Preface

The roles played by the competent professionals involved in construction are paramount to the achievement of project objectives at the completion of each project. This has motivated stakeholders concerned with construction projects to keep learning and developing their skills to better offer services that will enhance the performance of projects. To strike a balance among various objectives of infrastructural development, construction professionals have resorted to embracing the use of information technology and digital tools to improve every aspect of construction from reconnaissance and inception to completion, usage, maintenance, and final stage. The digital tools are basic elements of the Fourth Industrial Revolution (4IR) such as gamification, machine learning, artificial intelligence, and augmented reality, among others. Adopting these in the construction industry is termed construction 4.0.

There have been many sustainable practices that have supported the effective production of infrastructure. One such sustainable practice is information technology that has been incorporated into constructional practices. Sustainable construction provides a sustained framework that is centred around an environment that is utilized and maximized to the highest possibilities. It encompasses the introduction of various measures to make preventive or corrective applications to infrastructural development for the infrastructure to be able to provide the service it is due for within the expected life cycle. Sustainable construction processes have been applied in construction projects across the world, in both developed and developing countries, to improve the economic situation through the set out means. This is however not the case in some under-developed countries where there is little or no such practice; these countries work more towards construction that satisfies the immediate wants and needs of the clients and meets the supply of their basic infrastructure needs.

In order to raise the awareness of the general populace regarding its further implementation along with the benefits that accrue with it, it is necessary to the various drivers, concepts, and steps by which its nearly total implementation would benefit the construction industry significantly. This book therefore provides the readers with an understanding of numerous concepts, benefits, and practices that the adoption of the 4IR technologies would bring when working

towards a sustainable construction. The adoption of 4IR principles for sustainable construction is termed sustainable construction 4.0.

As digitalization continues to advance progressively, the pressures on stakeholders in the architecture, engineering, construction, and operation (AECO) industry to revamp and restructure their activities and deliveries become increasingly urgent. This research book on sustainable construction in the era of the 4IR explains the importance of various digital tools, also known as 4IR principles or ICT tools in the achievement of sustainable construction, hence the term 'sustainable construction 4.0'. The expected readers of this book include built environment scholars; government agencies (public clients) such as parastatals, ministries, and other arms of the government that are concerned with the infrastructure and other related developmental projects; corporate agencies involved in planning, execution and infrastructural management; individual clients who desire to have a sustainable project; owners of construction projects; policy makers who are concerned with improving the quality and performance of construction projects; construction professionals charged with the responsibilities of monitoring and developing construction works; bodies and boards involved in monitoring and regulating the professionals; building contractors in various categories of project execution in building, civil, and industrial engineering areas; and financiers of construction projects, including banks, insurance companies, bond companies, and loan firms, amongst others.

The book adopts various standards and concepts in bringing out the ways by which the 4IR technologies could assist in achieving construction sustainability. These concepts are divided into parts/sections with various chapters that are all expressed in terms of the 4IR fusion in the achievement of sustainable construction. Each of the chapters starts with an introduction which introduces the knowledge relating to the concept to be discussed and ends with a conclusion that summarizes the major highlights of the concepts and their potential in support of sustainable construction. As this is a research book, references are provided at the end of each chapter for additional information about the subject. An index of important and key terms is also provided to enable a swift check of an identified area of study.

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projects including banks, insurance companies, bond companies, and loan firms, amongst others.

The book can be adopted as research guide, framework, and note on material topics relating to sustainable construction, the concept of sustainable projects, project performance indices, and sustainable developments in the construction industry. We hope that all readers of this book will find it educating, interesting, and impacting in shaping their knowledge in understanding the 4IR technologies for sustainable construction.

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