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A MATURITY MODEL FOR DIGITALISATION OF SMALL AND MEDIUM ENTERPRISE CONTRACTORS IN THE SRI LANKAN CONSTRUCTION INDUSTRY: A FOCUS ON CLIENT AND TECHNOLOGY DIMENSIONS

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ABSTRACT

Small and Medium-Scale Enterprises (SMEs) tremendously contribute to Sri Lanka's economy, providing employment opportunities and contributing to the total Gross Domestic Product of the country. However, many SMEs underperform due to limited digital technology use. The COVID-19 pandemic accelerated digital adoption, highlighting the potential for significant competitive advantages through digital transformation. This research aimed to identify key digitalisation aspects relevant to small and medium-scale construction firms and establish a mechanism for assessing the maturity of digitalisation by proposing a digitalisation maturity model tailored to SMEs operating within the Sri Lankan construction industry. The maturity model was derived based on the findings from a comprehensive literature review and a focus group discussion that was composed of ten construction professionals. The primary dimensions of the model include Client, Technology, Operations, Organisation and Culture. However, this manuscript presents a detailed study carried out for Client and Technology dimensions only. Within these two dimensions, nine sub-dimensions and 41 digital criteria were identified, which can be employed for the assessment of digital maturity within organisations.

Keywords: *Digital Maturity Model; Digitalisation; SME Enterprise Contractors; Sri Lankan Construction Industry.*

1. INTRODUCTION

The construction industry, which is a major contributor to the economies of countries across the globe, was affected by the COVID-19 pandemic due to numerous restrictions imposed, such as social distancing, curfews and travel restrictions. leading to delays, disruptions, and uncertainty on construction projects, while forcing the industries to adopt more sophisticated technologies to tackle the reduced workforce on job sites (Adhikari &

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Poudyal, 2020). In the business world, the main sufferers of the COVID-19 outbreak were Micro and Small Enterprises, especially in developing countries like Sri Lanka due to the limited use of digital technologies (Bai, et al., 2021). Hence, the disruptive nature of COVID-19 has compelled many industries to promptly transform their business processes and operational practices using digital technologies, communication platforms, and information systems (Bartik et al., 2020; Watermeyer et al., 2020). Conversely, the employees had to adapt to new technology within a short period of time to perform their work. For example, work-from-home setup, video conferencing, digital payments, new computer applications, likely software were needed to be adopted.

Digital transformation offers numerous benefits in construction sector. According to Parusheva (2019), these include enhanced productivity and efficiency, accelerated construction activities, shortened project deadlines, and improved adherence to schedules. Aghimien et al. (2018) emphasise that digital transformation also enhances quality, safety and the precision of construction documentation, alongside improved building design. Furthermore, digitalisation reduces construction costs and given that the construction industry is a major consumer of raw materials, digitalisation plays a crucial role in optimising global resource use through digital platforms for material supply and smart logistics and maintenance of construction sites (Schober et al., 2016). Additionally, construction workers spend approximately 30% of their time on core tasks, with the remaining 70% allocated to tasks such as material handling, site cleaning, and equipment retrieval. Utilising digital tools such as supply management software can significantly improve efficiency by ensuring timely material delivery, thereby reducing the need for storage and rearrangement efforts (Schober et al., 2016).

However, the ability of SME construction firms in Sri Lanka to mobilise around and sustain digital transformation is questionable. It is essential to identify the specific aspects of digitalisation available to these firms and categorise them into maturity levels to assess their digital maturity. Furthermore, understanding the current digital maturity level of an SME construction firm is crucial for guiding its development towards higher levels of digital transformation. Therefore, this research aims to fill this gap by identifying the key aspects of digitalisation in SME construction firms in Sri Lanka and establishing a mechanism to assess and understand their digital maturity through a Digital Maturity Model. This model will be focused on 2 dimensions: Client and Technology dimensions. Ultimately, this will help enhance the performance and productivity of the construction industry.

2. LITERATURE REVIEW

2.1 SMALL AND MEDIUM-SCALE ENTERPRISES (SMES)

As per the National Human Resources and Employment Policy published by the Secretariat for Senior Ministers, SMEs account for 80% of all businesses. SMEs are established in all sectors of the economy, primary, secondary, and tertiary and provide employment for persons under skilled, semi-skilled and unskilled categories. The SME sector is considered the core segment of economic development in Sri Lanka. More than 75% of the total number of enterprises falls within the SME sector, providing employment opportunities of 45% and contributing to the total Gross Domestic Product of the country by 52% (Ministry of Industry and Commerce, 2015)

The SMEs can be defined considering parameters like the number of people employed, the amount of capital invested, and the amount of annual turnover. Bolton (1971, as cited in Ranadewa, et al., 2018) also stated the parameters that can be used to define SMEs qualitatively/economically, namely, having a relatively small share of its market, being managed by its owners or part-owners in a personalised way, not being part of a larger enterprise, and being free from outside control in taking their principal decisions. In Sri Lanka, a business is considered an SME if its number of employees does not exceed 300 individuals and if its revenue does not exceed 750 million LKR (Export Development Board, 2021). According to the National Policy Framework for Small Medium Enterprise Development published by the Ministry of Industry and Commerce as indicated in Table 1, medium-scale enterprises in the manufacturing sector are made up of 51-300 employees, whereas in the service sector it is 51-200 employees. Furthermore, small scale enterprises, both in manufacturing and service sectors, are made up of 11-50 employees.

Table 1: Defining SME enterprises
(Source: National Policy Framework for Small Medium Enterprise Development by the Ministry of Industry and Commerce, 2015)

Sector	**Size**		
	Criteria	**Medium**	**Small**
Manufacturing Sector	Annual Turnover	Rs. Mn. 251 - 750	Rs. Mn. 16 - 250
	No. of Employees	51 - 300	11 - 50
Service Sector	Annual Turnover	Rs. Mn. 251 - 750	Rs. Mn. 16 - 250
	No. of Employees	51 - 200	11 - 50

According to Table 1, C2, C3 graded contractors under CIDA grading can be considered medium scale enterprise contractors while C4, C5, and C6 graded contractors can be considered small scale enterprise contractors (Ranadewa, et al., 2018).

2.1.1 Characteristics and Challenges Faced by Construction SMEs

Agwu and Emeti (2014) identified that in developed and developing countries, SMEs employ most of the workforce and are responsible for income-generating opportunities while declining poverty. With the construction industry being one of the riskiest business environments in the world, the SMEs face many difficulties and challenges. Ofori and Toor (2012) explain that the risks faced by SMEs in developing countries are the lack of job continuity due to the project-based nature of the industry, the competition generated by a large number of similar enterprises offering the same service, the expectations of stakeholders. In addition to these, Rymaszewska (2014) identifies inadequate financial resources, low levels of technology, shortage of skilled labour, the lack of entrance to international markets, and uncooperative government laws as some other problems faced by SMEs. The barriers for small enterprises in the Sri Lankan construction industry to survive in the competitive construction industry have been identified as employee turnover, application of new technology, government regulations, financing, contractor responsiveness to environmental issues, project management, and knowledge transfer. Hence, these firms need support from the government or any outsiders to upgrade existing technology, improve product quality, improve managerial skills and explore market opportunities (Ramawickrama, 2016).

2.2 DIGITALISATION

Digitalisation (digital transformation), a significant topic for companies in all industries, has become a critical element due to the development of technology. Digital transformation is the integration of digital tools to enhance processes and make them more efficient. The technologies have advanced significantly over the last few years to support digital transformation and have been designed to encounter specific construction requirements. The five key trends that reinforce digital transformation in the construction industry currently are BIM, digital documentation, mobile-first tools, process automation, and data software (McManus, 2022). Moreover, McKinsey Global Institute also identifies five trends that will shape construction and capital projects, as indicated in Figure 1, which are more similar to what McManus (2022) has identified.

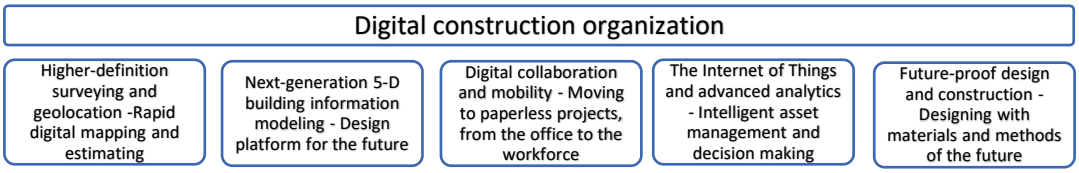


Figure 1: 5 trends that will shape construction and capital projects: McKinsey Global Institute (2016)

Relevant to the above, Walch (2020) also identifies the usage of AI-based technologies in construction work, like AI and machine learning systems to process data to make future predictions to assist in bidding on new projects. Additionally, within construction sites, autonomous drones and rovers equipped with high-quality cameras can be used to take photographs, scan the sites, and transport materials. The scanned images can then be compared with BIM models, 3D rendered drawings, project schedules, specifications, and estimates to inspect the quality of work and to assure the process adheres to the expected standard (McManus, 2022). Likewise, with advanced software, deep-learning algorithms can be used to identify and report errors in work executed, and technologies, such as Telematics, Internet of Things (IoT), Virtual Reality (VR), Augmented Reality (AR) and 3D printing can be identified as new approaches for digitalisation (Adhikari & Poudyal, 2021). Moreover, Schober et al. (2016) identified additional technological advancements in the construction sector, such as the utilisation of digital platforms for raw material procurement, the deployment of digital tools for efficient logistics, and site maintenance that facilitate just-in-time material delivery and reduce storage and rearrangement efforts. With the help of related sensors and signals within intelligently connected construction machines, the time for the coordination of equipment like hoists, cranes, vehicles can be optimised. Hence, it is crucial for construction contractors to consider digitising their organisations by developing digital road maps and also partnering with technology firms (Agarwal, et al., 2016).

2.3 DIGITAL MATURITY

Lahrmann et al. (2011) defines the term '*Maturity' as "a state of being complete, perfect or ready and is the result of progress in the development of a system*". Further, Chanias and Hess (as cited in Teichert, 2019) describes digital maturity specifically reflects the status of a company's digital transformation. Hence, this describes a company's efforts in achievement of transformation and the preparation of the system to be more competitive in further development of the digital environment. The study on digital maturity and corporate performance of companies by Eremina et al. (2019) identified factors such as

technology, computers and software represent the fundamentals of the digitisation process and further digital maturing.

2.4 MATURITY MODELS (MM)

A maturity model described by Succar (as cited in Adekunle, et al, (2022) is said to be a collection of process maturity levels from the starting point of "immaturity" to highly mature. MMs are further elaborated by Adekunle, et al, (2022), "*an assessment tool to identify the effective level of a system and suggest the solutions by recognising the required capabilities to encounter the optimum effectiveness*". Moreover, Lasrado (2015) identifies five components in a maturity model as maturity levels, dimensions, sub-categories, path to maturity, and assessment questions which are usually directly linked to the sub-categories with the maturity score or level visualised usually as a graphical representation.

2.4.1 Digital Maturity Models (DMM)

DMMs aid organisations in understanding the status quo in order to achieve digital transformation in a systematic way. As Berghaus and Back (2016) describe, DMMs are composed of dimensions and criteria that describe areas of action and measures to be taken at several levels of maturity. A dimension, as described by Bruin et al. (2015) is a specific, measurable, and independent component reflecting a key aspect of digital maturity and defines an area of action. Most importantly, Teichert (2019) has identified common digital maturity areas of the existing MMs in their study as: Digital Culture, Technology, Operations & Processes, Digital Strategy, Organisation, Digital Skills, Innovation, Customer Insight & Experience, Governance, Vision, Digital Ecosystem, Leadership, Compliance & Security, Products & Services, and Business Model.

2.4.2 Requirements of SME for Digital Maturity Models

The research conducted by Schallmo et al., (2020) has identified various dimensions from the responses given by SMEs to develop a maturity model as represented in Table 2. Accordingly, the most required dimensions are processes, digital strategy, products and services, technology and customer respectively. Therefore, Technology and customer/ client dimensions will be focused in the digital maturity model due to the limited time frame for the research.

Table 2: The dimensions required in digital maturity models agreed by SMEs (Schallmo, et al., 2020)

Requirements / Dimensions	SME1	SME2	SME3	SME4	SME5
Digital strategy		**		**	**
Partner interface			*	**	**
Company's processes	**		**	**	**
Employees	*	*		*	**
Technologies used		*	*	**	**
customer interface		*	*	**	**
products and services		*	**	**	**

** Strong need for further actions (top priority),
* Need for further actions, (Blank) - No immediate need for further actions

2.4.3 Phases of Developing a Maturity Model for Digitalisation of SMEs

Bruin et al. (2005) implemented a development framework for maturity models and recognised 6 phases for the development of maturity models as:

Figure 2: Model development phases (Bruin, et al., 2005)

2.5 DEVELOPMENT PHASES OF CONCEPTUAL MODEL

2.5.1 Scope

In this phase, the outer boundaries of the digital maturity model were defined by clarifying its purpose and limitations. The audience was identified as SMEs within the Sri Lankan construction industry. Dimensions were defined as Client and Technology. Boundaries were established by excluding non-construction-related SMEs. Rather than overall business maturity, digitalisation aspects were concentrated.

2.5.2 Design

The architecture of the model is determined including the needs of the intended audience and methods for achieving these needs. The specific needs of SMEs in the Sri Lankan construction sector regarding digitalisation were identified. A series of one-dimensional linear stages (Maturity Stages) representing maturity, from basic to advanced digitalisation were developed. Layered Model was developed as indicated in Figure 3, which is composed of Domain, Domain Components (client management and technology adoption) and Sub-components (specific elements within each domain component, informed by literature and expert consensus).

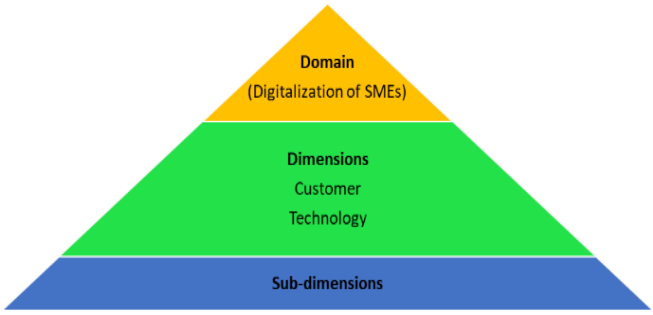


Figure 3: Architecture of the model

As illustrated in Table 3, the dimensions and sub-dimensions for the conceptual model were selected through a literature review and by referring to existing maturity models.

Table 3: Dimensions, Sub-dimensions of Conceptual Model

	Dimension	
	Customer	**Technology**
Sub-dimensions	Customer engagement	Use of modern tools/applications
	Customer experience	Advanced IT infrastructure
	Customer trust and perception	Data management
	Customer insights and behaviour	Connectivity and network
		Security
		Technology architecture
		Application for users

3. RESEARCH METHODOLOGY

Research approaches can be categorised as either qualitative or quantitative, depending on the type of data sought. Research that involves a mixture of these approaches is called the mixed-method approach. While the qualitative approach is useful in identifying new perceptions, concepts, and theories, the quantitative approach can be used to explain and describe phenomena using numerical values derived from observations (Taherdoost, 2022). In this research, to identify the dimensions, sub-dimensions, and criteria for a digitalisation model, the knowledge, ideas, agreement, and criticism of experts in the construction industry were essential. Hence, a qualitative approach was employed, involving the case study strategy and the focus group technique for data collection.

Case Study Design: The case for this study is defined as the development of a digital maturity model for SME contractors in the Sri Lankan construction industry, with a specific focus on the client and technology dimensions. This research aims to address the absence of such a model tailored to the unique needs and challenges of these firms.

Focus Group Technique:

To collect qualitative data within this case study framework, the focus group technique was employed. The focus group consisted of carefully selected participants from the case organisations. This technique involved the participation of a total of 10 participants, representing top-level and middle-level management from the 10 SME construction firms. Participants were chosen using the judgmental sampling technique to ensure they had substantial knowledge and experience with digital technologies in the construction industry. Each participant provided insights and perspectives that contributed to understanding the digitalisation maturity across the selected SME construction firms. Additionally, a comprehensive literature review was conducted to define new terms, identify methods for developing maturity models, compare existing digital maturity models, and develop a conceptual model.

The steps involved in conducting the focus group discussions were as follows:

- Prepared the focus group questions and conceptual model to be presented.
- Recruited the right participants through judgmental sampling.
- Chose a moderator (the researcher).
- Conducted the session and generated focus group transcripts from the recordings.

Detailed information about participants of the focus group is included in Table 4.

Table 4: Profile of the focus group participants

Participant Code	Designation	Experience > 5 years	CIDA grading of organisation	Size	No. of Employees	Industry focus	Years of operation > 10 years	Geographical location
P1	Civil Engineer	Yes	C2	Medium	>50	Building/Roads	Yes	Western Province
P2	Civil Engineer	Yes	C2	Medium	>50	Building	Yes	Western Province
P3	Civil Engineer	Yes	C4	Small	<50	Building	Yes	Noth Western Province
P4	QS	Yes	C5	Small	<50	Building/ Roads	Yes	Western Province
P5	Assistant QS	Yes	C6	Small	<50	Building/ Roads	Yes	Central Province
P6	Assistant QS	Yes	C4	Small	<50	Building	Yes	Western Province
P7	QS	Yes	C3	Medium	>50	Building/ Roads	Yes	Central Province
P8	QS	Yes	C6	Small	<50	Building	Yes	Noth Western Province
P9	Managing Director	Yes	C6	Small	<50	Building/ Roads	Yes	Central Province
P10	Civil Engineer	Yes	C3	Medium	>50	Building	Yes	Noth Western Province

3.1 DATA COLLECTION

The data collection process involved the following steps. The preparation step; focus group questions were prepared and provoke detailed insights were developed on digitalisation aspects. The Conceptual Model was presented to participants for feedback and validation. Participants were recruited through judgmental sampling based on their expertise and experience with digital technologies in the construction industry. The sample included top-level and middle-level management from the ten SME construction firms. The researcher facilitated the sessions to ensure structured and productive discussions. Sessions were conducted with 10 participants in a conducive environment to encourage open and honest discussions. Sessions were recorded with participants' consent to ensure accurate data capture. Detailed precise transcriptions of the discussions were created from the recordings.

3.2 DATA ANALYSIS AND DISCUSSION

The analysis of the primary data followed a systematic approach. All verbal exchanges from the focus group sessions were accurately captured in written form through transcription. The transcribed data were reviewed and initial codes were assigned to segments of the text that related to specific aspects of digitalisation. These codes were based on recurring themes and topics discussed by the participants. The initial codes were grouped into broader categories representing different dimensions and sub-dimensions of digitalisation. This step involved organising the data into meaningful clusters that aligned with the research objectives. The categories were further refined into themes that encapsulated the core aspects of digitalisation identified in the discussions. These themes were used to develop the digital maturity model. The themes and categories were reviewed and validated by comparing them with findings from the literature review. This triangulation ensured the reliability and validity of the data. Based on the manually sorted and analysed data, a digitalisation maturity model was developed.

3.2.1 Dimension – 'Client'

Given the limited literature on digital maturity models for SMEs in the construction industry, the conceptual model required validation by industry professionals and adaptation to industry-specific terminology. The dimension areas, sub-dimensions, criteria under each sub-dimension, and the method of determining maturity levels were thoroughly discussed. The dimension "Client" was defined by the focus group as the "use of digital channels to interact and communicate with the client." Initially, the conceptual model included four sub-dimensions under "Client," but it was expanded to five based on common suggestions as Client experience strategy, Client Engagement, Client Needs Assessment, Client Collaboration & Client Satisfaction.

3.2.2 Sub-Dimensions of 'Client'

Sub-dimensions suggested for the dimension 'Client' by the focus group are indicated tin Table 5.

Table 5: Sub-dimensions for dimension 'Client'

		Sub-dimensions
Group 01	P01, P02, P03	Client Communication, Client Procurement process, Client expectations, Client Engagement and Collaboration, Client Satisfaction
Group 02	P04, P05, P06	Client Engagement – Consider first engagement, Client Needs Assessment, Client Engagement and Collaboration, Client Satisfaction
Group 03	P07, P08, P09, P10	Client experience strategy, Client Engagement, Client Needs Assessment, Client Collaboration, Client Satisfaction
Proposed sub-dimensions		Client experience strategy, Client Engagement, Client Needs Assessment, Client Collaboration, Client Satisfaction

3.2.3 Dimension – 'Technology'

The dimension "Technology" was initially composed of seven sub-dimensions. Given the complexity and significance of this dimension, there was some debate among participants. While some argued for three sub-dimensions (Modern Tools, Applications, Communication) to simplify the model, others proposed a more detailed structure. Eventually, the consensus was to refine the sub-dimensions into four main areas: Modern Tools (Office & Site Operations), Modern Software Applications, Data Management, Connectivity and Network, User Applications.

3.2.4 Sub-Dimensions of 'Technology'

Sub-dimensions that are suggested for the dimension 'Technology' by the focus group are indicated in Table 6 as follows.

Table 6: Sub-dimensions for dimension 'Technology'

		Level of agreement for Sub-dimensions of "Technology"
Group 01	P01, P02, P03	Modern tools, Applications, Communication
Group 02	P04, P05, P06	Use of modern tools & applications, Advanced IT infrastructure, Data management, Connectivity and network, Security, Technology architecture, Application for users, AI tools that works with software's and general computers apps
Group 03	P07, P08, P09, P10	Modern tools in organisation (Office) & site operations & Modern software applications, Data management, Connectivity and network, Application for users
Proposed sub-dimensions by all participants		Modern tools in organisation (Office) & site operations& Modern software applications, Data management, Connectivity and network, Application for users

3.2.5 Criteria Under Sub-dimensions

The criteria or all the available tools under the sub-dimensions were identified as in Table 7. The significance of these criteria is to determine the use of each tool on a scale to find the maturity level of the organisation.

Table 7: Assessment criteria

Dimension	Sub-dimensions	Criteria
Client	Client experience strategy	Methods implemented to understand the Client and requirements.
		A clear customer experience vision has been defined by the organisation.
		Compose a strong team to increase customer experience and provide improved service.
		Use artificial intelligence (AI) for a better customer experience
		Methods implemented to measure customer experience
		Incorporate customer feedback for continuous improvement
		Provide digital customer experience
	Client Engagement	1. Client-to-Company Engagement
		2. Client-to-Content Engagement
	Client Needs Assessment	1. Prepare client priorities appraisal
		2. Clearly defined business case/Client brief of Client
		3. Develop a plan on what has to be achieved
		4. Execute according to the plan
	Client Collaboration	1. Work with cloud-based construction software
		2. Share real-time project data and insights across project team therefore always are up to date with the status of the project.
		3. Use a Single Source of Data
		4. Methods to start collaboration early
	Client Satisfaction	1. Have an effective and efficient complaints-handling process in place oriented to ensure the Project Owner Satisfaction and also to improve the quality of the construction elements being executed.
		2. Measure, evaluate and monitor the Project Owner Satisfaction on regular bases as to be possible to implement the required measures to achieve this goal in real time. (Aleixo, 2015)
Technology	1.Modern tools in organisation (Office)/ site operations/Modern software applications	1. Tools in organisation (Office) / site operations/ Modern software applications.
		Take off and estimating -Manually/Use software
		Bidding platforms - Newspaper/Web sites/e-tendering
		Accounting – Manually/Use software
		Resources planning - Use of proper plan manually/Use of software/Use of ERP system
		Marketing – Newspaper/Website/Social media/Media
		Project management -Use of proper plan manually/ Use of software
		BIM - Use of BIM
		Design & modelling - Manual drawings/ Use of 2D rendering software/ Use of 3D rendering software/ Virtual Reality
		Document management - Manually with paper work/ Cloud storage

Dimension	Sub-dimensions	Criteria
		Progress tracking – Manually/ Use of offline tools like MS office/ Use of software
		Site management – Manually/ Use of offline tools like MS office/ Use of software
		Equipment and plant management - Use of software applications
	2. Data management	Collecting data –Manually/Use of software
		Processing data – Manually/ Use of software
		Validating data – Manually/ Use of software
		Storing data - Printed papers in files / Use of cloud storage
		Access to project stakeholders - Use of apps/software to provide access to data of the project for reference of stakeholders
		Use of methods to secure data and privacy with a digital partnership.
	3. Connectivity and network	Connectivity and network -
		Presence of network of divisions, construction equipment, vehicles, devices, people, to communicate with each other via wireless or digital technology.
		Digitally transfer data and information across regional business units, remote workers, sub-contractors, suppliers and partners. (Gareeb, 2017)
	4. Application for users	Application for users
		Presence of developed application for communication, information sharing with the clients, Presence of Website, Blogs, social media

3.2.6 Determining the Levels of Digital Maturity

The focus group discussion defined each level of digital maturity as in Table 8. The scoring against the usage or not usage of tools listed under sub-dimensions will range the organisations accordingly and assign them a level in the model.

Table 8: Maturity level definitions and score range

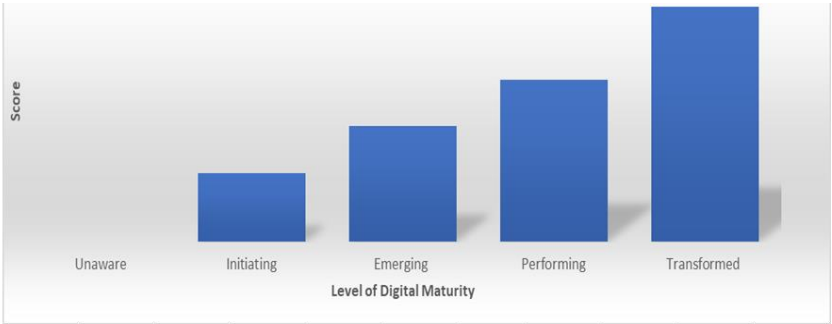
Level	Definition	Score range
Unaware	Use manual or analog methods, no vision on digital transformation of the organisation. No understanding of the potential benefits of digital technologies	0
Initiating	Basic digital tools are used such as having a website, email communication, and basic project management tools., initiated methods in adapting to new technology, have a strategic plan for initiation, organisational vision on digital transformation is established, educate the employees on new tools.	0-29
Emerging	Companies at this stage have started adopting construction-specific software for project management, scheduling, and cost estimation.	30-59
Performing	Performing according to the steps of strategic plan for digitalisation, work towards to achieve organisational vision on digital transformation, Use of modern tools and applications, provide training and skill development of employees to perform tasks using digital tools. Advanced utilisation of	60-89

Level	Definition	Score range
	BIM for 4D scheduling, cost estimation, and facilities management. Implementation devices for remote monitoring and data collection.	
Transformed	At the highest level, the company achieves full digitisation and optimisation across its operations. This includes utilising AI. Implementation of robotics and automation for construction processes likes drones for supervision. Advanced tools are used to perform tasks under dimension areas, Cloud based operation, Continuous learning environment in the organisation.	89-100

3.3 RECOMMENDATIONS

3.3.1 Developed Maturity Model

Figure 4 below illustrates the proposed Digital Maturity Model with dimensions and levels of maturity. This model will aid to measure the level of digital maturity in an organisation.



Dimension	
Client	Client experience strategy , Client Engagement, Client Needs Assessment, Client Collaboration, Client Satisfaction
Technology	Modern tools & applications ,Data management, Connectivity and network, Application for users

Figure 4: Maturity levels in digital maturity model

4. CONCLUSIONS

The technology is emerging day by day where most of the analogue processes become digitally transformed. Construction being one of the significant industries in Sri Lanka, it is necessary to consider embracing digital transformation in to organisations to be more efficient and productive. When compared to digital transformation in construction industry in other countries, Sri Lanka is far behind owing to several reasons. The digital maturity model developed focusing the SME enterprise contractors in Sri Lanka will enable them to determine their level of digitalisation within their organisation or status quo. Hence the model will enable the organisations to identify the digitally deficiency areas to be developed to reach next level of digital maturity. The common structure of the maturity model was composed of Domain, Dimensions, sub-dimension and maturity criteria. The digital maturity model developed for government of Sri Lanka by ICTA was examined when determining the sub-dimensions for the proposed model, since it was related to Sri Lankan context. But the terminology and definitions in this model were inappropriate for the construction industry. Yet in order to fulfil this objective the conceptual model was developed while reviewing the existing digital maturity models. The professionals from the construction industry contributed their knowledge and

expertise in determining the dimensions, sub-dimensions and digital criteria to be assessed in this digital maturity model. The model composed of 2 dimensions, 9 sub-dimensions and 41 digital criteria which will measure the digital maturity of SME enterprise contractors in Sri Lanka. Further researches are encouraged on, developing this model further in other dimensions which were not considered in this research, validation of the digital maturity model in the SME enterprise contractors in Sri Lankan construction industry and develop a digitalisation road map for digital transformation of SME enterprise contractors in Sri Lankan construction industry.

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