Editorial

FARU Journal Vol.9 focuses on the theme of 'Independence and interdependence of sustainable spaces' where we had the first issue (Issue 01) already published in June 2022. We are delighted to publish the Issue 02 of Vol.9 of FARU journal on the same theme that reflects the independent and interdependent nature of research and professional spaces of sustainability in the built environment. This theme of Volume 9 of FARU Journal and FARU 2022 Conference encouraged authors to submit papers to contribute to address the knowledge gap in the field of sustainability spaces with multidisciplinary perspectives.

In this context the Issue 02 of this volume contains twelve highly commendable papers which were invited based on the papers presented at the '15th International Research Conference of Faculty of Architecture Research Unit (FARU - 2022)'. The selection of the papers focused on the reviewer recommendation, its academic standing, contribution to the field of study and presentation. The research papers that cover issues pertaining to local context and to other Asian countries namely, Bangladesh, India, and Maldives. We strongly believe that citing the work from FARU journal will help the research from local context to be recognised and outreached beyond the local boundaries.

The papers presented in this Volume demonstrates environmental, methodological, technological, psychological, architectural, technical, and financial perspectives, but all relating to the overarching theme of sustainable built environment. Several studies adopted case study as the research strategy and the methodology used by the authors range from quantitative to qualitative analysis. The first two papers (papers 1-2) discuss the enhancement of thermal comfort using natural means and technological means. Another paper (paper 3) presents the patch isolation analysis of destruction of peri-urban natural ecosystem. Presenting a methodological approach to re-image a city was then presented taking the Galle city, Sri Lanka as the case (paper 4). The next paper (paper 5) proposes strategies to implement the concept of Industry 4.0 for predictive maintenance in facilities management. How the interior colours used in classrooms impact on the mental health of undergraduates was studied in the next paper (paper 6). The next two papers (papers 7-8) elaborate the role of architecture in achieving social sustainability. The impact of the form and structure of Mamoty as a traditional agriculture tool for user experience was then presented (paper 9). The next paper (paper 10) presents a single-rate based approach to forecast labour cost of construction trades. Integration of formal and informal sector in waste management system in cities in Sri Lanka was then presented with special reference to Homagama (paper 11). Final paper (paper 12) was on luminance measurements using smartphone cameras.

The first paper by Ratnayake et al., establishes the correlation between the Sky View Factor (SVF) modifications and Outdoor Thermal Comfort (OTC) that could inform optimum street tree planting strategies in the warm, humid, context of Colombo, Sri Lanka. To conduct the study Elvitigala Mawatha and Ananda Coomaraswamy Mawatha were selected as the representative streets in Colombo. Common street tree planting patterns were then identified and simulated, utilising the RayMan software. The authors claim that there is a distinct advantage in utilising trees for SVF modifications and thereby increasing OTC. The paper also highlights that tree planting patterns and the corresponding SVF would give different impact during the day and night. The authors recommend that the tree planting methods for overall sustainability should be properly practiced by urban planners. The second paper by De et al., have used machine learning to predict operative temperature (OT) for adaptive comfort model for mixed mode operation. OT is not a commonly used parameter for controls as it is difficult to measure at real-time and long-term levels, hence the prediction of operative temperature in this study has been proposed using machine learning (ML). The adaptive thermal comfort controls were implemented in an Experimental Building at an educational campus in Bangalore, India. As claimed by the authors the special contribution of this work is to demonstrate the implementation of the operative temperature-based controls with a feasible sensor regime, in a way that makes the approach scalable for use in most buildings with the help of machine learning. The third paper authored by Sirimewan and Dharmasena, investigates the ecological deterioration due to the neglect of natural terrain in the rapid urbanisation process, with reference to Kandy Bahirawakanda terrain. This paper uses the patch isolation index as the measuring device to measure the increase of isolation of ecological patches. As such the paper demonstrates how effectively the remote sensing field, which is not a widely applied concept in Sri Lanka, can be used in analysing urban issues. The fourth paper by Tharaka and Rathnayake applies a methodological approach to re-establish the image of Galle city in Sri Lanka by assessing the city impressions of its users. Photo Collage Technique and Web-based Photo Identification formed the data collection techniques that were analysed both quantitatively and qualitatively. The study demonstrates key factors that influence city impression and their interrelationship through a newly developed framework. The authors concludes that the visual methodological approach can be utilised to identify city impressions to re-image the cities. The fifth paper by Sivanuja and Sandanayake identifies strategies to successfully implement Industry 4.0 concept for effective predictive maintenance (PdM) for facilities management (FM), where the authors highlight that the demand for Industry 4.0 enabled predictive maintenance for facilities management has risen as a result of the industrial revolution. A qualitative research approach was adopted for this research, where the data were collected using semi-structured interviews and analysed using code-based content analysis with the assistance of NVivo 12. The research identified strategies to overcome challenges in applying the Industry 4.0 concept for carrying out PdM by facilities managers. The sixth paper by Bandara and Hettiarachchi, focuses on the impact of colour, as an Architectural element, on psychiatric imbalances among undergraduates with special consideration on depression, anxiety, and stress levels. Blue, green and red with vivid, dim and pale levels of tints were considered for

the study. Both the quantitative and qualitative methods were used for data collection. Colour red was found to be the colour that has most adverse impacts whereas green indicated a comparatively low adverse impact. The authors suggests that the incorporation of appropriate colours in design interventions could facilitate the creation of better classroom interiors in order to address depression, anxiety and stress related disorders of undergraduates.

The seventh paper by Madhury assures a conductive rehabilitation environment for destitute children by exploring design approaches. It initially evaluates the effects of destitution on the children and then analyses the design requirements for a conductive rehabilitation space based on the children's activities and health conditions. A case study on Chattogram, Bangladesh was conducted employing field and questionnaire survey using one-to-one interviews, photographic surveys, recordings, walkthroughs, and direct observation as the data collection techniques. The research concludes that the damaging effect on children due to the external environment can suitably be minimised or balanced with the design of a healing environment. The author argues that to create such healing environment for children architectural features should incorporate the ideas of children. The paper further claims that the efficiency in rehabilitation is possible through imagination-stimulating activities in the spaces for young children and motivating activities for teenagers. The eighth paper authored by Mohamed and Coorey aims to develop a theoretical framework highlighting the attributes of mass housing developments which are critical to social sustainability at a neighbourhood level. The paper identifies the Social Sustainability Key Indicators (SSKI) that can be used to assess the overall social sustainability of four housing projects in the Greater Male Region, Maldives. The paper first identified the architectural attributes for social sustainability using questionnaire and focus group discussion, where seven architectural attributes and nine social sustainability indicators were identified to be highly relevant in the Maldivian context. The formulated framework was then validated theoretically, practically and statistically. The authors claim that this paper has attempted to contribute to the knowledge gap by developing a criterion to assess the social sustainability of housing developments in the Maldives. The ninth paper by Perera and Dissanayake focuses on how the form and structure of mamoty as a traditional manual handling agriculture tool, influences user experience in the current context. Small-holder vegetable farmers from a selected grama niladhari division in Kalutara district was selected as the case. An Interpretative Phenomenological Analysis (IPA) is conducted to discover the relationship between independent and dependant variables. The study revealed critical parts, elements of the mamoty and their impact on concentrated user experience segments. The key elements of the form and structure of the tool, such as material, shape, and size were also identified. The study concludes that elements from each part of the tool contributes to the overall experience by highlighting specific capabilities of each element. The tenth paper by Ramachandra et al. aims to assess the labour requirements for the cost significant trades of two-storey houses in Sri Lanka. The paper involved thirty-eight (38) two-storey houses to collect the required data using the sources such as the Bill of Quantities (BoQs) and assessed the norms available in the building schedule of rates (BSRs). The findings reveal that finishing works, masonry works, concrete works, reinforcement, formwork and roofing work are more labour-based activities, where cost significant trades in two-storey houses, contribute to around 19% of its total cost. The authors further conclude that there is no significant deviation of labour requirement per square feet of gross floor area (GFA) with the size of the project (GFA) for significant cost elements in the two-storey house. The eleventh paper by Perera and Ranasinghe investigates the contributions of formal and informal sectors to the waste management system, by identifying the opportunities for integrating both sectors into the waste management process. Homagama pradeshiya Saba was selected as the case study area within which both questionnaire survey and semi-structured interviews were employed as the data collection tools. For data analsyis the authors have used Integration visualisation tool, Mass balance analysis and Waste management index. The authors claim that integrating formal and informal sectors would reduce municipal waste disposal costs and increase recycling rates, hence this study can be used by planners, policymakers, waste-related authorities, local authorities, surveyors for a better solid waste management system. The last paper by Thounaojam et al. evaluates the daylight performance visual comfort buildings by measuring light in luminance and illuminance using luminance and lux meter respectively. This research evaluates the High Dynamic Range (HDR) acquisition method using accessible smartphone cameras, where seven types of smartphone cameras (iPhone XR, iPhone 8, iPhone 7, iPhone 6s, iPhone 5s, One plus 6 and One plus 5) and a DSLR camera are evaluated. As such a visual comfort survey of a primarily daylit workshop space is done to document as a test case to evaluate the feasibility and accuracy of the low-cost HDR approach.

The above overview of the papers signals the multi-disciplinary nature of the journal manuscripts in this Volume. I wish to congratulate all authors who made valuable contributions to the knowledge domain on sustainability in the built environment. My sincere appreciation to all the reviewers, who have provided their utmost support to maintain the quality standards necessary for the manuscripts to be published in the journal. I would like to thank my colleagues in the FARU team who worked very hard for the professional undertaking of the tasks involved. I specially thank Dr. Sumanthri Samarawickrama, Editor-in-Chief of FARU Journal for offering me the opportunity to play a role as a guest editor for the Volume 9. Finally, I would like to acknowledge the Sri Lanka Journals Online for publishing the FARU journal in their database.

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