresh

Chinyio, Singh and Suresh discuss ‘A review of stakeholder management in construction’. They note that many organisations would have different interests in the operations or projects of a particular firm. When these interests do not align with those of the firm or its projects, there would be a potential for covert or overt conflicts which could manifest as opposition, hostility, sabotage, antagonism, and so on. Chinyio, Singh and Suresh suggest that the costs and time consequences of stakeholder management impinge on the economics of an organisation and thus the industry. They note that stakeholder management initially gained prominence in business management, and subsequently attracted the attention of construction and other disciplines. They point out that many scholars attribute the modern formalisation of stakeholder management to Ronald Freeman, but its art is part of general human relations at individual and corporate levels. Stakeholder management is now entrenched in organisational developments and practised overtly or covertly in negotiations, dispute resolution, leadership functions, and so on.
Chinyio, Singh and Suresh note that a threefold theory of stakeholder management is commonly reported: the descriptive, instrumental and normative. Strategies, tactics and tools for stakeholder engagement are being deployed, and these include the use of information technology (IT). Stakeholder management continues to gain recognition in construction practice in such as in procurement and in contracts and their administration. For instance, the New Engineering Contract (NEC) promotes stakeholder management through its risks and issues management procedure. Chinyio, Singh and Suresh suggest that the stakeholder management phraseology will likely appear increasingly in contracts, procurement and other construction practices. They observe that while stakeholder management still faces some challenges, some enablers are enhancing its implementation. Chinyio, Singh and Suresh suggest areas of future research on stakeholder management, including the assessments of the time spent on it, the cost of its implementation, its tangible and intangible benefits, and the role of technology in its deployment.

Chapter 21 by Weisheng (Wilson) Lu and Meng Ye

In the chapter on ‘The global construction market’, Lu and Ye note that economic globalisation, trade liberalisation, advanced technology, fast transportation and convenient communication have all catalysed the globalisation of construction. Their aim in the chapter is to provide an overall picture of the global construction market. Lu and Ye start by clarifying some of the concepts and terms, such as whether construction is a sector or an industry; the term ‘architecture, engineering and construction’; whether construction makes products or provides services; and market segments and geographic dispersal. They then empirically describe the historical development and status quo of the construction market from a global perspective. Lu and Ye note that global construction has developed into a massive market worth trillions of dollars, encompassing the developed world as well as hotspots in the emerging countries.

Lu and Ye observe that a considerable portion of the global market is occupied by contractors who ‘follow the money’ to new continents for corporate growth and to minimise the risk of vicissitudes of individual markets. They note that there is a clear tendency for these firms to expand to other continents or sectors through vigorous business practices such as mergers and acquisitions, but the outcomes are mixed. In concluding, Lu and Ye’s discussion focuses on the future of the global construction market. They suggest that the market is now confronting great uncertainty triggered by the rising populism, increasing xenophobia, and distrust of globalisation, which are further exacerbated by the Covid-19 pandemic. Lu and Ye note that there must be a ‘new normal’, but no one knows what it will look like, and how it will affect the global construction market.

Chapter 22 by Albert P.C. Chan and Emmanuel Kingsford Owusu

Chan and Owusu discuss ‘Relational impacts of corruption on the procurement process: implications for economic growth in developing countries’. They note that the economic state of a nation is influenced by both micro and macro indicators, including government spending. With the increasing global demand for infrastructure projects and housing, governments are often pushed to allocate a considerable amount of resources for such spending, which is estimated to amount to at least 30 percent of the gross domestic product (GDP) of developing countries. Chan and Owusu note that such a high budget allocation often renders
public procurement processes vulnerable to corruption, which may increase the overall public expenditure significantly, either directly or indirectly. In the chapter, they examine two critical indicators of corruption, which pose a significant threat to economic growth: (1) the proneness of the procurement activities to corruption; and (2) the criticality of the causal factors of corruption and their impact on the procurement process.

Chan and Owusu use two non-probability sampling techniques (that is, purposive and snowball) to secure the participation of 62 experts involved in construction-related works in the context of developing countries. The findings from Chan and Owusu’s study revealed that the leading causes of corruption were: personal greed, inadequate sanctions, inappropriate political interference and lack of rigorous supervision. Network analysis showed that the overall impact exerted by the causal factors is highly critical at the contract stage, the contract administration stage and the post-contract stage.

To Chan and Owusu, their chapter contributes to the enhancement of the understanding of the critical causal factors that instigate corruption during the different phases of the procurement process. They also note that their chapter reveals the critical activities and stages of the procurement process that are most affected by the established causal factors. Chan and Owusu believe that their findings provide an insightful discourse that will be valuable to project stakeholders and policy-makers in developing countries who seek to mitigate or eradicate corruption in all its guises.

Chapter 23 by Chimay J. Anumba and Esther A. Obonyo

Anumba and Obonyo discuss ‘Economic considerations in the procurement and deployment of construction informatics applications’. They note that the construction industry has witnessed a significant increase in the uptake of construction informatics applications. From being notoriously slow in the deployment of emerging information and communication technologies, the industry is now leveraging new applications in the construction project delivery process.

In the chapter, Anumba and Obonyo explore the economic considerations in the procurement and deployment of these applications. They start with a brief background on the nature of the construction industry and the adoption of these technologies in the construction industry. This is followed by an overview of current and emerging technologies that are of interest to the industry. Anumba and Obonyo then discuss at length the specific economic considerations in procuring and deploying these technologies, including in-house development, off-the-shelf solutions, costs, training and return on investment. They then draw conclusions on what construction organisations should do to ensure that they maximise the benefits of their technology investments.

Chapter 24 by George Ofori

In the final chapter of this book: ‘The future: new directions of construction economics research’, Ofori provides a brief summary of the book and considers some issues which can be further studied in order to contribute to the development of construction economics. He suggests that whereas construction economics is an important subject owing to the strategic role of the industry it studies and builds knowledge on, the subject has not developed significantly; it has been left behind by many other subfields of economics of a similar age. Ofori outlines the aspects of construction economics which require to be explored in order to develop the field.
After considering various possible ways, he presents a path towards a better future for construction economics. Ofori stresses that progress will require a systematic and concerted effort, that certain prerequisites should be in place, and that leadership and action by all researchers in the field will be needed. Ofori identifies some possible actors in this process of development.

**Categorising the Subjects of the Chapters**

Construction economics is generally divided into three areas: construction industry economics, construction company economics and construction project economics. Table 1.1 presents a categorisation of the subjects of the chapters of the book into these three areas, and another ‘temporary’ general category.

**CONCLUSION**

The preview provided by the synopses of the chapters presented in this introduction shows that, taken together, the chapters, which are authored by accomplished researchers on the particular topics, provide a comprehensive coverage of construction economics in terms of the breadth of subject and the time period. They not only present the state of the art of the field of knowledge, but also they provide a window to the future of the subject. The book shows that the subject has an illustrious history, where it was useful in guiding the allocation of scarce resources in the provision of both public and private buildings and items of infrastructure, and was also influential in governance, professionalism and enhancement of the quality of life. It also shows that construction economics has some way to go to become a recognised field of knowledge. Researchers and students of construction economics will find this book a very useful resource.
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