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A Paradigm Shift in Construction Management Embracing Digitalization as an Effective Strategy to Achieve Sustainability Improvements

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Abstract
Construction is a complicated industry that demands the integration of many abilities to complete a vast number of jobs and procedures. It is also characterised by high capital investment levels, lengthy delivery times, numerous hazards and uncertainties. If deadlines for cost, time and quality are to be fulfilled, then careful coordination of all of these is required. Nonetheless, the construction sector is known for performing poorly on sustainability metrics. Construction projects consume a lot of resources and materials, generate a lot of rubbish and contribute significantly to energy production. It is possible to enhance building efficiency on the basis of sustainability and business outcomes by digitizing the building-related issues with practices. Viability of market-driven economic models. Ultimately, findings suggest that strategic collaborations spanning.

Keywords: Digitalization, Sustainable, Construction and SDG.

Introduction
One of the biggest segments of the world economy is the building sector Construction-related spending makes up 13% of worldwide spending and the industry's total yearly income is anticipated to be over $10 trillion, with growth potential to reach $14 trillion by 2020 The construction sector contributes an additional $2.86 to the GDP of construction for every $1 in GDP, making it one of the sectors with the largest economic spillover benefits. Because of this, the national economy will greatly benefit from even a small improvement in the sector Increased sustainability, more accessible prices, more options, greater information and improved usability and profitability for present day companies and expenditures are just a few of the ways that digitalization may benefit any industry. Improved organizational structures, reduced expenses, improved communications, increased customer satisfaction and more are some of the additional advantages of digital technologies. Improvements in all areas economic, social and ecological help create a more sustainable building sector; in fact, these are interrelated Owing to these possibilities, digitization has become a key factor in sector transformation. The argument that environmentally friendly building methods are too expensive has long been used to oppose such initiatives. Nevertheless, data suggests that Australia might benefit from an additional $25 billion in value each year from digitization between 2017 and 2027.

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The Construction Industry's Digital Transformation
From technological developments in communication and information to lean approaches, developments encompass a broad spectrum of revolutionary systems. These solutions reduce the energy use and emissions from industrial processes, from building component production to building construction, operations and decommissioning. Their automated solutions and underlying intelligent operating platforms can greatly minimize the detrimental impacts of traditional systems and procedures on carbon emissions, pollution and even possibly dangerous or unfair working conditions through task output optimization. Due to construction businesses' efforts to address these

difficulties, the sector is witnessing an increasing shift favouring the adoption of modern technology in construction.

The Need for a Strategy for Digital Transformation

It is far more difficult to digitalize an established business than to launch a new digital enterprise Therefore in order to help construction companies establish the primary goals, action plans, pertinent actions and methods of assessment, an appropriate strategy must be developed. This tactic alters a number of crucial components and aspects of business, including as operations, stakeholder relations, business processes, customer experience and networks. Without a plan for digital transformation, a business ends a few small-scale, isolated operations that have little impact and squander vital resources.

Obstacles in Creating Such a Plan

Due to the significance of the digital revolution for institutions, industries and corporations, a growing body of knowledge has been created. But much of the research that has already been done only covers a small number of important aspects and dimensions of digitalization, making contemporary studies lacking in a comprehensive approach to creating digital transformation plans. The four determinants of the digital evolution are size, pace, scope, along with their worth.

Factors to Take into Account While Creating a Digital Transformation Plan

The main components of digital conversion were the subject of numerous studies that sought to explain them. All references to products, business activities and sales processes are included within the scope of our digital business plans. The relationship between digital components and their businesses, sectors, IT infrastructure and the outside world is outlined in the scope of digital business strategies.

Methods for Formulating a Strategy for Digital Transformation

For digital rotation, two key strategies are considered: Top-down and lower-up. The first, many of the features that are moving, which is involved in doing new jobs to change business models. Changing the current value chain and money modeling is the main purpose of this long e-strategy. Using equipment and techniques are expelled by the technology, which is also known as a technology, which is intended to improve or improve. This strategy aims to promote gradual increases in staff accountability, productivity and customer pleasure and experience. The most productive of the advertisement on the main features of the organization, including the procedures and the meaning of weak direction to create digital processing strategies. A corporation may experience negative effects from the bottom-up method, such a decline in productivity. The negative effects are avoided and changed the speed by the way that drives the strategy or above. However, there are hazards associated with creating a digital transformation strategy via a top-down approach alone. These include a greater chance of setting unattainable goals, a lack of staff support and a lack of focus on current practices, structures and initiatives. The literature suggests combining these two strategies, with the bottom-up strategy predominating, to address the issues with digital transformation and expedite the digitalization process**.** Managing the entire portfolio and business units is equivalent to corporate strategy.

The Methodology for Formulating a Digital Transformation Plan

Establishing a strategic direction in accordance with digital guiding principles is the first step in developing a digital transformation plan. Digital vision, mission, policies, aims and terminologies are the five elements that make up this. Creating a strategic business vision for the suggested digital organisation is the first step. Long-term objectives and immediate resources should be taken into account in the strategic vision. Value generation, product and service digital transformation or both can be the goals of a digital vision. Based on business strategy and objectives, vision should also include digital use cases and business tools.

Methodology

Following work plan (Figure 1) has been adopted to reach the deliverables. Systematic approach and work breakdown structure have been implemented to achieve targets.

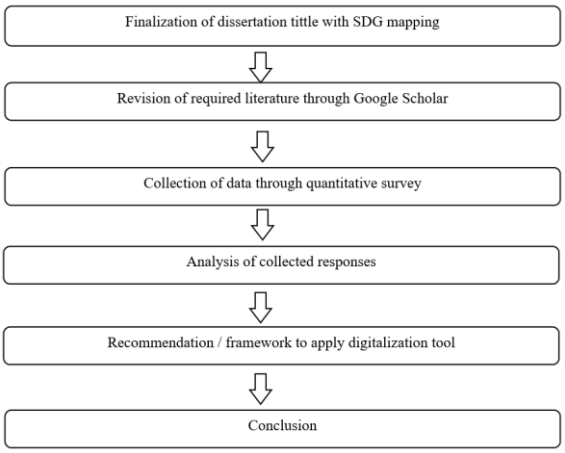

Fig. 1: Systematic work plan to study

Data Collection Process

The four categories listed below (Table 1) are set up to gather information from participants, including SDGS (Sustainable Development and Development). The United Nations (UN) launched its 2030 agenda in 2015 for sustainable progress as an important step towards socioeconomic progress. The agenda included 231 different indicators, 169 destinations and 17 goals for sustainable development (SDGs). The SDGs offer the building industry a new outlook on how to translate global community demands and goals into workable, profitable solutions. This report will help the construction industry efforts to achieve sustainable development goals from 2030. A total of 150 individuals were contacted and interviewed. The study approach that was selected was an online questionnaire. Because of these choices, we were able to collect a significant amount of data at a reasonable cost. The ability to contact with several construction organizations simultaneously, obtain data rapidly and collect a variety of easily interpretable and explicable data were further advantages of using this study methodology.

Table 1: SDG mapping with category assigned

S. No.	Category	SDG mapped
1	Effectiveness and quality of work	SDG7 (Affordable & Clean Energy)
2	Comfort of work	SDG8 (Decent Work & Economic Growth), SDG17 (Partnerships for Goals)
3	Tools for digitization and their use	SDG11 (Sustainable Cities and Communities), SDG7 (Affordable & Clean Energy)
4	Sustainability influence	SDG11(Sustainable Cities and Communities)

Table 2 describes the framework of questions with assigned category to collect data from respondents. Respondents were Academicians, Engineers, Consultants and superannuated persons.

Table 2: Questionnaire Survey details with assigned category

S. No	Question	Category
1	How did you think the quality of the work was impacted by not having direct touch with clients or coworkers?	Efficiency and caliber of the work
2	Have digital means of communication made your work more efficient?	Efficiency and caliber of the work
3	How do you feel about the design process being digitized?	Efficiency and caliber of the work
4	Which IT solutions did you utilize at work that allowed you to operate remotely and communicate with clients remotely?	Digitization tools and their application
5	Does sustainable development benefit by digitalising design and building sector?	Sustainability influence
6	Have you felt more secure working from home?	Workplace comfort
7	Did you find working remotely more pleasant than working stationary in a design office or other workspace?	Workplace comfort
8	Have some of the solutions employed during remote work persisted even if most organizations have returned to stationary work?	Digitization tools and their application
9	In your opinion, how comfortable is it to work during the COVID-19 pandemic? During the epidemic, has remote work improved or worsened working conditions?	Workplace comfort
10	Were the remote communication means you and your employer utilized before to the epidemic to communicate with the client?	Digitization tools and their application

Data Collected Summary with Solution to Facilitate Digitalisation

Better project delivery or improving project results and adding value for stakeholders, is the ultimate purpose of digitization in construction projects. The integration of digital technology into construction projects (Table 3) is a social-technical innovation system that alters the relationships between actors, resources and activity links. As such, the success of digitalization hinges on how well organizational and technical solutions work together. In the absence of organizational flexibility, implementing digital technology could result in high expenses and not provide the anticipated or even higher project benefits.

Table 3: Themes to promote digitalization

S. No	Solution to facilitate digitalization	Majority of responses received
1	Do more	Respondents declared receiving more orders while working remotely.
2	Increased output	More work could be done remotely, according to respondents.
3	Saving out of fuel use	Because they did not have to travel to their design office, employer or private office, respondents reported using less fuel.
4	Reduced use of fossil fuels	Respondents expressed their opinion in reduced nonrenewable resource use as a result of office buildings and industrial zones using less electricity.
5	Reduced use of resources in businesses	Respondents stated that there was a decrease in the use of utilities (water, gas and electricity) as a result of their absence and that of other workers at businesses and design offices.
6	A decrease in the quantity of harmful substances emitted into nature	According to the respondents, fewer hazardous substances were emitted into the environment as a result of working remotely (vehicle exhaust emissions, boiler exhaust fumes and heating industrial premises).
7	Individual savings	Respondents reported financial savings in their own finances as a result of not having to commute order and purchase meals at work or make frequent outings from the office.
8	Reduced tension	The respondents stated that they had less stress when working from home.
9	Job performance	According to the respondents, projects completed remotely were of higher quality.
10	choice-making	Respondents reported increased decision-making efficiency.
11	Communication with the customers	Faster customer contact was reported by respondents.

12	Communication with the project members	The participants reported improved communication and collaboration with the project team.
13	Communication with the service providers	Improved communication with contractors was reported by respondents.

Digitalization to Achieve UN SDGs

Digital technology could accelerate almost every UN Sustainable Development Goal (SDG). The most important innovation pillars of SDG 9, the development of resistant infrastructure and fair and sustainable industrialization, are supported by digitization. By implementing efficient and fair price infrastructure and services, nations can engage in the digital economy and improve their economic competitiveness and wells. With a strong impact on the field of financial integration, reducing poverty and improving health, most of the 42 countries (LDCs) have made considerable progress in SDG 9. They have the potential to reduce poverty and hunger, improve health, create new jobs, mitigate the consequences of climate change, increase energy efficiency and create more sustainable cities and communities.

Marginalized groups, including as women and girls, the elderly, people with disabilities, indigenous communities, the economically disadvantaged and citizens of landlocked developing nations, small island developing states and LDCs, must be included in the emerging digital society in order to achieve all 17 SDGs. The primary objectives of digitalization are to increase and promote digital inclusivity, stimulate investment in ICT and telecommunications networks and create an enabling environment. Because more people are accessing the internet to complete their schooling, jobs and social media during lockdowns and confinement, the COVID-19 pandemic has increased connectivity. However, there are now more obstacles in the way of accomplishing the SDGs due to the pandemic and the slowing economy. The whole community has promised to "build back better" by taking lessons from the pandemic's worldwide struggle.

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