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College of
Built Environment

Poster Book

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023

**College of Built Environment
UiTM Puncak Alam**
20 January 2023 | Friday

Editors:

*Dr Aidatul Fadzlin Bakri, Nurzafira Zainul Abidin, Sr Dr Noor Akmal Adillah Ismail,
Dr Har Einur Azrin Baharuddin, Assoc. Prof. Ts Gs Dr Abdul Rauf Abdul Rasam*



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Generations of Professional Excellence

Unleashing Potentials
Shaping the Future

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PREFACE

Assalamualaikum Warahmatullahi Wabarakatuh and Greetings to all.

Welcome to the International Invention, Innovation & Design Exposition for Built Environment and Engineering 2023 (IIIDBEEEX 2023).

I would like to congratulate The Research and Innovation Unit (BERI) - College of Built Environment (CBE), who have contributed tremendous effort for this prestigious IIIDBEEEX 2023. This acknowledgement also extends to the IIIDBEEEX 2023 organizing committee consisting of CBE Shah Alam and Puncak Alam academic and administrative staff. The commencement of the IIIDBEEEX 2023 portrays the high spirit and commitment of BERI Unit and CBE effort in promoting creativity and innovation among the nation, and most importantly, the College's continuous determination to assist UiTM in achieving the 'Globally Renowned University' status by the year 2025.

Congratulations to all.

The IIIDBEEEX 2023 embraces a hybrid mode showcase of invention, innovation and design exposition and is a significant international event for the College of Built Environment (CBE), UiTM. The commencement of this type of event is a noble platform contributing to CBE's visibility as the future Built Environment nexus centre of excellence in research and innovation.

Last but not least, I would like to express my gratitude to all IIIDBEEEX 2023 juries and participants who have shown their dedication and commitment to the event's success today.

Thank you.

YBHG. PROFESOR TPr. Dr. JAMALUNLAILI ABDULLAH
ASSISTANT VICE CHANCELLOR, COLLEGE OF BUILT EN'



WELCOME REMARKS

Assalamualaikum Warahmatullahi Wabarakatuh.

With great pleasure, I welcome all distinguished guests to the International Invention, Innovation & Design Exposition for Built Environment and Engineering 2023 (IIIDBEEEX 2023).

IIIDBEEEX 2023 confers a valuable opportunity for local and international participants from various categories, such as academia, undergraduate and postgraduate students and industries, to experience the interactive presentation of invention and innovation vital ideas in the Built Environment. The event also offers the participants excellent proficiency and skills in deliberating various significant ideas to be pondered in a concise infographic form.

Finally, I would like to express my heartfelt appreciation to all juries and participants who contributed significantly to this event. May you have a fruitful session.

Thank you.

PROFESOR SR DR ZULKIFLEE ABB LATIF
DEAN RESEARCH & INNOVATION
COLLEGE OF BUILT ENVIRONMENT, UiTM



IIIDBEEEX2023

International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023

20 January 2023 (Friday)
8.00am - 5.00pm

IIIDBEEEX2023 SUBMISSION CLUSTERS

Interested participants are invited to submit their entry in the area of built environment and engineering according to clusters below:

- Invention
- Innovation
- Design

IIIDBEEEX2023 EXPOSITION CATEGORIES

The exposition invites participants from

- Academicians
- Professionals (Practitioners & Industries)
- Students - Undergraduate & Postgraduate Student

IIIDBEEEX2023 EXPOSITION THEMES

Project and Construction Management, Planning and Development, Property, Facilities & Safety Management, Construction Law, Procurement and Contract, Building Technology, Architecture, Interior Architecture, Landscape Architecture, Park Amenities and Management, Innovation in Construction, ICT in Construction, Engineering Design Issues and Solutions, Geomatics Science, Engineering and Technology, Sustainable Development and any other related topic to Built Environment, Construction and Engineering.

Submission Guidelines

Please access to this web link for author guidelines. Participants are advised to read and understand the guidelines for poster and extended abstract.

<https://kab.uitm.edu.my/iiidbeex2022>

All accepted extended abstract will be published in e-ISBN publication

IIIDBEEEX2023 ENTRY FEES

Academician	RM150
Student Undergraduate	RM50
Student Postgraduate	RM100
Professionals	RM200
Foreign Participant	USD50

Special award will be given to the best posters.



Venue:
Kolej Pengajian Alam Bina,
Kampus Puncak Alam

IIIDBEEEX2023 IMPORTANT DATES

Payment deadline	: 6 January 2023
Extended Abstract Submission	: 6 January 2023
Poster Submission	: 6 January 2023
Notification of acceptance	: 1 week after the entry submission
Event	: 20 January 2023

IIIDBEEEX2023 PAYMENT METHOD

Local

- Payment must be made through the link provided on the website.

International

- Bank transfer.
- Foreign personal cheques are not accepted.

Institutional cheques or money order should be sent to:

BENDAHARI UiTM
Universiti Teknologi MARA (UiTM)
40450 Shah Alam
Selangor, Malaysia.

Bank Transfer Information:

Bank Name	: BENDAHARI UiTM
Bank Account Number	: 12177010005715
Bank Account Name	: Bank Islam Malaysia Berhad
Swift Code	: BIMBMYKL

Please attach the scanned version of the bank transfer slip or receipt together with the participant details as proof of payment through google form:

<https://forms.gle/EzWFR17xaXnRTDXB9>

Disclaimer: No refund on any cancellation of participant

PAYMENT DEADLINE 6 January 2023

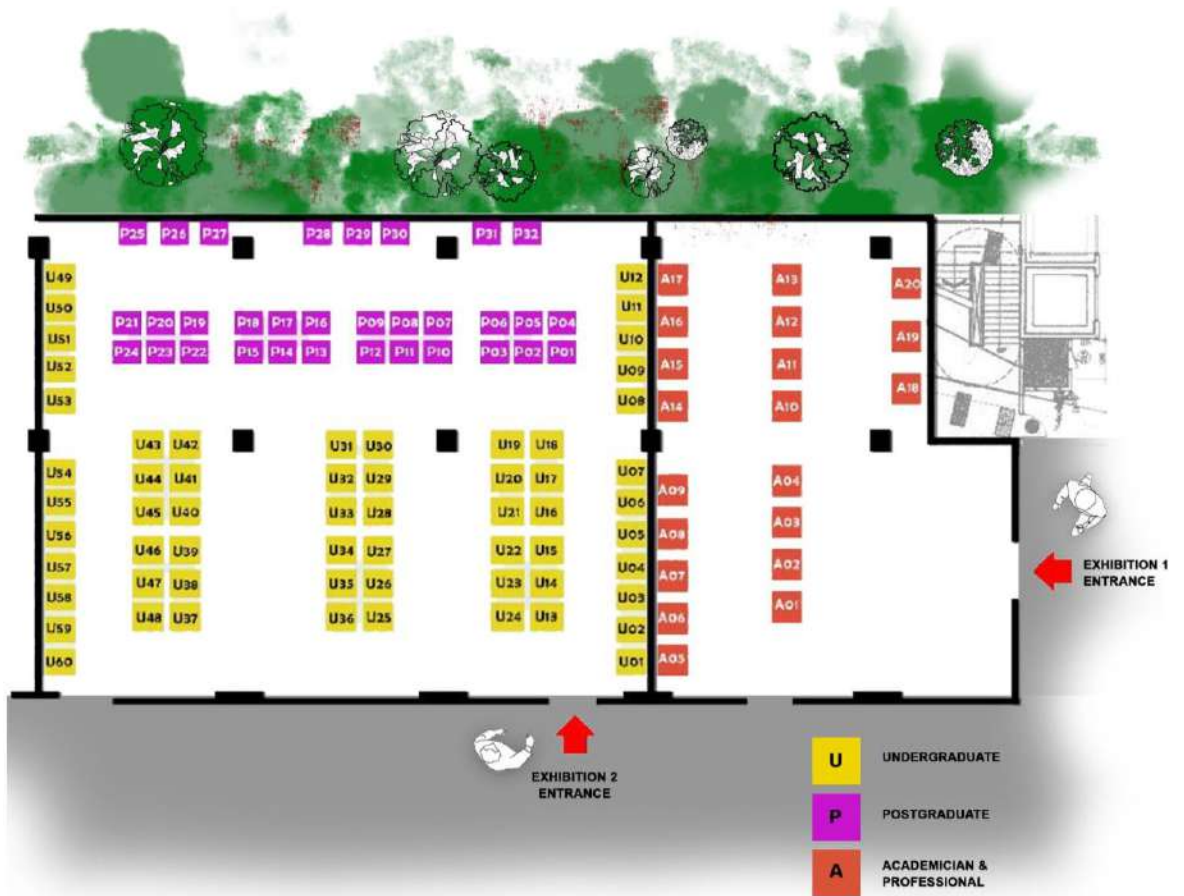


General Inquiries:

iiidbeexfspu@gmail.com

Tel: (+603) 5544 4380 (En. Shafiq)

EXHIBITION LAYOUT



EVENT PROGRAMME

07.30 AM

Students Registration
Arrival of Juries

08.30 AM

Breakfast
Arrival of Honorary Dif-Dif

09.00 AM

Do'a Recitation
"Negaraku" and UiTM
song.

09.30 AM

Presentation and Judging
session

09.10 AM

Welcome speech from
IIDBEEEX2023 advisor.
Opening Speech from PNC of
College for Built Environment.
Opening Montage
Photography session.

12.30 PM

Lunch and Rest /
Prayer

2.45 PM

Score Calculation

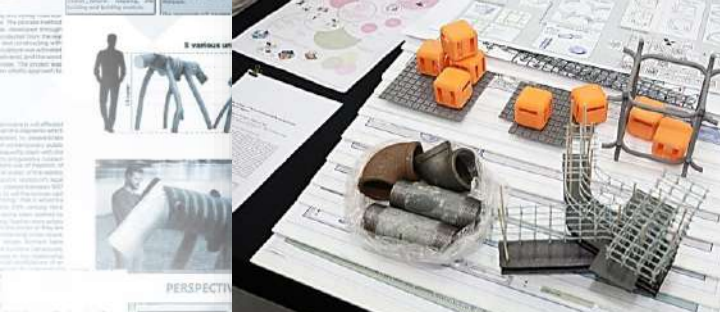
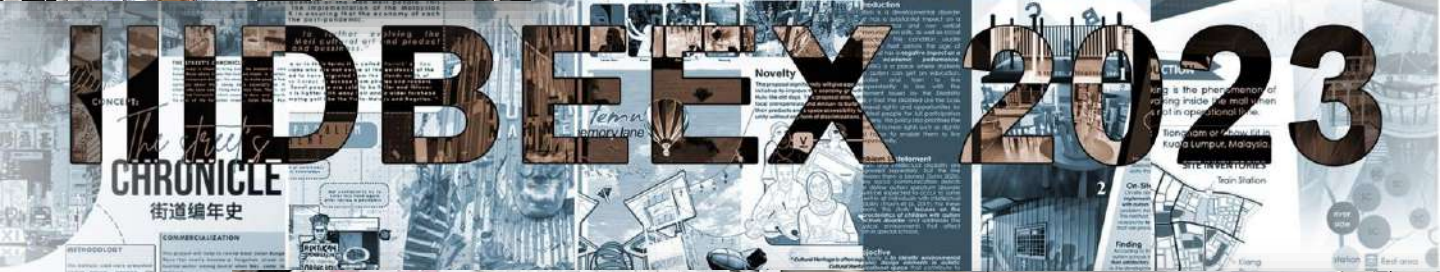
2.50 PM

Winners
announcement for
IIDBEEEX 2023

4.30 PM

Tea Time and Disperse

EVENT MEMORY



EVENT MEMORY



**POSTER CATEGORY:
ACADEMICIAN &
PROFESSIONAL**



LIST OF PARTICIPANTS

ID	Full Name	Title Of Poster
A01	Siti Mazwin bt Kamaruddin & Mohamad Muzammil bin Hamad	Pedestrians' Level of Satisfaction of Walkways Case Study: Kota Bharu
A02	Marlyana Azyyati Marzukhi. Yusfida Ayu Abdullah, Nur Masyitah Ghazali, Oliver Ling Hoon Leh, Zulkifli Ahmad Zaki, Mohammd Yusup & Muhammad Hakim Danial	The Relationship between High-Density Residential and Mental Health
A03	Ishak Che Abdullah, Mohammad Yusup & Zulkifli Ahmad Zaki	Measuring Urban Walkability Index for Petaling Jaya
A04	Ramlan Abdullah, Assoc Prof Dr Rafeah Legino, Prof Dr David Forrest, Assoc Prof Ts Gs Dr Abdul Rauf Abdul Rasam	Public Abstract Sculpture in the Park: From Abundance to Environmental Importance
A05	PM Ts. Dr. Rostam Yaman, PM Sr. Dr. Nor Rima Muhamad Arif, Dr Julaida Kaliwon, Nurul Nabilah Aris, Norishahaini Mohamed Ishak, Lt Kol Ali Zakafri Ab Aziz, Lt Muhmamad Abdul Qahhar Abdul Malik, Sjn Mohd Rowfiq Rahim, Kpl Norizwan Mat Saad, Kpl Khairul Anuar Zulkifli, Kpl Mohammad Sukri Ya'akub, Pbt Eldeh Imanuel Imbut@Enik	Modular Mobile Pool Structural & Filtration System for Military Training & Fitness Test
A06	Khalid Zainudin, Mohd Azren Hassan, Zafikha Aida Bidin, Sylvia Gala Ak Mong, Syamimi Liyana Amat Rais & Farah-Ajlal Julaihi	PAO Decision-Making: Collaborative Planning Approach Framework
A07	Mohamad Sufian bin Hasim	Developing a Strategic Approach to Facilitate Sustainable Facilities Management (SFM) Practice for Universities in Developing Countries
A08	Nor Hanisah binti Mohd Hashim & Ainna Syifaa binti Abu Khari	Trail Standard for Hikers at Gunung Berembun and Gunung Telapak Buruk
A09	Nurul Afida Isnaini Janipha, Nor Azlinda Mohamed Sabli, Zulkhairi Affandy Mohd Zaki	TnL-A through IERA-Stages: Strategies for BQS406 Content Development
A10	Dr Ainon Nisa binti Othman & Nur Hanisah Hashim	Monitoring Benthic Classification: A Comparative Study of Pixel-based and Object-based using Satellite Imagery
A11	Sr. Dr. Noor Akmal Adillah Ismail, Sr. Dr. Har Einur Azrin Bharuddin, Ts. Zulkhairi Affandi Mohd Zaki, Sr, Ts. Abdul 'Izz Mohamad Kamil & Hazwani Ramli	BIM Education for Quantity Surveying Students using REVIT Tools: Evaluating the Knowledge, Awareness and Perceptions.
A12	Nur Idzhainee Hashim, Firdaus Chek Sulaiman & Ahmad Nazrin Aris Anuar	Tree Rings Provide Snapshots of Earth's Past Climate
A13	Sr Dr Har Einur Azrin Baharuddin & Sr Airul Faizal Othman	The Correlation Analysis between Training and Attitudes towards Building Information Modelling (BIM) Adoption in Malaysian Construction Industry

LIST OF PARTICIPANTS

A14	Nur Lesya Firsya binti Johaimi Ling, Mohd Hasrol Haffiz bin Aliasak & Kartina binti Alauddin	The Sale and Leaseback Investments Framework for Real Estate Investment Trusts (REITS) in Malaysia
A15	Hikmah Kamarudin, Nurul Fadzila Zahari, Muhammad Haziq Md Anuar, Aidatul Fadzlin Bakri & Nurulhusna Qamaruz Zaman	GOAL Method: Identifying Physical Inaccessibility Impacts
A16	Dr Ahmad Shazrin Mohamed Azmi, Prof Dr Noor Rosly Hanif, Assoc. Prof. Dr Siti Mashitoh Mahamood	Empowering Special Property Development Entity (SPDE) for Waqf Land Development
A17	Mohd Nor Azmi Ab Patar, Jamaluddin Mahmud, Mohammad Azzeim Mat Jusoh, Mohd Shahrom Ismail & Abdul Malek Abdul Wahab	Vibration Simulation & Analysis Teaching Tool (VSATT): An Interactive Learning Tool based on MATLAB Simulink and GUI
A18	Sr Dr Hafiszah Ismail, Sr Dr Robiah Abd Rashid & Sr Muhamad Saiful Alizan Nordin	The Malaysian Generational Elderly-Friendly Housing Design Features Framework (MGens-ElderLyHD)
A19	Shariffah Zatil Hidayah Syed Jamaludin, Kumalasari Kipli, Anis Rosniza Nizam Akbar, Irma Hanie Ibrahim, Suzana C. Alih & Abdul Rahman Mat Jusoh	Development of Elemental Cost Analysis (ECA) Web-based Application Platform
A20*	Muhammad Fakhurrazi bin Fatziruddin, Muhamad Aqil Ahmad Mahmud & Ahmad Irsyaduddin Maktar	New Norm and New Form: Outdoor Abstract Sculpture Tolerate with Environment

Pedestrians' Level of Satisfaction of Walkways

Case Study: Kota Bharu

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INTRODUCTION

Walking is a way of moving from one point to another on foot. The pedestrian is a key part of the city's traffic system while a pedestrian walkway is an important aspect of traffic management especially in an urban area. There are more than 500,000 road accidents including pedestrian deaths each year on the world's roads (WHO 2020). The lack of quality space, expose pedestrians to greater traffic accidents i.e. risk.

ISSUES/ PROBLEM STATEMENT

Pedestrian facilities must meet pedestrian specifications, guarantee protection, and provide comfort to pedestrians. The pedestrian walkway is closely linked to the environment, activities and human movements that use the pedestrian walkway. However, when pedestrians haphazardly walk onto the road, accidents will happen

OBJECTIVES

The objectives were to evaluate the level of satisfaction of users of the walkway, assess physical elements of the pedestrian walkway and recommend how to improve the pedestrian walkway towards more safe, comfortable and accessibility. thus suitable actions could be implemented by the authorities.

METHODOLOGY

In this study, data was obtained through a survey using a questionnaire. An enumerator each was stationed at Jalan Tok Hakim, Jalan Tengku Chik, Jalan Post Office Lama and Jalan Tengku Besar, Kota Bharu. Each enumerator distributed the questionnaire randomly to pedestrians/users of the street. This data collection used a sampling method by means of purposive sampling also known as judgment, selective or subjective sampling is a reliable random sampling method based on the justification and criteria of the researcher to determine the sample population to participate in the study (Black, 2013, Saunders et al., 2019).

Upon the end of MCO restrictions in Kota Bharu on 8th May 2021, the researchers collected the data during the recovery phase in November 2021. However, the public generally was still very cautious and public interaction was very minimal. The enumerators and respondents wore masks and kept strict social distancing. Data was collected from 68 respondents. Questionnaires were distributed to pedestrians, in front of commercial lots and in front of the mosque.

The responses in the questionnaire used a Likert type scale from "1" (least satisfied), "2" (unsatisfied), "3" (neutral), "4" (satisfied) to "5" (most satisfied) and the respondents selected/ticked their preferred response.



FINDINGS

Elements	Mean (M)
Pedestrian walkway width by standard 5 feet	3.3881
Surface of pedestrian walkway	3.3433
There is a safety signage	3.2985
Information signs are easy to read	3.2836
Information signs for motorists clear	3.2239
Information signs for pedestrians clear	3.2090
Information signs for disabled clear	3.1791
Facilities disability well maintained	3.1642
There is a clear track to cross the road	3.1343
Pedestrian walkway through area of crime	3.1194
Height and width pedestrian walkway make it easy for users	3.1045
There is a lamp for night use for safety	3.0597
Facilities for the disabled	3.0000
Adequate street lighting	3.0000
The surface of pedestrian walkway is well maintained	3.0000
Landscape along the pedestrian walkway is well maintained	3.0000
Design of the pedestrian walkway attractive and comfortable	2.9254
Landscape along the pedestrian walkways	2.8955

Table 1 displays the means score for 20 perceived satisfaction items, ranked in descending order by mean value. The most reported satisfaction of pedestrian elements (mean response ≥ 3) involved pedestrian walkway widths followed by information signages, facilities, lighting and surfaces. The perceived elements of pedestrian walkway that were least or unsatisfied with reported (mean response ≤ 3) primarily included the design of the pedestrian walkway or landscape along the pedestrian walkways. This is consistent with analysis by Bhaduri et al (2019) which found that pedestrian walkway width was a strong factor in influencing pedestrians' perception of being satisfied with the walking environment.

NOVELTY

Although the survey was conducted during the recovery period of the movement control order in November 2021, the respondents, enumerators and researchers successfully collected 68 responses from respondents, manually. However, the researchers followed strict procedures such as maintaining social distancing and hygienic procedures eg. Wearing face masks, applying hand sanitizers and constantly being alert about self hygiene during data collection stage.

CONCLUSION

Based on the analysis, respondents are generally satisfied with several physical aspects of pedestrian walkway elements eg. Width and surface, because the current conditions of the pedestrian walkway in the study area is in relatively good condition and provides convenience for users to walk through. Also, there are clear crossings provided for road users, thus they feel safe to cross the roads. However, respondents said that the facilities and street furniture for pedestrian walkways such as information signage, and signage for the disabled are still lacking and in need of improvement and maintenance. Also, landscaping and lighting for the sidewalks on some areas still need maintenance to attract people to use the sidewalks.

COMMERCIALIZATION

This study's findings of the satisfaction level of pedestrians towards walkways in a commercial area in Kota Bharu can provide significant insights to the commercial retailers within the study area on pedestrians preference, perception and opinions of walkways linked to their shops. The retailers could partner with the local Authority eg MPKB to place more informative signs/improve landscaping/hardscapes and softscapes to make their commercial area more attractive for shoppers and pedestrians.



Temporary pathway



Permanent pedestrian walkway

A "Complete Street" in Mexico City



Safe separation of pedestrian vs vehicles



Covered walkway

NYC's Public Plaza Program



Public plaza



Safe separation of pedestrian vs vehicles

THE RELATIONSHIP BETWEEN HIGH-DENSITY RESIDENTIAL AND MENTAL HEALTH

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INTRODUCTION

High-density residential is highly associated with urbanization trends. As people move to urban areas for job opportunities and better lifestyles, it causes an increase in urban population numbers. Urbanization is vital in urban planning, especially to health challenges in the 21st century [1]. The effects of rapid urbanization and uncontrolled high-density residential can produce urban stressors or environmental stressors, and the stressors may vary for each individual. The urban stressor is the situation that represents the level of mental health of the urban inhabitants facing the daily dullness that are incompatible with their life [2]. Mental health can be affected by this stressor faced by the urban dwellers depending upon adaptation and the degree of choice people feel over the aggressor.



ISSUES/ PROBLEM STATEMENT

Mental health problems such as depression and anxiety are expected to be a significant problem among Malaysians [3]. Based on Malaysia National Health and Morbidity Survey [4], one in every five people is depressed, two in every five are anxious, and one in every ten has stress problems in Malaysia. The increasing numbers of people having depression, anxiety, and stress worldwide are alarming. The root causal and drivers of these problems need to be identified to reduce the prevalence. Numerous works of literature have investigated the relationship high density residential and mental health; however, little is known about the effects of living in high density residential on the mental health of the urban population particularly in Malaysia. Therefore, this research is important to meet the crucial aspect of planning and health challenges of the urban population, which will cause a transformative effect on the lives of the community.

OBJECTIVES

To assess the relationship between high-density residential in urban areas and mental health to create a better environment and improve urban well-being.

METHODOLOGY



The analysis of qualitative data from the interviews, including the transcription analysis, coding or indexing, and identifying the patterns and connections, were conducted using thematic analysis. Atlas ti.9 software was used to analyse the qualitative data, including transcription and coding of the answers.

References:

- [1] World Health Organization. (2010). People with mental disabilities cannot be forgotten - Google Academic. 12-13.
- [2] Rishi, P., & Khuntia, G. (2012). Urban Environmental Stress and Behavioral Adaptation in Bhopal City of India. *Urban Studies Research*, 2012, 1-9.
- [3] Lee, J., Je, H., & Byun, J. (2018). Well-Being index of super tall residential buildings in Korea. *Building and Environment*, 46(5), 1184-1194.
- [4] Malaysia National Health and Morbidity Survey (2012). Malaysian Mental Health Association.

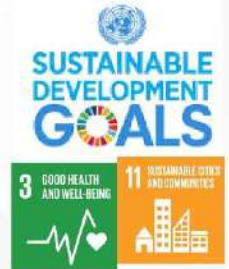
FINDINGS

High-density living needs to be looked at with other supporting factors. And these supporting factors, such as green spaces and density, are highly related and create a chain connection link. Thus, the findings show that when a person lives in a high-density living, many factors could contribute to mental health problems, and when these factors are linked, it may worsen (or not) the person's conditions. Thus, it is important to integrate mental health considerations in urban planning through incorporating planning guidelines in local plans.



NOVELTY

The Sustainable Development Goals have become the starting point for the government to emphasize mental health well-being in Malaysia. Thus, this research supports the Sustainable Development Goals (Goal 3 and Goal 11) and the New Urban Agenda, among others, to incorporate health as a central consideration in addressing emerging challenges of urbanization.



CONCLUSION

Mental health well-being is crucial as it affects the everyday life routine of a person. Living in a high-density residential environment is not the only factor for mental health well-being; it is related and interlinked with the other urban stressors within neighborhood environment. Thus, urban planning, as a form of primary prevention and contributor to health outcomes, and social and physical environments play a significant role in community health, including planning a good quality of high-density residential area.

COMMERCIALIZATION

New Planning Guidelines on Urban Planning and Mental Health

Consultancy services

Training and seminars

RECOGNITIONS

1. Bronze Award, IICE 2019, UITM - A Theoretical Framework of Bidirectional Associations Between Urban Physical Environment and Mental Health.
2. Platinum Award, IIIDBEE 2020, UITM - Impact of Urban Physical Environment on Mental Health

CONFERENCES & PUBLICATION

- [1] Marlyana Azyyati Marzuki, et al. (2020). A Bidirectional Associations between Urban Physical Environment and Mental Health: A Theoretical Framework Environment-Behaviour Proceedings Journal.5 (13).
- [2] Marlyana Azyyati Marzuki, et al. (2020). The Influence of Urban Physical Environment on Mental Health: A Theoretical Framework. *KIEAE Journal*.
- [3] Marlyana Azyyati Marzuki, et al. (2020). Confronting mental disorder in urban physical setting. *Environment-Behaviour Proceeding Journal* 5(14):311-316.
- [4] Marlyana Azyyati Marzuki, et al. (in progress). The Influence Of Urban Planning On Mental Health. Case Study: Federal Territory Of Kuala Lumpur. *Planning Malaysia Journal*.
- [5] Nur Masyitah Ghazali, Marlyana Azyyati Marzuki et al. (2020) Urban High-Density Living Effects on Mental Health. *AIVCE-BS-2, Shah Alam*.
- [6] Nur Masyitah Ghazali, Marlyana Azyyati Marzuki, Oliver Hoon Leh Ling (2021). Urban Low-Cost Housing Effect Mental Health. *Planning Malaysia Journal* 19 (4), p.244-256.
- [7] Nur Masyitah Ghazali, Marlyana Azyyati Marzuki, Oliver Ling Hoon Leh, Weng Yinxue (2021). Public Housing Environment and Depression: Case Study Bandar Baru Sentul. *Built Environment Journal* 18(2), p.1-10.

ACKNOWLEDGEMENT

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Marlyana Azyyati Marzuki^{1*}, Yusfida Ayu Abdullah², Nur Masyitah Ghazali³, Oliver Ling Hoon Leh⁴, Zulkifli Ahmad Zakri⁵, Mohammad Yusup⁶, Muhammad Hakim Danial⁷
¹⁻⁷Pusat Pengajian Perancangan Bandar dan Wilayah, Kolej Pengajian Alam Bina, UITM Selangor, Kampus Puncak Alam, Selangor

PREPARED BY:

INTRODUCTION

Green neighbourhood is one of the initiatives taken by PLANMalaysia to reduce the nation's overall greenhouse gas emissions. Walkability has been introduced as one of the newest elements in supporting green neighbourhood. Various studies have been conducted to identify the built environment factors that influences people's decision to walk. From these studies, scholars have developed walkability index to measure the walkability of a specific areas. However, most of this studies are conducted outside of Malaysia. Despite the numerous advantages of using walkability index to measure walkability of an area, the application of walkability index in Malaysia is limited and scarce. Therefore, this study attempts to develop the walkability index based on Malaysian context and test the feasibility of using this walkability index in Malaysia. The walkability index indicators were adjusted to suit the Malaysian local environment and used transportation network design, land use diversity and population density as the built environment indicators..

ISSUES/ PROBLEM STATEMENT

Pedestrian requires a walkable environment to encourage people to choose walking as mode of transportation. Therefore, the Local Authority needs to provide infrastructure to encourage people to walk. However, most of the decision to improve the pedestrian infrastructure are based on visual inspections by the technicians. This approach is time consuming and requires a lot of effort. Therefore, a more efficient approach are needed to determine the areas with high walkability. By having this valuable information, it will assist the Local Authority to make decision and improve the efficiency of services.

OBJECTIVES

1. To determine the built environment factors that influences people's decision to walk.
2. To develop the Walkability Index.
3. To test the Walkability Index.

METHODOLOGY

This study developed a neighbourhood walkability index in Malaysia, using the urban areas in Petaling Jaya as a case study. The study investigated the factors of built environment to be used as the indicators in the walkability index and identifying an appropriate GIS data source for modelling the walkability index.

The walkability index for Petaling Jaya was developed and computed based on three indicators associated with walking behaviours; transportation network design (intersection density), land use diversity and distance to transit and Point of Interest. The three indicators were chosen based on the availability of data and the highest value of weighted average elasticities of walking. Based on the value of weighted average elasticities of walking, population density indicators were omitted from the computation of walkability index.

The walkability index was produced at neighbourhood scale using land use data, street data, transit data and POI data. The formula used to derive the walkability index are as follows:

$$\frac{(w/3) + (x/3) + (y/3)}{3}$$

- w = ranking score for proximity to transit station and Point of Interest (POI)
x = ranking score to street intersection density
y = ranking score for Entropy Index

FINDINGS

Figure 1 shows the result of Walkability Index for Petaling Jaya based on the three (3) indicators. The high score indicates areas of high walkability areas in Petaling Jaya based on built environment factors while the low score of Walkability Index means that people are more incline to use motorized vehicles which resulted in less walking.



Figure 1: Results of Walkability Index for Section 5 – Section 52, Petaling Jaya

Results from this study was validated by officers and technicians from the Transport Department, Petaling Jaya City Council. The index showed high reliability in depicting areas which may have high volume of pedestrian especially in the town centre of Section 52.

Based on this study, the index has the potential to be applied at City Council especially in assisting the City Council in determining areas with high or low volume of pedestrians. However, it should be highlighted that the accuracy of the Walkability Index is highly dependent on the accuracy of input data used in developing the index. Therefore, the acquisition of highly accurate spatial data is important to ensure the reliability of the index.

NOVELTY

This study developed a neighbourhood walkability index in Malaysia, using the urban areas in Petaling Jaya as a case study. The application of walkability index in Malaysia is limited and scarce. Current approaches in Malaysia to assess walkability relies on visual observation and respondents survey. Those approaches are time consuming and is difficult to implement by Local Authorities due to limited resources. Therefore, the study developed Walkability Index based on Malaysian context that is more efficient in depicting walkability areas in any given area. This Index will provide useful insights on walkability areas that can assist planners and stakeholders in making informed decision in improving the built environment to promote walkability among the people.

CONCLUSION

The findings from this study showed that the Walkability Index is a highly valuable tool to assist planners and stakeholders in understanding areas with high level of walkability and low level of walkability. Having this valuable information will assist planners and stakeholders in formulating strategies and policies to improve the pedestrian infrastructure in the city. Previously, most of the decision to upgrade or improve the pedestrian infrastructure are based on visual inspections by the technicians. However, this approach is time consuming. By using Walkability Index, planners can focus a more thorough inspection at the areas with high score because it is deemed that this area has a high chance of people walking based on built environment factors. This approach will improve the efficiency of the public services and ensure that areas with high score will be provided with the proper infrastructure. This also will provide the planners with a proper tool to evaluate the existing and proposed new layout from the built environment factors that can encourage people to walk.

Public Abstract Sculpture in the Park: From Abundance to Environmental Importance

Ramlan Abdullah
College of Creative Arts, Universiti Teknologi MARA 40450 Shah Alam Selangor Malaysia
ramla278@uitm.edu.my

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INTRODUCTION

This project aims to develop a public sculpture made of wood, the formation of which will be stylized after the form of a four-legged animal. The characteristics of the animals were selected and used as a metaphor for a situation that responds to the actual habits of humans in organising vegetation management in a specific location, such as a highway and byway road site. The metaphor was chosen because the animal character features respond to the actual habits of humans. The process method began with the reacting process of observation, then the process of manipulating and creating was developed through sketches and drawings, and finally, through drawing, a scale model was formed from the material wood collected from the real location in the Shah Alam area. In the workshop, the process of manufacturing with the appropriate tool and constructing with a joiner wood technique that supports accessories such as screws and nails is carried out. Before the sculpture was activated or relocated to the real location using the artist's impression technique, the finishing and cleaning were delivered, and the wood stain was used to preserve the wooden material. Additionally, enamel paint was used for artistic purposes. The project was established as a series called "running the forest." This project was symbolic in nature, and we chose an artistic approach to deliver the message to the community congenially.

PROBLEM STATEMENT

The pleasantness of the natural scene is diminished by public sculpture, but the pleasantness of the urban scene is not affected by the sculpture. The aesthetic value of public art had a greater impact on the surrounding landscapes than the degree to which it was harmonious with the surroundings. The ratings for pleasantness and the visual properties related to pleasantness legibility ranged from artwork to artwork in public spaces (Motoyama & Henry, 2014). The majority of contemporary public sculpture, beginning with Rodin, is founded on the strongly held personal values of the artists, which frequently clash with the values of the public that the artists choose not to celebrate. Rather than depicting the values essential to progressive modern societies, modern sculptors have actually put those values into action. One example is how the modern use of freedom of expression should be disciplined and constructive. The laudable artists have fought to persuade the general public of the validity of their practices and ideals is still ongoing (Eisen, 1989). In a few different situations, the question of public sculpture's legal standing and preservation comes up. In November 2012, the *Draped Seated Woman* by Henry Moore, created between 1957 and 1958, was purchased by the London Borough of Tower Hamlets; Moore made the deal in the 1960s to sell the bronze cast to the predecessor of the London authority, which is now known as Tower Hamlets, with the "understanding" that it would be installed in East London (Lydiatt, 2012). Richard Serra is regarded as the most influential sculptor of the 20th century. He is well-known for developing innovative sculptures (abstract sculpture compositions existed before him, having been opened by the constructivists vanguard at the beginning of the 20th century). Henry Moore, Vladimir Tatlin, and Oskar Tzadkin were artists who worked before Richard Serra. Serra is famous for his ability to translate the accents of his works from the works as they are to the environments in which they are placed. He claimed that the sculpture assisted him in better understanding urban space. His rusted metal sheets and profiles, which can be rectangular or curved, approach architectural design. Richard Serra positioned them next to architectural constructions as an intermediary scale checkpoint between street furniture (lampposts, booths, fountains, and seats) and buildings, especially modern ones. In particular, Serra was interested in the relationship between the scale of street furniture and the scale of buildings (Rappaport, 2007). Context and the social ramifications of an artist's work are two factors that influence whether an artist's work is considered "political" or "single-minded" or "marginal." The issues of gender, ethnicity, socioeconomic status, and the environment can be linked to political art on a variety of scales, including the personal, the local, the regional, the state, and the global. The author of this study uses a public art and sculpture project supported by memory and geography to re-contextualize one of the largest industrial disputes that have ever occurred in Australia. Workers who fought for union members' rights and working conditions are recognized and honoured by the monument. The open-ended design brings the combination of the psychological and the social, resulting in a hybrid piece of work. In this study, memories and occurrences from that era are re-examined, and the authors argue that political art can enhance the creative process and give prolonged cultural meaning by recalling, discussing, and acting upon historical events (Wolmering, 2012). Therefore, the whole idea and the concept of making are derived and paradigm through the real project, which is associated with public sculpture, and the place that will be located or intended is a park in any suitable places in Shah Alam.

OBJECTIVES

The objective of this project is to utilise an abundance of tree trunks for the creativity of abstract sculpture construction in the park.

METHODOLOGY

The artistic research process guides the methodology (Balkema & Slegers, 2004; Hannula, Suoranta, & Vaden, 2014). As a result of the recent review of the artistic approach, the proper direction must be followed and reflected in practice. The visit and observation process was managed several times; I went to a specific location where the tree had been cut, and the tree trunk was plentiful. I approached the worker (wood-cutter worker) and requested permission to obtain the abundant tree trunk in order to use and construct it as the main material in my sculpture studio. The process of developing a method from sketches and improving it through drawing and small-scale models. The work was made from collected wood, which was formed according to the abstract character to be formed. Making with the appropriate tool and constructing with a joiner wood technique that supports with accessories such as screws and nails in the studio. The finishing and cleaning were completed, and the wood stain was used to preserve the wooden material, and enamel paint was used for artistic purposes before the sculpture was stimulated or relocated at the real location using the artist's impression technique, and the project was named the "running forest" series.

FINDINGS

The "running the forest" project that is depicted in Figure 1 is an actual piece of artwork that is going to be installed in a particular location in Shah Alam. Artwork that the green movement of the 21st century has never been so passionate about before, especially in light of the growing media coverage of global warming and the devastating effects that it has had on this planet in recent years. As an artist whose primary medium is wood and timber, one of nature's precious resources, I have expressed my reaction to such situations that are happening right now in my most recent design for a sculpture that will be entered into this compilation. The title "Running the Forest" sculptures give the impression that the natural world is in motion right from the start. I interpret it as a collection of five animal-like wooden sculptures arranged to give the impression of a gathering. The natural quality of these semi-abstract works is highlighted and embellished with body stripes and spots, anatomical characteristics inherent to the animal kingdom. They range in size and personality, with the largest being 150 centimetres in height, but they all have the characteristic of being creatures with four legs. Their demeanor gives off the impression of being calm and composed while also being on high alert and prepared to flee at the first hint of danger, which may come from humans, urbanisation, or deforestation.

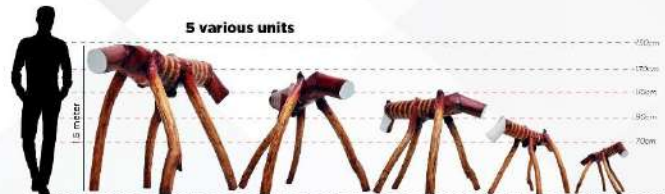


Figure 1: The "Running Forest", Variable Size, Wood, Bitumen, Wood Stain and Wax, 2008

NOVELTY

The interaction with the public abstract sculpture and the coordinated change with the environment is more important in public environmental art abstract sculpture. The sculpture is one of the elements that embody and express the connotation of works as an affiliate of environmental elements to the community. This project explores the relationship between abstract sculpture and the environment through an examination of space environment characteristics.

CONCLUSION

To sum up, this project's response to the management of the vegetation within the city limit is connected to this project in some way. The characteristics of the animal were selected and used as a metaphor for a situation that responds to the actual habits of humans in organising vegetation management in a specific location, such as a highway or byway road site. This metaphor was chosen because the animal character features respond to the actual habits of humans. Wood was gathered from the actual site in the Shah Alam region so that it could be used in the creation of the sculpture.

COMMERCIALIZATION

Artists and their unique creative perspectives are invited to participate in the city's decision-making process thanks to public art. A non-sanctioned work may be the result of an artist-initiated project, an invitation from an official entity, or no official involvement at all. The presentation of alternative viewpoints through public art has the potential to challenge preconceived notions, held beliefs, and core community values.

RECOGNITIONS

Public abstract sculpture adds value to cities on multiple fronts, including the cultural, social, and economic spheres. The addition of artwork to public areas brings a sense of humanity to the surroundings and revitalises public places. It creates a point of connection between the past, the present, and the future, as well as between different fields of study and ideas. Our culture is reflected and revealed through public abstract sculpture art, reflecting and revealing our culture.

CONFERENCES & PUBLICATION

Conference: International Conference on Wood and Eco-Products 2022 (ICWEP 2022)
Publication: Special Issue ICWEP 2022, Environmental Behaviour Proceeding Journal (EBPJ)



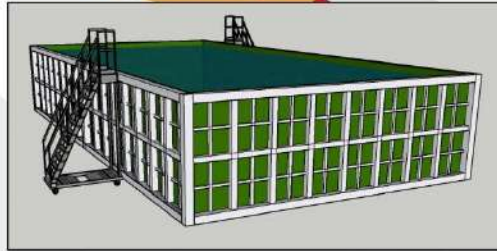
MODULAR MOBILE POOL STRUCTURAL & FILTRATION SYSTEM FOR MILITARY TRAINING & FITNESS TEST

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



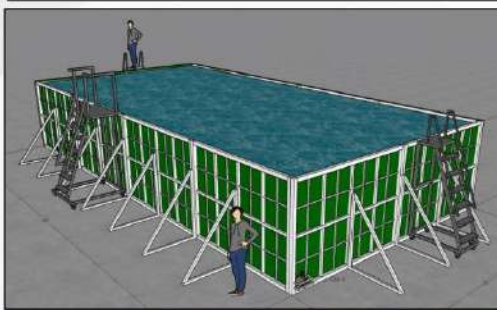
INTRODUCTION

Military training and periodical assessment is important in preparing a well built soldier physically and mentally. Hence, supporting facilities and equipment are necessary in implementing this exercises and tests. The problem in this study is lack of water-pool facilities at medium or small military units in the country. The aim of this research is to design and prototype a modular mobile pool for floating exercise and test for military personnel. The study is conducted in partnership with Kor Kejuruteraan DiRaja in achieving the goals. The objectives of the study is to design, simulate, prototype and built the modular mobile pool for military uses



ISSUES/ PROBLEM STATEMENT

Military training and fitness test is a continuing procedures and routines throughout all three branches of Malaysia Arm Forces. Besides combatant exercises and others military tasking, fitness test is one of the most important measures in assessing level of physical abilities and readiness towards any duty calls while serving. Since training were carried out at bases and remote field, the requirement for water-pool in conducting aquatic-based physical training and testing. The main issue in handling this physical training and test is the limitation of military bases that have water-pool facilities in the country besides main Military Bases. The problems are further supported with the high-cost to build and maintain the water pool, location of the military unit or training ground are remote and far-away from main bases with such facilities and aquatic-based fitness ability test done periodically which not viable to built a permanent pool of such huge cost.



FINDINGS

The project novelty to design and prototype a modular mobile pool for military floating training and fitness testing which can be easily assembled and dismantled, lightweight and sturdy, ease of mobility and storage, and huge cost saving for construction and maintenance expenditure. The second novelty is the attachable filtration system which include, overflow channel, overflow pool, filtration and pump system. Design framework and component blueprint for on-site application and further research commercialization (co-ownership of ipr/patent by UITM & Kor Kejuruteraan DiRaja)

OBJECTIVES

1. To design + engineering element/system for modular and mobile pool.
2. To simulate & measure efficiency of the design + engineering element/system for modular and mobile pool.
3. To prototype modular mobile pool with structural integrity, material durability and water filtration system.
4. To apply and measure the efficiency of design + engineering design/system on-site (military base)



CONCLUSION

The material and method for this installation is convenient, easily constructed and dismantle, it is also a light weight materials and durable, and low-cost, it does not require advance tools, and can easily transported.

NOVELTY

The novelty of The innovation is to deign and construct the first modular mobile pool for military training and fitness test in Malaysia.

METHODOLOGY

PHASE 1

Content Studies & Design Profiling

- Project briefing & a statement from Kor Kejuruteraan DiRaja
- Study of literature and design methodology for pool structure & filtration system
- Design problem definition and objectives
- Design Ideation
- Conceptual Design of modular mobile pool profile

PHASE 2

Digital Prototyping, Evaluation & Testing

- Digital Prototyping of modular mobile pool
- Structural integrity and material suitability
- structural component & modulation system
- Computational Fluid Dynamic simulation of digital prototype
- Data analysis, validation and conclusion
- Research report & publication

PHASE 3

Content Studies & Design Profiling

- Physical Prototyping of modular mobile pool
- construction method and materials
- water filtration system solution
- modular (construct & deconstruct) + mobile



COMMERCIALIZATION

It is a viable, however the product is under prototyping stage for further development.

CONFERENCES & PUBLICATION



Modular Mobile Pool Structural & Filtration System for Military Training & Fitness Test.
Rostam Yaman¹, Nur Nisra Muhamad Arif², Nabila Kallim³, Farrah Zuhaira Ismail⁴ & Norshahaini Mohamed Ishak⁵
¹Strategic Chair, Marlia PALAPES UITM
²Faculty of Architecture, Planning & Surveying, UITM
³Corresponding author, gossain@uitm.edu.my
Abstract

Military training and periodical assessment is important in preparing a well built soldier physically and mentally. Hence, supporting facilities and equipment are necessary in implementing this exercises and tests. The problem in this study is lack of water-pool facilities at medium or small military units in the country. The aim of this research is to design and prototype a modular mobile pool for floating exercise and test for military personnel. The study is conducted in partnership with Kor Kejuruteraan DiRaja in achieving the goals. The objectives of the study is to design, simulate, prototype and built the modular mobile pool for military uses

RECOGNITIONS



PAO DECISION-MAKING: COLLABORATIVE PLANNING APPROACH FRAMEWORK

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Khalid Zanudin¹, Mohd Azren Hassan², Zafikha Aida Bidin³, Sylvia Gala Ak Mong³, Syamimi Liyana Amat Rais³, and Farah-Ajlaa Julaihi³

¹Faculty of Social Sciences and Humanities, Universiti Malaysia Sarawak, Sarawak, Malaysia
²Town and Regional Planning, College of Built Environment, Universiti Teknologi MARA, Cawangan Selangor, Puncak Alam, Selangor, Malaysia
³Quantity Surveying, College of Built Environment, Universiti Teknologi MARA, Cawangan Sarawak, Kota Samarahan, Sarawak, Malaysia

ABSTRACT

Urban planning and its operation involve many processes where participation and collaboration between various key stakeholders are fundamental to ensure the best possible planning and operational decisions are made. Collaboration can be defined as two or more groups of people and higher integration among key stakeholders toward achieving common goals. A collaborative approach can better obtain stakeholders' commitment, stronger stakeholder relationships, balance power and control, and consensus building. The aim of this study is to enhance the capability of participation and collaboration among the key stakeholders in planning and operational (PAO) decision-making. The study was conducted using qualitative methods which involved a series of in-depth interviews and focus group discussions with key informants, namely the local public planners, residents' committees, local councilors, and private developers' representatives. A total of 43 in-depth interviews and nine focus group discussions involving 67 participants were conducted. The outcome of this study indicated that accessibility to planning information and process, intergovernmental relationship, stakeholders' awareness, and knowledge, representation, and behavioral skills are vital in enhancing the capability of key stakeholders in participating and collaborating in the planning and operational decision-making.

INTRODUCTION

Public participation in urban planning provides a clear picture to decision-makers about the public's preferences, thus contributing to better decision-making by incorporating community's experiential knowledge into the process (Innes and Booher, 2010; OECD, 2017). The capability for the community to participate effectively in urban planning should be empowered to ensure that the participatory process is not merely tokenism (Arnstein, 1969; Monno and Khakee, 2012).

Participation in urban planning has been historically ambivalence in the public process particularly during decision-making where government tends to employ caution approach as a result of interests' discrepancy between the government and interested stakeholders (Maginn, 2007). Participatory process only benefit specific actors or community segments and retained the status quo. It has resulted in the less-influenced segment of society being marginalised from the process.

Collaborative Approach in Urban Planning

Collaborative planning has been promoted as an approach in addressing the need to empower the stakeholders' capability to participate and influence the process. This paradigm shift of participatory method is based on continuous discussion and collaboration has progressed from trust and consensus; as well as improves the public knowledge and producing collective decision (Ghomashchi, 2012).

Collaborative planning offers the opportunity to urban stakeholders to inclusively interact and participate in the planning process, thus addressing the complexity of interest of modern society (Brand and Gaffikin, 2007). This planning approach is built from the Habermas' communicative rationality which saw interested stakeholders participate in extensive dialogue and discuss to deliberate alternative. Collaboration could be initiated by involving extensive stakeholders through numerous participatory means including forums and meetings (Cooke et al., 2012).

Planning and operational decision-making in urban planning

With the impact of urbanisation, the process is becoming more complex. In this research, both development plan-making and planning permission as the planning and operational decision-making in urban planning are focused. It is corresponding to the argument about the relationship between both planning processes which see development plan to guide the local government in granting planning permission (Faludi, 1987; Gallent et al., 2013). In preparing a plan, the planner needs to collaborate with other stakeholders, particularly those who are affected and addressed by the plan. The participation and opinion from these stakeholders will help the planner to deliberate in finding the best alternative

OBJECTIVE

To enhance the capability of participation and collaboration among the key-stakeholders in planning and operational (PAO) decision-making.

PROBLEM STATEMENT

Lack of key-stakeholders capability to participate and collaborate effectively in urban planning process, hence exerting their interest in decision-making

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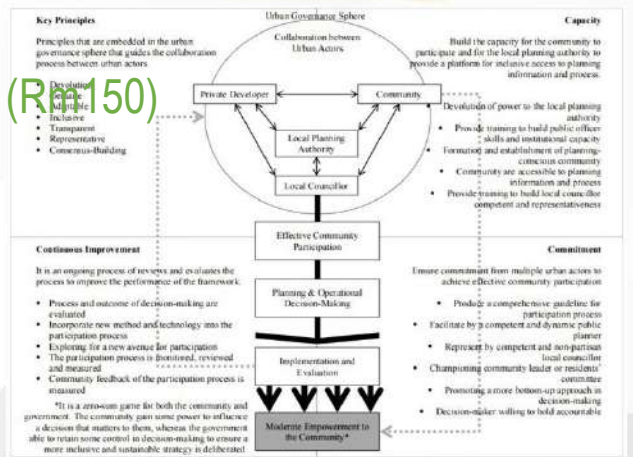
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METHODOLOGY

Qualitative methods namely the in-depth interviews and focus group discussion were employed to obtain the primary data, whilst document gathering for secondary data. Purposeful sampling is employed due to the selection of various key-stakeholders (government and non-government actors) as the respondents and participants for both methods, to ensure qualitative data are gathered from the key-informants that can provide valid and comprehensive information concerning the research subject (Neuman, 2014). Thematic analysis and document analysis are then used to analyse both primary and secondary data.



FINDINGS



Collaborative approach framework explained on the key principles for collaboration, the capacity of the community to participate in decision making, the commitment of key-stakeholders to achieve effective community participation and the continuous improvement to review and evaluates the process of decision-making. From the collaboration among the key-stakeholders, it will drive towards effective participation, and this will make the planning and operational decision-making more efficient.

NOVELTY

The novelty of the research is the development of a framework that focuses on the process-oriented flow of participation and collaboration of the stakeholders for urban planning. The framework emphasizes the integration of four components that become the essential part of the success of decision-making for urban planning consisting of:

- The key principles that will guide the collaboration process between urban actors.
- The capacity of the community to be part of the decision-making for urban planning
- The commitment of the urban actors to achieving effective community participation
- Continuous improvement to enhance the performance of participation, collaboration, and dependability of the framework

CONCLUSION

A framework is proposed to improve the urban stakeholders, predominantly the community's participation in both development planning and planning permission processes. The development of the framework is based on the idea that effective participation is about giving more power to the local (government and non-government actors) together with genuine participatory that shape the attitude and willingness of various stakeholders, especially the community towards participation process. This should be a catalyst to enhance their capability to participate and influence in both the planning and operational decision-making.



DEVELOPING A STRATEGIC APPROACH TO FACILITATE SUSTAINABLE FACILITIES MANAGEMENT (SFM) PRACTICE FOR UNIVERSITIES IN DEVELOPING COUNTRIES

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INTRODUCTION

Sustainability practices in facilities management (FM) are vital in reducing the impact of buildings on the natural environment. Such techniques can provide a significant contribution to organisational success in terms of lowering cost, improving efficiency; increasing safety and health; and expanding the value of an investment. While sustainability in management practices is being adopted in university organisations globally, different levels of commitment are experienced in developed and developing countries. It is considered that developed countries are more advanced in adopting sustainability, and, by contrast, the practices within developing countries are still emerging.

ISSUES/PROBLEM STATEMENT

Sustainable development approaches are becoming more critical as the need to achieve the goal of sustainability becomes more pressing. Organisational efforts to put sustainability into practice have been reported in numerous publications. However, most of this literature says on the situation in developed countries (i.e. North America and Europe), and evidence from developing countries is much less common. Moreover, developed and developing countries have varying commitments to sustainable practices. In addressing this knowledge gap, there needs to be research on the extent of sustainability adoption into FM practices and examine the commitment of both developed and developing countries toward sustainability. This study is significant, especially to developing countries, as they need new knowledge to accelerate their effort to improve sustainable practices in FM and expand their organisational sustainability outcomes.

AIM & OBJECTIVES

This research aims to develop a strategic approach which can facilitate the adoption of SFM practice for universities in a developing country from lessons learned from a developed country. In particular, it is to comparatively investigate the commitment of developed and developing countries towards sustainability by using a university setting, and to better understand the possible factors (drivers and barriers) that influence the implementation of SFM performance.

METHODOLOGY

With the constraint of the existing knowledge on SFM practices in universities in developed and developing countries, a case study approach was used. A single case study was used to uncover the extent of sustainability adoption in each nation and more attention is given to what can be learned from the cases. This research selected Australia and Malaysia as case studies as both countries have a similar system of government which uses the British Westminster system and are countries with federal-state relationships and structure.

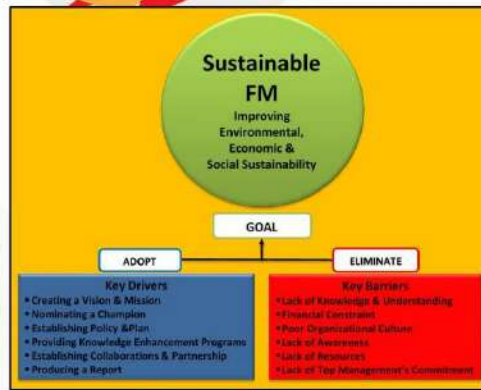
Therefore, to support the argument with an in-depth analysis of the particular countries, a comparative case study analysis was chosen for this research with a variety of data sources by using: i) website analysis, ii) a questionnaire survey and iii) in-depth interviews. These three stages have been chosen as they can complement the others.

INSTRUMENTS	INVOLVEMENT	PURPOSES
Stage One Website Analysis	All university websites in Australia (39) and Malaysia (20)	To identify initial sustainability indicators and facilitating the development of the questionnaires.
Stage Two Questionnaire Survey	Total of 107 managers Australia (50), Malaysia (57)	To determine the extent of sustainability adoption and discovering a relationship between variables.
Stage Three Interviews	26 managers, semi-structured questions: Australia (10), Malaysia (16)	To gain an in-depth understanding and rich picture from participants' own experiences.

The data were then analysed, and conclusions were drawn by using **triangulation analysis** and **cross-case comparisons**. Finally, all relevant findings were used to formulate recommendations to develop the strategic approach that developing countries can adopt.

FINDINGS

- Overall, the study showed **significant differences between developed and developing countries**. This study has demonstrated that SFM performance is **significantly associated with drivers and barriers** embedded in the university organisation.
- Several motivators** led to SFM practice in universities: top management commitment, pressure from stakeholders, policy and strategy in place, availability of knowledge-enhanced programs, collaboration and partnership, and reporting. These factors have pushed university FM departments to adopt more sustainable practices.
- Among the **top barriers** that need to be eliminated are lack of knowledge and understanding, financial constraints, negative organisational culture, lack of awareness, lack of resources and lack of top management's commitment. Indeed, all these factors have potentially contributed to the deceleration of SFM practices within universities.



Based on the research findings, a **strategic approach** that categorizes the motivational factors (drivers) and how they are connected to sustainability performance (outcomes) has been developed.

Malaysian universities could undertake these six (6) key drivers (courses of action) and avoids the barriers to position on a faster track for SFM practice.

NOVELTY

This research contributes significantly to understanding the commitment of developed and developing countries towards SFM practice by identifying and applying the factors that facilitate or hinder its implementation. The strategic approach was designed as an outcome of this research to assist in the successful adoption of SFM practices for universities in Malaysia.

COMMERCIALIZATION

This research provides a new strategic approach for university organisations concerning SFM to enhance their practices. As the strategic direction developed is based on case studies of Australia and Malaysia, it is most likely to apply to other pairs of countries (since the fundamental problems are universal), especially developing countries. However, with some consideration of factors such as diverse administration systems, governance and constitutional frameworks. It will assist in measuring their capacity, performance and threats in adopting sustainable FM practices.

CONCLUSION

The aim of this research was to develop a strategic approach which can facilitate the adoption of SFM practice for universities in a developing country from lessons learned from a developed country by using Australian and Malaysian universities as case studies. The motivation for the research arose from a strong interest in making buildings more sustainable in developing countries. Thus, considering Australia and Malaysia as case studies for this research representing two different economic nations but with similar government systems based on the British Westminster model, there is potential for lessons to be learned explicitly by Malaysian universities.

Generally, the critical elements in the strategic approach could be undertaken by universities in other developing countries to position them on a faster track for sustainable development. Indeed, the prospects of learning from developed countries are worthwhile for sustainability improvement in universities in developing countries.

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TRAIL STANDARD FOR HIKERS AT GUNUNG BEREMBUN AND GUNUNG TELAPAK BURUK

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INTRODUCTION

The tropical rainforest of Malaysia is considered the oldest in the world and is a major attraction for those who love outdoor adventures to explore the mysterious natural beauty of the forest which is still well preserved. Some hikers walk their way up only to the first checkpoint or station which is natural waterfall and after enjoying their time in waterfall, they fall back to the base. However, most hikers will hike to the peak of the mountain to gain the most satisfying experience.

The purpose of this research to identify the trail standard for hikers' at Gunung Berembun and Gunung Telapak Buruk is an important role in defining the access is attributed to specialists who design and manage the infrastructure, which set standards for access systems. Furthermore, this study also focuses to determine how trail standard can affecting hikers' arrival at Gunung Berembun and Gunung Telapak Buruk.

ISSUES/ PROBLEM STATEMENT

- In reserve forest, trails are accessibility for visitors to reach to natural area which is positively to become well known place.
- Some of the Gunung Berembun and Gunung Telapak Buruk trails are not properly followed and managed by Forest Department.
- Trail conditions in the recreation centre will continue to decrease without the improvement of routine support and maintenance of building highlights.
- If the user use another path, which is natural path, to affect the natural resources along a road as well.
- Corrupted paths diminish the atmosphere of the leisure centre, making it difficult and unsafe for walkers to be safe.

OBJECTIVES

- I. To identify the trail standard for hikers' at Gunung Berembun and Gunung Telapak Buruk, Jekebu.
- II. To determine the trail standard can affecting hikers' arrival at Gunung Berembun and Gunung Telapak Buruk, Jekebu.
- III. To document the relationship between trail standard and factors affecting hikers arrival at Gunung Berembun and Gunung Telapak Buruk.

METHODOLOGY



The study area can be access by two entrance, one from Gunung Berembun trailhead Kampung Pantal and telecommunication tower Gunung Telapak Buruk. The hikers need to apply permit before can access the area and RM 5.00 per person. The first campsite and water spot, Lata Berembun. It takes about 30 minutes to get to the Lata Berembun from the head of the trail and the trail is wide mostly flat and clearly marked. About every 50 m you can find laminated paper marks on the trees. Lata Berembun is a beautiful waterfall that hikers can take bathing.

Quantitative techniques used to determine the important of accessibility trails for hikers at Gunung Berembun and Gunung Telapak Buruk to complete exploration. Interviews were arranged was delivered and collected between the Jabatan Perhutanan Negeri Sembilan of about Gunung Berembun and Gunung Telapak Buruk keeping in mind the ultimate goal to gather all information and data about the nature of administration. The technique, coordinated audit of article writing diary and track different sources. The survey has been provided by the elections.



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FINDINGS

Types of Trail

Most trekkers know that there are as many different sorts of hiking trails as there are different types of roads. While knowing the difference won't make hiking them any simpler, it will help you learn how to carefully prepare a journey, improve navigation, and avoid going onto a trail that should never be on.

There are 10 types of trail:

- Trail Type A – Hiking (High Challenge)
- Trail Type B – Hiking (Moderate Challenge)
- Trail Type C – Hiking (Accessible)
- Trail Type D – Walking
- Trail Type E – Exercise/Fitness (Resilient Track)
- Trail Type F – Biking
- Trail Type G – Mountain Biking
- Trail Type H – Equestrian
- Trail Type I – Hiking & Mountain Biking
- Trail Type J – Hiking & Equestrian

Factor Affecting Hiker's Arrival

Hiker's data serves as a basis for considering the operational management plan, budget, facilities, and maintenance. It can also be used as a measure to determine the level of appropriate use for environmental and social effects is unnecessary, and objective information can be used to assess the cultural, economic, and political.

Attraction is a dynamic field as it varies according to the number of factors related to the safety, location, the destination country, and the markets from which the tourists appeared, and markets the destination. They also reviewed destinations by investigating accessibility and attractions they provide or any other way to attract tourists.

Trail Standard

Trail standards lead to improvement in trail quality and guarantee a steady way of dealing with the arrangement of trails, which both improve the well-being and satisfaction of all trail customers. All associations and forestry departments engaged in trail improvement or managing are expected to use the guidelines at Gunung Berembun and Gunung Telapak Buruk.

NOVELTY

| NOVELTY |

Risk management is important for people's safety, hence the application of it should be emphasize.

| BENEFITS TO SOCIETY |

Help the people to ensure their safety when doing their favourite outdoor activities without getting hurt and lessen the risk of danger.

| POTENTIAL FOR COMMERCIALIZATION |

Assign interpreter at the recreational area to help the people there. Guidelines on the understanding of risk management.

CONCLUSION

Reliability Statistics	
Cronbach's Alpha	N of Items
.820	59

- The reliability test is used to use the questionnaire to examine. Depending on the Alpha outcome of Cronbach, reliability is sufficient and reasonable for respondents if we obtain more than 0.7. The alpha score for the Cronbach element is.821 that is considered acceptable. Therefore, 300 respondents are qualified to use the questionnaire.

The result is that the walker is more aware of the trail standard that the experience and its rights were presumed. The advantage of using standard road operations will enhance the best experience of visitors using the trail.

Gunung Berembun and Gunung Telapak Buruk are already well-known trails for hiking. Before being open to the public, the hiking trail is required to follow the standard. On the basis of the observation, question should be raised as to how the standard marking and warning sign on the Gunung Berembun and Gunung Telapak Buruk trail applies to the hiker. The advantage of using standard road operations will enhance the best experience of visitors using the trail.

PREPARED BY:

| AINNA SYIFAA BINTI ABU KHARI |
| syifaaainna15@gmail.com |

| NOR HANISAH BINTI MOHD HASHIM |

| FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING | Universiti Teknologi MARA Shah Alam |

TnL-A THROUGH IERA-STAGES: STRATEGIES FOR BQS406 CONTENT DEVELOPMENT

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition for Built Environment and Engineering 2023



INTRODUCTION

Education system in any countries can be considered as one of the foundation of its economic growth and development. Through a proper education content development, people will be provided with the skills and knowledge that lead to self improvement and nation's growth. The enrichment of content development in education is among the important and actual tasks of teaching and learning nowadays by expanding the scope of knowledge and skills, increasing creativity and quality of students.

ISSUES/ PROBLEM

1. Educational teaching and learning are constantly changing. However the need of high-quality content has never change.
2. With the availability of different content formats, many educational institutes struggle to keep the content consistent and strategic. Educational institutions need to alter the content strategy to keep up with the transformation and it need to comprehend students' goals and needs, and then respond to those with engaging content.
3. There is a need to develop high-quality courses for traditional, online, and hybrid learning through several strategies with technology and faculty support to develop highly effective courses
4. Universiti Teknologi MARA also emphasised on the interactive teaching and learning approach, by establishing Education 5.0 @ UITM.

(Sixredmarbles, 2023; Hurix, 2021; Team_Embibe, 2022; Janipha, et. al, 2022: Academic Affairs Division UITM, 2019)

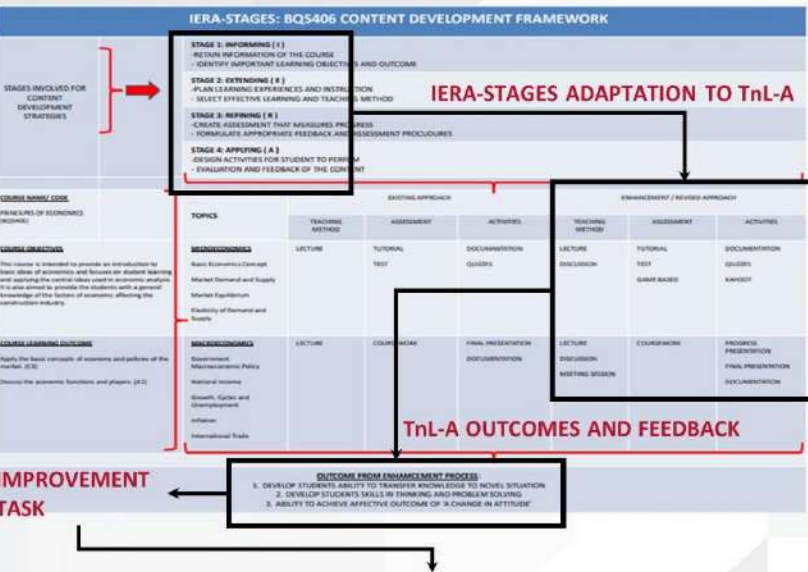
OBJECTIVES

1. To highlight the adaptation of IERA-Stages: Strategies for BQS406 Content Development to the teaching and learning methods and form of assessment
2. To determine the implementation of those strategies in the related course.

METHODOLOGY

An extensive literature review ; to obtain the content development for education, at large.
Experimental;
done to the 80 students of AP224 Semester 01; BQS406 course, to obtain the outcome in depth.

FINDINGS



NOVELTY

ENHANCED BQS406 CONTENT DEVELOPMENT

- Was developed to have more interactive learning approach, more informative and structured course content and formative assessment application

IMPROVED EXISTING CENTRE OF STUDIES FOR QUANTITY SURVEYING SYLLABUS

- Ensure all courses are efficient and students' learning experiences are meaningful and exciting

SUPPORT EDUCATION 5.0 @UITM, IR 4.0

- Help to reinforce UiTM education and Governments' objectives to inspire Malaysians

RECOGNITIONS

BRONZE AWARD: IERA-STAGES: BQS406 CONTENT DEVELOPMENT (INNOVATORS 2022: HITEL TEACHING AND LEARNING INNOVATION COMPETITION 2022)

COMMERCIALIZATION

The implementation strategies of course content was done for Principles of Economics subject (BQS406) under the Centre of Studies for Quantity Surveying.

TnL-A THROUGH IERA-STAGES FRAMEWORK

1	2	3	4	5	6	7	8	9	10	11	12	13	14
LECTURE PLAN													
MICROECONOMICS							MACROECONOMICS						
INTRO	BASIC ECO CONCEPT	DEMAND (DD) & SUPPLY (SS)	MARKET EQUILIBRIUM	ELASTICITY OF DD & SS	GOVT POLICIES	NATIONAL INCOME	BUSINESS CYCLE & UNEMPLOYMENT	INFLATION	INT. TRADE	FEEDBACK			
<ul style="list-style-type: none"> • QUIZZES ; TEST • GAME-BASED ; KAHOOT • FORUM SESSION ; DISCUSSION 							<ul style="list-style-type: none"> • PROGRESS PRESENTATION • DISCUSSION • FINAL PRESENTATION • INDIVIDUAL ASSESSMENT • GROUP ASSESSMENT • PEER REVIEW 						
TEACHING & LEARNING-ASSESSMENT													
• INDIVIDUAL ASSESSMENT													

CONCLUSION

To develop content, effective strategies and methodology should be implemented. Academicians should play a major role in course content and imparting knowledge and skills to the students.

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Monitoring Benthic Classification: A Comparative study of pixel-based and object-based using satellite imagery

INTRODUCTION

Coral reef is one of the most complex marine environmental system, biodiverse, and productive ecosystem on the planet, which play important role for millions of people in major social, economic, and cultural especially for future generation. They only cover 0.1% from the sea, but they support 25% of other marine life species in the ocean, as they are widely known as the "rainforest of the sea". These ecosystems provide benefits to the country as it gives income through marine based industry, fisheries and from the tourism activities, as they are not just beautiful underwater fixture that make the ocean more colourful and vibrant. The island that have clear blue water with beautiful beach will have coral reef ecosystem and rich of diversity of marine flora and fauna (Spalding et al. 2017).

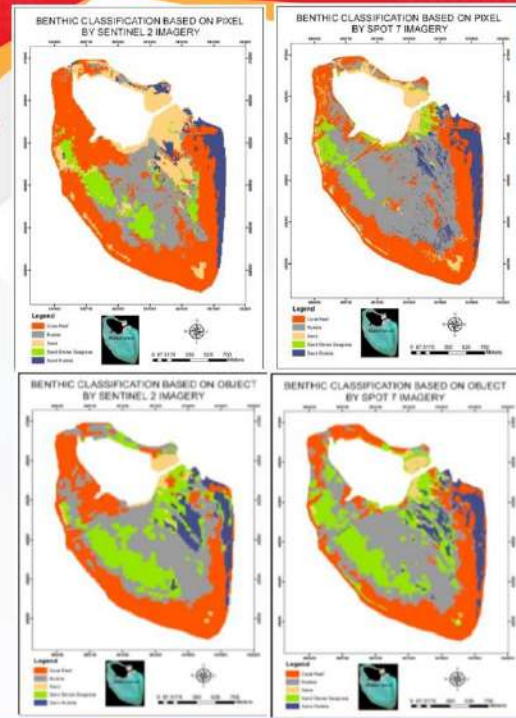
ISSUES/ PROBLEM STATEMENT

Benthic habitats such as coral reef, seagrass, and algae are ecologically and economically important. They provide various support such as nursery and feeding ground for marine life, and supports marine production especially for fishery (Green et al. 2000). Their beautiful underwater landscape trigger tourists to have activity indirectly support local people and country economy. However, despite their value, coral reef globally are facing crisis (Bellwood et al. 2004). With increase of tourist arrivals, it led to pressure coral reef ecosystem. Large swathes of coral reef have been degrade by increasing of coastal construction, shipping around the world, rising of global temperature, overfishing and climate change (Burke et al. 2011). It estimated 33 percent of coral reef now in danger of extinction. By using pixel-based and object-based classification technique, it can monitor the presence coral reef substrates. From the satellite images of Sentinel 2 and SPOT 7 will be know the classification of benthic habitats and with the accuracy from the result of the technique, it will be used for better planning and management of coral reef area in the future

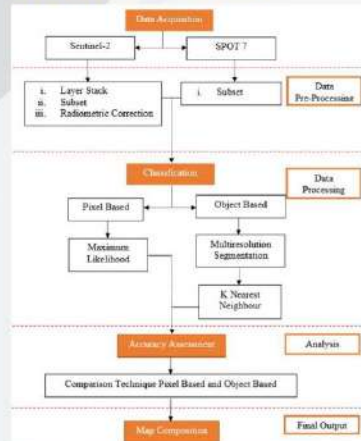
OBJECTIVES

- To compare the differences of technique between pixel-based and object-based image analysis method.
- To generate benthic classification map using SPOT 7 and Sentinel 2 imagery.

Result of Benthic Classification using pixel-based and object-based for both SPOT 7 and Sentinel 2 imagery



METHODOLOGY



The study involves five stage. The first stage required a project planning in defining problem statement, aim, objectives, study area and software to use. The collect the data required. The next stage involves data processing for the acquired data. For current condition analysis, ERDAS 2014 and eCognition Developer 9.0 are used to support the remote sensing techniques in identifying coral reef. Then, based on the result from both data, there will a comparison between two data with two different method.

NOVELTY

Different techniques have been introduced to identify the presence of benthic using different methods and different satellite imagery. This methods can be applied and help local authority especially for Department of the Marine to monitor the presence of benthic from above using satellite imagery.

CONCLUSION

The summaries of finding in this study are to identify the comparison between pixel-based and object-based image analysis in monitoring benthic classification by applying Remote Sensing technique. This study concludes that both SPOT 7 and Sentinel 2 image data can be used to map benthic habitats in the shallow water of Mabul Island, Sabah by using pixel-based and object-based classification approach. Through a comparison analysis, pixel-based classification by using KNearest Neighbour is significantly outperformed the object-based method, although it still has a classification error with an accuracy value above 85%. Spatial information generated from Sentinel 2 and SPOT 7 for object-based classification image data lower accuracy than pixel-based. However, these results can provide an overview of the condition of the shallow water of Mabul Island, Sabah. The overall accuracy for pixel-based is 97.55% for SPOT 7 and Sentinel 2 is lower which 90%. Meanwhile for object-based classification method, SPOT 7 produced 87.05% and only 82.81% for Sentinel 2 overall accuracy assessment. This project study assuredly concludes that not all object-based method is would be increasing the accuracy of classification compared with the pixel-based method.

FINDINGS

Benthic Habitats Class	SPOT 7		Sentinel 2	
	Producer Accuracy	User Accuracy	Overall Accuracy	User Accuracy
Sand	100%	100%	66.67%	50%
Coral Reef	100%	91.67%	75%	100%
Sand Rubble	66.67%	100%	100%	80%
Sand Dense Seagrass Rubble	100%	100%	100%	85.71%
Overall Accuracy	97.55%		90%	
Kappa Accuracy	0.9655		0.8698	

Benthic Habitats Class	SPOT 7		Sentinel 2	
	Producer Accuracy	User Accuracy	Overall Accuracy	User Accuracy
Sand	64.70%	95.65%	77.78%	100%
Coral Reef	98.18%	98.18%	100%	83.33%
Sand Rubble	30.77%	47.06%	88.89%	80.00%
Sand Dense Seagrass Rubble	93.33%	66.67%	58.82%	90.90%
Overall Accuracy	87.05%		82.81%	
Kappa Accuracy	0.8252		0.7823	

COMMERCIALIZATION

Potentially by:
Department of Marine Life, Malaysia and also for Institut Maritim Malaysia
NGO in preservation of Coral Reef in Malaysia

RECOGNITIONS

Thanks to the agencies that involved in this study for their willingness to allow their agencies to be involved in this project study, which Malaysian Space Agency (MYSA) for provide their data of SPOT 7 of Mabul Island, Sabah
Thanks to Perpustakaan Tun Abdul Razak UTM Shah Alam for helping provide data from MYSA.

Accuracy assessment is an important process in the classification procedures that been performed by comparing by map created by remote sensing analysis to a reference map based on different information sources. Tables below shows the accuracy user accuracy (UA), overall accuracy (OA), producer accuracy (PA), and the value of Kappa statistic for both methods. The accuracy assessment for pixel-based image analysis classification method have been made by created 40 samples for both classifications. Random method is used in this study. Overall accuracy for SPOT 7 is 97.5% and 90% for Sentinel 2 is 90% respectively. The SPOT 7 Kappa coefficient statistic is 0.9655 and 0.8698 for Sentinel 2. For the accuracy assessment of object-based, there have four method can be used which classification stability, best classification result, error matrix based on TTA mask and error matrix based on sample. In this method, error matrix based on sample is used and 139 sample been created for the classification accuracy. Overall accuracy for SPOT 7 is 87.05% and 82.81% for Sentinel 2 respectively.

BIM Education for Quantity Surveying Students Using REVIT Tools:

IIBDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



Evaluating the Knowledge, Awareness and Perceptions

INTRODUCTION

The implementation of BIM has been proven to enhance the productivity and efficiency throughout the construction process in other countries such as United Kingdom, Singapore, Hong Kong (Building Research Levy, 2016). Thus, the Malaysian government has highly encouraged the application of BIM to transform the Malaysian construction industry to a higher level (CIDB, 2015). Thus, the changes towards existing construction education system in BIM or information technology curricular, also for professional development courses need to be carefully examined in order to support the demands for the skilled BIM professionals. Developed countries have put in many efforts to impose BIM in their education systems as the reason to increase BIM awareness and train their graduates to be well-equipped and adequate with BIM knowledge and skills (Aziz et al., 2019). Howard et al. (2017), Jin et al. (2017) and Aziz et al. (2019) have discussed on the individual professional perception in BIM practice and implementation in AEC industry. Additionally, studies by Kugbeadjo et al. (2015), Zhao et al. (2015) and Shelbourn et al. (2017) have focused on the development of BIM in higher learning institutions' curricular and academic. Kugbeadjo et al. (2015) outlined BIM readiness defined as the student's willingness to explore BIM and their ability to work in a BIM-enabled environment. BIM is observed as a groundbreaking approach and integrated process that supports the efficient design, information storage and retrieval, model-based data analysis, visual decision making, and communication among project stakeholders (Eastman et al., 2008). BIM is different from computer-aided drawing (CAD), which enables modeling of the building's form. Meanwhile, CAD only provides a representation of the engineering object (Sacks, 2010). Therefore, the development of BIM initiates a new approach to teaching AEC. Through BIM, a comprehensive, integrated graphic and alphanumeric database, stakeholders can collaborate effectively (Thomsen 2008). Advanced analysis using BIM data allows various analytical activities, such as code checking, collision detection, energy efficiency analysis, and structural analysis. Adding time and cost information to the 3D model results in the virtual construction model (Kim, 2012). In response to this promising technology and industry needs for relevant skills, academic institutions are exploring strategies and approaches to incorporate BIM education in their undergraduate and graduate curriculum (Wang & Leite, 2014). Recently, the teaching method in construction education has also changed as education is always in tandem with the industry. The BIM technique has been integrated into the construction education curriculum (Kim, 2012).

ISSUES

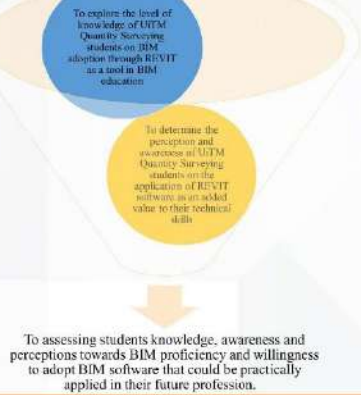
ATC industry demands for BIM competence professionals (Hosseini et al., 2018)

AEC industry faced problems of lacking skilled BIM professionals (Sawati et al., 2013)

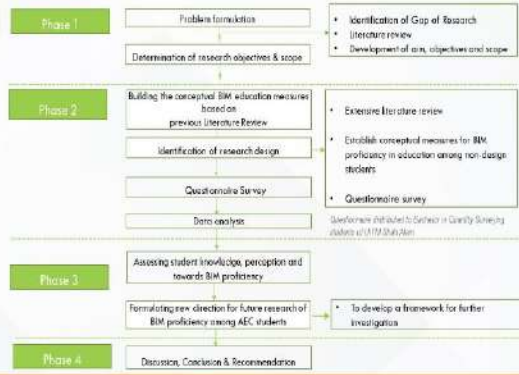
BIM skills and competencies are needed to solve future problems in construction sectors (Bosch-Sijtsema et al., 2019; Hong et al., 2019; Jin et al., 2019).

There is still lack of studies in the previous literature addressing BIM awareness and readiness of built environment students towards BIM software application especially for non-design students.

AIM & OBJECTIVES



METHODOLOGY



FINDINGS

Respondents' profile

	Frequency (No.)	Percentage (%)
Age		
18-20 years old	58	28.6
21-23 years old	142	70.0
24-26 years old	5	2.5
Total	205	100.0
Gender		
Male	58	27.6
Female	147	72.4
Total	205	100.0
Education level		
UTM	31	15.1
Matriculation	58	27.6
Diploma	108	52.2
Others	5	2.5
Total	205	100.0

Perceptions towards BIM and Revit Software Application

	Mean	Std. Dev.	Min.	Max.
Perceptions on BIM	3.728	1.449	1.000	4.500
Perceptions on Revit Software	3.266	1.494	1.173	4.500

Knowledge and Awareness on BIM and Revit Software

Questions	BIM		REVIT	
	Frequency (No.)	Percentage (%)	Frequency (No.)	Percentage (%)
Have you heard of BIM? Autodesk Revit Architecture before? (Without knowing what it is)	Never: 119 (58.0)	Rarely: 30 (14.8)	Sometimes: 40 (19.7)	Often: 7 (3.4)
Do you know the application of BIM? Autodesk Revit Architecture?	Never: 154 (75.1)	Rarely: 31 (15.3)	Sometimes: 15 (7.4)	Often: 2 (1.0)
Do you have any idea how BIM, Autodesk Revit Architecture works? (In term of technical aspect)	Never: 159 (77.5)	Rarely: 30 (14.8)	Sometimes: 10 (4.9)	Often: 2 (1.0)
Are you aware of what BIM, Autodesk Revit Architecture can bring to construction projects?	Never: 128 (62.4)	Rarely: 35 (17.2)	Sometimes: 24 (11.8)	Often: 18 (8.8)
Are you aware of the main benefits of BIM? Autodesk Revit Architecture?	Never: 137 (66.8)	Rarely: 32 (15.8)	Sometimes: 22 (10.8)	Often: 7 (3.4)

CONCLUSION

Through the assessment on the students' knowledge and awareness versus their perceptions towards BIM and Revit software, it can be observed that the results demonstrated quite positive findings. In response to the survey questions, most of the students were excited in knowing more about BIM and ready to learn and explore Revit software, although they did not have any idea and aware about neither BIM nor Revit since they never heard of the terms before. Hence, they could not interpret either how BIM and Revit work, or what benefits they could get when using the tools in construction projects. Nevertheless, they believed that BIM technology with the usage of its tools such as Revit included in the course syllabus would benefit them in giving added-values towards their future career development.

NOVELTY

In terms of practicality, this research intends to promote the initial efforts in producing competent and proficient non-design students towards a successful implementation of BIM system in BIM-based projects. Consequently, it could lead to the establishment of a career as a BIM Manager among non-design professionals.

CONFERENCE

Paper has been submitted to the 11th International Conference on University Learning and Teaching (InCULT 2021), UiTM, entitled "BIM Education for Quantity Surveying Students Using REVIT Tools: Evaluating the Knowledge, Awareness and Perceptions" held on 2nd December 2021

COMMERCIALIZATION

This research is in the process of applying an Intellectual Property (IP) for the title and scope following the extended research on examining students' perceptions towards the after-effect of employing Revit as a tool. It includes the benefits and challenges of using Revit as BIM tools in deliberating their understanding to be aligned with skills and knowledge when using BIM platform.

PREPARED BY:

Sr Dr. Noor Akmal Adillah Ismail, Sr Dr. Har Einur Azrin Baharuddin, Ts. Zulkhairi Affandi Mohd Zaki, Sr Ts. Abdul'Uzz Mohamad Kamil and Hj. Hazwani Ramli
Centre of Studies for Quantity Surveying, College of Built Environment, UiTM Shah Alam

TREE RINGS PROVIDE SNAPSHOTS OF EARTH'S PAST CLIMATE

Nur Idzhainee Hashim, Firdaus Chek Sulaiman, Ahmad Nazrin Aris Anuar

Centre of Studies for Parks and Amenity Management, College of Built Environment, Universiti Teknologi MARA

ABSTRACT

Dendrochronology is the scientific discipline of determining the relationship between tree growth and climate, and is determined using the annual growth rings. This provides a potential method for monitoring climate change. Climate usually acts as a major factor influencing the tree growth. Here, the effects of climate of a conifer species was assessed in relation to measured climatic variables. Tree cores of Scots Pine (*Pinus sylvestris*) were sampled from a forestry plantation at Hordron Edge, Derbyshire to determine the relationship between annual growth increment and four climate variables (maximum temperature, minimum temperature, grass minimum temperature and rainfall). In this study there was no significant correlation between growth and climatic variables. There were no significant first-order relationships found between tree growth indices and any of the four climatic variables tested. This result suggests that climatic variables were not significant in controlling tree growth at this site.

INTRODUCTION

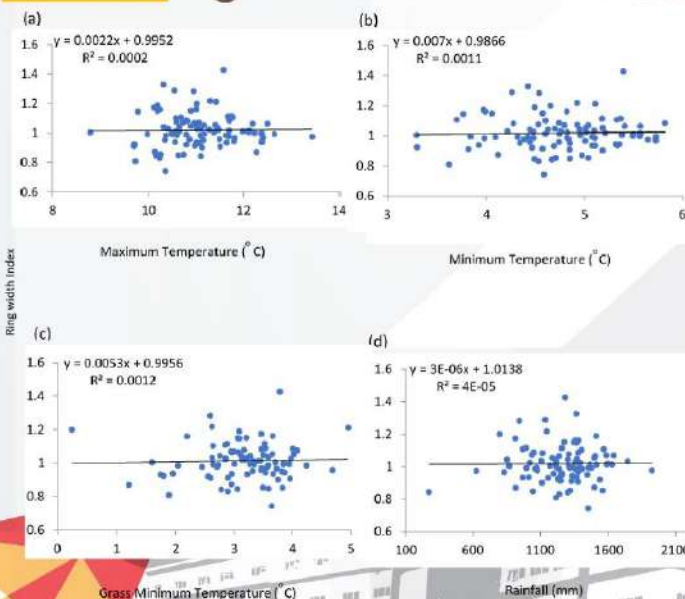
Forest ecosystems have been recognized as an essential component of the biosphere. One of the most widely-distributed conifers tree in the world is Scots Pine (*P. sylvestris*) (Royal Forestry Society, 2014). It is found naturally in Great Britain mainly in the Scottish Highlands but is planted extensively throughout the country. During the early 20th century, the field of dendrochronology was born when it discovered that tree-ring width was dependent on climatic and environmental parameters (Fritts, 1976). Tree-rings are formed by the vascular cambium, a cell tissue located between the xylem and phloem, which produces new xylem (wood) to the inside and new phloem to the outside. Differential activity in the cambium layer in response to climate produces xylem rings of different thicknesses and is in effect a measure of response to climate.

NOVELTY

The novelty of the research is to provide the snapshots of earth past climate using tree's rings and the determination on the relationship between annual growth increment and four climate variables:

- Maximum temperature
- Minimum temperature
- Grass minimum temperature
- rainfall

FINDINGS



OBJECTIVES

To determine the relationship between tree growth and climate using the annual growth rings.

METHODOLOGY

Standard dendrochronological techniques were used to collect, prepare and measure tree-ring width increments. Tree-ring widths were as cross referenced to the climate data to enable growth dynamics to be investigated. Sampling was completed at the site using standard dendrochronological methods (Fritts, 1976). For each tree, height was recorded using a Haglof Vertex IV Ultrasonic Hypsometer (Krooks et al., 2014). Cores were always taken from the southern side of the tree to minimize differences due to aspect. Cores were labelled and glued into a wooden block until processed. The cores were left to dry overnight and then glued into the wooden core blocks with multipurpose white adhesive in a way that exposes the transverse cross-sectional surface. Cores were then progressively sanded and polished with successively different grades of emery paper (120, 240, and 320) until the wood cells were clearly visible under the microscope. Cores were then scanned using an Epson scanner (Expression 11000XL) at 1200 dpi resolution to provide a computerized image of the cores. The scanned images of the cores were then viewed using CoolDendro software and distances between annual rings counted. All samples of cores were visually cross-dated to avoid miscounting by missing or false rings which were either locally-absent or present as multiples rings.

CONCLUSION

The research does not show any relationship between tree growth and climate relationships, as there were no significant first-order relationships found between tree growth indices and any of the four climatic variables tested. This suggested that (*P. sylvestris*) growth was not governed by climate variables at this site hence, our initial was rejected. Given this it was not possible to produce predictive relationships between tree (*P. sylvestris*) performance and climate at this site. As climate change is not static and is fluctuating continually, the dynamics of tree growth towards climate will likely depend on many factors comprising of water and nutrient availability, the timing of the warming, rising atmospheric CO2 and the ability of species to acclimate to new growing conditions (Way and Oren, 2010).

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Journal of Academia UiTM Negeri Sembilan 5 (2017) 69-81

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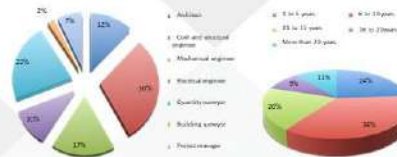
The Correlation Analysis Between Training and Attitudes towards Building Information Modelling (BIM) Adoption in Malaysian Construction Industry

INTRODUCTION

The adoption of Building Information Modelling (BIM) as a technological advancement in the industry has become a main concern among its stakeholders. Despite the level of BIM awareness improving, the rate of adoption is considered low. Research and expert advice has claimed that the BIM adoption rate can be increased by giving in-depth understanding in the importance and benefits of BIM implementation. Training is one of potential factors that could expedite the adoption of BIM. BIM training is a significant aspect in BIM implementation due to its role not only to expand the knowledge, but also as a means of facilitating BIM adoption. Therefore, the aim of this research is to investigate the influence of BIM training on attitudes to BIM implementation among Malaysian construction players by using extended technology acceptance model (TAM). The beliefs of ease of use, usefulness and employee resources were utilised as TAM variables for explaining the relationships between training variables and behavioural intention to use. In order to achieve this aim, an online survey was conducted among professional employees of government agencies. The findings demonstrated that extent of training was not related to TAM variables suggesting that a high amount of training would not positively affect the BIM adoption. In addition, TAM variables had significant positive relationships with behavioural intention to use. Finally, this study suggested the perspectives of ease of use, usefulness and employee resources should be taken into consideration by training organisers in organising BIM training in order to create an effective training that can facilitate BIM adoption.

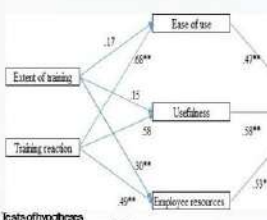
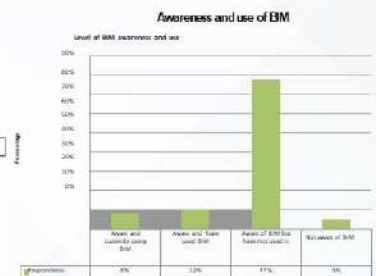
FINDINGS

The total of 204 online questionnaires was received and have been completely answered by the respondents from various government agencies. Personal information in the answered questionnaire showed that the respondents consist of various professional backgrounds in the following proportions:



Variable	EOT	TR	EOU	U	ER	ITU
TR	0.19					
EOU	0.17	0.67**				
U	0.15	0.57**	0.67**			
ER	0.17	0.49**	0.50**	0.57**		
ITU	0.22*	0.41**	0.47**	0.58**	0.53**	

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)
Relationships between training variables (EOT and TR) and ITU



Tests of hypotheses
Pearson correlation coefficient approach was employed to measure the linear relationship (correlation) between the variables in the research model. A pair of the variables in the hypotheses were tested in order to examine if there is a significant relationship between two variables in each hypothesis. In determining the level of significant correlation, the guide proposed by Evans (1955) was used to determine the significant level of value of r which consisting very weak (0.00 - 0.19), weak (0.20 - 0.39), 0.40 - 0.59, 0.60 - 0.79, 0.80 - 0.99 strong (0.80 - 1.00).

From the survey, the results indicated that the level of BIM awareness is very high where 95% of the respondents are aware of BIM. On the contrary, the usage of BIM is very low where only 8% of the samples are currently using BIM and 10% of the samples have used BIM. From the literature review, it is found that BIM awareness among architects is about 80% and found that quantity surveyors in Malaysia also have high level of BIM awareness ranging between 85% to 81% in different construction stages. Thus, these findings offer clear evidence that BIM is already a well-known technology in Malaysian construction industry. In use of BIM, the findings showed that the level of BIM use is very low (10%) as found in the previous study, which means Malaysian construction players are still struggling to fully adapt to BIM implementation.

PROBLEM STATEMENT

Lack of skilled personnel – the lack of ready group of competent people who has capability in using BIM effectively and competency

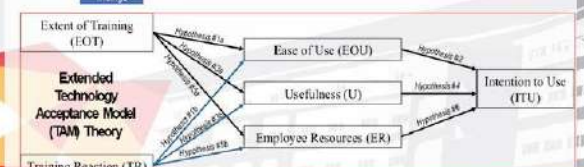
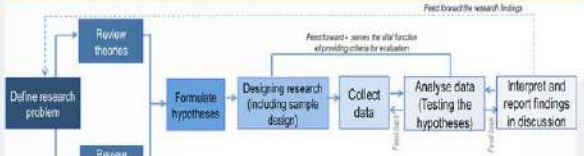
Project personnel not properly trained did not have sufficient training and mostly have little knowledge of the benefits of BIM adoption

Training could accelerate the process of BIM adoption. Hence, BIM training is a salient topic to be investigated due to awareness of BIM steadily growing in Malaysian construction industry

AIM & OBJECTIVES



METHODOLOGY



Prepared by:
Sr Dr. Har Emir Azrin Baharuddin
Sr Ainal Faizal Othman

1 Centre of Studies for Quantity Surveying, College of Built Environment, UTM Shah Alam
2 Cawangan Kontrak dan Ukur Bahan, Ibu Pejabat JKR Malaysia, Kuala Lumpur

The relationship between training variables (EOT and TR) and ITU are via the TAM variables, this is reflected on significant relationships between ITU and TR (moderate) and EOT (weak).

- a) Relationship between Extent of Training (EOT) and Intention to Use (ITU)**
For EOT a strong ITU might prompt someone to seek out and attend BIM training. Equally, relationships seen may be due to the measured variables both being related to an unmeasured third variable, for example, an employee who has been assigned to a BIM project might score highly on both EOT and ITU without the training having had any actual effect on intention.
- b) Relationship between Training Reaction (TR) and Intention to Use (ITU)**
For TR, the moderate relationship with ITU might indicate that the enjoyment, satisfaction and expectation of training have fulfilled the needs of participant in participating BIM training. These results might be explained by the fact that the training contents and experienced trainers are important elements in creating conducive training environment that may turn to be main psychological factors to influence participants to use BIM.

CONCLUSION

In conclusion, extended TAM variables demonstrate positive influence to behavioural ITU, the BIM training organisers should be sensitive to the current needs of the potential participants and not just provide the training to fulfil their training schedule. Although there was a weak significant positive correlation between EOT and ITU, as compared to the relationship between EOT and TAM variables, the number of days training may not be able to contribute a strong positive impact on the participants because the knowledge and skills they have learned in training were still unable to help them understand and explore the uses and benefits of BIM. Therefore, it could be concluded that possibly there is a lack of training quality in terms of content and trainer.

NOVELTY

This research intends to promote the effort in enhancing BIM Training methodology among construction players towards acceptable attitudes on BIM adoption. Eventually, it could lead to the establishment of effective organization of BIM Training

COMMERCIALISATION

This research is in the process of applying an Intellectual Property (IP) for the title and scope following the extended research on promoting effort in enhancing BIM training among construction key stakeholders towards acceptable attitudes on BIM adoption.

RECOGNITIONS, CONFERENCE & PUBLICATION

- 2nd Runner Up in Postgraduate Research Award 2019 held on 30 Sept 2019 in OestE, Malak
- Paper presented in ICMBEE 2019, Bangkok Thailand and Paper published in Baharuddin, H. E. A., Othman, A. F., Adnan, H., & Ismail, W. N. W. (2019, February) BIM training: The impact on BIM adoption among quantity surveyors in government agencies. In *IOP Conference Series: Earth and Environmental Science* (Vol. 233, No. 2, p. 022036). IOP Publishing
- Paper published - Baharuddin, H. E. A., Othman, A. F., Adnan, H., & Ismail, N. A. A. (2021). Evaluating the influence of training on attitudes to building information modelling (BIM) adoption in Malaysian construction industry by using extended technology acceptance model (TAM). In *Optimization and Integration in Construction, Engineering, Management and Technology* (pp. 577-582). Springer, Cham.

THE SALE AND LEASEBACK INVESTMENTS FRAMEWORK FOR REAL ESTATE INVESTMENT TRUSTS (REITs) IN MALAYSIA

INTRODUCTION

Sale and Leaseback investment has become one of the alternative ways for institutional investors such as Real Estate Investment Trusts (REITs) in purchasing existing properties with great value. It is the responsibility of the REITs managers to determine which properties are suitable to be invested in this type of investment since there is no proper guideline for REITs in conducting Sale and Leaseback investments. Therefore, the aimed of this project is to identify the factors that influence the property investment yield and a framework for the REITs managers as a guideline in conducting Sale and Leaseback investments. The data were collected through structured interviews with six M-REITs that practice Sale and Leaseback Investment in Malaysia. After the interview, the whole process of data analysis was assisted by computer software using QSR NVIVO 12 to conduct qualitative data analysis and followed by the content analysis method. The result of the study would be a useful guide to Real Estate managers in developing countries towards using Sale and Leaseback investment as one of the alternative ways of acquiring property that is likely to produce a higher yield.

PROBLEM STATEMENTS

- The difficulties in determining the property market fundamentals is to consider the risk and return (yield) achieve by the property (Lam & Tipping, 2016; Tir et al., 2015; Tipping & Newton, 2015)
- Sale and Leaseback investments in the real estate market is not extensively practiced in Malaysia, Ang (2017). In reality, Sale and Leaseback investments is more complicated than it appears to be on the surface (Previndran, 2019), due to no proper guideline for REITs in conducting Sale and Leaseback investments

OBJECTIVES

- To assist the investors to achieve the desired yield before acquired the property through Sale and Leaseback investment.
- To develop Guideline for Sale and Leaseback investment framework according to M-REITs practices.

METHODOLOGY



NOVELTY



1 APPLICATION

The first application property investment framework that incorporates the Sale and Leaseback investments arrangement that meet

2 COPYRIGHT

Registration Number: CRLY00015346

3 GERAN KHAS INSENTIFPENYELIAAN PERAK (IGIPP)(2018-2019)

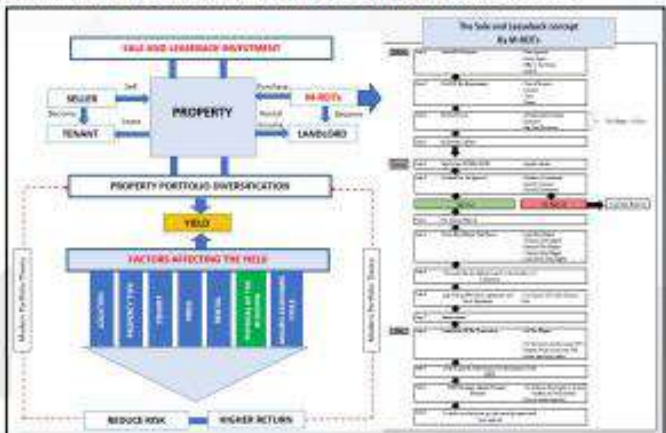
Grant Amount-RM3,000.00 Ref. Num.:900-KPK(P.J.1/5)

COMMERCIALIZATION



FINDINGS

A new property investment framework that incorporates the Sale and Leaseback investments arrangement that meet the needs of M-REITs were developed.



CONCLUSION

The development of Sale and Leaseback framework can be used as a Guideline for the existing or also other Real Estate Investment Trusts (REITs) companies, in formulating their decision-making in purchasing property through the Sale and Leaseback investments and also enabling the development of a framework that can be used by professional practitioners and investors in predicting high yields for portfolio building purposes.

CONFERENCES & PUBLICATIONS

- Ling, N.L.F., J. Aliasah, M. H. H., & Alauddin, K. (2020). Malaysia REIT Companies Concepts in Practising Sale and Leaseback Investment. *Journal of ASIAN Behavioural Studies*, 5 (6) 39-49 (2020). doi: <https://doi.org/10.21834/jabs.v5i6.543>
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RECOGNITIONS

- The 8th International Invention Innovation and Design Competition (INDES 2019). Factors That Affecting The Transition Of Property Investment Through Sale and Leaseback Investment, 19 September 2019, Casuarina Hotel, Ipoh. (Gold Award).
- International Creative Design Competition (ICDC 2018). Evolution of Property Investment Through Sale and Leaseback Investment, 29-30 October 2018, Dewan UTM Seri Iskandar, Perak. (Silver Award).



GOAL

Method:

Identifying Physical Inaccessibility Impacts

IIIDBEE X 2023

20 JANUARY 2023

International Invention, Innovation & Design Exposition for Built Environment and Engineering 2023



INTRODUCTION

Accessibility enables disabled people to have full participation in society that supposed to lead to social justice and equity, thus promote social sustainability. Public places and public buildings should be planned and designed based on the accessible manner to ensure that everyone could have access to the physical environment. However, literature show that physical barriers in the built environment hindered disabled people full participation in the society that resulted to marginalisation.



ISSUES/ PROBLEM STATEMENT

- Identifying barriers using access audit – predetermine accessibility checklist.
- Little consideration of disabled people's lived experience (psychological and emotional views).
- Dynamic interaction between disability and the built environment.
- Disability encompasses structural and psycho-emotional dimensions.
- Hence, go-along (GOAL) interview method adopted (a type of walking interview typically employed in ethnography research).
- To gain in-depth understanding of accessibility and inclusion issues among disabled people.



FINDINGS

Psycho-emotional effects of disability include frustration and insecurity about continuing the journey. Both structural and psycho-emotional disability indicate injustice through inadequate environment that causes social exclusion. When wheelchair users need help climbing stairs, they compromising safety. OKUs emotions and body were affected by fear of built environment barriers. Being lifted by others to get to another floor makes OKU uncomfortable (for safety and being watched) and inferior for not being able to do things independently. These feelings could hinder OKU's social life. This issue caused some OKU to consider giving up and prevented them from living their full potential.

NOVELTY

- GOAL interview permits observation of the participants' spoken responses, faces, body language, and voice tones as they communicate their experiences while accessing or attempting to access building and public space.
- Collect data with empathy – facing built environment challenges together.
- The researcher was the first to adopt GOAL interview in understanding the disability-environment context in Malaysia.



OBJECTIVES

To identify physical inaccessibility impacts towards disabled people from the psycho-emotional dimension while experiencing physical barriers in KL city centre by using GOAL interview method.

METHODOLOGY

The researcher walked alongside disabled participant (or OKU, commonly used in Malaysia) in pedestrian walkways, buildings and public spaces, and ride-along with each participant using the participants' preferred mode of transportation.

CONCLUSION

Generally, OKU still struggles for inclusion due to many impediments, as evidenced in GOAL interviews. Disabling barriers are both structural (e.g., inappropriate ramp gradient) and psycho-emotional (personal experience). The way OKU perceived structural and psycho-emotional barriers varied from person to person, despite using the same walking aid and having the same impairment. Learning 'with' disabled participants is more effective in understanding the disability-environment context compared to learning through research that is 'about' disabled people's experiences or by only conducting traditional interviews with them. There were so many precious experiences that the researcher would not be able to achieve through reading or listening, but gathered through the GOAL interview journey. The researcher not only observed the participant but was involved with empathy in what the participant experienced in the journey as the researcher directly faced the challenges with them. Understanding disabled people's psycho-emotions within human-environment interactions helps promote an inclusive environment.

COMMERCIALIZATION

The outcomes of using GOAL method in identifying and understanding structural and psycho-emotional dimensions of disability faced by OKU promote inclusive environment for social sustainability, which is more valuable than monetary value.

RECOGNITIONS

- Three Minutes Thesis Finalist (Top 10), University of Birmingham, United Kingdom, 2017
- Best Presenter - The 2nd International Conference on Contemporary Muslim World (ICCMW2021) Universiti Teknologi MARA Cawangan Perak, Malaysia, 13-14 October 2021

CONFERENCES & PUBLICATION

- H. Kamarudin, J. Kaliwon, Y. Sarkom, W.Z.W. Ismail (2022), Physical barriers faced by mobility-impaired city travellers to perform prayer in mosques and suraus, in Muhd Imran Abdul Razak, Ahmad Rozaimi Ali Hasan, Shahril Nizam Zulkapli (Eds), Paraghna Ilmu Islam dan Realiti Semasa (pp. 194-205).
- H. Kamarudin, A.F. Bakri, N.Q. Zaiman (2022), Identifying physical barriers through a real-life experience with mobility difficulties city travelers: a go-along interview method. IOP Conference Series: Earth and Environmental Science 1067 (1), 012008
- H. Kamarudin, B.A. Hadi, E.S. Mohandas, A.Z.A. Shahbuddin, M. Musa (2022), The adoption of the go-along interview method in identifying transportation barriers for mobility-impaired travelers, International Conference for Built Environment and Engineering 2022.
- N.F. Zahari, A.T.C. Ani, R.A. Rashid & N. Ismail (2018), Conducting go-along interview method to discover experience of wheelchair traveller's accessibility in National Heritage building. Proceedings of Conference on Regional Architecture and Built Environment 2018 (SeniBINA2018) Theme: National Architectural Identity, 76.

SAMPLE	RECRUITMENT	PARTICIPANTS ATTRIBUTES
20 volunteers with mobility difficulties	Adults PWD volunteer - willing to travel to and spend time in the KL city center with the researcher.	Snowballing technique - used when finding participants is scarce
10 manual wheelchair users		
- polio		
- spina bifida		
- spinal cord injury		
3 unaided		
- clubfoot		
- acquired brain injury		
1 skateboard		
- polio		
2 powered wheelchair users		
- cerebral palsy		
- congenital amputation		
1 prosthetic leg		
- single leg amputee		
2 crutches users		
- cerebral palsy		
- single leg amputee		



PREPARED BY:

Hikmah Kamarudin¹, Nurul Fadzila Zahari², Muhammad Haziq Md Anuar³, Aidatul Fadzlin Bakar⁴ & Nurulhusna Qamaruz Zaman⁵

¹Centre of Studies for Building Surveying, College of Built Environment, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia.

²Department of Built Environment Studies and Technology, College of Built Environment, Universiti Teknologi MARA, Perak Branch, Seri Iskandar Campus, 32610 Seri Iskandar, Perak, Malaysia.

³Centre of Architecture, College of Built Environment, Universiti Teknologi MARA, 42300 Puncak Alam, Selangor, Malaysia.

EMPOWERING SPECIAL PROPERTY DEVELOPMENT ENTITY (SPDE) FOR WAQF LAND DEVELOPMENT

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



INTRODUCTION

The Special Property Development Entity (SPDE) is a structurally subsidiary of SIRCs, waqf governing agency or any related organisation. It functions as a waqf focused/specialized property developer which responsible to conduct waqf land development according to the aspiration of its parent organization.

Data from the Yayasan Waqaf Malaysia (2016) indicated that waqf development in Malaysia is still far from optimum. The involvements of property developers are expected to improve waqf land development because they are the main agents in producing built environment products and shaping city growth (Adams et al., 2012; Drane, 2014). Their professionalism and capability to seek opportunities and potentials of the lands would boost waqf land development.

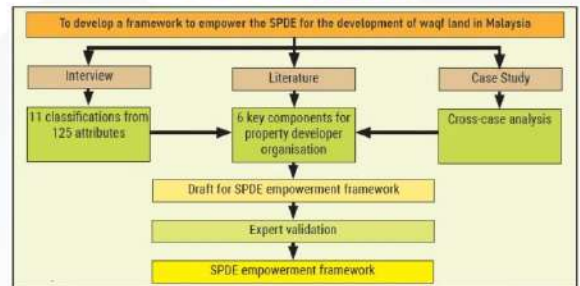
ISSUES/ PROBLEM STATEMENTS

The record had shown that several property developers had worked together with the State Islamic Religious Councils (SIRCs) to develop waqf lands (Mohsin et al., 2016, Yayasan Waqaf Malaysia, 2016). However, not many property developers were interested to involve because waqf has some restrictions that slightly tedious to deal compared to ordinary lands. Furthermore, there are issues involving the suspicion and imbalanced dealings between the property developers and SIRCs when both parties were strategizing strategies to secure their interests. So, having a subsidiary that understand the aspiration of parent organisation would ease the process to elevate the agenda of waqf development in the country.

OBJECTIVES

To propose components in empowering waqf land Special Property Development Entity (SPDE)

METHODOLOGY



Corroboration of the literature, interview and case study has been done to produce a framework that integrates all the empowerment components for the SPDE (refer Diagram 2). It involved analytical review and analysis of the literature, 19 interviews with the SIRCs and developers, as well as conducting three case studies on SPDE. The process has derived a total of 6 key components from the literature, 11 classifications of 125 attributes from the interviews and rich information about SPDEs.

THE PROPOSED FRAMEWORK



The SPDE empowerment framework for waqf land development has 3 main components namely the Spiritual Components, Operational Components and Aims Components. Also, there are 8 sub-components that are inter-related with each other to contribute to the robust setup of an SPDE.

- 1. Tawheedic** - the spiritual element that the SPDE for waqf development should embrace. This element of tawheedic will shape the organisational character of the waqf SPDE and its business model. It binds the good self-conduct and professional practices in delivering waqf development, thus portray exemplary Islamic organisation.
- 2. Autonomy management structure** - the autonomy management structure would benefit the SPDE by providing the freedom to control its operation, designing the internal system, make any strategic decisions, respond to the market environment and many more.
- 3. Knowledge and expertise** - the ability of the SPDE to attract and retain the talent within the organisation which requires effective human resource management.
- 4. Financial** - vital to ensure the sustainability of the SPDE. It includes the strategy to obtain, spend, maintain and invest its financial sources.
- 5. Project management, supervision and monitoring** - In managing the development project, the SPDE must understand the intention or deeds of the waqf and incorporate them in the development projects.
- 6. Project delivery and maintenance** - Accountability during the post-development stage is important because waqf must be well maintained and sustainably deliver the benefits to its beneficiaries.
- 7. Mardhatillah (blessings of Allah)** - being reckoned as the aim of the development. Whereby the success of a development is measured by whether the development actor is getting the blessings from Allah for his action and being rewarded with paradise in the hereafter. It looks intangible, but it can be understood through understanding of the tasawwur.
- 8. Sustainable Development Goals (SDGs)** - is a global agenda by the United Nation that intends to improve peace and prosperity, globally through the participation of the global community, including the philanthropic sector such as waqf.

NOVELTY

1. The concept of the SPDE has been promoted for the application of the waqf sector, which not widely available in the Malaysian waqf sector.
2. All the components in the framework are derived from thorough study of literature and practices. On top of that, the framework had gone through two rounds of validation.
3. The framework is holistic, which encompassing the spirituality, operational and motivational aspects for Muslim entity. It is possible to accommodate the development model for religious related properties.

RECOGNITIONS

The framework is an output a PhD study, which academically possesses intellectual property although pattern application has not been applied yet.

COMMERCIALIZATION

The idea of the framework has commercial application although may not for commercialization

CONCLUSION

The final framework has successfully emphasized the roles of the components. Intentionally, every component is expected to lead to another component so that the process continues and empower the organisation.

CONFERENCES & PUBLICATION

Some related publications in the journals and conference proceedings are as follows:

1. Ahmad Shazrin Mohamed Azmi, Noor Rosly Hanif & Siti Mashitoh Mahamood (2017) Revitalising the Development of Waqf Properties: A Way Forward, International Journal of Real Estate Studies (INTREST), Vol. 11, No. 3, July 2017, ISBN 1832-8505
2. Ahmad Shazrin Mohamed Azmi, Noor Rosly Hanif & Siti Mashitoh Mahamood (2017) Expediting waqf property development through the Special Property Development Entity (SPDE): Sharing the Experience from Selangor, Malaysia. Presented in 5th Global Waqf Conference 2017, 16th - 18th October 2017, The Premiere Hotel, Pekanbaru, Riau, Indonesia.
3. Ahmad Shazrin Mohamed Azmi, Noor Rosly Hanif & Siti Mashitoh Mahamood (2016) The Characteristics of Special Property Development Entity (SPDE) for Waqf Development as Identified by Authorities in Malaysia. Presented in An International Multi-Disciplinary Graduate Conference of Terengganu (GRACE 2016) on 5th November 2016, Taman Tamadun Islam, Pulau Wan Man, Kuala Terengganu, Malaysia.

Vibration Simulation & Analysis Teaching Tool (VSATT): An Interactive Learning Tool Based on MATLAB Simulink and GUI

IIIDBEE
20 JANUARY 2023

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for Built Environment and Engineering 2023



INTRODUCTION

The use of a Graphical User Interface (GUI) as an interactive teaching tool has been increasingly popular in many areas of study. A MATLAB-GUI program as a teaching tool in engineering courses would not only improve the learning experience but could also improve student understanding of the subject itself. An example of a simulation of a Single Degree of Freedom (SDOF) forced vibration system is given to demonstrate the role of all the different parameters of the model, so students can get a real interactive experience.

PROBLEM STATEMENT

The current practice of teaching involves mainly visual and auditory stimuli, where lecturers present the concept to the student during lecture sessions. In passive learning settings, students sit in lecture halls and take notes whilst listening to the lecture.

The use of GUI in learning enables an active learning setting where students can develop higher-order critical thinking and analysis skills. This is because active learning requires students to engage in meaningful activities and think deeply about the concepts they're learning. It is believed that when students engage in active learning, they are more likely to retain what they've learned.

OBJECTIVES

To address this issue, the current program Vibration Simulation & Analysis Teaching Tool (VSATT) was developed and introduced to promote interactive learning environment for better understanding of the forced vibration problems.

This simulation could analyze and display vibration behavior under various conditions as input by users (students). The simulator would allow the user to test different input parameters and observe how this would affect the respond behavior. Also, the introduction of VSATT could offer a different learning experience to students.

METHODOLOGY

VSATT is a MATLAB Program (R2017b, The MathWorks, Inc) execute-file, which was developed as a teaching tool for the Vibration course (MECS21. This course is enrolls by semester 5 students (third year).

Using this tool, the student able to simulate two cases simultaneously to observe the difference in displacement behavior due to parameter changes. The GUI can also be applied potentially in research as researchers can make quick assessments and calculations of conditions. The emphasis is given for the program to practical applications and potential situations for its use. The GUI development also emphasizes on ease of use, neat visual appearance and fast computation time to ensure successful content delivery.

NOVELTY

VSATT is a newly developed MATLAB-based program which could calculate accurately the displacement over different initial parameters. The program will be used during the teaching and learning sessions for the third chapter in the course Vibration (MECS21).



DETAILS OF PRODUCT

The tool consists of two sections which are Simulink block diagram, GUI and m-file programming. Using this tool, students are able to learn the time response behavior and observe the effect of parameter variation of vibration element such as mass, spring and damper as it can be repeated several times.

Table 1: Special Feature of VSATT

Simple and easy to use	The program is employing an analytical approach (exact solution), with direct input and can produce results with good accuracy. The interface has been constructed to be user-friendly. The choice for inputting parameters includes an editable text area, a drop-down menu, and click on buttons.
Concurrent results for on-the-spot comparison	The basic program provides the possibility for the user to change parameters and observe how different parameters would affect the respond of the vibration system
Visual representation	The visual representation of displacement offers the user a better understanding the respond of the vibration system.
Easy for Editing	The program could be edited to include new and/or remove current parameters/components.
Interactive and Exciting Learning Platform	The real-time outputs, graphics and interactive environment will allow the users (students) to involve in active learning. Therefore, the students could understand better the forced vibration problems, as they themselves input the variables and then visualize the response immediately.

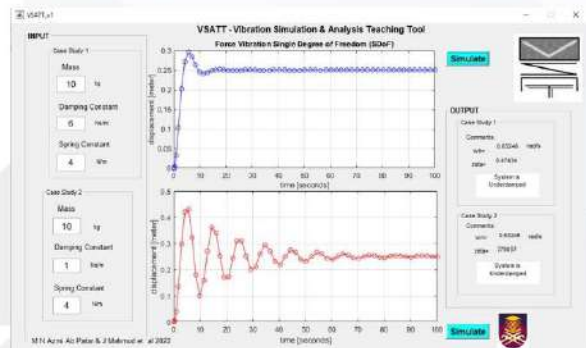


Figure 1: VSATT GUI upon execution

POTENTIAL FOR COMMERCIALIZATION

We focuses on industries related to plants, machinery, equipment, system and structure that experience vibration. The general target are Oil & Gas, automotive, aerospace and manufacturing industries. In addition, VSATT can also be promoted to the Training and Consultation companies.

For commercialization, VSATT is ready to be commercialised, either as it is (VSATT interface, execute file) or with the option for an upgraded/ customised program.

THE MALAYSIAN GENERATIONAL ELDERLY-FRIENDLY HOUSING DESIGN FEATURES FRAMEWORK (MGens-ElderLyHD)

IIIDBEE X 2023

20 JANUARY 2023

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INTRODUCTION

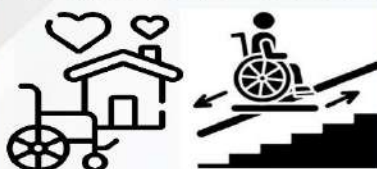
The continuous growth of the elderly population in Malaysia will render the country an aging nation status by the year 2030. The elderly population would escalate up to 15 percent out of the overall population in Malaysia. The increasing elderly group and soon retirement group among the Malaysian population should be interpreted as an important segment in determining the Malaysian elderly (seniors) housing needs and preferences. The role of the policymakers in upgrading the quality of life of the elderly (senior) is vital as the escalating ageing trends will have long-term implications for the nation's economy. Due to the growth and increase of longevity of the elderly (senior) population in Malaysia, initiatives should be taken by offering more housing concepts or living arrangements suitable for this unique generation. Thus, a housing concept with elderly-friendly design features is significant and highly needed to guarantee a good quality of life for the elderly (seniors) to age in place.

PROBLEM STATEMENT

Continually improved health conditions and life expectancy drives the aged generation to become more active (mobile) and independent

Poorly designed buildings, insufficient communal areas, limited mobility options, and few supportive services resulted in difficulty for people to remain active and engaged with friends, family & neighbours.

The environments incorporate design elements and promote opportunities for socialization, support and enrich the lives of individual residents (Kochera, et al., 2005).



RESEARCH OBJECTIVES

- (i) To determine the Elderly-Friendly Housing Design needs and preferences features for the ageing population in Malaysia.
- (ii) To suggest a suitable Elderly-Friendly Housing Concept embedded with Elderly-Friendly housing design features to enhance the elderly quality of life for the Malaysian ageing population.

RESEARCH AIM

To provide a comprehensive overview of the Elderly-Friendly Housing Concept, and the Housing Design Features Preferences for the Malaysian Ageing Population.

METHODOLOGY

MIXED-METHODS: Qualitative & Quantitative

Literature Reviews
Qualitative – Industries
Pilot Study

Quantitative – Housing Consumers
Data Analysis & Findings
Develop Framework

FRAITY IN ELDERLY

- (1) Unstable with changes in the floor level/surface
- (2) Problem with eyes vision
- (3) Decreased stamina
- (4) Difficulties with wayfinding
- (5) Fail to bend, stoop or stretch
- (6) Difficulties in gripping
- (7) Difficulties in pushing to open heavy doors



NOVELTY & COMMERCIALIZATION

THE MALAYSIAN GENERATIONAL ELDERLY-FRIENDLY HOUSING DESIGN FEATURES FRAMEWORK (MGens-ElderLyHD)

CONFERENCES & PUBLICATIONS

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RECOGNITION

INNOVATION: GOLD AWARD
The Malaysian Generational Elderly Residential Environment Preferences (GenEREPs) Assessment Tool & Geographic Information System (GIS)

IIDEX2019, DATC, UITM, Shah Alam (10th-15th September 2019).

MAIN FINDINGS

THE ELDERLY-FRIENDLY HOUSING DESIGN PREFERENCES BY GENERATIONS

3 main preferred features

Generation	Baby Boomers	Generation X	Generation Y
Elderly-Friendly Bathroom	1) Walk-in Shower 2) Grab/Holding Bars 3) Raised/Elevated Toilet Seat	1) Switches 2) Walk-in Shower 3) Raised/Elevated Toilet Seat	1) Walk-in Shower 2) Grab/Holding Bars 3) Switches
Elderly-Friendly Bedroom	1) Mobility aids 2) Call Button 3) Bed	1) Call Button 2) Electrical Switches and Outlets 3) Bed	1) Mobility aids 2) Bed 3) Electrical Switches and Outlets
Elderly-Friendly Floor	1) Floor material 2) Floor Design	1) Floor material 2) Floor Design	1) Floor material 2) Floor Design
Elderly-Friendly Kitchen	1) Refrigerator 2) Cupboards 3) Countertops height	1) Refrigerator 2) Stove 3) Cupboards	1) Manoeuvring 2) Cabinets 3) Cupboards
Elderly-Friendly Living Room	1) Lighting 2) Electrical Cords 3) Intercom system	1) Electrical Cords 2) Lighting 3) Intercom System	1) Lighting 2) Electrical Cords 3) Furniture
Elderly-Friendly Staircase	Staircase Geometrical Design: 1) Staircase Configuration 2) Number of steps per flight Staircase Handrail design: 1) Handrail existence 2) Handrail height 3) Handrail wall clearance Staircase Lighting: 1) Lighting Switches 2) Consistency of Lighting 3) Illumination level Staircase Steps Design: 1) Riser height 2) Going depth 3) Nosing	Staircase Geometrical Design: 1) Numbers of steps per flight 2) Staircase configuration Staircase Handrail design: 1) Handrail existence 2) Handrail height 3) Handrail cross-section Staircase Lighting: 1) Lighting Switches 2) Consistency of Lighting 3) Illumination level Staircase Steps Design: 1) Going depth 2) Riser height 3) Nosing	Staircase Geometrical Design: 1) Staircase Configuration 2) Number of steps per flight Staircase Handrail design: 1) Handrail existence 2) Handrail surface texture 3) Handrail-wall clearance Staircase Lighting: 1) Lighting Switches 2) Consistency of Lighting 3) Illumination level Staircase Steps Design: 1) Going depth 2) Step finishing material 3) Nosing

CONCLUSION

Different generations are equipped with different needs and preferences. However, the study shows **the older generations and younger generations of Malaysian housing consumers show similar preferences** for elderly-friendly housing design features.



DEVELOPMENT OF ELEMENTAL COST ANALYSIS (ECA) WEB-BASED APPLICATION PLATFORM

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



INTRODUCTION

The cost estimation at the inception stage is important to forecast the actual budget of the project. The use of strategic historical cost data would produce benchmarking information that allows the development of accurate quantities and costs of a project. Elemental Cost Analysis (ECA) is one of the reliable sources of cost data that QS may refer to prepare a cost estimate. Therefore, documented ECA properly is highly needed. By having several numbers of ECA, cost trends for each material and element can be done. Due to that, **the compilation of ECA for the various type of projects is crucial for the QS to prepare a reliable estimate.**

PROBLEM STATEMENT

Unfortunately, there is a lack of documented ECA even though it can be done once the contract document has been issued (Soutos and Lowe, 2018). Through informal discussions with industry practices, the majority of them agreed that ECA is not properly documented. This is because of:

1. Lack of awareness in storing ECA systematically
2. Lack of interest in documenting the ECA
3. Time constraints due to being busy handling construction tasks

OBJECTIVES

1. To investigate the challenges faced by Quantity Surveyors in storing the ECA.
2. To identify the level of difficulty in preparing ECA forms.
3. To develop ECA web-based application for storing the ECA systematically.

RESEARCH METHODOLOGY

Exploratory Interviews

Interviews with construction practitioners to gain an in-depth understanding of the main causes of a poor compilation of ECA

Data Collection

Questionnaire survey

Conducted on 1st July 2022 until 31st August 2022

50 questionnaires were distributed among QS consultant firms within Klang Valley

Data Analysis

SPSS V25 (Descriptive Analysis)

Development of system in open-source platform using PHP framework

FINDINGS

Objective 1

Challenges faced by QS in documenting the Elemental Cost Analysis	Frequency	Rank
Lack of interest in documenting ECA manually	12	1
Too busy handling construction tasks	9	2
Too many documents need to refer while preparing for ECA	5	3
Difficult to understand Manual ECA by RISM	4	4

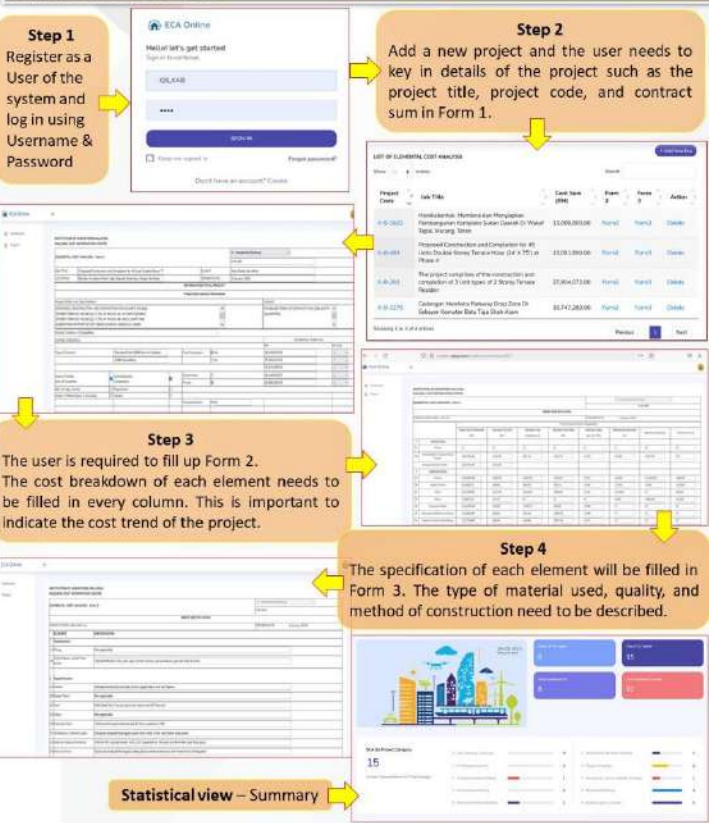
Objective 2

Difficulties of documenting ECA based on the item	Frequency	Percentage	Rank	
Document Information	Contract Document	12	40	1
	Tender report	10	33	2
	Working drawing	4	13	3
	Specification	4	13	3
	Manual ECA	0	0	5
Form 1	Standard ECA form	0	0	6
	Competitive tender list	8	27	1
	Areas (Usable, Internal division, circular and ancillary area)	8	27	1
	Project details & site condition	4	13	3
	Contract particulars	4	13	3
	Accommodation and design features	4	13	3
Form 2	Functional Unit	2	7	6
	Element Unit Quantity (EUQ)	15	50	1
	Element Ratio	4	13	2
	Element Unit Rate (EUR)	3	10	3
	Cost/GFA	2	7	4
	Reinforced Concrete	2	7	4
	Formwork	2	7	4
Form 3	Reinforcement	2	7	4
	Specification for services	8	27	1
	Specification for finishes	6	20	2
	Specification for external work	6	20	2
	Specification for superstructure	5	17	4
Specification for substructure	5	17	4	

FINDINGS CONT'D

Objective 3 To develop ECA web-based application for storing the ECA systematically

Based on all these findings, the ECA web base application using an open source platform using PHP framework was developed to encourage the QS in storing ECA. The URL of the web base is <https://ecauiitm.epjy.com>. The followings are screen captures of the web features and steps required to document the ECA.



NOVELTY

The novelty of this product is the enhancement from the manual method of documenting ECA to a web-based application. In line with digital transformation 4.0, the development of the ECA web based is valuable as a centralized historic cost data that can be accessed anywhere, flexible, and user friendly.

CONCLUSION

The development of the ECA web base will encourage QS in storing ECA systematically. The QS becomes motivated and attractive to compile the ECA for each project once the contract document has been issued. The benefits of developing the ECA web base such as centralized data, accessibility, and manageability hopefully help the QS to forecast a reliable future project cost.

COMMERCIALIZATION

The Elemental Cost Analysis (ECA) web based can be linked easily to the construction cost data portal such as Building Cost Information Services Malaysia (BCISM) and also can be customized toward organization preferences.

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PREPARED BY: Shariffah Zatil Hidayah Syed Jamaludin¹, Kumalasari Kipli², Anis Rosniza Nizam Akbar³, Irma Hanie Ibrahim⁴, Suzana C. Ailih⁵ and Abdul Rahman Mat Jusoh⁶

^{1,3,4,5} Centre of Studies for Quantity Surveying, College of Built Environment, University Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia

² Centre of Studies for Quantity Surveying, College of Built Environment, University Teknologi MARA, 94300 Kota Samarahan, Sarawak, Malaysia

⁶ Web cure (M) Sdn. Bhd, Laman Seri Business Park, 40100 Shah Alam, Selangor, Malaysia

**POSTER CATEGORY:
POSTGRADUATE**



LIST OF PARTICIPANTS

ID	Full Name	Title Of Poster
P01	Ireina binti Izwan & Dr Mohd Azren Hassan	Preservation of Culture in Royal Klang Town
P02	Nur Hidayah binti Rosli, Aidatul Fadzlin Bakri & Nik Farhanah Nik Azhari	Kuala Lumpur's Human Capital Enhancement Centre: Optionality, Alternatives and Possibilities for D.I.Y. Spaces
P03	Alia Nisa Raffly & Aidatul Fadzlin Bakri	The Influence of Physical Environment Design on Positive Youth Development
P04	Muhammad Izzat Irfan bin Mustaffa & Dr Nurulhusna binti Qamaruz Zaman	Motorbike Madness: Embracing Sustainable Two-Wheeled Mobility
P05	Xu Kewei, Azlaine Abdul Aziz & Arniatul Aiza Mustapha	Adaptation Of Semiotic Theory in Neo-Chinese Interior Design
P06	Deng Chenhao, Nur Maizura Ahmad Noorhani & Zhao Zhiyi	The Guideline of Spatial Definition on Children's Play Behavior in Chinese Kindergarten
P07	Nibing, Arniatul Aiza Mustapha & Nur Maizura Ahmad Noorhani	Interior Design Scope of Work for Interior Project Delivery in China
P08	Mohd Hidayat bin Ab Rahman & Prof Ir Dr Jamaluddin bin Mahmud	Recent Toe Cap Shoe Applications and Direction for Future Research: A Review
P09	Adil Imran bin Fakharuddin & Dr Nurulhusna Qamaruz Zaman	Trashlab: An Exploration of Spatial Study on Types of Upcycling Spaces and Programmes in Upcycling Centre
P10	Aman Faizal Bin Khalili, Ar Ts Amir Sheriff Mohd Sheriff & Dr Zalina Samadi	Design Quality of Freshwater Lobster Farming In Teluk Intan
P11	Andi Zhang, Raja Norashekin, Syed Sobri Zubir & Hafiz Amirrol	Mall Walking Circuit: Elevated Walkway to Improve Walkability in Kuala Lumpur
P12	Muhammad Haziq bin Shamsul Bahri & Mohamed Tajulz Ariff Samsuddin	The Sense of Place in Designing Coffee Shops in Malaysia
P13	Abdul Muhaimin bin Mohd Salleh & Dr Zalina Samadi	An Application of Construction Techniques in Vernacular Architecture used by Indigenous People in Malaysia
P14	Mohd Aiman Bin Yusuf, Kartini Kasmuri & Mohamed Tajulz Ariff	Designing a Prototype Planetarium Typology with Full Dome Imaging Technology for Enhancing and Impactful Cognitive Experience
P15	Mohd Ezamil bin Mazlan, Ts Azlan Ariff bin Ali Ariff & Dr Zalina Samadi	Simulation on Daylighting Penetration into Building Atrium for Artificial Intelligence Integrated Farming
P16	Atiqah binti Abdul Aziz, Nor Asyiqin Jafri & Noorliyana Zakaria	Treated Rubberised Engineered Cementitious Composites (ECC) for Modern Civil Engineering Material
P17	Siti Noor Syazwani Zakaria, Nurul Ain Mohd Zaki & Farrah Melissa Muharam	Above-Ground Biomass and Carbon Stock Estimation Of Harumanis using Artificial Neural Network and Random Forest
P18	Nur Nazura binti Abd Razak	Analyses of Least Square Methods for Outlier(S) Detection in Cadastral Network Adjustment
P19	Nik Afiqah binti N.Ahmad Yani, Shukor Sanim Mohd Fauzi, Nurul Ain Mohd Zaki, Nadia Nabilla Mohd Shahidan & Eliy Nazira Mat Nazir	MiDSAM - Mangifera Indica Disease for Smart Agriculture Monitoring

LIST OF PARTICIPANTS

P20	Nurul Nabihah Zainal Abidin, Noraliza Basrah & Norbaya Ab Rahim	Pandemic Disruptive Factors in Estate Agency Performance
P21	Ahmad Faiq bin Abd Wahid & Dr Mimi Zaleha binti Abdul Ghani	Typology of Food Art Therapy Effect on Mental Illness in Common Food Stall in Malaysia
P22	Shahreena Melati Rhasbudin Shah, Husna Nabilah Che Husin & Tey Li Sian	Lignin: Green Modifier for Road Pavement
P23	Gerraint Gillan Anak Ahi & Ts Dr Nor Hanisah bt Mohd Hashim	The Implementation of Smart City Concepts in the Area of Greater Kuching, Sarawak
P24	Seri Nanisa Sima Yusoff, Juliana Brahim & Rumaizah Mohd Nordin	Conceptual Framework of Construction Professionals' BIM Competencies Assessment
P25	Noor Aisyah Asyikin Mahat, Professor Datin Sr Dr Hamimah Adnan & AP Sr Dr Norazian Mohammad Yusuwan	"g-PAT" : Revitalising Productivity Growth in Green Construction Projects (GCP).
P26	Mohamad Amirul Hafiz bin Md Shukri	Automated Tree Quantitative Structure Model (ATQSM)
P27	Mohd Shafiq bin Abd Muttalib & Hafiszah Ismail	Factors Influencing Real Estate Buying Behaviour during Covid-19 (Case Study: Petaling Jaya, Selangor)
P28	Muhammad Shahfarhan bin Mohamad Yassin, Aini Jaapar, Mohd Arif Marhani & Nor Azmi Ahmad Bari	Exploring the Critical Success Factors of Value Management for Sustainable Public Housing in Malaysia: Findings from a Preliminary Study
P29	Siti Fadzillah Nurain binti Sidi Omar	Optimization of Thermoelectric Performance by Varying Thermoelectric Height
P30*	Jing Lu	Evaluating The Residential Outdoor Environment For The Elderly In Shuiqinggou, Qingdao, China Using The Seniors' Outdoor Survey Tool
P31	Mohamad Faris bin Ismi & Ahmad Zharif Ahmad Zahir	Breathing Wall Specialization For Urban Farming At Low-Cost Social Apartments In Malaysia
P32	Nik Siti Fatimah Nik Hassin & Alamah Misni	Exposition of Traditional Malay House Architectural Design Element Influencing Indoor Thermal Performance
P33	Muhammad Amirul Izzat Bin Nerzali, Siti Sara Rais & Norhayati Ahmad	IoT Based- Automatic Room Lighting System (ARoLS)
P34	Nibing, Arniatul Aiza Mustapha & Nur Maizura Ahmad Noorhani	Interior Design Scope Of Work for Interior Project Delivery in China

Preservation of Culture in ROYAL KLANG TOWN

IIDBEE X 2022

International Invention, Innovation & Design Exposition For Built Environment And Engineering 2022



Fakulti
Senibina,
Perancangan
dan Ukur

INTRODUCTION

Royal Klang Town is known as one of the oldest town in Malaysia rich with history, tradition and customs. The purpose of this study is to explore the culture and built heritage in Royal Klang Town as well as to identify strategies to preserve and enhance existing culture of both tangible and intangible culture. This research is made to study on the preservation of culture in **Royal Klang Town with the area size of 101 hectares.**

OBJECTIVES

- 1 To identify the existing element of culture in form of tangible and intangible in Royal Klang Town.
- 2 To analyze the effectiveness of culture in form of tangible and intangible in Royal Klang Town
- 3 To recommend strategies to preserve and enhance culture and built heritage in royal Klang town

METHODOLOGY

- OBSERVATION -

To identify existing culture and evaluate the conditions

Qualitative Method

- INTERVIEW -

In depth interview with an expert from MPK

RECOMMENDATIONS



Adding new modern attractions like hop-on hop-off bus and shared electronic scooter are initiatives to attract more visitors and tourists to visit Royal Klang Town and at the same time exposing them to the precious culture in this old town.



Revitalizing existing culture such as Little India Night Walk, reviving back-lane as outdoor culture art gallery and preserving shophouses heritages.



Apart from daily culture activities, seasonal culture activities are also suggested in the Heritage Calendar Festival and school trips.

It is hoped that with these recommendations, all existing cultures in Royal Klang Town can be preserved, enlivened, celebrated and appreciated forever especially when society have begun to acknowledge the unappreciated gems of culture in this town.

FINDINGS

TANGIBLE CULTURE

- 1 All individual buildings are in excellent condition and seem to be well taken care of by the local authority. In fact, five (5) of these buildings have been gazetted as national heritage sites, named Kota Raja Mahadi, SMK Convent Klang, Gedung Raja Abdullah, Galeri Diraja Sultan Abdul Aziz and Masjid Diraja Sultan Suleiman.
- 2 Unfortunately, according to interview sessions carried out with local people, hardly any of them have knowledge or awareness that these gems of heritage buildings have been gazetted. What is found to be worse is that not many people are aware that these buildings can be visited and even turned into a museum.
- 3 Apart from that, efforts on promoting its cultural are still at a rather unsatisfying level as there seems to be little to no cultural recognition among the locals.
- 4 Some of the shophouses heritage buildings appear neglected, damagingly affecting the image of the city as the Royal Klang Town. The paint on some of heritages shophouses are fading, and sadly, unattended plants have crawled their way onto its walls. Making it much more difficult when the older the building, the higher the cost to preserve these buildings.



KOTA RAJA MAHADI



GEDUNG RAJA ABDULLAH



SULTAN ABDUL AZIZ ROYAL GALLERY



MASJID DIRAJA SULTAN SULEIMAN



SMK CONVENT KLANG

INTANGIBLE CULTURE



LITTLE INDIA

1 Little India as it is the most obvious ethnic enclave and the largest Indian-influenced street in Malaysia.

2 Klang is also in fact renowned for its food. There is a number of famous cultural types of food discovered in the study area such as Yap Kee Banana Leaf, Chong Kok Kopitiam and Regent Pandan Cake.



YAP KEE BANANA LEAF



CHONG KOK KOPITIAM



REGENT PANDAN CAKE

Kuala Lumpur's Human Capital Enhancement Centre: Optionality, Alternatives and Possibilities for D.I.Y. Spaces

IIIDBEE X 2023
20 JANUARY 2023
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INTRODUCTION

WHAT?? - D.I.Y. has been described as a "self-made-culture"; one of designing, creating, customizing and repairing items or things without any special training. D.I.Y. has grown to become a **social concept** with people **sharing ideas, designs, techniques, methods and finished projects** with one another either online or in person. Especially when **Covid-19 hits**, the numbers of people who ventured into it increases making it as a needs to have a proper place and ways on exploring the hobbies/activities further.

HOW

D.I.Y. culture has been around but this study circles around covid-19 pandemic in Malaysia



Figure 1.2 shows how crafting became more popular in Malaysia after the pandemic hit

WHY

Because the pandemic covid-19 affect a lot more than the health centre. It also affects the economics as well as architectural influence in micro spaces typologies.



Figure 1.3 sample of works by Bahar et al (2021) research on Psychological distress, fear and coping among Malaysians

WHO

Youth | Un-employed | Hobbies | Makers



Figure 1.4 according to some paper stated that the unemployed suffers more stress than

ISSUES/ PROBLEM STATEMENT



Malaysians still **underestimate the potential of D.I.Y. culture** especially in the advancement of sustainability and economy. This maker-culture is still at its early stage in Malaysia and we are the hard consumer to major products



The **exposure to D.I.Y. culture in this country are still at minuscule level** after observation, locals still pledge themselves to the three main excuses to not applying D.I.Y. culture in their lifestyle in Malaysia. "no tools, no space and no experience"



There is **no clear guide on understanding space relevancy** of the D.I.Y. culture and its activity that can guaranteed it safety and benefits

OBJECTIVES

1

To understand the cultivation of D.I.Y. culture in Malaysia during the Covid-19 pandemic while consider the **possibility of new capital enhancement on self-sufficiency.**

2

To study the **programmes** that will help people after the pandemic and the **working environment** related to **creative incomes** in Malaysia.

METHODOLOGY

RM₁

LITERATURE REVIEW

- Articles
- Relevant Documents
- Reports
- Reference Books

to

- Define
- Categorize
- Factors contribute

RM₂

PRECEDENT STUDIES

- Station F, Paris
- Blackhorse Workshop Sideshow, UK
- KEDAI Artisanal Market, KL

on

- Function of building
- Programmes
- Target Users
- Spatial Planning

RM₃

SEMI-STRUCTURED INTERVIEWS

- 4 home-owners
- Running D.I.Y. project
- Make profits

questions include:

- D.I.Y. Activities
- D.I.Y. Workspace

RM₄

OBSERVATIONS

Observations enable the researcher to **observe the activities and spatial layout** required for do-it-yourself projects.

NOVELTY

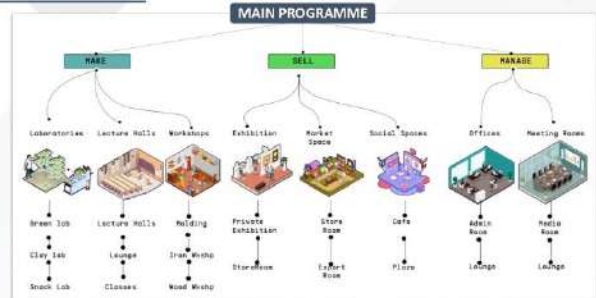
Helps to :

- Shed light on the **importance of providing space** for D.I.Y. activities
- Harnessing talents**
- Educating** people about **resiliency**

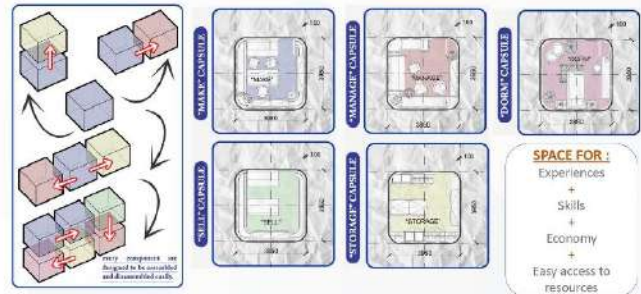
BY

- Exploring the opportunities towards the **artisanal society**
- Bridging the educational divide** among the different income groups

FINDINGS



The building's **core is regenerative design**, which ensures **future flexibility for change**. A 3-dimensional recursion rule creates a module or capsule with compatible joints. Because these capsules are constantly **growing and evolving**, the assembled and disassembled components can be seen adding to the geometry.

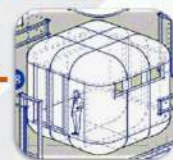


CONCLUSION

This study sheds light on the **importance of making space for do-it-yourself activities, developing talents, teaching people about resilience by exploring opportunities** in the artisanal society, and **bridging the educational divide** between different income groups. This study examined the **profile of Malaysian D.I.Y. culture** and how **important** it is to consider the **workspace** to make it **personal, productive, and fulfilling** while maintaining a **sense of home**. The study's findings can be further investigated and improved by recognising the importance of analysing the **unique needs for specific programmes and space efficiency** as part of initiatives to cultivate better productivity for Malaysia's D.I.Y. and maker cultures. Designers and developers can apply the concept of **adaptability, optionality, alternatives, and possibilities** through the **design of capsules** to other do-it-yourself or similarly styled structures.

COMMERCIALIZATION

THE IDEA OF:
Flexibility +
Optionality +
Alternatives +
Possibilities



Design of Capsules

CAN BE ADOPTED BY:
Designers and developers

TO:
Other D.I.Y. buildings or buildings of similar nature

CONFERENCES & PUBLICATION

Poster and Extended Abstract submission: Nur Hidayah Rosli, Aidatul Fadzlina Bakri & Nik Farhanah Nik Azhari. 2022. *D.I.Y. (Do-It-Yourself) Culture in Malaysian Homes during the Covid-19 Pandemic. Gold Medal, 3rd International Conference on Built Environment and Engineering 2022 (IConBEE), 8th - 19th October 2022, Putrajaya, Malaysia.*

The Influence of Physical Environment Design on Positive Youth Development

IIIDBEE
20 JANUARY 2023

2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



COLLEGE OF
BUILT
ENVIRONMENT
(CBE)

INTRODUCTION

What?

Positive Youth Development (PYD) is a method built on youth's existing abilities and resources, emphasizing the clear definition of positive outcomes and adopting an optimistic vision of adolescents. It has been found that interaction with outdoor spaces, mainly natural and naturalized urban environments, is associated with positive outcomes across a variety of physical, mental, social, emotional, and cognitive indicators of the health and well-being of youth.









Why?

There is a need for applied research that focuses on designing and assessing interventions that address issues of physical activity and social interaction in Malaysian children and youth as a direct result of the apparent drop in physical activity levels and the increase in the sense of social isolation over the past few decades. (Malaysian Youth Index, 2020).

How?

By understanding the connections between the characteristics of quality outdoor spaces and levels of physical activity and social connectedness, how factors of the built environment influence the health behaviors of children and youth, and the spatial connection between the space and youth development is going to be the primary focuses of the scope of this study. The aim is to determine the extent to which factors of the built environment influence the health behaviors of urban poor youth.

FINDINGS

	Boys and Girls Club, Ecatepec De Morelos, Mexico	Kamwokya Community Center, Kampala, Uganda
Location	 The Club is situated on the border of two municipalities, Tecamoc and Ecatepec, and serves 15 low-income areas within a two-kilometer radius. The federal Interior Ministry has established a special crime prevention zone in this area. Ecatepec and Tecamoc have a combined population of 2,070,000 people, making them the cities in Mexico with the highest population density, insecurity, and crime rates.	 Kamwokya is a valley in the hills of Kampala's central region, with an exceptionally dense population, inadequate infrastructure, and terrible health conditions.
Programme	 Active + Creative	 Active + Creative
Outdoor Space Quality	 Central Play Courtyard	 Central Play Courtyard
Open Space Quality	 Semi-Open Shaded	 Semi-Open Shaded

This research was able to help in identifying the characteristics of high-quality physical environment design that influence the level of physical activity and social connectivity among young people. These factors, in turn, contribute to positive outcomes for youth development. The layout of an outdoor area, as well as its accessibility, are critical components in the process of youth development, particularly for children and adolescents living in urban areas with limited resources.

ISSUES/ PROBLEM STATEMENT

The rise in physical inactivity among Malaysian youth is widely acknowledged as a major health concern. (Physical Activity Index, Malaysia Youth Index 2020)

Increase of anxiety and stress on the physical and social environment of youth. (Zaremozabbah et al., 2019)

Low-income communities need more outdoor spaces to enable positive youth development.

There is a need for applied research that focuses on designing and assessing interventions that address issues of physical activity and social interaction in Malaysian children and youth. Routine moderate-to-vigorous physical activity is associated with decreased risk of hypertension, obesity, heart disease, stroke, cancer, and depression. Outdoor spaces, defined as any public open area that is natural, water, sporting, playground, or landscaped, frequently provide opportunities to interact with nature, participate in leisure activities, and foster social connection. Additional moderate-to-vigorous physical exercise has been associated with more vital scholastic accomplishment, enhanced cognitive performance, and increased self-esteem, in addition to its association with health markers

OBJECTIVES



- 1) To identify the present attributes of the physical environment of youth from low-income communities.
- 2) To determine the qualities of the physical environment that encourage positive youth development.
- 3) To propose a parameter design to enhance positive youth development

METHODOLOGY

The goal of this research is to identify the characteristics of various types of high-quality outdoor spaces that can support positive youth development while increasing physical activity and social connection among young people. In content analysis, researchers look at a specific type of social artefact, usually written documents. In order to achieve the study objectives, which is to understand the characteristic of quality outdoor space in enhancing positive youth development, two sample case studies were selected. Identification of the case studies was chosen based on the quality and accessibility of quality outdoor spaces for poor urban youth.

Case study:

1. Boys and Girls Club, Ecatepec De Morelos, Mexico
2. Kamwokya Community Centre, Kampala, Uganda

Method 1:

Defining positive youth development and physical environment

Method 2:

Study the attributes of positive youth development and physical environment

Method 3:

Analyze existing typology of physical environment that contributes to positive youth development.

Explore global to local definition of positive youth development

Through analysis of precedent studies.

Through content analysis.

CONCLUSION

	Identifiable Traits of High-Quality Outdoor Space Design
Outdoor Space	<p>Flexible open space, multipurpose plaza design for play and sports activities, and also catering for occasional community events and activities.</p> <p>Courtyard for free play, an autonomous space for youth to use. A transitional space between main programme and also a space for youth to meet informally and socialize.</p> <p>Landscape features, the function and the design of outdoor furniture play a role in how children and youth navigate and uses the space. The application of modern design furniture encourages youth physical activities.</p> <p>Materials provide a sense of belonging and the creation of a space ambience to the local communities, and it also evokes the local identity.</p> <p>The availability of shaded or covered semi-open places to accommodate a variety of other activities. Creating a more suitable environment for the activities that are always taking place on-site.</p>

Motorbike Madness : Embracing Sustainable Two-Wheeled Mobility



College of Built Environment (CBE)

PROJECT INTRODUCTION



MOTORBIKE MADNESS IN HANOI

The phenomenal motorbike dominance seen in Hanoi today developed after Vietnam embarked on the market reforms known as doi moi in 1986. The two-wheelers are seemingly everywhere, either parked or in motion, and the humming and honking of millions of motorbikes is the soundtrack of contemporary Hanoi (Arve Hansen, 2016).

Congestion, unhealthy air quality noise pollution, limited parking spaces that encroach into pedestrian walks are among major issues created by the motorbike dominance.

This research addressed Hanoi's struggles in balancing between traffic and liveability through adaptation of mechanical parking system using the theory of E-velomobility and parasite parking. A site visit to Hanoi strengthen the innovation to be grounded and catered to the local urban culture.

PROBLEM STATEMENT



ILLEGAL PARKING CULTURE

Lack of parking area for motorbike cause encroachment of the pedestrian walkway as parking space.



PEDESTRIAN BECOME MOTORWAYS

Irresponsible use of pedestrian walkway as motorbike lane during high peak traffic that may lead to accidents.



INFLUX OF CARBON EMISSION

over 95% of personal motorized vehicle still use gasoline-based engine which increase CO₂ Emission, exhaust fumes.

KEYWORD

Motorbike madness, Sustainable, Parasite Parking, E-velomobility

PROJECT NOVELTY



to provide solution for the limited parking space that address the motorbike madness culture within Hanoi District.



PRECEDENT STUDY & THEORY

MECHANICAL PARKING SYSTEM #1

STACKED PARK SYSTEM



SPS provides two parking levels in the space of one that can be constructed as dependent or independent systems, depending on location either above ground or in a pit. SPS also use simple mechanism to operate with small amount of energy.

ROTARY SYSTEM

Rotary parking has a wide range of applications for various types of vehicle. It can be integrated into the building and could be relocated or re-installed at another place.



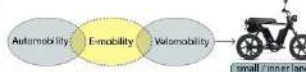
CIRCULAR PARK SYSTEM



Circular parking system (CPS) is designed to minimize the area and/or volume required for parking vehicle through vertical stacking such as multistory parking garage that maximize parking spaces while minimizing land usage.

THEORY : E-VELOMOBILITY #2

Velomobility (often spelled 'velomobility') relates to mobilities research around cycling or mobility that happens by bicycle. The term E-velomobility is a useful means to investigate mobilities research into E-cycling that includes practices, systems, and technologies of E-cycling which revolves around E-bikes (electric bicycle).



THEORY : PARASITE PARKING #3

...is an intervention in the public space that uses a multifunctional platform camouflaged as a parking space. The platform can adapt to its paved environment or easily transform to create space for various uses: as a living space, a stage, a cafe or simply into a conventional parking space...



Jacob Wirth, 2020

PROJECT OBJECTIVE

PROJECT QUESTION

Why did the culture of motorbike madness occurs in Hanoi?

What are the issues produced by motorbike madness

how to solve the motorbike madness issues in Hanoi?

PROJECT OBJECTIVE

to study the history and two-wheel culture of Vietnam in Hanoi District

to understand issues that occurs from the motorbike madness in Hanoi

to initiate and develop new solution by using architectural technic framework

PROJECT METHODOLOGY

STAGE ONE



SITE VISIT

The Old Quarter in Hanoi District was chosen where the four road was identified as the most busiest street in Old Quarter zone, namely Hang Ma, Hang Ba, Hang Gai and Hang Luoc streets.

STAGE TWO



PRECEDENT STUDY

Idea generation adapted from precedent study and literature review on the theory of sustainable transportation facilities and existing advanced new parking system for the mobility in urban area.

STAGE THREE



TECTONIC FRAMEWORK

Grounding the initiatives of sustainable motorbike city from the idea generation to the architectural tectonic solutions that are responsive to the study site that leads to two main proposal, namely smart parasite parking system and e-velomobility subscription hub.

PROJECT FINDING



Sustainable Motorbike City

The framework below explains the solutions suggested to solve the motorbike madness phenomena in Hanoi clearly for the targeted main spine in the Old Quarter. Two theories were referred that are the Parasite Parking Theory and the Electric Velomobility. The proposals addressed specific issues such as:

1. Smart Parasite Parking Concept which focus on illegal parking behaviour to give back the sidewalk to the pedestrian.
2. E-velomobility Subscription Hub to reduce the carbon emission and noise pollution, to restore healthy environment.



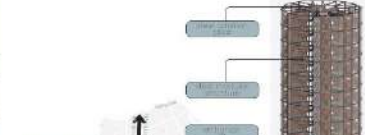
Stacked Parking System

Vertical SPS located within the pedestrian area occupying 25% which use simple construction integrated at the building facade vertically and horizontally along Hang Luoc street.



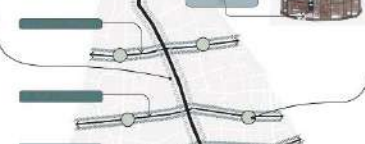
E-velomobility Subscription Hub

Located in front of Hoan Kiem Lake, EVSH which promotes E-mobility trend for Old Quarter residents has added commercial value where the E-bike vending machine is the main feature. EVSH has other supported programme such as warehouse and showroom that are powered by photovoltaic panels.



Circular Parking System

CPS can store a huge amount of motorcycles vertically estimated around 200-300 nos. CPS uses modular construction system that combine steel and glass material.



RPS can be integrated as part of the building structure and can supply medium amount of motorcycle parking ranging 6-12 in number. RPS could be located in Hang Ma, Hang Board, Hang Gai street.



Rotary Parking System

CONCLUSION

TWO-WHEEL MOBILITY CULTURE

the issues that arise from motorbike madness affects the traditional two-wheeled culture of Hanoi that has long been an important choice of mobility for the people.

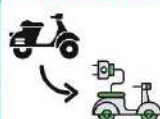
HAZARDS

Unpredictable level of motorbike usage can lead to unsafe environment for the urban resident such as the encroaching of pedestrian walkway and hazardous level of carbon emission.

ARCHITECTURAL TECHONIC SOLUTIONS

The project show how the tectonic framework from architectural views can help to improve the quality of Hanoi's motorbike culture by applying Smart Parasite Parking and E-velomobility Subscription Hub

COMMERCIALIZATION



NEW ERA OF MOTORBIKE FACILITIES

The framework can be applied in any urban area especially cities in Southeast Asia which has motorbike madness issues.

PUBLICATION



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 Chief Editor : Dr. Nurulhusna Qamaruz Zaman
 Status: On-going Publishing

REFERENCES :

1. Hosen, A. (2015). Motorbike Madness: Development and Two-Wheeled Mobility in Hanoi. Asia Pacific Journal, 20(20), 1-11.
2. Hosen, A., & Naitou, E. (2016). The effects of motorbike on the built environment. DCM2016 Core Conference April 13-19.
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Prepared By :

Muhammad Izat Irfan Bin Mustaffa
 Dr. Nurulhusna Qamaruz Zaman

INTRODUCTION

Globalization has inevitably disrupted the sanctity of the local culture of countries in the world under the impact of dominant foreign culture. Ignoring the preservation of domestic culture will lead to cultural homogenization and loss of identity. Conservation of local culture has become one of the most crucial agendas in many countries' cultural development planning, including China. The emergence of Neo-Chinese interior design in China has created a window to forward new interpretations and meanings while preserving traditional Chinese culture through contemporary interior design. This research attempts to formulate a new design model for meaning interpretation and conveying of traditional Chinese culture in Neo-Chinese interior spaces by using semiotics. The meanings and semiotic structures of Chinese traditional paintings will be decoded to help formulate the new proposed model of the Neo-Chinese interior design. The outcome of this research can be helpful to Chinese interior designers while also acting as a reference for other countries.

ISSUES/ PROBLEM STATEMENT

Chinese interior designers often label designs containing forms and elements of traditional Chinese cultural symbols and characteristics as Neo-Chinese. Many Chinese designers choose the most superficial ways to frame the decorative elements, focusing only direct and superficial adaptations of traditional symbols and elements. The actual values and meanings of traditional Chinese culture are not accurately translated in them, and the designs produced are rigid, artificial, lacking innovations and unharmonious with the essence of traditional culture within modern forms.



OBJECTIVES

To analyze the relationship between spatial design and cultural connotations in Neo-Chinese interior design.

To study the semiotic relationship between the interior design representation and artistic conception from traditional Chinese culture, such as Chinese architecture, painting and poetry.

To formulate a methodological model to help Chinese interior designers interpret and reproduce traditional Chinese culture in their designs.

METHODOLOGY

Firstly, this research engages fundamental semiotic theories to analyze the ideographic process of Neo-Chinese interior design and make a comparison analysis with Chinese traditional painting.

Secondly, to formulate a methodological model for Neo-Chinese interior design under the frame of semiotic theories.

Thirdly, data will be collected and evaluated through the analysis of design cases expert interviews and questionnaire surveys, and the assessments of the methodological model will take place.

NOVELTY

Based on semiotic theories, this research explores how to interpret traditional Chinese culture in contemporary Chinese interior design by analyzing the ideographic process of Neo-Chinese interior design.

Chinese traditional painting is chosen and decoded to help formulate the methodological model for Neo-Chinese interior design under the frame of semiotic theories.

COMMERCIALIZATION

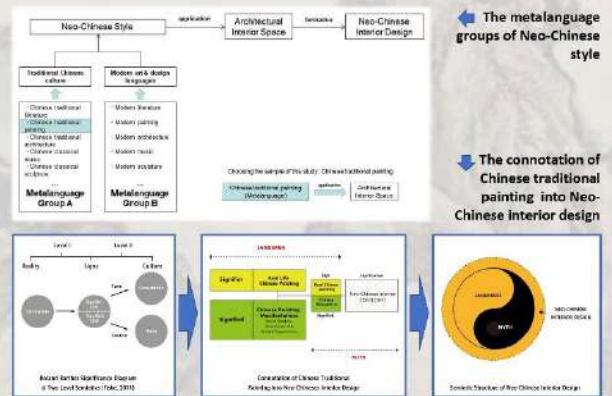
The outcome of this research will be put into commercial application in following three ways.

- To compile a guideline of Neo-Chinese interior design for Chinese interior designers, companies and self learners etc.
- To write a textbook for professional education at school or online.
- To set up an app which can supply online guidance or consultations to the folks.

FINDINGS

This study regards "Neo-Chinese interior design" as a representative symbol containing multiple and complex meanings. Roland Barthes' theory of "connotation and metalanguage" has revealed the multiple and complex code structures hidden under the symbol's surface structure level. They will be analyzed to help decode the representation of Neo-Chinese interior design. Louis Hjelmslev's theory of "expression plane" and "content plane" and Umberto Eco's theory of codes have revealed and broadened the innovative ideas that could lead to the formation of Neo-Chinese interior design language.

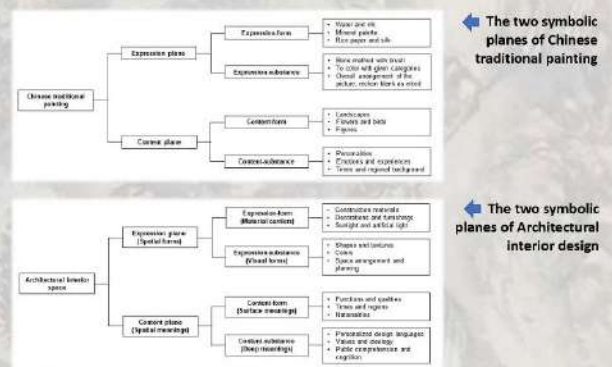
Adaptation of Roland Barthes' Semiotic Theory



The metalanguage groups of Neo-Chinese style

The connotation of Chinese traditional painting into Neo-Chinese interior design

Adaptation of Louis Hjelmslev's Semiotic Theory



The two symbolic planes of Chinese traditional painting

The two symbolic planes of Architectural interior design

CONCLUSION

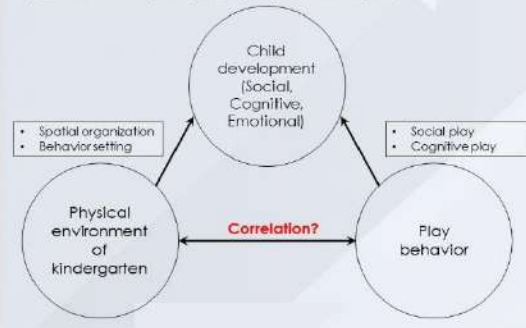
Semiotics is a capable theoretical instrument that would be applied to aid the process of interpreting traditional Chinese culture in contemporary Chinese interior design. The approach in constructing a methodological model for Neo-Chinese interior design does not intend to make it stylized and dogmatic. Instead, it will make the Neo-Chinese interior designs act as a symbolic system and a narrative text that help to symbolize and sustain traditional Chinese culture into the future.



The Guideline of Spatial Definition on Children's Play Behavior in Chinese Kindergarten

INTRODUCTION/BACKGROUND

- The Chinese government and Chinese parents attach importance to kindergarten education (MOE, 2012, 2016; Yang, 2022; Liu et al., 2022; Xu & Qin 2021).
- In China, play behavior has gradually become the leading role in children's daily activities (Liu & Zhu, 2020; Huang, 2021; Zhu, 2019), and affects children's cognitive and social development (Aureli, 1996; Rubin, 1978; Elkind, 2007; Levine & Munsch, 2014; Lautamo & Heikkila, 2010).
- As the carrier of children's activities, the physical environment is also one of the prominent factors to evaluate the quality of childcare in kindergarten (Kantowitz & Evans, 2004; Abbas, 2016; Moore et al., 2003).

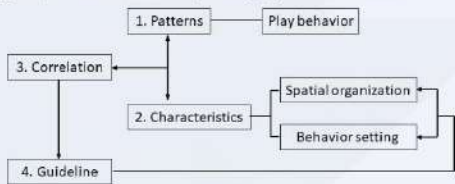


ISSUES/ PROBLEM STATEMENT

- Kindergartens in China are mainly in a closed-plan layout, and obvious "discipline" and "domain" in spatial organization (Lu, 2022). Cause the interior space lacks integrity, connectivity, flexibility, and has a single spatial function (Lu, 2022; Hu, 2013)
- The interior design of Chinese kindergarten is adults' aesthetic orientation, and ignored the needs of children (Li, 2022; Qin, 2020). The classroom lacks vertical communication space (Xu, 2015), furniture and materials are homogenized seriously (Dong, 2007), and the space utilization rate is low (Dong, 2007; Li, 2022; Chen, 2018).
- The lack of study about the relationships between spatial definition of inclusive kindergarten and children's play behavior in China.

OBJECTIVES

The aim of this research is to develop a design guideline for playroom of China's kindergarten, so as to motivate more positive play behaviors of children.



METHODOLOGY

- Data were collected from the physical environment characteristics and children's play behavior of 6 kindergartens in Nanchang.
- All the data of play behavior and spatial definition were qualitatively analyzed using a content analysis method through Atlas.ti.
- Pearson correlation and linear regression was used to examine the potential associations between levels of spatial definition and levels of play behavior.
- Analysis was conducted in SPSS 26.0.

PRELIMINARY STUDY

- 3 kindergartens were investigated and photographed on the spot (Fig. 1, Fig. 2)
- Analyze the physical environment of three kindergartens using Moore's (1987) conclusion on the factors of physical environment (table 1).
- "Well-defined" childcare centers and "Resource-rich activity area" (Fig. 3; Fig. 4)

Factor of Physical Environment	Kindergarten A	Kindergarten B	Kindergarten C	Conclusion
Site	Closed	Closed	Closed	Closed
Layout	Closed	Closed	Closed	Closed
Space	Lack	Lack	Lack	Lack
Activity settings	Floor-defined	Floor-defined	Vertical	Well-defined settings
Space utilization	Low	Low	Low	Low
Technical design features	<ul style="list-style-type: none"> Floor surface: Concrete tile, wood floor, brick covered with soft materials. Wall surface: No change in material with simple decoration (e.g. decorative paintings, mirrors, paintings, logos). Color: Monochromatic color. 	<ul style="list-style-type: none"> Material: The wood floor in classrooms, corridor and common space covered with soft materials. Change in material with simple decoration (e.g. decorative paintings, children's paintings, logos). Material: Colorful. 	<ul style="list-style-type: none"> Material: The wood floor in classrooms, ceramic tile in common space, wood floor in common space. Change in material with simple decoration (e.g. decorative paintings, children's paintings, logos). Material: Colorful. 	Lack of diversity in technical design features and equipment
Outdoor play space	Non-functional	Non-functional	Non-functional	Non-functional

Table 1. Analysis of physical environment factors of three kindergartens



Figure 1. Classroom of kindergarten C

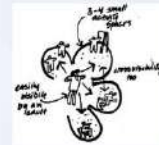


Figure 4 Resource-rich activity pocket



Figure 3 Well-defined childcare center



Figure 2. Activity room of kindergarten B

Result

- Spatial definition involve five aspects: Openness and visibility, Enclosure and private, Variety and flexibility, Concentration and separation, Size and amount (Table 2).
- CPERS and ECEPS are suitable tools for kindergarten physical design environment evaluation (Table 3).
- POS and PLAY are suitable for record and assess children's play behavior (Table 4).

Contents	Meaning	Author
Openness and visibility	Openness: refers to the degree of the building facade, which is related to the degree of openness to the outside world. Visibility: refers to the degree of visibility of the building facade.	International Building Code (IBC) (2006); Moore, 1987
Enclosure and private	Enclosure: refers to the degree of enclosure of the building space. Private: refers to the degree of privacy of the building space.	Moore, 1987; Wang & Wang, 2013; Wang, 1988
Variety and flexibility	Variety: refers to the degree of variety of the building space. Flexibility: refers to the degree of flexibility of the building space.	Moore, 1987; Qin, 2020
Concentration and separation	Concentration: refers to the degree of concentration of the building space. Separation: refers to the degree of separation between different functional spaces.	Moore, 1987
Size and amount	Size: refers to the degree of size of the building space. Amount: refers to the degree of amount of the building space.	Moore, 1987; Wang, 1988; Wang, 2013

Table 2. Categories of Spatial Definition

Author	Year	Scale	Contents	Assessment approach	Limitations
Moore	1987	Scale (CPERS)	Openness and visibility, Enclosure and private, Variety and flexibility, Concentration and separation, Size and amount	Moore's (1987) conclusion on the factors of physical environment	Not suitable for small-scale projects
Wang	2013	Scale (ECPERS)	Openness and visibility, Enclosure and private, Variety and flexibility, Concentration and separation, Size and amount	Wang's (2013) conclusion on the factors of physical environment	Not suitable for small-scale projects
Qin	2020	Scale (ECPERS)	Openness and visibility, Enclosure and private, Variety and flexibility, Concentration and separation, Size and amount	Qin's (2020) conclusion on the factors of physical environment	Not suitable for small-scale projects

Table 4. Assessment tools for children's play behavior

Table 3. Assessment tools for kindergarten environment

CONCLUSION

- The indoor physical environment of kindergarten indeed related to children's behavior and development.
- The spatial definition of classroom and play room in China's kindergarten is not clearly and lacks of evaluation tools.
- The observation dimension of children's play behavior still remains in a single social or cognitive perspective. Future study needs to use scale (e.g. Play Observation Scale) to combine social and cognitive behavior.

INTERIOR DESIGN SCOPE OF WORK FOR INTERIOR PROJECT DELIVERY IN CHINA

INTRODUCTION

With contemporary technological advances, Chinese citizens continue to improve their quality of life through interior design materials and available technologies. With both possibilities and obstacles, the application of project management methods in interior design is becoming more common, and internal design project delivery management systems are becoming more complex while providing theoretical recommendations for managing design practices.

ISSUES/ PROBLEM STATEMENT

Three issues impact the quality delivery of interior design projects in China, according to the formal study of China's Architectural Decoration Project Quality Inspection (2001).

1. Design and implementation stages take so long, and the project planning time cycle involves many units. The ability to successfully manage several departments and work with the plan smoothly is directly tied to the project's advantages.
2. Efficient management of the design phase construction process impact control to assure design quality and decrease construction risk. This would significantly cut the project's construction time and ensure the design delivery.
3. Interior design project management supervision approach aids in the rapid and high-quality clarification of design objectives so that design work may be completed quickly and precise control of the entire design management process.

Construction Team
Construction Steps
Construction Cycle
Construction Quality

Construction Organization
Construction cost
Construction Risks

Quality of design drawings

Customer Service
Complaints
Quality Complaints

Design Communication
Design Staff Assignment
Design cycle

OBJECTIVES

1. Standardize scheme drawings according to interior design work standards
2. Reasonable organization of personnel in the construction, standardization of project steps, proper planning of construction cycle,
3. Avoid risks and save costs to achieve results and quality acceptance.

METHODOLOGY

Literature - National Standards - Classic Cases - Experience Summary
Survey method - market data - project interviews - company designer communication - third party quality inspection department acceptance data
Case method - historical cases - analysis of data - summary

NO.	Subject matter	Important points	Title	Author, year
I	IIBDK	Interior designer responsibilities	The Interior Design Profession's Body of Knowledge	Compiled by Carol S. Marise, PhD, CID, ASID, IIDA, Denise A. Guertl, PMA, FIDEC, ASID, IIDA, University of Tennessee, 2005 http://www.iaa.org
II	Project 2021 from beginner to master	Project management techniques	from beginner to master	
III	PMWIKI	Project management standards, capabilities, implementation	Guide to the knowledge system of project management	Project Management Institute, Publisher project Management Institute, Inc. 14 Campus Boulevard Newtown Square, Pennsylvania 19073-3219, USA(2017)(2018)
IV	Interior Decoration Project Management Manual	Optimization of interior design management process	Interior Decoration Project Management Manual	Chen, R. China Taiwan Malacca (2010)
V	Construction Contract-Legal Risk Prevention and Contract Management	Contract management, Legal Risk	Construction Contract-Legal Risk Prevention	Li, F., Gu, Z., & Cai, M. (2018)
VI	Interior Decoration Project Budget and Bidding Quotation	Project Budget and Bidding Quotation	Interior Decoration Project Budget and Bidding Quotation	Awg, Z. (2021)
VIII	Project Management (2nd Edition)	Engineering management method	Project Management (2nd Edition)	Yang, X. (2019)

Construction management is a summary table of diary issues

Stage	Specifics	Number of issues
Program design phase	1. Misalignment between drawing elevation and site 2. The material in the chart is not consistent with the budget list 3. The final list is incomplete	4
Procurement phase	1. Increased costs, for those not estimated locally 2. Allowing from the contractor's side 3. High material transportation costs 4. Some sales rates are unclear 5. A limited number of items purchased and colour differences in secondary purchases	6
Construction phase	1. Unprofessional procurement staff and deviations in goods 2. Construction on-site issues occur when drawings are not reviewed prior to handover checks. 3. Lack of timely feedback to designers on site issues 4. Failure of acceptance of plumbing and electrical installation 5. Carpenter work is too short, resulting in higher prices 6. Inadequate sealing of wall joints, resulting in uneven installation of the floor set of the back 7. Inadequate sealing of panel installations 7. Lack of timely removal of rubbish on site affects construction progress 8. Inadequate deployment of construction workers	8
Completion phase	1. Poor window installation 2. Uneven floor slabs 3. Adjustment records needed for uneven walls 4. Some of the gaps between the cabinets and the walls are too large, recommended adjustment 5. Overall material colour deviation	5
Total		25

The project managers of the project construction organization were interviewed and their management diaries were used to obtain the corresponding questions

NOVELTY

There is no clear written reference for the interior design work paradigm, but the knowledge and understanding of the work description (scope of work) for each task and phase exists and is something that needs to be further investigated and refined in this paper.

1. The research makes the scope of work of the interior designer clearer for project delivery. The designer's responsibilities are more clearly analyzed.
2. The interior design project delivery will be smoother.
3. Project management standards in the decoration industry are improved and the industry authority is more convincing.

CONCLUSION

Collection of information through feedback from Interior decoration industry, and the project specification to highlight the importance of a precise scope of work in managing interior projects and determining the work process for internal projects. Promotes interior design professionals and academics to urge and expand their way of thinking. It can further improve the designer's overall ability, refine the scope of work, improve the quality of delivery of interior projects, deliver more smoothly, and gain some influence in the management of the industry's specifications. It is also hoped that this study will contribute to establishing a standardized working platform framework by examining the scope of work for project delivery. It is also expected that more people will explore and improve the interior design project methodology.

Industry standard

Economic development

Happy life

Global effect



COMMERCIALIZATION

High quality interior design products, enhanced marketing impact for designers and design firms.

- Designers with more comprehensive design skills, higher project management skills, and driving employment opportunities
- Higher level of interior design products delivered, improving people's quality of life and contributing to the country's economic development

FINDINGS

summary of breakthroughs in industry standards as demonstrated by front-line project delivery, and management feedback from industry associations

First, designers and project managers must grasp the project management methods and techniques to improve work efficiency and professional level. For enterprises, it can reduce the loss of manpower and material resources to accelerate efficiency of enterprises. It can establish a reputation for corporate services. For customers, they can receive assured, high-quality projects. Finally, reasonable supervision and control of the project are favorable to avoid risks, quality, and technology to improve the overall quality of the residential living environment. Promotes the development of a social economy, and standardize the industry standard of interior design project delivery. At the same time, management knowledge also presented more international information and talent, with the development of the times.

PREPARED BY:

¹Nibing, ²Arniatul Aiza Mustapha, ³Nur Maizura Ahmad Noorhani



RECENT TOE CAP SHOE APPLICATIONS AND DIRECTION FOR FUTURE RESEARCH: A REVIEW

INTRODUCTION

Safety shoes are essential gear to keep employees safe in various situations. Safety shoes are designed to shield the foot from flying debris [1-2]. For comfortable use, they must also be as light as possible. After a long shift, wearing more lightweight footwear makes your legs feel less worn out.

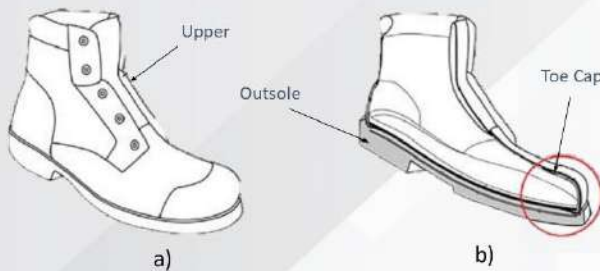


Figure 1: a) Safety shoes and b) Cross sectional of the Safety shoes. Source <https://www.iso.org/home.html>

The outsole, toe cap, and upper are the three main components of safety shoes show in Figure 1. The shoe section that touches the ground, the outsole, weighs between 50% and 60% of the entire shoe.

MECHANICAL REQUIREMENTS FOR SAFETY SHOES

Category of Safety Shoe		
Toe Cap Requirements	Safety ISO 20345	Protective ISO 20346
Impact energy (J)	200	100
Compression load (kN)	15	10

CONCLUSION

The purpose of journal review is to provide literacy knowledge about recent toe cap shoe applications and direction for future research. Workers utilise personal protection equipment (PPE), such as safety shoes, to shield themselves from various health and safety risks at work. Such safety shoes must adhere to fundamental health and safety standards during the design and manufacturing stages to provide the user with suitable protection.

TOE CAP SHOE OVERVIEW

Title	Material Toe Cap Shoe	Author	Year
Thermal aspects of steel toe caps in footgear	Steel	K. Kuklane et al	1999
A Study on plastic Toe-Cap for safety shoes	Plastic	K. S. Cho et al	2004
Effect of a Steel Toe Cap on Forefoot Injury Pattern in a Cadaveric Model	Steel	John Y. Kwon et al	2011
Innovative Geometric Redesign of Safety Footwear Components Using A Reverse Engineering Approach	Advanced High strength Steels (AHSS),	Sérgio L. Costa et al	2016
Study on the impact behaviour of a new safety toe cap model made of ultra-high-strength steels	High-strength steel	Sérgio L. Costa et al [11]	2016
Analysis of Toe Caps for Safety Shoes	Nylon 66 and carbon fiber (CF)	Mr. Hulesh Ram Kurre	2018
Kajian Awal Material Pembuat Toe cap (Safety shoes) Menggunakan Metode Elemen Hingga	i. Steel ii. Aluminum iii. Carbon/epoxy iv. E-glass epoxy v. Kevlar/epoxy	Hendrix Noviyanto Firmansyah et al	2021
Comparative life cycle assessment of safety shoes toe caps manufacturing processes	i. Steel ii. Aluminum iii. Polycarbonate iv. Prepreg	Iacopo Bianchi et al	2022

COMPARISON OF TOE CAP BASED ON STEEL VS COMPOSITE

Type of Material	Advantages	Disadvantages
Steel	i. cheaper price ii. strong iii. already tested iv. many models, sizes, and shapes	i. heavier ii. can be influenced by the ambient temperature iii. Act as conductor
Composite	i. Light and has good durability ii. Not affected by temperature environment iii. Act as insulation	i. High cost ii. Limited on models, size and shape

TRASHLAB: AN EXPLORATION OF SPATIAL STUDY ON TYPES OF UPCYCLING SPACES AND PROGRAMMES IN UPCYCLING CENTRE

INTRODUCTION



WHAT?

Upcycling is a term used to describe a variety of processes that allow old products to be updated and given a second life by being transformed into a new product.

WHY?

While Malaysia has benefited from the expansion of the fashion industry, a number of issues have arisen as a result of the current situation. The absence of upcycling facilities in Malaysia exacerbates the rapidly growing apparel waste problem particularly in the urban city, which is rapidly filling the landfills.

HOW?

In order to find the suitable literature that can be used for this research, a search phrase combination of "upcycle" or "upcycling" is used. A series of comparative analysis are also conducted in order to find out the best layout for upcycling facility in Malaysia.

AIMS AND OBJECTIVES

To study the numerous upcycling layout types that can be implemented in an upcycling centre. Additionally, this will also study the potential of upcycling technology, which has the potential to promote a waste-free lifestyle.

To identify the suitable layout in creating an upcycling centre in Malaysia.

To investigate the upcycling strategies that encourage public to upcycle.

To establish the notion of upcycling that focus on sustainability in Malaysia.

PROBLEM STATEMENT



Excessive amount of apparel waste

Lack of upcycling facility

Lack of upcycling awareness

METHODOLOGY

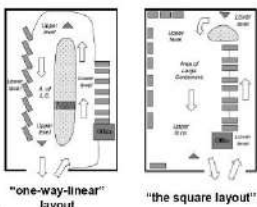
There will be a mixed of qualitative and quantitative methods used, and the three forms of methods that will be conducted to collect data regarding this research;

- Document Analysis – Literature Review
- Visual Observation
- Research Design – Precedent Study

LIMITATION

There is a limitation of previous research papers and guidance on this particular topic in Malaysia. Lack of field work to visit existing upcycling facility due to time constraint and Malaysia's pandemic rule.

FINDINGS AND DISCUSSION



Spatial design in a textile upcycling centre can be studied by looking at how the processes are organized in an orderly manner. In order to effectively exhibit innovative products and to tell the story of their process and success, significant consideration must be given to the surrounding physical space.

From the findings of Sundin et al., there are two type of layout typically found in upcycling centres;

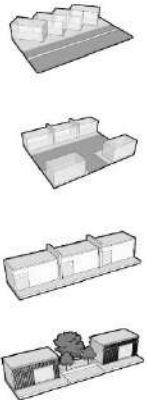
- "one-way-linear" layout
- "the square" layout

PRECEDENT STUDY

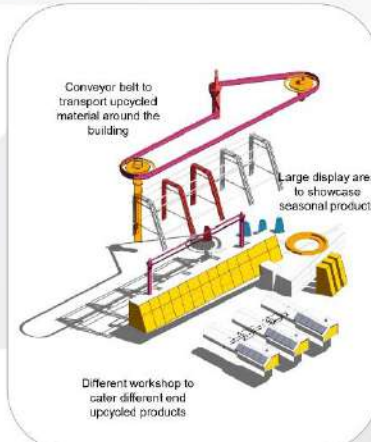


Based on the findings from these two precedent studies, the design of upcycling centre is greatly influenced by the spatial layout and also programmes that are provided. However, it can be very difficult to predict and plan for the time and number of visits as well as the type and amount of waste the visitors will bring. Even so, some patterns can be identified as the amount of waste is greatly increased after festive seasons.

Variable – Spatial Design	Observed Spatial Design Parameters	
	Smestad Recycling Centre	Sunset Park Material Recovery Facility
Workarea Organization	<ol style="list-style-type: none"> 1. Entry layout make no transition 2. Simple space movement 	<ol style="list-style-type: none"> 1. No usage of this space
Width	<ol style="list-style-type: none"> 1. No usage of this layout 	<ol style="list-style-type: none"> 1. Compartmentation of space, allows visitors to come freely 2. Allows more complexity to the space organization
Material	<ol style="list-style-type: none"> 1. Less visible material 2. Space use separated with partitions 	<ol style="list-style-type: none"> 1. Space use separated with solid walls 2. Space use strategic organization/transition
Screen	<ol style="list-style-type: none"> 1. Usage of partitions to allow more open space of the building 	<ol style="list-style-type: none"> 1. Usage of windows to create scale of structure towards the space
Size	<ol style="list-style-type: none"> 1. Building is fairly small due to its simple layout 2. Space is managed by smaller mass of structure 	<ol style="list-style-type: none"> 1. Building is fairly large due to its complexity of layout 2. Requires a larger mass of structure to support the building
Space arrangement	<ol style="list-style-type: none"> 1. The space use arranged connected with each other 	<ol style="list-style-type: none"> 1. The space use arranged connected with each other through corridor, transitional space
Building Design	<ol style="list-style-type: none"> 1. Space needs to have relation with each other 2. Space topology is typically the same 	<ol style="list-style-type: none"> 1. Space can be use related with each other 2. Space topology is mostly different to the same
Greenery	<ol style="list-style-type: none"> 1. Use of greenery to act as a natural barrier between the site context and neighbouring region 	<ol style="list-style-type: none"> 1. Use of greenery to act as a natural barrier between the site context and neighbouring region



DESIGN STRATEGY



By letting the materials be moved around the outside of the upcycling centre, this makes people curious before they even go inside.

The upcycling centre can also show off seasonal products in the large, clear display area.

Last but not least, visitors will be able to choose which upcycled products they want to learn more about in the different workshops.

CONCLUSION

It is possible to improve the design on upcycling centres by considering vehicle flows and visitor activities. For instance, the upcycling centre must be better managed by selecting an appropriate layout, signs, and operating hours. This can be accomplished by reducing the visiting durations and cleaning up the waste collection point. Queues, peak flows, bottlenecks, capacity, flexibility and efficiency can be controlled through a design guidelines for upcycling centre.

MALL WALKING CIRCUIT : IIIDBEE X 2022

Elevated walkway to improve walkability in Kuala Lumpur

International Invention, Innovation & Design Exposition For Built Environment And Engineering 2022



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INTRODUCTION

Mall Walking is the phenomenon of people walking inside the mall when the mall is not in operational time.

Location: Tiongnam or Chow Kit in Kuala Lumpur, Malaysia.



OBJECTIVES

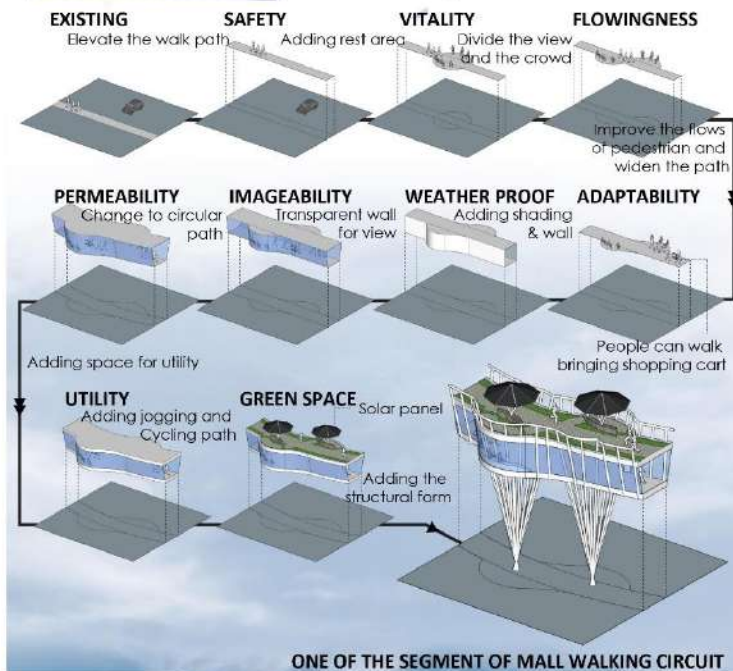
- MOVEMENT**
Create a better and safe walking experience by elevating the path
- MIXING USES**
Connect the path to various kinds of use for shorter travel by walking
- NATURAL MOVEMENT**
Inject spatial principles and human dimensions to keep the vitality of paths

METHODOLOGY

- Locating the potential spatial area by space syntax
- Indicate walkability elements
- Implementing the element into the design
- creating to mall walking circuit through design process



FINDINGS AND DESIGN



ISSUES / PROBLEM

- The average walking in Malaysia is below the global average.
- The registered vehicles outnumber the population of Malaysia.
- The society today has become a car-dependent society



NOVELTY

New walkability elements :

- Injecting purposes
- Comfortable path conditions
- Spatial principles

This project promote the idea of sustainable urban transportation mode.

CONCLUSION

The implication of this project is not limited to improving walking behavior in society but also can improve the vitality of the shopping centers by generating visitors.

- Increase pedestrian
- Promote the shopping activity
- Reduce private car ownership

RECOGNITIONS

This study is in the process of publication. It has been shared to the local authority for knowledge-sharing.

CONFERENCES & PUBLICATION

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- A. Andi, Z. Zain, and U. F. Andi, 'Study on Spatial Configuration of Mall (Study Case: Matahari Mall and Ayani Megamall in Pontianak)', *ARSITEKTURA*, vol. 18, no. 2, Art. no. 2, Nov. 2020, doi: [10.20961/arst.v18i2.43471](https://doi.org/10.20961/arst.v18i2.43471).

The Sense of Place in Designing Coffee Shops in Malaysia



INTRODUCTION

WHAT?

Coffee shops are considered "third places" in urban environments, distinct from work and home, where people may gather, relax, and form connections. As coffee shops become more prevalent in urban environments, they serve as both work and leisure venues as well as places where people may socialize and potentially form communities.

WHY?

The sense of place transforms a conventional environment into one with unique behaviour patterns and sensory qualities. It is influenced by individual and communal ideals, and it also impacts individual behaviour, social and cultural values and attitudes. According to their sense of place, people typically engage in social activities.

HOW?

In order to identify the sense of place of the coffee shops, three different typologies of building with the same brand has been studied to identify the relationship between the typologies of the coffee shops and the architectural design characteristics that can influence the users.

ISSUES/ PROBLEM STATEMENT



OBJECTIVES

This research aims to identify good ambience in three different typologies of coffee shops that influence an architectural response.



To identify the architectural design strategies in determining the sense of place of a coffee shop.



To study the design characteristics and demands that users seek in a coffee shop.



To define the design criteria for improving the good ambience of the existing coffee shop.

METHODOLOGY

Method 1

Literature Review

Identified the architectural design strategies affecting the spaces in determining the sense of place of a coffee shop.

Method 2

Case Study

A background study of the design characteristics and demands in a coffee shop.

Method 3

Site Observation

Design criteria were evaluated to improve the sense of place in the current design of the existing coffee shop.

FINDINGS

Design Characteristics that Affect Users	Typology of Coffee Shops		
	Stand Alone	Shophouse	Inside Shopping Mall
	Starbucks Setia Alam	Starbucks Wolo Hotel Bukit Bintang	Starbucks Tropicana Gardens Mall
Finishing Materials	Floor: Used polished tiles for low maintenance and high traffic area Wall: used clay bricks and wood for a relaxed and welcoming Ceiling: high ceiling to feel more spacious	Used the existing shophouses materials for interior and exterior to keep the value and blend in with the surroundings	Used the existing materials of the mall for the exterior and different materials for the interior to keep the brand's theme
Appealing Aroma	The normal ventilation system as the aroma circulates inside the shop and to the outdoor seating	The ventilation system makes the aroma ventilates to the main entrance, as shared with the hotel.	The aroma ventilates to the mall to attract people and creates a pleasant smell inside the coffee shop.
Adequate Lighting	Using a glass wall at the entrance to allow natural lighting and warm ambient light as artificial lighting	Using double volume height at the front to allow natural lighting to the upper level and the back of the coffee shop	Most of the light is artificial, as the shops cannot get enough natural lighting.
Comfortable Furniture and Layout	Different types of furniture at different places as the shop have outdoor seating and bar seating.	The ground-level seating focuses on comfy and relaxation, while the first-floor seating focuses more on the working table	All the indoor furniture is the same, while the outdoor uses steel for outdoor furniture.
Views	Use minimum glass walls as the shop is stand-alone and not focusing on the outside view.	Using ceiling height glass wall to capture the maximum view towards Jalan Bukit Bintang	Only using glass walls towards the outdoor seating to capture the view of the outdoor garden.
Appealing Acoustics	Mainly using the same acoustics material for interior	Using a different type of acoustics material as the upper floor needs more calm compared to the ground floor	Using acoustics materials along the attached walls to the mall as they need to control the noise

CONCLUSION

Although the research sheds light on three different coffee shops as potential places, it raises new questions as well. For example, this research used the same brand, but the typologies of the coffee shop influenced the different design characteristics of each shop. The key findings showed that the top six design considerations included: cleanliness, appealing aroma, adequate lighting, comfortable furniture and layout, views, and appealing acoustics. This research shows that the typologies of coffee shops were found to have unique site characteristics that related to the physical design characteristics and influenced the sense of place of the coffee shops to the users. In conclusion, design characteristics also influence the users as they affect the ambience of the coffee shops, although within the same brand but with different typologies of buildings and give users different experiences and perspectives.

AN APPLICATION OF CONSTRUCTION TECHNIQUES IN VERNACULAR ARCHITECTURE USED BY INDIGENOUS PEOPLE IN MALAYSIA

International Invention, Innovation & Design Exposition For Built Environment And Engineering 2022



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ABSTRACT



BAMBOO CONSTRUCTION TECHNIQUES BY INDIGENOUS PEOPLE IN MALAYSIA

WHAT?



Bamboo has become a popular material choice in architecture and design projects because of its sustainable qualities and hardwearing characteristics as it has a higher compressive strength than concrete or wood, and rivals the tenacity of steel.

WHY?



Bamboo plants can be found almost worldwide and it is one of the materials that is very familiar to the indigenous people especially in Malaysia. They used bamboo as their main construction material, in the early days.

HOW?



Observations were done in the aboriginal village where bamboo is the main material in building practice and part of their lifestyle. Also precedent studies in foreign countries were done to analyse another kind of construction techniques available.

LITERATURE REVIEW

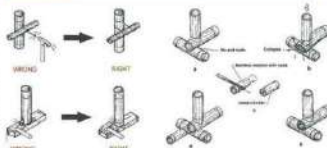
Bamboo Basic Principles

Not to use conventional wood nails in bamboo joinery as it will cause them to split.

To make sure that the lower part connecting with the surface ends with node when using bamboo as column.

When connecting bamboo poles with bolts, make sure to bolt them together in between 2 nodes, otherwise the bamboo will crush.

In construction, using bamboo nodes is very important. Bamboo columns or beams need to have a node at both ends.



Bamboo Poles



Straight Element

Bamboo Split



Curve Element

Bamboo Laminated



Bamboo as Structural Elements



Single Layer



Multiple Layer



Multiple Poles

PROBLEM STATEMENT



The vernacular architecture using traditional materials such as timber and bamboo has slowly being forgotten by the indigenous people where it was their main construction materials during early days.



Most of the indigenous people did not take advantage on their building skills using traditional materials and make living out of it due to lack of awareness.



Community from urban areas are no longer aware on the sustainability and the versatility of traditional materials such as bamboo in helping their environment.

RESEARCH AIM

The major purpose of this study is to highlight bamboo as a construction material and what may be created from it. What kind of bamboo may be utilised in construction and what procedures should be employed in building construction are investigated. Bamboo is expected to make significant progress as a construction material and to provide confidence that it is an environmentally beneficial material.

RESEARCH QUESTION

- What is the best construction techniques for vernacular architecture?
- How can vernacular architecture improve the sustainability of a building?
- What is the advantages of using bamboo as building construction material?



RESEARCH OBJECTIVE

- To study on the construction techniques that can be used for vernacular architecture
- To explore on the sustainability of vernacular architecture
- To discover the advantages of using bamboo as building construction material.

LIMITATION

- Previous study publications and instruction on the topic are few.
- Lack of site visit to existing bamboo-built buildings since the existing building located faraway.



SIGNIFICANT OF RESEARCH

- The construction method used can be implemented to the vernacular architecture in modern days.
- To promote the sustainability and versatility of bamboo construction.

CONCLUSION

Education: The first step in using bamboo as an architectural material is to get educated on the sustainability of the bamboo construction. Creation of jobs: If bamboo became a material used in Malaysia, more jobs would become available.

In closing, bamboo is a material that can change the way architects and engineers design in the future. It had the ability to be a sustainable source used to create LEED certified buildings across Malaysia. This will allow for architects in Malaysia to create architecture that is not only sustainable, but also aesthetically pleasing designs.

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- Indigenous People. (2022). <https://www.worldbank.org/en/topic/indigenous-peoples>

METHODOLOGY

PRIMARY DATA

- Observation**
- Study about the history of bamboo construction.
 - Understanding the versatility of bamboo and the sustainability of the material.
 - Analysis on the limitation of the material and the availability in Malaysia.

SECONDARY DATA

- Literature Review**
- Study about the history of bamboo construction.
 - Understanding the versatility of bamboo and the sustainability of the material.
 - Analysis on the limitation of the material and the availability in Malaysia.
- Precedent Studies**
- Study on how the connections were done by the architects.
 - Study on the limitation and the benefits of the connections used.

Step 1:

Define the objective of the survey

Step 2:

Determine the sampling group

Step 3:

Record the data gathered from the observation

Step 4:

Analyse the data from the observation

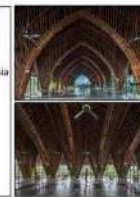
Step 5:

Implement the data gathered to the design

PRECEDENT STUDIES



Sharma Springs
Architect: [IBUKU]
Area: 750sqm
Year: 2012
Location: Indonesia



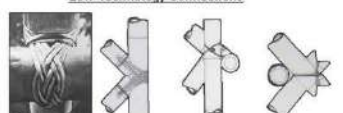
Ting Xi Bamboo Pavilion
Architect: VTN
Area: 480sqm
Year: 2010
Location: China



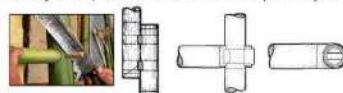
Nocenzo Cafe
Architect: VTN
Area: 687sqm
Year: 2018
Location: Vietnam

FINDINGS

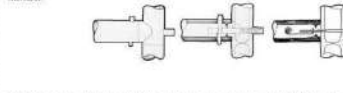
Low-Technology Connections



Friction-Tight-Rope - One of the simplest ways of connecting bamboo pieces is friction-tight-rope connections. Lashing can have variations of complexity as well. With strong members cut appropriately to fit snug to each other, the bamboo pieces can be lashed together with pre-drilled holes in each of them and the rope tied through them.

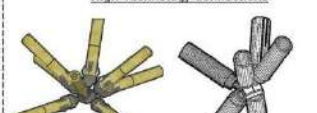


Wedge Connection - Driving a wedge at the connection of two bamboo members is a simple way of connecting bamboo. The horizontal member end needs to be rounded in order to fit and not move around the connection. On the opposite end of the vertical member a wedge is driven through and ends on the other side, inside the horizontal member.

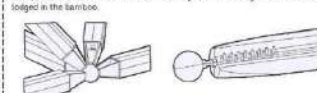


Plug Connection - Plug connections are similar in connections in wood with mortise and tenon, and are also used seldom used in bamboo structure. It used with rope connection sometimes as well. To be installed not to close to edge of bamboo, due to chances of the plug breaking out and the bamboo splitting.

High-Technology Connections



Interlocking Connection - Interlocking connections are using individual laminated different components. It involve gluing or chocking that around bamboo members. This involve applying a wood piece in the inner surface of the bamboo and gluing it. Also for this work, two slots need to be in the bamboo to prevent cracking when the wood is being lodged in the bamboo.



In-bow-anchor Connection - For bamboo members with large diameters, in-bow-anchor technique can be used to transfer 100% of the load of the entire cross section. The anchor is a cast-in-place concrete with barbs connection on its side. The in-bow-anchor can be easily sheared with a horizontal steel with concrete or artificial resin. The advantage: this is a simple manufacturing with a threaded rod and two counter nuts, and steel barbs/threaders are used as jacking points.



Transportation Annular - Transportation annular involves pressed concrete in the connection and depends on the concrete/bamboo connection, specifically the concrete compressive strength. Another factor involves the annular's thread diameter, the tractive direction and the girth design.



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Designing A Prototype Planetarium typology with Full Dome Imaging Technology For Enhancing and Impactful Cognitive Experience

IIDBEE X 2023

20 JANUARY 2023 International Invention, Innovation & Design Exposition for Built Environment and Engineering 2023



INTRODUCTIONS

THE NEW SPACE ECONOMY

NEW SPACE ECONOMY & Industry 4.0

The New Space Economy in 2018 has been introduced to **democratize the knowledge space related to economic fields**, such as **technology, engineering, education, infrastructure and even tourism**. [OECD, 2012] that is closely align with the Industrial Revolution 4.0, which **upgraded stressing every single sector to be prepared.**



OUR SPACE SECTOR?

The Science, Technology and Innovation Ministry is developing a blueprint called the **Malaysia Space Exploration 2030 (Malaysia Space-X 2030)** to drive growth and create a sustainable national space sector ecosystem. However, the root of our problem is the **awareness and initiative by the government to focus into education.**

HOW

The New Space Economy calls to Malaysia the movement here with any economic sector are now associated with space, since 2018. However, observations shows **Malaysia are nowhere near space exploration level**



WHY

Our Foundation in Space education are not strong enough. Results in Malaysia's space industries are less popular fields in Malaysia, and leads to **left behind in exposing the public interest to the importance of space education.**



WHO

The future generation will be affected and our **current national assets (Planetariums) assigned to sparks the interests of young minds into space fields have minimal effect** resulting future generation are not interested in advanced science and technology

PROBLEM STATEMENT

Space education awareness in Malaysia are still at critical level as we cannot produce an effective learning environment for the particular field

The urgency for a space science infrastructure as current **Planetarium designs are outdated** and receive critical demand to cater variety of audiences.

The current technology of the Planetarium Full Dome experience are still now **only reaching flat imaging capabilities.**

OBJECTIVES

RO¹ To understand the needs for a space infrastructures that to meet the requirements and objectives in educating people about space sciences.

RO² To find out design possibilities in merging space values and technologies in reaching goals of enhancing experience and cognitive learning.

RESEARCH METHODOLOGIES (RM)

LITERATURE REVIEW

SECONDARY DATA
1. Articles
2. Relevant Documents
3. Reports
4. Books References

To
DEFINE OBJECTIVE OF RESEARCH
1. DEFINE
2. CATEGORIZE
3. FACTOR CONTRIBUTE

PRECEDENT STUDIES

PRIMARY DATA
1. Shanghai Astronomy Museum Shanghai, China
2. Nagoya City Science Museum, Nagoya, Japan
3. Kanica Miracha Planetarium Tokyo

On
DETERMINE THE SAMPLING GROUP
1. FUNCTION
2. PROGRAMMES
3. TARGET USERS
4. DESIGN

SEMI STRUCTURED PROFESSIONAL INTERVIEWS

PRIMARY DATA
Identifications of aspects regarding the built of a Planetarium, into 3 sections: A. Architecture, Design and Educational role

To
CONDUCT INTERVIEW
IN-DEPTH INTERVIEW WITH THE PROFESSIONAL BODY IN JUNE 2022

CASE STUDY, OBSERVATION

SECONDARY DATA
Through Observation and retrieving technical data, such as plans, 3D, details and sectioned drawings

To
COLLECT AND ANALYSE DATA
DATA COLLECTION AND ANALYSIS

NOVELTY

Highlights awareness on Space Science field



Contribution on designing new planetarium helps to:

Educating people on best design practice of Planetariums



Cater for wider audience to have interests in Space Science



FINDINGS

RO¹: Importance of Planetarium in education

An interview conducted, to find out the operation for the built for Planetarium Negara. This paper has interviewed the Chief Senior Assistant Director of the National Planetarium, En Zaini Bin Masri, on June 2022, face to face in his office at Planetarium Negara, Kuala Lumpur, and the results regarding the aspirations have been answered below:



1. To become Symbol of a Nation acknowledges space science is important



2. To act as reference centre to Space Science field, and spark interests to the public



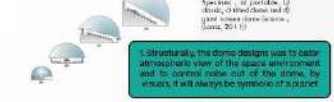
3. Urgency for Space Science Infrastructure is always in demand

RO²: Understanding design of a Planetarium

Planetariums represent one of the biggest and most visible avenues for presenting astronomy and related subjects to the public (Manning, 1994).

Leach & 2011, Reviewers of the Future, Centre for the Future (Leach, 2011); [OECD, 2012]

Figure 2.4.1: Digital Dome Structure of planetarium, 3D model of planetarium and 3D model of planetarium (Leach, 2011)



Structurally, the dome designs need to cater structural view of the space environment and to control noise out of the dome, for visuals, it will always be symbolic of a planet

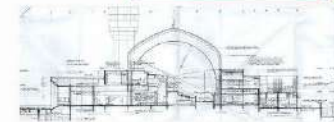


Figure 2.5: Digital Dome Structure of planetarium, 3D model of planetarium and 3D model of planetarium (Leach, 2011)

RO³: The Future of Imaging Technology

special studies : Planetariums



Planetariums are some interesting and interesting on the display surface. Some of the interesting and interesting on the display surface. Some of the interesting and interesting on the display surface.



Digital Planetarium is a planetarium that uses digital technology to display the sky. It is a planetarium that uses digital technology to display the sky.



Digital Planetarium is a planetarium that uses digital technology to display the sky. It is a planetarium that uses digital technology to display the sky.



Planetarium is a planetarium that uses digital technology to display the sky. It is a planetarium that uses digital technology to display the sky.



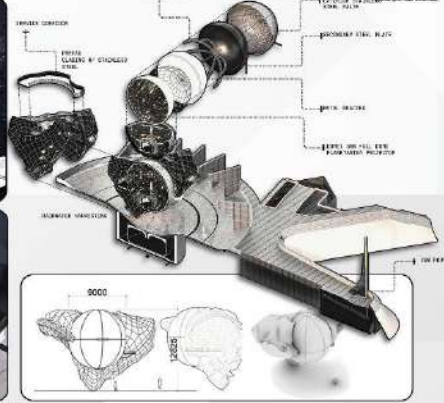
Planetarium is a planetarium that uses digital technology to display the sky. It is a planetarium that uses digital technology to display the sky.



Planetarium is a planetarium that uses digital technology to display the sky. It is a planetarium that uses digital technology to display the sky.

VISUALISING DESIGN OF THE PLANETARIUM

"660 Imaging + Form and shape representing a star and planet"



CONCLUSIONS

The findings proved, that planetariums will always be relevant in order to learn astronomy, as architecture feature as **stimulate towards astronomical education** have established within the country and as an inspiration for the enthusiasts. This research emphasizes the **importance of technology to boost the educational sector to reach the goal and consider the possibilities to make it more immersive, interesting, and productive, while fulfilling the need for a development in the Space sector.** The study's findings can be further investigated and improved by recognizing the importance of analyzing the unique needs for space planetarium and space efficiency. Designers and developers can apply the concept of **preconceptional, adaptability, co-existing with technologies and possibilities** through the design of the planetarium or other similarly styled structures.



COMMERCIALIZATION



Guidelines for Designing a Universal Planetarium and Structures Related



Guidelines Planetarium specialized construction and manufacturing



Guidelines on Designing Visual and Experience structures related

SIMULATION ON DAYLIGHTING PENETRATION INTO BUILDING ATRIUM FOR ARTIFICIAL INTELLIGENCE INTEGRATED FARMING



College of Built Environment (CBE)

INTRODUCTION



FINDINGS

NOVELTY

In order to design a better atrium that enables improvement of precise projected agricultural produce based on the optimal lighting conditions of indoor farming, the principle of simulating lighting in buildings can be integrated with artificial intelligence to create a more effective design.



RECOGNITIONS



What?

Urban farming is characterised as mostly taking place in a community within a city or other densely populated urban settings. Contemporary urban farming is usually done inside a building with an atrium, for direct sunlight penetration for plants

Why?

Malaysia's food crisis highlights how fragile the supply chains for everyday items can be in times of crisis. In order to feed the world in the future, there needs to be new solutions for food supply - urban farming is one such solution.

How?

In order to fully maximise the sunlight penetration within a tropical country, an atrium design must be fully efficient. With the help of AI sensors integration with the farming system, an atrium can be designed to maximise the daylight penetration.

ISSUES/ PROBLEM STATEMENT

Scarcity of Land + Low food supply

Urban Farming

Indoor

AI Integrated Farming

Improve agriculture

OBJECTIVES

a) To analyse what are the characteristic, benefits and limitations of atrium design.

b) To study different types of typologies of atrium design in tropical climate

c) To simulate the atrium design based on the criteria provided.

METHODOLOGY

PRIMARY DATA

Simulation will simulate three models-

- 1) Atrium design with long horizontal opening.
- 2) Atrium design with square opening.
- 3) Atrium design with centralised and circular opening

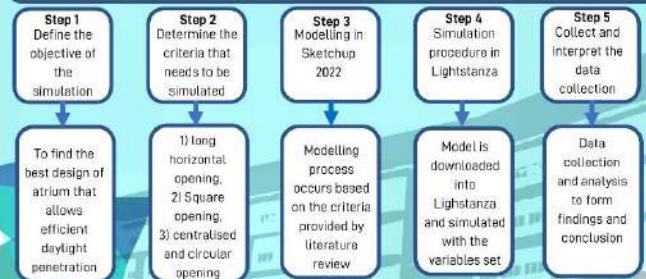
All three models are to be simulated with illuminance and amount of daylight penetration under tropical climate environment.

Date: 21 March, 21 Jun, 21 Sept, 21 Dec, Time: 8am-5pm (1 hour intervals)

Simulation Process Analysis: Sketchup -> Lightstanz -> Data Tabulations

SECONDARY DATA

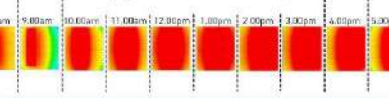
Literature review focused on the keywords; urban farming, artificial intelligence, tropical climate, atrium design. This will give a better understanding of different types of atrium design and also the benefits, characteristics and limitations. It will also help to decide the type of atrium design to be simulated



Atrium design with long horizontal opening



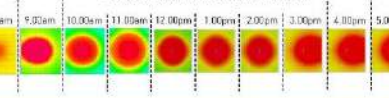
Daylight Penetration Distribution on plan



Atrium design with square opening



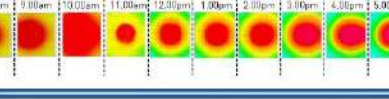
Daylight Penetration Distribution on plan



Atrium design with centralised, circular opening



Daylight Penetration Distribution on plan

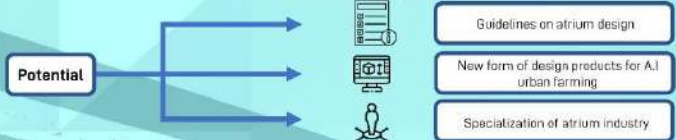


- The characteristics of atrium design is that it can be used to provide adequate daylight, circulation of spaces and surfaces for landscape applications. The benefits of the design is that it can reduce electrical consumption of the building and provide central area, while the limitations of atrium design are excessive daylight from inefficient design, glare and high temperature from tropical climate.
- According to the secondary data, these are the common 6 typology of atrium design that can be identified and found across the tropical climate, which are: 1) Centralised, 2) Semi enclosed, 3) Attached, 4) Linear, 5) Long horizontal opening and 6) Centralised Circular
- From the simulation, the circular shaped atrium is found top be the most efficient in the sense of daylight penetration, followed by the long horizontal atrium and the square opening atrium

CONCLUSION

In conclusion, the circular-shaped atrium is found to be preferable for atrium design in tropical climate due to more daylight penetration and distribution, compared to rectangular-shaped atrium and the square opening atrium. Therefore, it can be inferred as a recommended typology of atrium design for a.i integrated urban farming, which satisfy the study's aim and objective.

COMMERCIALIZATION



CONFERENCES & PUBLICATION



Treated Rubberised Engineered Cementitious Composites (ECC) for Modern Civil Engineering Material



INTRODUCTION

Engineered Cementitious Composite (ECC) - Excellent mechanical qualities and permanence that has a lot of interest from researchers and engineers

Rubberized Engineered Cementitious Composite (R-ECC) - a type of ECC in which fine aggregate is partially or entirely replaced by crumb rubber (CR)

ISSUES/ PROBLEM STATEMENT

Due to a limited supply, excessive exploitation of fine aggregate, a natural resource, will increase its depletion cost.

Tyre manufacturing demand for road vehicles has contributed to the rapid expansion of urbanization, increasing tyre manufacturing.

NOVELTY

- Treated R-ECC as partial sand replacement in ECC
- Usage of crumb rubber in ECC as a retrofitting material
- Sustainable Development Goal (SDG) 9 and 11

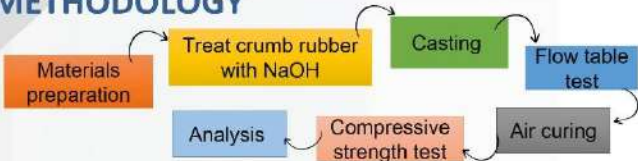
CONCLUSION

- All ECC or RECC specimens had passed the target for flowability test and compressive strength.
- The optimal percentage of CR as partial fine aggregate replacement in the ECC mixture is 10%.
- The material R-ECC promises to significantly provide new sustainable alternative materials in construction building.

OBJECTIVES

To identify the optimum percentage of crumb rubber as sand partial replacement in the ECC

METHODOLOGY



COMMERCIALIZATION



RECOGNITIONS

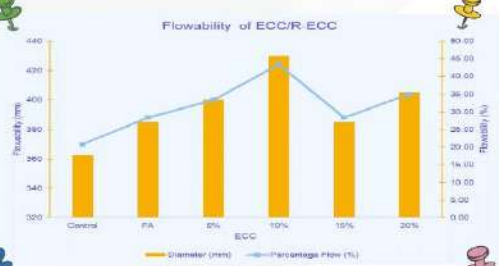


CONFERENCES & PUBLICATION



Dear author,
Congratulations! Your paper "Utilization of Sodium Hydroxide (NaOH) to Treat Used Tyres as Sand Partial Replacement in Engineered Cementitious Composite" has been accepted for publication in IIIE's International Journal of Integrated Engineering. Your manuscript will soon be forwarded to the Production Team who will prepare it for publication and you will be notified of a publication date once your paper has been scheduled for the special issue.

FINDINGS



ABOVE-GROUND BIOMASS AND CARBON STOCK ESTIMATION OF HARUMANIS USING ARTIFICIAL NEURAL NETWORK AND RANDOM FOREST

SITI NOOR SYAZWANI ZAKARIA ¹, NURUL AIN MOHD ZAKI ¹, FARRAH MELISSA MUHAMAM ²

¹ Centre of Studies Surveying Science & Geomatics, College of Built Environment, Universiti Teknologi MARA (UiTM), Perlis Branch, 02600 Arau, Perlis, Malaysia

² Faculty of Agriculture, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia



INTRODUCTION

The Artificial Neural Network and Random Forest are the popular machine learning algorithms to estimate above-ground biomass and carbon stock. This algorithms will be used to estimate the carbon stock for Harumanis

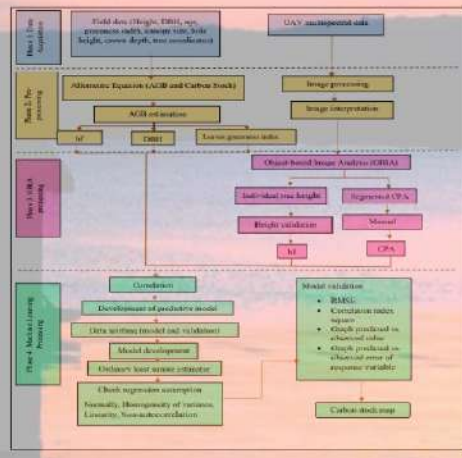
ISSUES/ PROBLEM STATEMENT

In the beginning of the 21st century, climate change starts to be a new challenge a priority concern of various stake holders. Climate change has now influenced significantly numerous sectors, including food security. Subsequently, food industries, farming communities and researchers connected with the agriculture sector ought to convey modern processes or adapt reasonably the existing ones in arrange to address the challenges presented by climate change. Agriculture sector must adopt the rising technology such as usage of drone UAVs can provide valuable data concerning the vegetation and chemical traits, in this manner influencing significant choices and approaches

OBJECTIVES

The objectives for this research are as follows: (1) To determine the relationship between tree parameter with weather variable, and multispectral data for Harumanis tree plantation for above-ground biomass and carbon estimation, (2) to classify tree crown delineation using Object Based Image Analysis and (3) to develop model for above-ground biomass and carbon stock estimation using artificial neural network and random forest

METHODOLOGY



NOVELTY

- Provide the model of above-ground biomass and carbon stock of Harumanis
- Provide basic knowledge about the usage of UAVs in agriculture sector
- Predict the future above-ground biomass and carbon stock for Harumanis
- As a reference for future study as not many research related to Harumanis

CONCLUSION

Artificial Neural Network and Random Forest can be used to estimate above-ground biomass and carbon stock and this algorithms are very handy for future agriculture sector as they can handle large amounts of data, improving accuracy and can make predictions about the future above-ground biomass and carbon stock

COMMERCIALIZATION

- Provide knowledge to farmers, researchers and also public users about the usage of UAVs in agriculture sector which can help to develop a bigger sector
- Via Machine Learning algorithms, the accuracy for estimation of above-ground biomass and carbon stock can be improved and help to predict the future carbon stock for Harumanis

INSTRUMENT

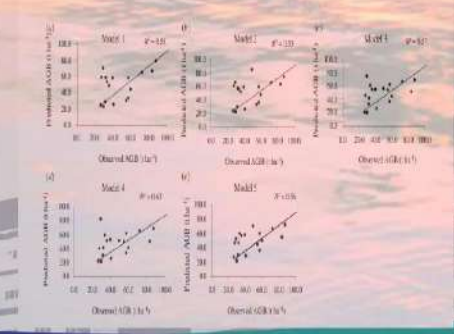
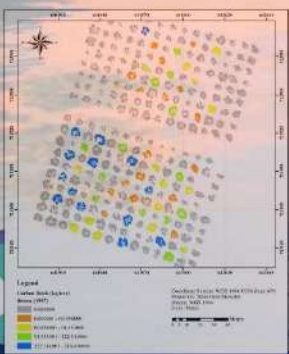
Detail	Ardupilot Quadcopter
Sensor	MicaSense RedEdge
Overlap	75% horizontal and vertical
Altitude	75m
Spatial resolution	5cm/gnd



CONFERENCE & PUBLICATION

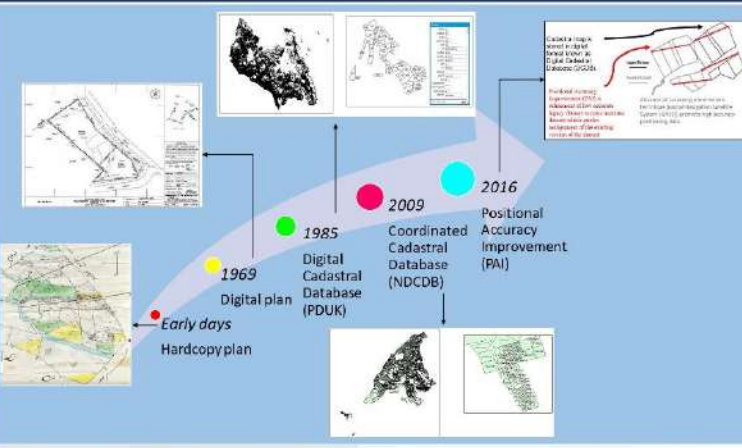
The 43rd Asian Conference on Remote Sensing (ACRS) 2022- Mongolia 3-5 October 2022

FINDINGS (EXPECTED OUTCOMES)



Analyses of least square methods for outlier(s) detection in cadastral network adjustment

1. INTRODUCTION



2. PROBLEM STATEMENTS

1. The existence of outlier can significantly decrease the accuracy of land records (Hashim et al., 2017).
2. Outliers can diminish the amount of information in survey datasets and making data analysis harder (Wada, 2020).
3. Resurvey and reprocessing the field book are complicated, expensive and time consuming (Wada, 2020).
4. Former study has found that StarNet's test is less sensitive towards small outlier (Abbas et al., 2021).

3. OBJECTIVES

1. To examine the reliability of least square outlier(s) detection approaches
2. To evaluate the sensitivity of least square outlier(s) detection approaches in detecting gross error(s) in cadastral network adjustment.

4. METHODOLOGY

1. Data acquisition

Table 1. Simulated traverse data

Sub-experiments	Augmented gross errors
i. Single distance measurement	5cm, 1m, and 5m
i. Single bearing measurement	1', 5' and 10'
i. Distances and bearings in multi-traverse line	5cm + 1', 1m+5' and 5m+10'

Table 2. Certified plans

Sub-experiments	No. of CPs	Production date	Location	Discrepancies (Distance, Bearing)	
				Line 1-2	Line 2-3
i. Two first-class measurement CPs	CP93164	March 23rd, 2009	Mukim Seriab, Perlis	29.556m 85° 39' 00"	37.298m 87° 07' 50"
	CP92873	April 7th, 2008		29.568m 85° 41' 10"	37.287m 87° 05' 50"
				Positional error of bearing (m)	
ii. First-class measurement and second-class measurement CPs	CP93387 (1 st)	July 21st, 2009	Mukim Seriab, Perlis	21.148m 124° 36' 10"	75.273m 133° 16' 40"
	CP33758 (2 nd)	Sept 28th, 1969		21.163m 124° 34' 00"	75.297m 133° 18' 00"
				Positional error of bearing (m)	
iii. Two second-class measurement CPs	CP90416	Nov 6th, 2003	Mukim Titi Tinggi, Perlis	6.220m 295° 47' 00"	115.670m 45° 06' 30"
	CP61325	Jun 28th, 1989		6.220m 295° 49' 00"	115.620m 45° 05' 00"
				Positional error of bearing (m)	
				0.004	0.05

4. METHODOLOGY (cont..)

2. Data processing

1. Computation of least square adjustment (LSA)

2. Global test

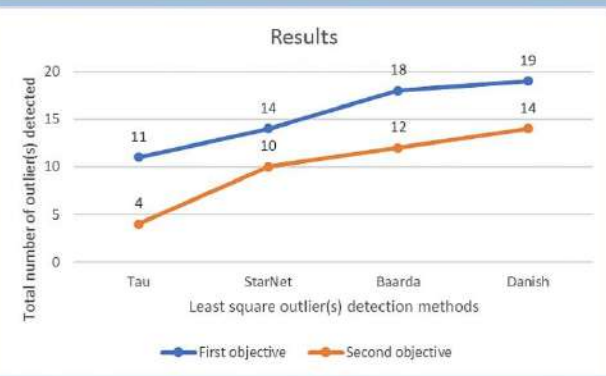
Two-tailed test based on Chi-square distribution: $\frac{rS^2}{X^2_{\alpha/2}} < \sigma_0^2 < \frac{rS^2}{X^2_{1-\alpha/2}}$

Presence of outlier(s):
 $H_0: \sigma^2 = \sigma_0^2$
 $H_a: \sigma^2 > \sigma_0^2$

3. Local test

Methods of local test	Standardised residuals	Critical value, c
Baarda	$\hat{v}_i = \frac{v_i}{(diagonal)(\sqrt{\sum v})}$	3.29
StarNet	$\hat{v}_i = \frac{v_i}{\sigma_0}$	3.00
Tau	$\hat{v}_i = \frac{v_i}{(diagonal)(\sqrt{\sum Varv})}$	Tau (τ) distribution
Danish	$\hat{v}_i = \frac{v_i}{(diagonal)(\sqrt{\sum L^a})\sqrt{l_i}}$	3.00

5. FINDINGS



6. NOVELTY

1. **StarNet method** reveals the limitations of detecting outliers when data sets from multiple survey classes are used.

7. CONCLUSION

1. The findings reveal that the excellent performance of outlier detection when tested on both combination of similar and different survey's classes is demonstrated using **Danish's method**.

8. COMMERCIALIZATION

1. Develops a commercial software based on Danish method for outlier detection to enhance positioning accuracy in cadastral network adjustment.

9. RECOGNITIONS

Deepest appreciation to:
1. Assoc. Prof. Dr. Sr. Mohd Azwan Abbas

INTRODUCTION

Mangifera indica Disease for Smart Agriculture Monitoring (MiDSAM) is an advance technology implementing geospatial and machine learning approaches to provide an early disease identification in *Mangifera indica* crops, utilizing image datasets from unmanned aerial vehicle (UAV).

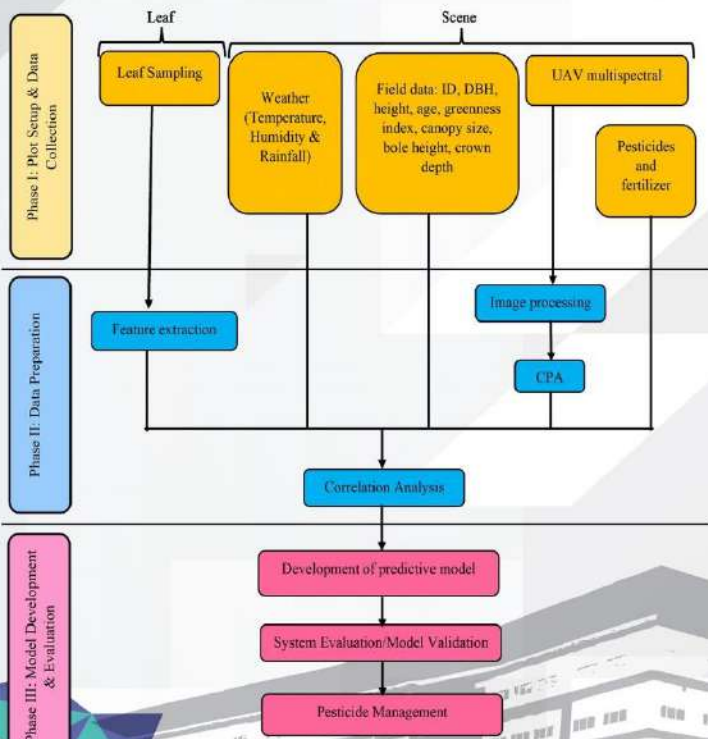
ISSUES/ PROBLEM STATEMENT

- Harumanis fruit is threatened by insidious fruit rot disorder, pest and disease attack.
- The production of mango is insufficient to fulfil the local demand (Per Capita Consumption 2021: 1.8 kg/year)
- Manually taking care of harumanis crops can be laborious.
- Disease symptoms are generally found later in the disease's progression
- The need of trained and experienced manpower capable of correctly assessing the crops' condition

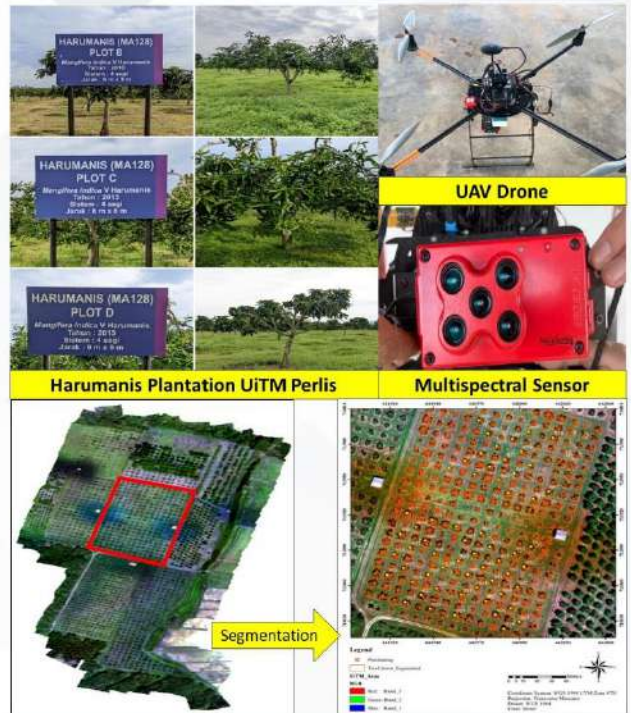
OBJECTIVES

- To model the disease identification and application of pesticides to the harumanis tree using geospatial and machine learning approaches.

METHODOLOGY



PRELIMINARY RESULT



NOVELTY

- Provide an early assessment of the disease-related to harumanis crops using geospatial and machine learning approaches.
- Assist the farmers to plan and advise the optimum usage of pesticides for disease management in harumanis crops.

CONCLUSION

This smart system will ensure the crops' productivity can be maximized, in line with the Malaysia National Agro-Food Policy 2011-2020, simultaneously help the environment by reducing waste from excess input applications.

COMMERCIALIZATION

Market size value in 2021: USD 5.49 billion	Market forecast value in 2030: USD 19.24 billion	Key countries covered in precision agriculture: North America, Australia, Japan, China, South Korea, India, etc
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ACKNOWLEDGEMENT

This research is partially supported by a grant from Research Management Centre (RMC), Ref: 600-RMC/GIP 5/3 (036/2022) Universiti Teknologi MARA (UITM)

1 INTRODUCTION

- The spread of COVID-19 that has affected on human health, it also affected on country's economy, world's population and disrupted the global way of life (Cucinotta and Vanelli, 2020).
- According to Woodruff (2019), factors that contributes to the economy growth could affect the property industry, such as human resource, physical capital, natural resources and technology.
- Real estate industry being in services sector and like most capital-intensive industry has been badly affected by COVID-19 pandemic (Tuah, 2021).
- Almost all countries faced the economic recession due to the implementation of lockdown, causing many sectors of the economy to be disrupted or stunted and changed the employee workflows and increase reliance on technology and virtual collaboration (Nah and Siau, 2020).



METHODOLOGY 4

SECONDARY DATA

- Sources:**
Journals, research publications, magazines, news, etc.
- The authors have focused on the content analysis of relevant literature reviewed and synthesized to explore the current situation of disruption in real estate agency and its performance indicators.

2 PROBLEM STATEMENT

COVID-19 pandemic has contracted sharply on the property market activity and transaction value in Q2 2020 (NAPIC, 2020).



The performance of estate agency during pandemic worsened during total lockdown declaration in Malaysia (Mohmad Lehan et al., 2020)



Real estate agencies were facing more challenges than before and need innovation of technologies in sustaining the business (Dang, 2019).



5 FINDINGS

Four major factors affecting performance of estate agency

- Technology Use
- Technology and Development
- Business Networking
- Interpersonal Skills

Five key performance indicators (KPI)

- Number of Calls Made
- Client Feedback Ratings
- Networking Goals
- Individual Marketing Activities
- Revenue Growth

❖ The impact of COVID-19 on real estate business performance requires new strategies to be taken by estate agencies.



3 OBJECTIVES

To identify the pandemic disruption factors affecting estate agency performance.

To determine the performance indicators of estate agency.



CONCLUSION 6

➤ This pandemic has opened the eyes of all industries globally, including real estate agencies in Malaysia, that they must think creatively and effectively to keep running their real estate business to generate income and revive the country's economy.

➤ The use of technology is not only significant to the entire real estate industry, but it also gives a new perspective from buyers and sellers, creating an opportunity for real estate agency to sustain their performance throughout pandemic.

LIGNIN: GREEN MODIFIER FOR ROAD PAVEMENT

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



INTRODUCTION

- Bitumen is a petroleum-based hydrocarbon, obtained from a crude petroleum distillation, has been widely used as a binding material in pavement construction.
- To improve pavement performance for long term condition, the properties of the bitumen need to be modified by adding modifiers. The modified bitumen can provide an improvement in rutting resistance, fatigue cracking resistance, and cracking resistance to binder hardening.
- Lignin is an organic renewable resource, one of the most abundant material available and can be obtained commercially from pulp and paper mills industry (Gosselink and Guran, 2004) or production of ethanol (Bajwa et al., 2019).
- Lignin is a hydrocarbon mainly consists of carbon, hydrogen and oxygen, a chemical similarity to bitumen binder (Wang & Derewecki, 2013), and possess a good binding and antioxidant properties.
- Due to its antioxidant properties and chemical structure similarities, lignin might be beneficial in slow down the oxidation rate of bitumen and as partial substitutes for bitumen binder.

ISSUES/ PROBLEM STATEMENT

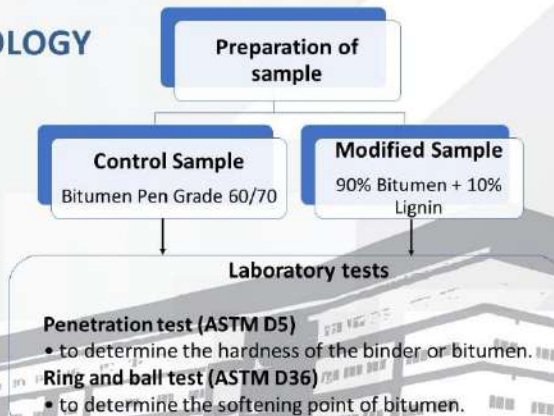
Limited study incorporated lignin as modifiers hinder its application in road pavement.



OBJECTIVES

- To determine the physical properties of lignin modified bitumen by ring and ball, and penetration tests.
- To compare the temperature susceptibility of conventional and lignin modified 60/70 bitumen.

METHODOLOGY



FINDINGS

- The finding (Fig. 1(a)) shows that the lignin has increase the hardness of bitumen by reduction in the penetration value from 68.3 PEN for bitumen grade 60/70 to 65 PEN for modified bitumen.
- It was found that the softening point temperature value of the modified bitumen is 52°C compared to conventional bitumen which is 48°C (refer Fig. 1(b)).
- As for the penetration index (PI), lignin improves the PI value from -1.0 to -0.07 (refer Table 1).

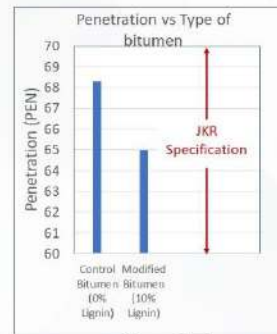


Figure 1(a)

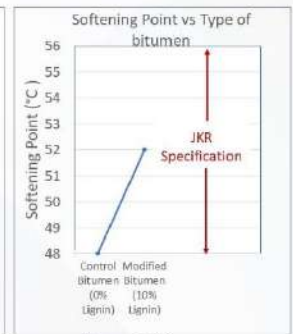


Figure 1 (b)

Figure 1(a): Penetration of control and modified bitumen (b): Softening point of control and modified bitumen

Table 1: Temperature susceptibility of control and modified bitumen

Type of Bitumen	Penetration Index (PI)
Control (0% Lignin)	- 1.0
Modified (10% Lignin)	- 0.07

NOVELTY

Lignin is a renewable, sustainable and an alternative modifier that can partially replace bitumen while maintaining and improving the properties of the binder and pavement.

CONCLUSION

- Adding 10% of lignin lowers the penetration value which increase the hardness of bitumen.
- Lignin increase the softening point of binder therefore modified bitumen can withstand a higher temperature compared to conventional bitumen.
- Lignin give a better results for the PI of the modified bitumen which is -0.07 compared to conventional bitumen with -1. Lignin modified bitumen is suitable to be applied in pavement construction (within the range of -2 to +2).
- Modifying the bitumen with lignin will help in reducing the usage of bitumen in road construction thus lower the cost of materials.

COMMERCIALIZATION

Lignin modified bitumen – A sustainable green binder that environmentally friendly, economically feasible and abundantly available.

THE IMPLEMENTATION OF SMART CITY CONCEPTS IN THE AREA OF GREATER KUCHING, SARAWAK

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



INTRODUCTION

Smart City implementation in Greater Kuching, Sarawak, is the subject of this study. According to United Nations Economic Commission for Europe (UNECE) smart city defines:

- utilizes ICTs to improve quality of life
 - productivity
 - services
 - competitiveness

In general, a smart city is an urban region that relies on technology and electronics to collect data, which is then utilised to efficiently manage assets, resources, and services, resulting in improved operations for the entire city.

ISSUES/ PROBLEM STATEMENT

- The number of developers and innovators tackling Smart City projects is growing but there are still a number of challenges that all developers face.
- There are issues on capacity and coverage challenges as well as security issues in digital world.
- As city populations increase and urban sprawl grows, economic and social issues are usually worsened.
- A city's quality of life is affected, but traditional infrastructure is also put under more strain.
- A case study in Greater Kuching, Sarawak is investigating public's acceptance on the implementation of a Smart City.
- Have the local authorities put in place the relevant structures for adapting ICT related to smart city under their jurisdiction based on the Sustainable Development Goals and New Urban Agenda?

OBJECTIVES

- To identify public perception on the idea of implementing Smart City concept in Greater Kuching.
- To assess the readiness of Local Authorities in Kuching in implementing the initiatives of Smart City in Greater Kuching.
- To identify Smart City applications around Greater Kuching's urban public space.

METHODOLOGY



This study is conducted in an area designated as Greater Kuching zone. The area is administered by two local authorities namely:

- Dewan Bandaraya Kuching Utara (DBKU)
- Majlis Bandaraya Kuching Selatan (MBKS).

- This study employs a descriptive research design using a combination of both qualitative and quantitative methodology.
- For qualitative design, the researcher carried out an elite interview with selected respondents who are officers in charge in Smart City implementation in the local authorities and stakeholders who are directly involved with the Smart City programme.
- Whereas to execute the quantitative design, the study utilized the survey method to collect quantitative data from the respondents residing in the marked area.

FINDINGS

The implementation of Smart City concepts in the area of Greater Kuching, Sarawak

Public awareness on Smart City

Public Awareness and Understanding

Local Authority readiness in implementing Smart City

Cross-agency Collaboration

Adoption of Internet of Things (IoT), Artificial Intelligence (AI), and Big Data

Urban Space

Urban Public Space Security

NOVELTY

PUBLIC AWARENESS

Residents and stakeholders of Greater Kuching in Sarawak are aware of the implementation of the Smart City initiatives and accepts it positively. There is a need for the government to provide sufficient sophisticated and user-friendly infrastructure facilities to realize this initiative. Community needs to be educated in terms of the use of information technology.

Local Authority Readiness

Those in authority should learn more about new technologies and collaborate with other stakeholders and the general public in exchanging technological information and ideas.

Urban Space

Greater Kuching is capable of becoming a gateway to other cities in Sarawak as per its physical and indescribable history.

The OKSHe initiative is aimed to emphasise Smart City element which aims to encouraging smart heritage development, empowering communities, and delivering high impact outcomes.

Urban Public Space Security

The State Government make a great decision by implementing CCTV cameras across various places in Greater Kuching Smart City.

This will help in reducing crime, disaster management and other purposes as the footage and data are centralised under the SIOC.

CONCLUSION

- Residents of Greater Kuching in Sarawak welcome the implementation of Smart City.
- At the local government level, local authorities are aware of the importance of public participation in improving the development of Smart City in Greater Kuching.
- Greater Kuching is a potential to become a good model of the implementation of Smart City as this city owns its remarkable physical and indescribable history.
- The OKSHe initiative is a kickstart in developing smart heritage, smart community which will lead to high impact outcomes.
- Sarawak Government leads a good decision by initiate the Sarawak Integrated Operation Centre (SIOC) intended to reducing delinquency activities, risk management and other purposes.
- The researcher wants to recommend Sarawak Government to create a master plan in regarding of Smart City as it is only limited to Greater Kuching.
- The researcher suggested that the research should examine more precisely about the effectiveness of smart city initiative in terms of urban connectivity in Greater Kuching, Sarawak.

ACKNOWLEDGEMENT

The author would like to thank the members of public in Kuching city for their voluntary participation in answering questionnaire surveys provided to them and it was a very tough process as it was conducted during the COVID-19 Pandemic. They have answered the questionnaire based on their experience and opinions towards the implementation of Smart City initiatives in Kuching, Sarawak. Their feedback provided by the respondents are very much helpful during the data analysis as well as for the future research in regards of technological advancement in managing cities.

CONCEPTUAL FRAMEWORK OF CONSTRUCTION PROFESSIONALS' BIM COMPETENCIES ASSESSMENT

1. INTRODUCTION



2. PROBLEM STATEMENTS

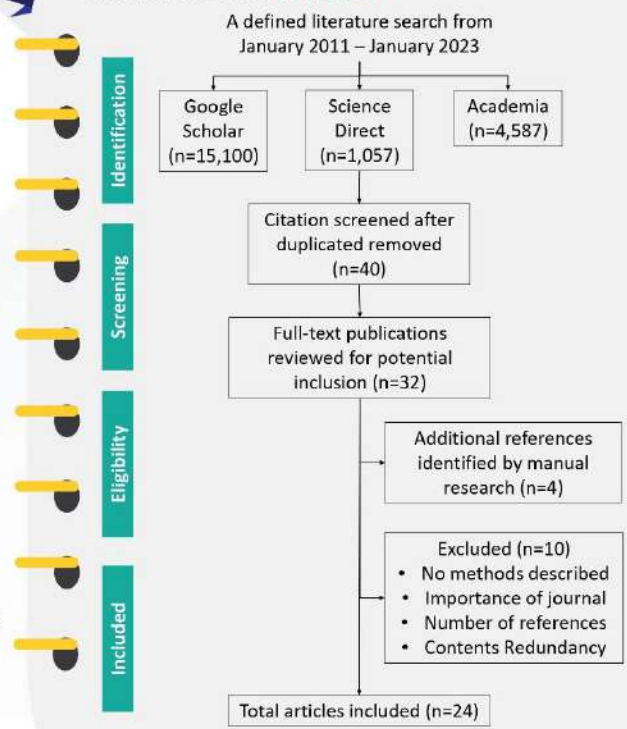
- The uncertainty of the current construction professionals' BIM competency level (Othman et al., 2020)
- The absence of an assessment tool to evaluate the level of BIM competencies (Memon and Rahman, 2014; Ishak and Fadzil, 2021)

3. OBJECTIVES

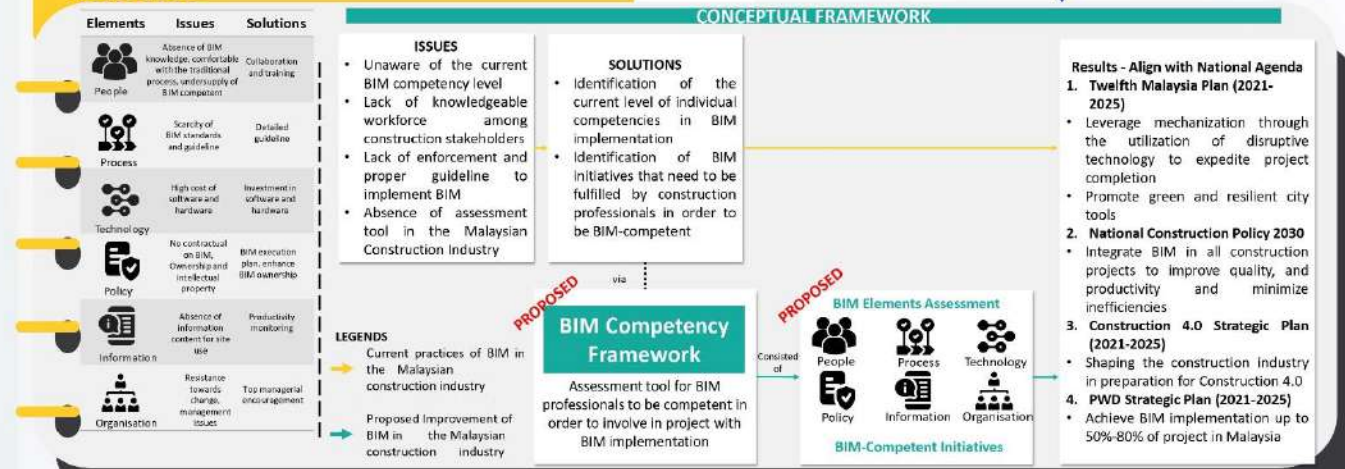


4. RESEARCH METHODOLOGY

Literature Review - Narrative



5. FINDINGS



6. NOVELTY



7. CONCLUSIONS

The conceptual framework developed is to illustrate and assist in developing the BIM Competency Framework to identify existing problems that lead to incompetent construction stakeholders and the activities that could improve the competency of construction professionals in the BIM organisation. Hence, it is expected to be able to reflect the Government's aim to promote successful BIM in the Malaysian construction industry, especially in terms of people, process, technology, policy, information, and organization.

"g-PAT" : REVITALISING PRODUCTIVITY GROWTH IN GREEN CONSTRUCTION PROJECTS (GCP).

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A TOOL DESIGNED FOR MONITORING & EMPOWERING GREEN CONSTRUCTION PROJECTS (GCP) PRODUCTIVITY PERFORMANCE

INTRODUCTION

"Productivity" is often used as a **performance indicator** in construction projects, also to evaluate the effectiveness of a building project performance. Conferring to Construction Industry Transformation Programme (CITP) 2016 – 2020, under strategic thrust number three, it is highlighted that **PRODUCTIVITY** is the primary engine of growth towards Malaysia's high-income target. Driving toward sustainable development across the country, Malaysia is amid a robust increase in the level of green activities driven by **Green Technology Masterplan (2017 – 2030)** and several green initiatives.



MALAYSIA aims to green at least 1750 no. of buildings in MALAYSIA by 2030. Construction productivity can be a basic and determining factor to secure the achievement of this target. However, the statistical data from Green Building Index (GBI) shows that the number of GB is still **LAGGED BEHIND** due to **performance and productivity issues**.

ISSUES & PROBLEM

The construction of **Green Buildings (GB)** differs from that of traditional buildings in terms of the design, materials, and processes. The barriers to the development of green buildings, such as the **HIGH COST AND PROJECT DELAY**, further indicate that the **PRODUCTIVITY** of green building construction needs to be **tackled**.

As for **CURRENT STATE**; Malaysia has **NOT DEVELOP ANY PLATFORM TO ACCESS PRODUCTIVITY PERFORMANCE** in construction project. **Monitoring productivity performance** is **important** to ensure the project is successful delivered without any hiccup especially in term of :

TIME, COST, QUALITY & SAFETY.

Due to aforesaid emerging issues, the development of g-PAT can be one of the **potential solution** to solve the problems.



A TOOL DESIGN FOR MONITORING & EMPOWERING GREEN CONSTRUCTION PRODUCTIVITY PERFORMANCE

OBJECTIVE

To **DEVELOP** an appropriate **PLATFORM (tools)** for monitoring and assessing productivity performance in Green Construction Projects.

1. Productivity Improvement Strategies In Green Construction Project: Formulation of Theoretical Framework: IOP Conference Series: Earth and Environmental Science, Volume 385, 4th International Conference on Research Methodology for Built Environment & Engineering (ICRMEE 2019)
2. Analysing Factors Affecting Green Construction Productivity: Exploratory Factor Analysis International Journal of Sustainable Construction Engineering And Technology Vol. 12 No. 5 (2021) 197-204.
3. Analysing Issues In Green Construction Productivity Performance: MCRJ Special Issue Volume 11, No.3, 2020



TEAM MEMBERS :
NOOR AISYAH ASYIKIN MAHAT , PROFFESOR DATIN SR DR HAMIMAH ADNAN & AP SR DR NORAZIAN MOHAMMAD YUSUWAN



- 1) Detail **PORTFOLIO** of the Green Construction Projects
- 2) **PRODUCTIVITY & RESOURCE MONITORING** (Financial, Manpower, Construction Plant & Material)
- 1) **PERFORMANCE ASSESSMENT** (TIME, COST, QUALITY & SAFETY)
- 2) **PROJECT REPORT**

- **CLOUD BASED SERVICES** = easy login and can be access at anywhere in the world where the internet can be captured.
- **"Pay-as-you-go"** for services such as storage, networking, and virtualization.

METHODOLOGY

1. IDENTIFICATION OF GCP KEY FEATURES

- To identify the **project feature**, procurement, type of contract, project cost, stake holder information etc)

2. GCP RESOURCE INPUT

- Identification **issues & factor influence to green construction productivity**
- Information about **RESOURCE INPUT** (Questionnaire Survey - GCP practitioners)

4. "g-PAT" TOOL DEVELOPMENT

- **Modelling Framework & Prototype the Tools Development**

3. RISK ASSESSMENT & KEY STRATEGY

- **Risk Assessment Analysis**
- **Strategy** to improve green construction productivity (Semi-structure Interview)

NOVELTY / VALUE PROPOSITION

- **Prelude full productivity computation**
- Provide an **accurate measurement** of overall efficiency and establish a target for productivity improvement at all levels.
- **Efficient RESOURCE Management**
- Provide valuables and **efficiency information** to Company

COMMERCIALIZATION

POTENTIAL CUSTOMERS SEGMENTS :

- **Organization** involve in GCP
Contractor Supplier Consultant Project Stakeholder (Private & Public)

FUTURE COLLABORATION:

Potential collaborative teams:
CIDB / Build-it Software Company / Local University (Research & Grant)

RECOGNITION

GRANT AWARD :

- 1) GERAN PENYELIDIKAN KHAS 2020 - File no. 600- RMC/GPK 5/3 (196/2020) : Research Amount RM20,000.00
- 2) GERAN PENYELIDIKAN UTM CAWANGAN SELANGOR - 600-UITMSEL(PI. 5/4)(128/2022) : Research Amount : RM45,000.00

OTHERS AWARD :

GOLD AWARD – 2ND GRADUATE DIGITAL INVENTION INNOVATION & DESIGN (GDII 2021)

CONFERENCES & PUBLICATION

- 1st Asean Quantity Surveying Association Academic Conference (AQSA 2022)
- 5th International Conference on Research Methodology for Built Environment & Engineering (ICRMEE 2021)
- 4th International Conference on Research Methodology for Built Environment & Engineering (ICRMEE 2019)

PUBLICATION:

Automated Tree Quantitative Structure Model (ATQSM)

MOHAMAD AMIRUL HAFIZ MD SHUKRI¹, ZULKIFLEE ABD LATIF², NURUL AIN MOHD ZAKI³

¹ Centre of Studies Surveying Science & Geomatics, College of Built Environment, Universiti Teknologi MARA (UiTM), Perlis Branch, 02600 Arau, Perlis, Malaysia.

² Centre of Studies Surveying Science & Geomatics, College of Built Environment, Universiti Teknologi MARA (UiTM), 40450 Shah Alam, Selangor, Malaysia.

³ Institute for Biodiversity & Sustainable Development, Universiti Teknologi MARA (UiTM), 40450 Shah Alam, Selangor, Malaysia

"FORESTRY TRANSFORMATION BEGIN TODAY"

INTRODUCTION

An Automated Tree Quantitative Structure Modelling (ATQSM) using Terrestrial Laser Scanning (TLS) is a novel technique to obtain forest information which is significant in estimating aboveground biomass (AGB) and carbon stock of tropical forests in Malaysia.

ISSUES/ PROBLEM STATEMENT

- Due to commercial farming, mining, and logging in Malaysia, monitoring of forest resources is necessary in obtaining accurate and frequent information.
- Conventional field inventories are time-consuming, labor-intensive, and geographically limited.

NOVELTY

- Improvement of model development of AGB and carbon stock using terrestrial laser scanning for tropical forest.
- Replace conventional method and improvement of the current remote sensing techniques for AGB
- TLS and QSM can be useful tools for assessing of climate change on tropical forest throughout time

OBJECTIVE

To estimate AGB and carbon stock for assessment of tree densities at tropical forests using laser scanning approach and Quantitative Structure Model (QSM).

CONCLUSION

ATQSM is a novel and important tool for assessing carbon related climate change at tropical forests, agriculture and other land use to control, monitor and manage.

COMMERCIALIZATION POTENTIAL

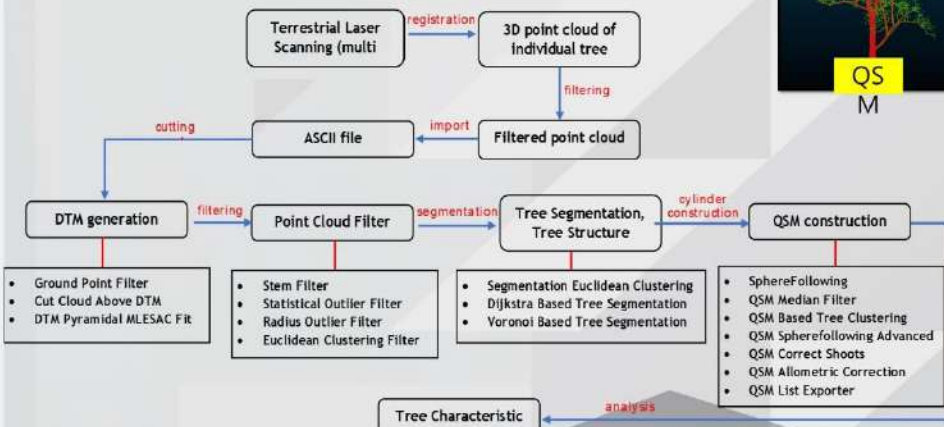


New approach for forest inventory and monitoring at tropical forests.



Potential to improve mapping efficiency compared with other conventional method.

METHODOLOGY

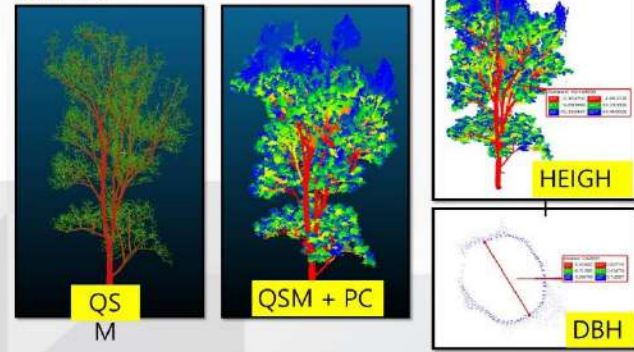


PUBLICATION
1ST INTERNATIONAL ACADEMIC RESEARCH CONFERENCE (IARECO), 2022
• Paper: Extraction of Tree Parameters by Terrestrial Laser Scanning in Dipterocarp and Non-Dipterocarp Forest - Journal of Sustainability Science and Management (JSSM) (in review)

THE 11TH SYMPOSIUM ON INNOVATION AND CREATIVITY 2022 - 11TH SIC
THE 5TH INTERNATIONAL INNOVATION, DESIGN AND ARTICULATION (I-IDEA), 2020



MAIN



INSTRUMENTATIO

Technical Specification (RIEGL VZ-400)	
Laser Wavelength (nm)	1550
Min. Range (m)	1.5
Mxm. Range (m)	600
Horizontal field of view	0° - 360°
Vertical field of view	100° (30-130)°
Pattern	Panorama - 40
Beam Divergence	0.35mrad
Angular Step	Users define
Accuracy (mm)	5mm
Precision	3mm
Peak pulse frequency	300 kHz
Points per second	122 000
Weight	9.6kg

FACTORS INFLUENCING REAL ESTATE BUYING BEHAVIOUR DURING COVID-19 (CASE STUDY : PETALING JAYA, SELANGOR)

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition for Built Environment and Engineering 2023



*Mohd Shafiq Abd Muttalib and *Halifah Ismail
Centre of Studies for Estate Management, Faculty of Architecture, Planning and Surveying,
Universiti Teknologi MARA (UiTM), 40450 Shah Alam, Selangor, Malaysia.
E-mail: *2017708273@student.uitm.edu.my, *halifah@uitm.edu.my

ABSTRACT



There has been an increasing rate in the property market over the years. However, because of Covid-19, the price of housing properties began to fall, despite home-buyers being unable to afford to purchase a home during this time period because most of them were losing their jobs. In early 2020, the sudden outbreak of the Covid-19 pandemic has continued to carry significant uncertainty and has led to real estate industry. The Malaysian lockdown has resulted in a substantial decrease in the number of buyers and sellers, as well as a shrinking of the property market. This study aim to identify the determinants that affect customers real estate purchasing behaviour in Petaling Jaya, Selangor during the Covid-19 outbreak. The research objectives proposed; (1) To determine the real estate purchasing behaviour; (2) To identify the real estate purchasing behaviour during COVID-19 outbreak; and (3) To identify the factors influencing real estate buying behaviour during COVID-19 in Petaling Jaya, Selangor. The research used mixed method and the main findings of the research shows that four (4) factors influencing real estate buying behaviours are; (1) location factor; (2) pricing and financial factor; (3) economic factor; and (4) interior and exterior design factor. This research is significance for the developer, an estate agent and house purchaser.

INTRODUCTION

There has been an increasing rate in the property market over the years. However, because of Covid-19, the price of housing properties began to fall, despite customers being unable to afford to purchase a home during this time period because most of them were losing their jobs. The swift and massive impact of the coronavirus pandemic and shutdown measures to contain it have plunged the global economy into a severe contraction. The economy has an impact on housing property supply and demand. When there is a high demand and low supply, the price of properties will increase, vice versa (Romeli, 2020).

PROBLEM STATEMENT

The diversity in housing choice in terms of size, category, location, design, cost, and materials remains a challenging process (Abdullah et al., 2012).

The comprehension of housing preference is crucial for the buyers' decision-making, particularly first-time buyers (Khan et al., 2017).

Many businesses in Malaysia are losing around 40 to 80%, and they cannot pay their employees as before (Hamdan, 2020).



RESEARCH AIM

Identify the determinants that affect customers real estate purchasing behaviour in Petaling Jaya, Selangor during the Covid-19 outbreak.

RESEARCH OBJECTIVES

- To determine the real estate purchasing behaviour.
- To identify the real estate purchasing behaviour during COVID-19 outbreak.
- To identify the factors influencing real estate buying behaviour during COVID-19 in Petaling Jaya, Selangor.

RESEARCH METHODOLOGY

FACTORS INFLUENCING BUYING BEHAVIOUR DURING COVID-19

Qualitative Data

Method: Direct interview & phone call
Purpose: Extracting data for suggestions on factors influencing real estate buying behaviour
Respondents:
• Academician
• Head of Director Estate Agency Company

Pilot Study

Draft Questionnaire

Quantitative Data

Method: Online survey
Purpose: Research on factors influencing real estate buying behaviours during covid-19 outbreak in Petaling Jaya, Selangor
Respondents: Property home buyers which aged are over 21 years old

NOVELTY

Conceptual framework of buying behaviour factors as it becomes a challenge and pressure for some researchers to produce innovative and relevant research.

RESEARCH DESIGN: MIXED METHOD
SAMPLING TECHNIQUE: PROBABILITY SAMPLING

RESEARCH SIGNIFICANCE

PROPERTY DEVELOPER

Property developer is more likely to build a project which suits clients requirement and preference.

ESTATE AGENT

Real estate agent provide through the whole house purchasing process, based on what the purchaser needs and wants.

HOUSE PURCHASER

Learning about the demographics and level of existing development and land under development

MAIN FINDINGS

FACTORS INFLUENCING REAL ESTATE BUYING BEHAVIOUR DURING COVID-19	Mean	Std deviation	Rank	Overall Rank
LOCATION FACTOR				
presence of shops	3.9278	0.95736	3	6
availability of retail centres	3.8389	0.84008	5	18
presence of schools	3.7889	0.95712	7	22
adjacent to all important emergency services, road rail transport accessibility	4.2389	0.75015	2	3
provision of recreational areas	3.9056	0.75015	4	17
distance travelled to work	4.3	0.88375	6	21
free from noise and pollution	4.3222	0.74486	1	2
PRICING AND FINANCIAL FACTOR				
effects of Real Property Gains Tax (RPGT)	3.7722	0.84451	6	24
Developer Interest Bearing Scheme (DIBS) given by developers	3.8944	0.77313	4	20
Home Ownership Campaign (HOC) given by government	4.00	0.82557	3	14
importance of Mortgage Loan to Value Ratio	4.00	0.76953	2	15
Base Lending Rate by Bank Negara	4.1667	0.66433	1	8
able to get 90% loan	3.7833	0.94115	5	23
able to pay a premium / deposit	3.3167	0.98862	7	29
eligible to get bank loan	3.9	0.83298	8	19
ECONOMIC FACTOR				
decrease in price	3.2778	1.10386	6	30
gaining profit in the long-run	3.5556	0.98719	5	27
able to sustain a job	4.0722	0.92773	4	10
average price of different properties	4.0722	0.74766	3	11
complete amenities and better quality, as it represents the higher the real estate value	4.5222	0.55396	1	1
future development	4.2833	0.68727	2	4
INTERIOR & EXTERIOR DESIGN FACTOR				
landed property	3.7278	1.03476	5	25
high rise property	3.4389	0.77072	6	28
size of the property	4.0722	0.81898	3	12
number of bedrooms	4.2556	0.66955	1	5
number of bathrooms	4.0833	0.73138	2	9
number parking	4.0167	0.86182	4	13
swimming pool	3.1278	0.90948	7	31
sports facilities	3.5833	0.90853	8	26
convenient store in the development	3.9556	0.81756	9	16
internal and external structure	4.2333	0.62624	10	7

CONCLUSION

In the nutshell, in order to assess whether there is an association between real estate and purchasing behaviour in Malaysia, four factors were examined. Homebuyers in Malaysia should take into account a variety of criteria, according to the research. These include location, pricing and financial, economic, and interior and exterior design factors. In order to better understand the wants and needs of homebuyers in their target markets, housing developers should perform more in depth research. Greater and wiser judgments should be made as a result of a better awareness of the elements that must be addressed in order to suit the needs of homebuyers.

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Muhammd Shahfarhan Mohamad Yassin¹, Aini Jaapar², and Mohd Arif Marhani³ and Nor Azmi Ahmad Bari⁴

^{1,2,3} and ⁴ Center of Studies for Quantity Surveying, College of Built Environment, University Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia



INTRODUCTION

National Housing Policy (NHP) 2018-2025 emphasizes the need of improving **quality** and **sustainability** in Malaysian housing development (MHLG, 2018). In the **12th Malaysia plan**, the project delivery method needs to be improved to ensure **on-time completion**, **value for money**, and **sustainability** (Malaysia Economic Planning Unit, 2021). The need to increase sustainability are driving force that can also assist the widespread adoption of VM in the development (Farouk et al., 2021; Fewings & Henjewe, 2019). As a result, **VM is one of the most effective tools for assisting the Malaysian construction industry in achieving sustainable public housing** (Yu et al., 2018). To make the VM implementation successful, it is crucial to identify the VM's CSFs to ensure project success (Mohamad Ramly, 2015; M. M. Thneibat & Al-Shattarat, 2021).

ISSUES/ PROBLEM STATEMENT

Land scarcity has forced property prices to rise as the urban population increases, making housing increasingly **unaffordable** and **less sustainable** for people (CIDB, 2021). Providing decent public housing is a significant difficulty for all emerging countries as demand grows yearly (Rahman et al., 2019). In Malaysia, **affordable housing** is an important issue that has arisen in tandem with the country's urbanisation development. Even though **76.7 percent** of affordable housing units had been constructed by the end of 2016, the housing crisis remains, particularly in the case of newly finished houses (Rahman et al. 2019). The government currently urges construction key players to promote **sustainable development**, especially in public housing projects (Lee, 2021).

OBJECTIVES

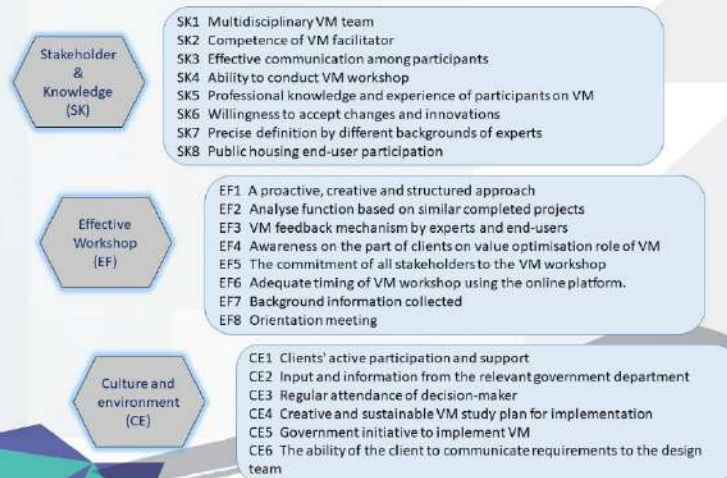
1. To analyse the CSFs of VM in Malaysian public housing projects.
2. To establish a sustainable success framework in VM/VE for Malaysian public housing projects.

METHODOLOGY

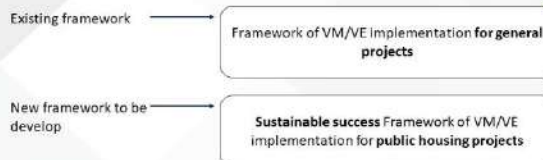


FINDINGS

The CSFs gathered and altered from literature reviews and interview is classified into 3 sets; Stakeholder & Knowledge (SK) with 8 factors, Effective Workshop (EF) with 8 factors, and culture and environment (CE) with 6 factors respectively.



NOVELTY



CONCLUSION

The **successful use of VM** needs a wide range of knowledge (CSFs in VM) in conjunction with a sufficient level of understanding of VM from diverse stakeholders. Hence, this preliminary study aims to **identify the CSFs of VM in Malaysian public housing projects** to make them more clear and more understandable. These findings could assist the government to provide better **quality and sustainable public housing** in the Malaysian construction industry. Findings could also be essential to promote sustainable construction, especially in public housing projects. This aligns with the Malaysian government's agendas to enhance the sustainability of public housing and give better satisfaction to end users towards public housing provided. The results reported in this study will be used for a future framework of VM that can act as drivers to **provide sustainable public housing**.

COMMERCIALIZATION

This study can be commercialized by collaborating this effort with the **KPKT, EPU, Developers, PWD, or CIDB** to reap the benefit of Sustainable Success VM/VE to the Malaysian public housing projects. Within their authorized scope of work, these agencies are expected to enforce their application in the construction industry.

RECOGNITIONS

1. "One off" fund from ex-minister of KPKT, Datuk Zuraida Binti Kamarudin.
2. Research Grant from Geran Insentif Penyelidikan Universiti Teknologi MARA, Shah Alam.

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1. Yassin, M.S., Jaapar, A., Marhani, M.A. (2021). Enhancing Projects' Sustainability Through Value Management Approach for The Malaysian Construction Industry: A Literature Review. IOP Conference Series: Earth and Environmental Science, doi:10.1088/1755-1315/1067/1/012046.
2. Yassin, M.S., Jaapar, A., Marhani, M.A. (2022). Exploring The Critical Success Factors Of Value Management For Sustainable Public Housing In Malaysia: Findings From A Preliminary Study. Proceedings of The 1st ASEAN Quantity Surveying Association (AQSA) Academic Conference 2022. e ISBN 978-629-97003-0-2

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OPTIMIZATION OF THERMOELECTRIC PERFORMANCE BY VARYING THERMOELECTRIC HEIGHT

IIIDBEE X 2023
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International Invention, Innovation & Design Exposition
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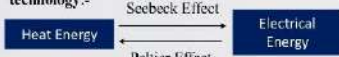


INTRODUCTION

Thermoelectric (TE)

Global population growth and rapid pace of industrialization is increasing, therefore people are facing energy supply depletion and environmental pollution.

TE has been widely investigated as clean energy conversion technology:-



Coefficient of Performance (COP)

- TE has problem of low efficiency/ zT values.
- Oxide perovskite material is becoming more critical as it has been found to have high-temperature durability, non-toxic and environmentally benign nature.

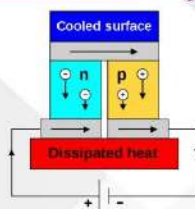


Figure 1 shows Peltier effect describes how a temperature gradient is induced by the application of an electric current, where the force flow of charged carriers creates a temperature difference.

NOVELTY

- The novelty of this project are the optimization of thermoelectric height for oxide perovskite materials, $\text{Ca}_2\text{FeMoO}_6$ and SrTiO_3 , by varying the thermoelectric height to get the best COP values.
- Therefore can produce and predict a better efficiency for the Thermoelectric Cooling or Heating in the near future.

CONCLUSION

- It can be observed that temperature and electrical distribution both have increment in both materials as height was increased.
- Further observation, as height increase, resistance of the thermoelectric also increase.
- Numerical calculation of COP was calculated based on previous researcher method.
- COP decrease as height increase due to the greater temperature gradient that was built up.
- 4 to 6 mm are ideal to use as optimize height considered that SrTiO_3 and $\text{Ca}_2\text{FeMoO}_6$ having COP closes to 1.

ISSUES/ PROBLEM STATEMENT

- Current thermoelectric materials, Bi_2Te_3 is not resistant to high temperature and high toxicity.
- Efficiency TE materials is low.

OBJECTIVES

To investigate electrical performance for optimize thermoelectric Peltier effect in COMSOL Multiphysics by:-

- Using two oxide perovskite materials, SrTiO_3 and $\text{Ca}_2\text{FeMoO}_6$
- Varying the height of thermoelectric leg, $n = 4\text{mm}, 6\text{mm}, 8\text{mm}, 10\text{mm}$.

METHODOLOGY

(i) Conceptual Geometry

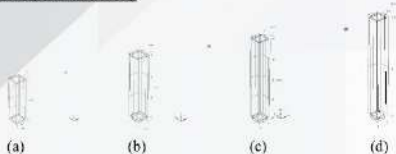


Figure 2 A geometry model of thermoelectric was built in COMSOL Multiphysics software which are a single leg TE. This model is simulated to by varying the height of the geometry (a) 4 mm (b) 6 mm (c) 8 mm (d) 10 mm. The set of measurement was from a previous paper which also based of the application library example in COMSOL Multiphysics.

Table 1: Dimension of Each Geometry Parts in Thermoelectric Peltier Effect which is based on previous simulation geometry.

Part	Length (mm)	Width (mm)	Height (mm)
Thermoelectric Leg	1	1	$n = 4, 6, 8, 10$
Top Copper	1	1	0.1
Bottom Copper	1	1	0.1

(ii) Simulation Condition

- Mesh is determined using sweep mesh approach.
- Carried out in a steady-state environment.
- Materials are in linear-elastic.



Figure 3 Meshing pattern of the geometry was manually specified to increase accuracy and save calculation time.

COMMERCIALIZATION

The potential that sufficiently advanced thermoelectric materials and device construction could one day be recognize as a potentially ideal thermoelectric cooling or heating technology due to their ability to convert electricity directly into heat and to develop cost-effective, pollution-free forms of energy conversion.

RECOGNITIONS

The authors would like to thank the Institute of Microengineering and Nanoelectronics UKM (IMEN) for the COMSOL multiphysics software, the College of Engineering, and the Research Management Centre (RMC) in Universiti Teknologi Mara (UiTM). This research was financially supported by Fundamental Research Grant Scheme.

CONFERENCES & PUBLICATION

- NANOSYMS 2021: S. F. N. S. Omar, N. Burham, and A. A. Aziz, "Simulation of Heat Transfer Response on Single Leg Thermoelectric Materials Behaviour," *Trans. Tech. Pubs., Ltd.*, vol. 1055, pp. 69-75, 2022.
- ICSE 2022: S. F. N. S. Omar, N. Burham, A. A. Aziz, and M. Muhamad, "Electrical Performance of Single Thermocouple with Different Types of Materials Using Multiphysics Simulations," in *2022 IEEE International Conference on Semiconductor Electronics (ICSE), IEEE*, pp. 33-36, 2022.

FINDINGS

(i) Temperature Distribution

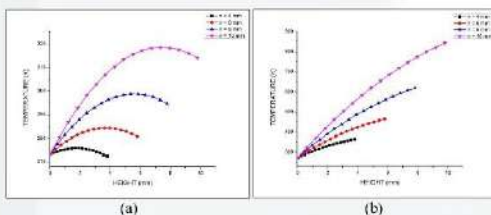


Figure 4 Temperature distribution for (a) SrTiO_3 (b) $\text{Ca}_2\text{FeMoO}_6$. It can be observed that the temperature difference of the thermoelectric for both materials increase with increasing TE height. As can be seen, that the temperature of $\text{Ca}_2\text{FeMoO}_6$ produce is higher than SrTiO_3 due to difference of thermal conductivity and internal resistance of each material

(ii) Electrical Distribution

Table II: Effect Of Resistance Against Height Variation

Height (mm)	SrTiO_3 Resistance (Ω)	$\text{Ca}_2\text{FeMoO}_6$ Resistance (Ω)
4	0.116	0.13
6	0.231	0.26
8	0.347	0.39
10	0.460	0.53

- The resistance of the leg increase as height of the TE legs increases.
- Based on Ohm's law, when resistance increase, the voltage output increase as resistance are directly proportional toward voltage.

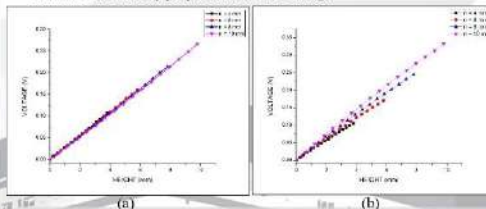


Figure 5 (a) and (b) shows the electrical distribution for varying height 4 mm, 6 mm, 8 mm and 10 mm for SrTiO_3 and $\text{Ca}_2\text{FeMoO}_6$. From the graph we can see that both have a linear increment and as the height of the TE leg increase, the voltage output also increase.

Table III: Voltage of Top Electrode

Height (mm)	Voltage (V)	
	SrTiO_3	$\text{Ca}_2\text{FeMoO}_6$
4	0.10659	0.1166
6	0.16084	0.17883
8	0.21352	0.24389
10	0.26453	0.31167

- It can be seen that the highest voltage was 0.26V for SrTiO_3 and 0.33V for $\text{Ca}_2\text{FeMoO}_6$.
- However, having high voltage and high temperature different does not mean it will very good efficiency for thermoelectric.

(i) Coefficient of Performance (COP)

Table IV: Coefficient Of Performances Of Oxide Perovskite

Height (mm)	Coefficient of Performance (COP)	
	SrTiO_3	$\text{Ca}_2\text{FeMoO}_6$
4	1.11216	0.97927
6	2.084558	0.047809
8	0.760708	0.014863
10	0.424378	0.017301

- The COP decrease as the height of the thermoelectric increase.
- Having high output in voltage and temperature different does not guarantee a good COP/output
- 4 to 6 mm height is considered the best in this simulation as COP value is more than 2 which is the value of the COP was 2.084558 for SrTiO_3 and 0.047808 for $\text{Ca}_2\text{FeMoO}_6$.

Breathing walls Specialization For Urban Farming at Low-cost Social Apartments in Malaysia

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



College of
Built
Environment
(CBE)



FINDINGS

Summary of Breathing walls urban farm impacts on the built Environment based on literature review

Psychological impact	Aesthetical impact	Health Impact	Socio economical impact
Enhancing the level of social interaction and personal fulfillment	Visually pleasing	Chance to eat nutritional, organic, freshly cultivated veggies and herbs at home	Less money spent on daily groceries
Visual relief from the urban setting environment	The use of green walls can be used to cover unpleasant sight of the building	Reduce building temperature and sun radiation	Energy efficient for cooling and heating
Encourage family and social gatherings, and urban farming activity	Greeneries from green walls provide softness and cooling view compared to hard surface wall	Reduce the impact of the urban heat island	Increasing the value of property
Enhance the quality of working and learning environment	Creative vertical gardens enhance the building's overall aesthetic value as a piece of urban art.	Enhance noise absorption to lessen stress cause by sound distraction	Create new job opportunities and source of income
Reduce blood pressure, tension, and other negative emotional states		Reduce headaches and curb sick building syndrome	
Healthy lifestyle and enhancing food security			
For Relaxation and hobby activity			

INTRODUCTION

WHAT

Recent Covid-19 outbreak has caused many people have lost their job and source of income as most of their job sectors were classed as a non-essential sectors. This has led a large number of people to explore agricultural activities at their own houses to add on their source of food and as a secondary income.

WHY

The Trend of urban farming in Malaysia and other cities can also be connected with the theory of biophilia which suggest that human innate nature needs and want to be closer to the natural environment. With the lack of common spaces for natural environment in the city how does the people reconnect with natural environment.

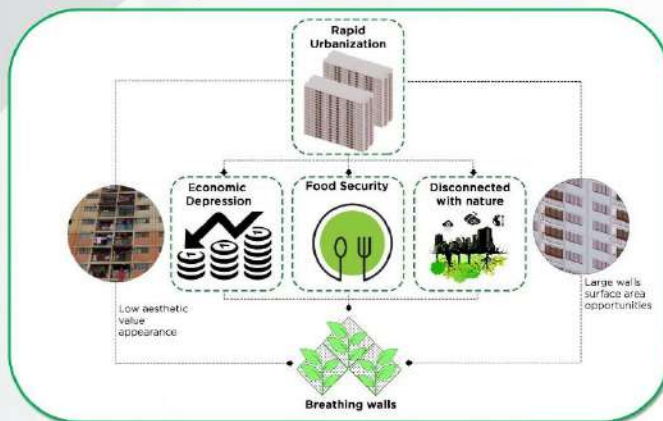
HOW

With the current trend and typologies of high-rise apartment there's plenty of walls that can be integrated with urban farming to strengthen food security. Through this study

Factors affecting efficiency of edible breathing walls.

Cost Efficiency	Resiliency and ease of maintenance	Health Risk	Carbon Footprint
Economic feasibility can be improved through cost-effective installation and maintenance and ensuring a wider use to increase social benefits	Equal water provision on all levels, the availability of light, and accessibility for harvesting crops if the system is too high above ground level	Inadequately treated water in the case of grey water, or water and air pollution when in the proximity of roads, can lead to the contamination of crops	Water usage during the operational phase of BWEs should be targeted to reduce life-cycle energy usage and GHG emissions through measures such as water harvesting, drip irrigation, a pump less gravity-fed watering system, and drought-tolerant plant species.
The most cost-efficient being support systems that comprise climbers at the base growing on a frame	Crops that prefer higher light saturation levels were more resilient	High concentrations of heavy metals such as arsenic, cadmium, copper, and lead in soils in inner city areas are of concern	
Modular systems with individual pots were more efficient than framed modular systems	Photoperiod-sensitive and non-photoperiod-sensitive crops selection	The trace metal content in the crop biomass in inner city areas, and especially high traffic areas, is argued to be mitigated through the erection of barriers between food crops and roads	
Recommend for unsophisticated technology with a lower financial and embodied cost, besides a reduction in energy and water usage			
Crop selection is confirmed to be important for increasing feasibility, with small crops that have short production cycles reported as being more suitable selections			

ISSUES/ PROBLEM STATEMENT



Proposed breathing walls integrated with farming



OBJECTIVES

- 1) To identify the importance and impact of the natural environment urban dwellers, especially at low-cost social housing.
- 2) To analyze typologies of edible breathing wall design and its impact on the built environment.
- 3) To propose specialized breathing walls that can be implemented on the existing built environment.

METHODOLOGY

Method 1 Literature Review	Method 2 Case Study	Method 3 Design Simulation
Literature review focused on the keywords of breathing walls, natural environment, urban farming and food security gives better understanding on the importance of natural environment and its psychological impact on urban dwellers	Kenanga Flat Sri Selangor apartment case study helps on defining the building walls character, dimension and suitable parts of the building to accommodate breathing walls.	Proposed Breathing walls integrated with urban farming were designed and modelled using sketchup 3d software and simulated using sefaire for its thermal impact.

CONCLUSION

It is found that the most viable design for a breathing wall would be the type that allows for light penetration into the room while optimizing the surface area of the walls. The breathings walls also must be able to be water sealed manually when intended and can be autonomously run with minimum supervision. One of the most suitable crops for the breathing walls would be Brazilian spinach due to its rapid regeneration with low maintenance requirements. Based on the simulation it is found that the proposed breathing walls farm reduces the thermal heat gain by up to 40%, improves natural ventilation of the spaces, and enhances the appearance of the existing building.

EXPOSITION OF TRADITIONAL MALAY HOUSE ARCHITECTURAL DESIGN ELEMENT INFLUENCING INDOOR THERMAL PERFORMANCE

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ABSTRACT

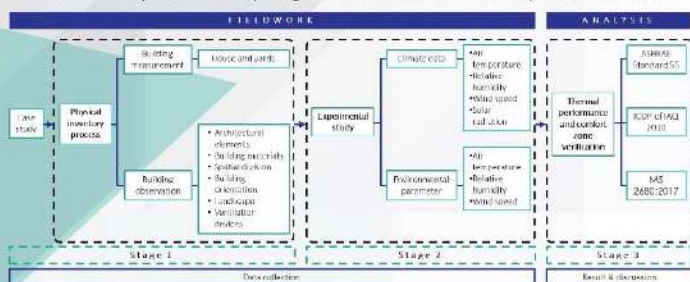
Traditional Malay houses (TMH) practicing climatic design strategies are acknowledged to have more acceptable thermal performance than modern residential houses. Unfortunately, due to contemporary science and innovation, the Malay house has undergone countless changes and is constantly threatened. This study aimed to assess the indoor thermal performance of Negeri Sembilan Malay houses for a sustainable approach to modern residential houses in the tropical environment. The fieldwork method was executed by observation and thermal measurement. The result shows that 20% of the overall data falls inside the recommended thermal comfort range when comparing the ASHRAE 55 and ICOP comfort levels. The house is in a comfortable condition in the morning where the indoor temperatures are between 25 and 27°C. Wind flow are within the comfort level ranges between 0.12 and 1.25m/s, while the RH level was 50-60%. Therefore, the primary finding were emphasized on five aspects of TMH construction that have a direct impact on the thermal performance of the house: size of the space, openings, floor and roof heights, materials, open compound areas, and building settings. A theoretical framework is developed in assessing the indoor thermal comfort of TMH. Thus, this study aspires to provide useful insights regarding the effectiveness of practices in the climatic design strategies of a TMH through the sustainable practices in modern residential design which aligned with the Twelfth Malaysia Plan (RMK12) Theme 3.

01 INTRODUCTION

To achieve optimal climatic control, the traditional Malay houses (TMH) are designed appropriately to suit specifically the vagaries of the tropical climate of Malaysia. They are appreciably suited to the local climate. TMH is among the best traditional houses that practice climatic design strategies (Johari and Said, 2021). It is known for its distinctive characteristics of the climatic design i.e., architectural design element that give a positive response to the thermal condition. Research on the evaluation of the thermal performance of TMH in Malaysia has been widely done. TMH practicing climatic design strategies are acknowledged to have more acceptable thermal performance than modern residential houses. This study aimed to assess the indoor thermal performance of Negeri Sembilan Malay houses for a sustainable approach to modern residential houses in the tropical environment.

04 METHODOLOGY

A mixed methods of fieldwork on site were applied consists of physical inventory of the building by observation and experimental study using climate data and environmental parameter of TMH.



02 ISSUE

NEGLECTION OF TRADITIONAL CONSTRUCTION TECHNOLOGY

Contemporary science and innovation, TMH has undergone countless changes and is constantly threatened

03a AIM

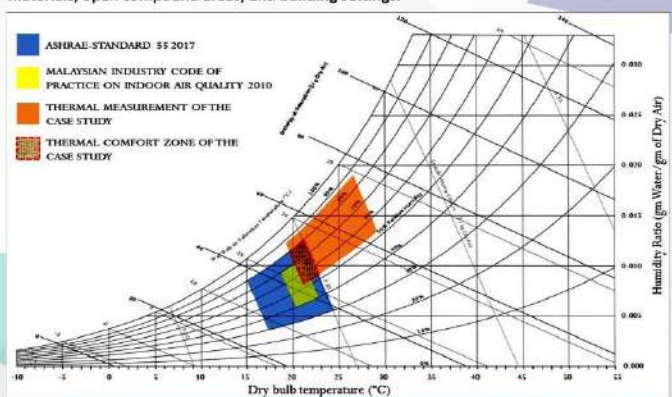
To assess the indoor thermal performance of Negeri Sembilan Malay houses for a sustainable approach to modern residential houses in the tropical environment

3b OBJECTIVE

To develop a framework the design features which influence the indoor thermal performance of the Malay house

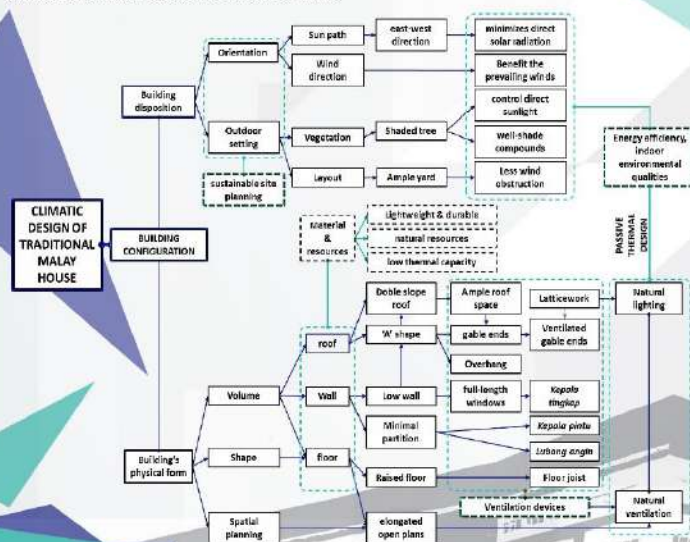
05 RESULT & FINDINGS

20% of the overall data in the thermal comfort range in ASHRAE 55 and ICOP comfort levels. The house is in a comfortable condition in the morning with temperature 25-27°C. Wind flow are varying within the comfort level range 0.12-1.25m/s, while the RH level was 50-60%. Therefore, there are five aspects of Malay house construction that have a direct impact on the thermal performance of the house: areas of spatial, openings, floor and roof heights, materials, open compound areas, and building settings.



06 NOVELTY

A theoretical framework is developed to acknowledge and comprehend the TMH's climate adaptations. The framework intends to facilitates future research in assessing the indoor thermal comfort or climatic effects assessment of TMH.



A theoretical framework is developed to acknowledge that the energy efficiency for indoor environmental qualities via natural lighting and natural ventilation were scientifically contributed by building disposition, building configuration and building physical form.

07 CONCLUSION

This study has demonstrated the essential strategies that existed in TMH, technically. The passive and climatic design strategies in TMH have a lot to offer to develop building construction, especially in the tropical country of Malaysia to attain a degree of passive control, thus providing comfortable conditions. It can be deduced that there are five architectural design elements that directly influence thermal performance which lead to indoor thermal comfort: size of the space, opening, floor and roof heights, materials, open compound area, and building settings. A theoretical framework is developed as a literature framework and facilitates future research in assessing the indoor thermal comfort of traditional Malay house. Thus, this study aspires to provide useful insights regarding the effectiveness of practices in the climatic design strategies of a traditional Malay house through scientific discussions of the sustainable practices in modern residential design which aligned with the Twelfth Malaysia Plan (RMK12) Theme 3.

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- Hassin N S F N and Misni A 2022 Developing methodology to assess the thermal comfort of traditional Malay house IOP Conference Series: Earth and Environmental Science 1067 1 012023

PREPARED BY:

NIK SITI FATIMAH NIK HASSIN | njsf@nikhassinw@gmail.com
Institute of Postgraduate Studies, College of Built Environment, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia

ALAMAH MISNI | alamahmisni@gmail.com
Centre of Studies for Landscape Architecture, College of Built Environment, Universiti Teknologi MARA, 42300 Puncak Alam, Selangor, Malaysia

IoT Based-AUTOMATIC ROOM LIGHTING SYSTEM (ARoLS)

INTRODUCTION

Sustainable development includes using electricity efficiently as per UN SDG goal 7 target; ensure access to affordable, reliable, sustainable, and modern energy for all. This research presents the development of an Automatic room light controller system via the Internet of Things (IoT). The purpose of this research is to detect the person entering the room and to save the power wasted when the light is left ON, even in the absence of human. This research uses NodeMCU as the main microcontroller with built-in a WiFi module. Ultrasonic sensor detects person entering and exiting the room while LDR (light detector resistor) senses the lightness of surroundings.

ISSUES/ PROBLEM STATEMENT

Most of the people often forget to turn OFF the light when leaving a room. This action is causing waste of electricity. This problem gets worse especially the room that people do not go in often. It will cause electric waste and certainly the electricity bills higher. One other thing is that people who have trouble reaching the switches. Parents no longer have to worry about their kids climbing something, which can be dangerous just to switch the light ON. This project also could provide safety at home. The use of automated control also would further aid in the use of those who are sick, handicapped or elderly. For example, someone unable to reach the light switch because of their disability. If they forced themselves to reach the switch, accidents might occur. Another example is when someone's hand is wet, this system will aid them, so there is zero chance of the person being electrocuted.

OBJECTIVES

- automatically turn on or off the lights in a room by detecting the human movement
- to provide a safety switch or non-contact switch for lights
- to add the ability to control the lights through a smartphone application

FINDINGS

Table 1 shows the result finding from the switching, for the light to be turned ON, the room should be in dark condition, and there should be one or more people inside the room. If the room is bright, the light will not be turned ON automatically even when a person enters the room. If there is no one inside the room, the light also will not be turned ON.

Person	Room Condition	
	Dark	Bright
= 0	OFF	OFF
> 1	ON	OFF

Table 1. The working of the system

From the simulation part for this ARoLS research. The simulation consists of Arduino Uno, which acts as the NodeMCU controller, two PIR motion sensors (replaced by ultrasonic sensors for a real design), an LDR, relay, and a light bulb. Figure 4, 5, 6 and 7 shows the result form simulation.

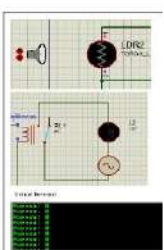


Figure 4. Simulation (When the room is dark, person = 0)

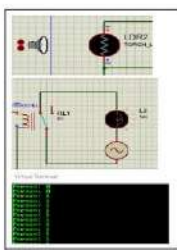


Figure 5. Simulation (When the room is dark, person >= 1)

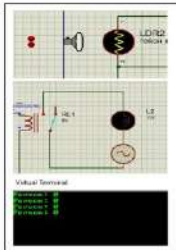


Figure 6. Simulation (When the room is bright, person = 0)

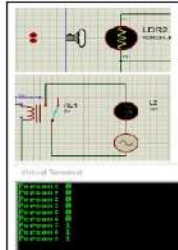


Figure 7. Simulation (When the room is bright, person >= 1)

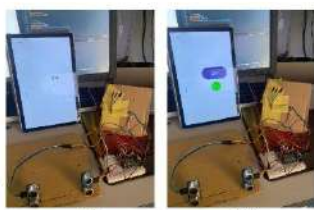


Figure 8. System Prototype with Blynk apps.

Figure 8 (a) shows the light can be turned off by the apps, while figure 8(b) depicts the light can be turned on via the apps regardless of any lightness of surroundings. The app also displays the number of humans in the room. This can be one of the smart home features including safety. The reset button on the apps can be used to reset the counter if a mistaken number happens. The green circle on the app shows the status of the light; either on or off.

METHODOLOGY

Figure 1 shows a block diagram of ARoLS. This system consists of two inputs and three outputs. Two ultrasonic sensors and an LDR were used as input, while the relay and light were used as outputs. Another feature is the WiFi module inside the NodeMCU microcontroller. Figure 2 shows a flow chart of ARoLS. There are two types of room conditions, whether the room is dark or bright. This room condition will justify whether the light will be automatically turned ON or OFF. It will indicate, the number of people inside the room. If a person enters the room, the value will increase by 1. When a person leaves the room, the value will decrease by 1. For the light to be turned ON, the room should be in dark condition, and there should be one or more people inside the room. If the room is bright, the light will not be turned ON automatically even when a person enters the room. If there is no one inside the room, the light also will not be turned ON. Person Room Conditions. Figure 3 shows a schematic diagram for ARoLS, the circuit was implemented using simulator software, Proteus.

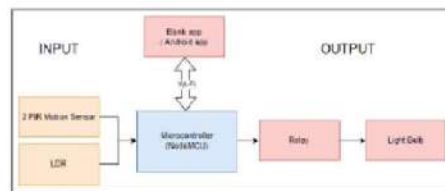


Figure 1. Block diagram of the ARoLS.

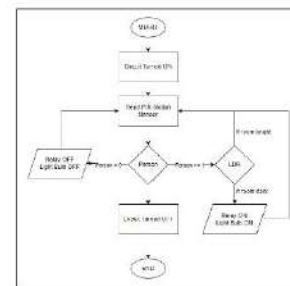


Figure 2. Flow chart of the ARoLS.

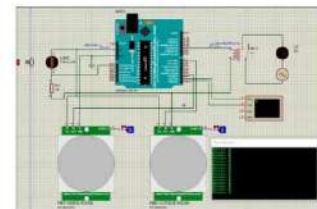


Figure 3. Schematic diagram of the ARoLS.

NOVELTY

The system is a simple microcontroller system which is a low-cost system. This system provides automatically turns on/off light depending on the human presence and surrounding lightness factor. At the same time, this gives efficiency to the use of electricity.

CONCLUSION

The development of Automatic Room Lighting system via the Internet of Things (IoT) is successfully developed. This research has fulfilled the main objective is to detect people entering and exiting the room with the use of ultrasonic sensor and automatically turn on/off the switch by the relay module, and thus the electricity usage is more efficient. In addition, this research also successfully provides a safety switch or non-contact switch for lights. Lastly, this research successfully connect a WiFi module included in the NodeMCU microcontroller, which is to add an ability to control the light through a smartphone application.

COMMERCIALIZATION

Nowadays, people used mobile as their main gadget. With the aid of IoT in this research, IoT based- Automated Room Lighting can be commercialized with enhanced the power source to be renewable energy and used a back-up power for the system.

RECOGNITIONS

We, the authors would like to thank University Technology MARA (UiTM), Campus Dungun for the chances to enable the author to join any IID competition. It was a great learning opportunity. Thank you.

INTERIOR DESIGN SCOPE OF WORK FOR INTERIOR PROJECT DELIVERY IN CHINA

INTRODUCTION

With contemporary technological advances, Chinese citizens continue to improve their quality of life through interior design materials and available technologies. With both possibilities and obstacles, the application of project management methods in interior design is becoming more common, and internal design project delivery management systems are becoming more complex while providing theoretical recommendations for managing design practices.

ISSUES/ PROBLEM STATEMENT

Three issues impact the quality delivery of interior design projects in China, according to the formal study of China's Architectural Decoration Project Quality Inspection (2001).

1. Design and implementation stages take so long, and the project planning time cycle involves many units. The ability to successfully manage several departments and work with the plan smoothly is directly tied to the project's advantages.
2. Efficient management of the design phase construction process impact control to assure design quality and decrease construction risk. This would significantly cut the project's construction time and ensure the design delivery.
3. Interior design project management supervision approach aids in the rapid and high-quality clarification of design objectives so that design work may be completed quickly and precise control of the entire design management process.

Construction Team
Construction Steps
Construction Cycle
Construction Quality

Construction Organization
Construction cost
Construction Risks

Quality of design drawings

Customer Service
Complaints
Quality Complaints

Design Communication
Design Staff Assignment
Design cycle

OBJECTIVES

1. Standardize scheme drawings according to interior design work standards
2. Reasonable organization of personnel in the construction, standardization of project steps, proper planning of construction cycle,
3. Avoid risks and save costs to achieve results and quality acceptance.

METHODOLOGY

Literature - National Standards - Classic Cases - Experience Summary
Survey method - market data - project interviews - company designer communication - third party quality inspection department acceptance data
Case method - historical cases - analysis of data - summary

NO.	Subject title	Important points	Title	Author, year
I	IIBDK	Interior designer responsibilities	The Interior Design Profession's Body of Knowledge	Compiled by Carol S. Marise, PhD, CID, ASID, IIDA, Denise A. Guertl, PMA, FIDEC, ASID, IIDA, University of Tennessee, 2005 http://www.iaid.org
II	Project 2021 from beginner to master	Project management techniques	from beginner to master	
III	PMWIKI	Project management standards, capabilities, implementation	Guide to the knowledge system of project management	Project Management Institute, Publisher project Management Institute, Inc. 14 Campus Boulevard Newtown Square, Pennsylvania 19073-3219, USA(2017)(2018)
IV	Interior Decoration Project Management Manual	Optimization of interior design management process	Interior Decoration Project Management Manual	Chen, R. China Taiwan Malacca (2010)
V	Construction Contract-Legal Risk Prevention and Control Management	Contract management, Legal Risk	Construction Contract-Legal Risk Prevention	Li, F., Gu, Z., & Cai, M. (2018)
VI	Interior Decoration Project Budget and Bidding Quotation	Project Budget and Bidding Quotation	Interior Decoration Project Budget and Bidding Quotation	Awg, Z. (2021)
VIII	Project Management (2nd Edition)	Engineering management method	Project Management (2nd Edition)	Gang, X. (2019)

Construction management is a summary table of diary issues

Stage	Specifics	Number of issues
Program design phase	1. Misalignment between drawing elevation and site 2. The material in the chart is not consistent with the budget list 3. The final list is incomplete	4
Procurement phase	1. Increased costs, for those not estimated locally 2. Allowing from the contractor's side 3. High material transportation costs 4. Some rate rises are unclear 5. A lot of numbers of items purchased and colour differences in secondary purchases	6
Construction phase	1. Unprofessional procurement staff and deviations in goods 2. Construction on site occurs when drawings are not reviewed prior to handover checks. 3. Lack of timely feedback to designers on site issues 4. Failure of acceptance of plumbing and electrical installation 5. Carpenter work is too short, resulting in higher prices 6. Inadequate sealing of wall joints, resulting in uneven installation of the floor set of the back 7. Inadequate sealing of panel installations 7. Lack of timely removal of rubbish on site affects construction progress 8. Inadequate deployment of construction workers	8
Completion phase	1. Poor window installation 2. Uneven floor slabs 3. Adjustment records needed for uneven walls 4. Some of the gaps between the cabinets and the walls are too large, recommended adjustment 5. Overall material colour deviation	5
Total		25

The project managers of the project construction organization were interviewed and their management diaries were used to obtain the corresponding questions

NOVELTY

There is no clear written reference for the interior design work paradigm, but the knowledge and understanding of the work description (scope of work) for each task and phase exists and is something that needs to be further investigated and refined in this paper.

1. The research makes the scope of work of the interior designer clearer for project delivery. The designer's responsibilities are more clearly analyzed.
2. The interior design project delivery will be smoother.
3. Project management standards in the decoration industry are improved and the industry authority is more convincing.

CONCLUSION

Collection of information through feedback from Interior decoration industry, and the project specification to highlight the importance of a precise scope of work in managing interior projects and determining the work process for internal projects. Promotes interior design professionals and academics to urge and expand their way of thinking. It can further improve the designer's overall ability, refine the scope of work, improve the quality of delivery of interior projects, deliver more smoothly, and gain some influence in the management of the industry's specifications. It is also hoped that this study will contribute to establishing a standardized working platform framework by examining the scope of work for project delivery. It is also expected that more people will explore and improve the interior design project methodology.

Industry standard

Economic development

Happy life

Global effect



COMMERCIALIZATION

High quality interior design products, enhanced marketing impact for designers and design firms.

- Designers with more comprehensive design skills, higher project management skills, and driving employment opportunities
- Higher level of interior design products delivered, improving people's quality of life and contributing to the country's economic development

FINDINGS

summary of breakthroughs in industry standards as demonstrated by front-line project delivery, and management feedback from industry associations

First, designers and project managers must grasp the project management methods and techniques to improve work efficiency and professional level. For enterprises, it can reduce the loss of manpower and material resources to accelerate efficiency of enterprises. It can establish a reputation for corporate services. For customers, they can receive assured, high-quality projects. Finally, reasonable supervision and control of the project are favorable to avoid risks, quality, and technology to improve the overall quality of the residential living environment. Promotes the development of a social economy, and standardize the industry standard of interior design project delivery. At the same time, management knowledge also presented more international information and talent, with the development of the times.

PREPARED BY:

¹Nibing, ²Arniatul Aiza Mustapha, ³Nur Maizura Ahmad Noorhani



**POSTER CATEGORY:
UNDERGRADUATE**



LIST OF PARTICIPANTS

ID	Full Name	Title Of Poster
U01	Afrina Zulaikha Jasni, Arniatul Aiza Mustapha, Nur Adila Abd Rahaman & Nur Maizura Ahmad Noorhani	The Street's Chronicle: Traditional Chinese Restaurant
U02	Muhammad Khairie Nazmie Mustapa & Ts Norzaihan bt Mad Zain	Berlin Chair
U03	Fatin 'Aisyah binti Rosli, Nur Maizura Ahmad Noorhani, Arniatul Aiza Mustapha & Nur Adila Abd Rahaman	Boutique Hotel: The Royal Press
U04	Alina S'yaffa binti Samrin, Nurul Nabilah Aris White, Zarina Za'bar & Nor Hazirah Hasri	The Loop: Fashion Waste Avenue
U05	Mohammad Shahidan Rosli, Nor Hazirah Hasri & Sarah Rahman	The Environmental Graphics Identification in Malaysia's Autism School Design
U06	Nur Irdina Farzana Binti Mohamad Sharif & Nurul Nabilah Aris White	Hybrid Techno Market
U07	Amirah Putri binti Shamsudin, Noorul Nadya binti Shaharum, Dr Azlaini Hj Abdul Aziz, Dr Zanariah binti Abu Samah	Proposed Interior Design for Artisan: Malay Heritage Boutique Hotel
U08	Aisyah Athirah binti Kamal, Noorul Nadya Shaharum, Hafizuddin Haron, Nur Hazirah Hasri & Azlan Kasroh	[et.nik] Textile Gallery
U09	Nur Syamira bt Baharuddin & Ts Norzaihan Mad Zain	À Elle
U10	Muhammad Syafiq Hazwan bin Mohamad Jaafar, Nur Adilla Abd Rahaman, Nur Maizura Ahmad Noorhani & Arniatul Aiza Mustapha	Titik Temu: Central Market
U11	Nur Alissa binti Zainudin	Cultural Sustainability in regards to National Architectural Identity in the City of Kuala Lumpur
U12	Eiman Haqim Abu Bakar & Rashidah Jimi Sham	The Effects of Industrialized Building System (IBS) Application in Increasing the Efficiency of Building Construction Projects
U13	Amar Mursyid bin Ahmad	The Development UITM BTech. Course Application for Students
U14	Muhammad Abdul Azim Azhar, Sr Dr Siti Nor Azniza Ahmad Sekak & Dr Anis Rosniza Nizam Akbar	Green Roof System in Malaysia: The Construction Practitioners' Perspectives
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U50	Fariz Hafizin bin Mohd Rizal, Golwes Edson Anak Gaong, Muhammad Hazimin bin Ghazali, Ts Gs Dr Abdul Rauf Abdul Rasam	Malaysia Crime Awareness Mapping System (MyCAMS)
U51	Alice Iping Anak Dressa, Auni Asirah binti Abdullah, Nur Nathasya binti Mat Foad, Ts Gs Dr Abdul Rauf Abdul Rasam	RnR Web Mapping System @ Peninsular Malaysia
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U55	Siti Sarah binti Mohamad Nor, Nazrin Zulkhaini bin Zulkefli, Gs Dr Hasranizam Hashim & Assoc. Prof. Dr Nor Aizam Adnan	3d Web-Based Residential College System
U56	Muhammad I'mran bin Radzuan, Muhammad Luthfi bin Shahadan, Muhammad Ameerul Hakim bin Mohammad Amin, Zal Aidi bin Che Idrus, Iman Nuryasmin binti Iffli Efendy, Nur Aqilah binti Zulhilmi, Muhammad Razif bin Sairan, Pauziyah binti Mohammad Salim	Eye in the Sky: Determining NO2 Emission Sources
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U59	Faiz Aiman bin Mohd Zolzamzuri & Sr Dr Anis Sazira binti Bakri	Impact and Challenges of ICT-Based Information Sharing Tools in Malaysian Construction Industry

THE STREET'S CHRONICLE

TRADITIONAL CHINESE RESTAURANT

inspired by STREET STYLE

IIBEE X 2023

20 JANUARY 2023

International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



吃饭

EAT
EAT
EAT

TO BRING BACK OLD MEMORIES

inspired by STREET STYLE

INTRODUCTION

Back then in 80s - 90s, Jalan Bunga Raya was the liveliest street in Malacca before the existence of Jonker Street. A lot of people came for business, shopping and entertainment. There's a lot of street food, textiles and clothes shop, & entertainment. Many traders were among Chinese until now. However, after Capital Clean up was shut down, Jalan Bunga Raya no longer became the centre of attraction. Mostly traders move to the Jonker Street causing this street lost it's attraction. Now, mostly people only come here as it is one of access to the main road.

In order to bring back the moment of Jalan Bunga Raya where it was the liveliest street in Malacca, we decided to create a restaurant with nostalgic atmosphere. Where it was a street food, textiles and clothes shop, & entertainment. Many traders were among Chinese until now. However, after Capital Clean up was shut down, Jalan Bunga Raya no longer became the centre of attraction. Mostly traders move to the Jonker Street causing this street lost it's attraction. Now, mostly people only come here as it is one of access to the main road.



NOVELTY

This restaurant will serve traditional Chinese food while giving the customer experience Jalan Bunga Raya vibes during it's famous time. The interior itself were inspired by Jalan Bunga Raya by using street style dining area.

This project is to create an outstanding Chinese restaurant with a vibrant, colourful and funky traditional Chinese eatery and attract more tourist to come.



OBJECTIVES

- To design a restaurant that comes along with street ambience in late 70s-80s by using different types of furniture and material in the interior to make it look more funky and merrier.
- To provide tourist the halal authentic Chinese cuisine at Jalan Bunga Raya
- Add more interesting place to visit at the street itself
- To attract target market comes to the restaurant
- To make the elders feels the nostalgic vibes by coming to the restaurant

TARGET MARKET

- Tourist:**
Attract tourist to come as Jalan Bunga Raya lack of interesting places to visit
- Youngsters:**
Youngster nowadays are more interested with beautiful place
- Elders:**
Mostly Jalan Bunga Raya residents were elders who live here up until now. So this restaurant's objective is also to attract elders to come and eat here since the restaurant gave classic chinese restaurant vibes but with Jalan Bunga Raya in 80s - 90s. They will feel nostalgic like their old days

ISSUES

NEARBY THROUGH PARKING SPOT

- 1) Lack of parking spot
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NOTABLE IDEAS FROM RESEARCH & CASE STUDY THAT WILL BE ADAPT INTO THE DESIGN



By using neon signages as decoration can help to create a Chinese street ambience. It's also make the interior look more fun and interesting.

Colorful, different types of furniture and materials will make the dining area looks random as if it's at the street and looks more casual too.

Old style poster on the wall helps to highlight the old Chinese street while nostalgic with the one of the keywords which is "nostalgia". It made us feel as if we are in late 70s-80s.

FINDINGS



THE STREET'S CHRONICLE

This concept is about to bring back the moment of Jalan Bunga Raya where it was the liveliest street in Malacca into a restaurant design. It's about to make people feels nostalgic about their young days especially for the elders who have been living here since then. That is why it's called "Chronicle" which means to show and describe the past of the forgotten street, Jalan Bunga Raya.

CONCEPT:



The street's CHRONICLE

街道编年史

METHODOLOGY

The methods used were precedent studies, cultural mapping, site building and building analysis.

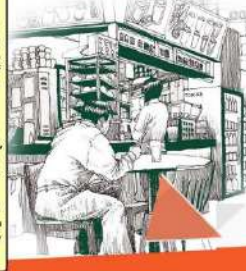
CONCLUSION

Malacca has been known as Historical City by UNESCO World Heritage. The economy of Malacca City is largely based on tourism. As the economic centre of the state of Malacca, it also hosts several international conferences and trade fairs. Unfortunately, the UNESCO only spent to protect the facade of the historic building, not the interior. That is why, it is our responsible to keep this heritage for the future. Other than protecting our heritage, this project also helps to make Jalan Bunga Raya becomes lively again by becoming a new attraction for people to come.

COMMERCIALIZATION

This project will help to revive back Jalan Bunga Raya that nearly became a forgotten street in tourism sector among tourist when they come to Malacca.

The restaurant will become a new attraction for people to come



BERLIN CHAIR

In 1923 Gerrit Rietveld designed his iconic Berlin chair for the 'Juryfreie Kunstschau' (Jury-Free Art Show) in Berlin. In addition to the Red-Blue chair, this is one of Rietveld's most famous chairs. In 1960 Rietveld designed two new versions of the chair for the boardroom of the Rijksacademie van Beeldende Kunsten in Amsterdam. In this second version, a cushion was used and one of the chairs (that of the chairman) was fitted with a higher backrest.

Gerrit Rietveld designed the Berlin Chair in 1923 for the 'Jury Freie Kunstschau' (Jury-Free Art Show) in Berlin. Rietveld designed a space together with Vilmos Huszar who was responsible for the colour selection of the chair. In 1960 Rietveld adjusted the design with a slightly different arm rest for the Academy of Arts in Amsterdam.



The commencement of this design phase was to transform the iconic furniture design philosophy into a modern design of furniture. This transformation was aimed to revive the glory of the iconic furniture value in modern design innovation.

The design process started with initial research on the iconic chair to understand the significant design elements of the furniture. The design development then took place to establish a new furniture design. The proposed side table innovated the Berlin Chair's design philosophy with a pinch of modern design twist to ensure the transformation could meet the modern design trends while still preserving the originality of the iconic furniture elements. Reflecting on the iconic chair philosophy, minimal use of furniture construction material has made the fabrication process could be complete in a short period.



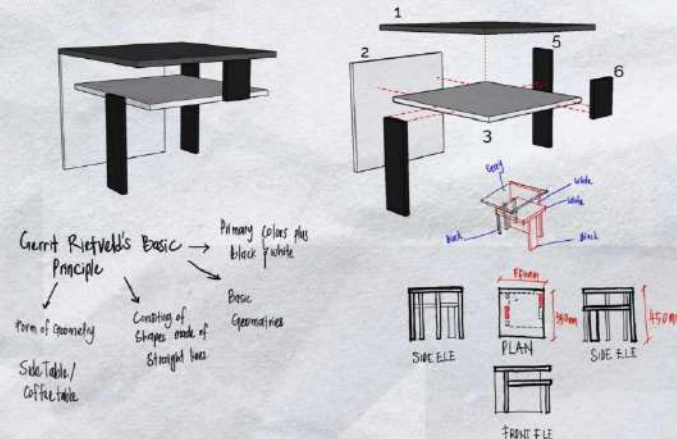
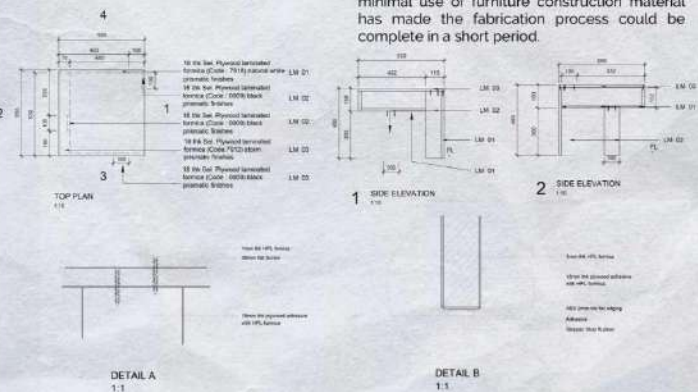
**BERLIN
ZIJTAFEL**

Iconic furniture was well known for its authenticity of design and philosophy which was established many years ago. This can be seen in the famous 'Berlin Chair' that was designed by Gerrit Rietveld in 1923. Even though the chair has been produced almost a century ago, the furniture has still been significantly valued in the recent modern design era. While the chair remained iconic in this era, there was an idea of whether similarly designed furniture could be reformed by modern designers in recent days to enhance the integration of iconic furniture aesthetic value and modern architectural elements.

Berlin Zijtafel was designed as a companion piece to the famous Berlin Chair, keeping the same proportion and colors. If you're sitting in the chair where do you put your glass of coffee cup?

Furniture as art. The following table is based on the designs of Gerrit Rietveld.

It was an experiment waiting to happen, the surprise was that no one had done it before. One of the central idea of De Stijl was the emphasis that planes of space led off elsewhere, suggesting or creating further planks.



Boutique Hotel : The Royal Press

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BOUTIQUE HOTEL

Issues | Objectives

PROJECT ISSUES

- The existing boutique hotel at Jalan Hang Jebat only focuses on accommodation rather than contribute to a truly historical boutique experience.
- Lack of exposure and acknowledgment of the heritage invention.
- Visitors do not have any options to stay at Jalan Hang Jebat because it is located in the middle of Jonker Walk and it is a tourist hot spot. The road is accessible to anywhere. Unfortunately there is no hotel along the road.

PROJECT OBJECTIVES

- **To experience** and relive the journey of an age-old printing business among the young and future generations
- **To promote** the preservation of printing press to today's generations which was one of the most important invention in history.
- **To provide** a place for travelers to stay and at the same time able to get exposure to learn and find out about heritage history.

Introduction.

With the continuous advancement of science and technology, the modern printing process has been simplified, and only a computer and a printer can easily print articles or pictures, so the previous printing technology has been eliminated by the times. The wisdom of the ancestors needs to be preserved forever, so that the future generations may have the same privilege of appreciating the dying art of letterpress technology.

Imbued with Melaka's rich culture and history, the setting up of **Boutique Hotel** at one of the colonial-era's shophouses (Dutch-Peranakan-style shophouse) in Jalan Hang Jebat is to provide an accommodation with **one-of-a-kind experience to the guests** by just walking through the space, gives them an **appreciation of the lost pre-digital era**. It is also to pay homage to the bygone days of using the letterpress machine. At the same time, it transports the guests back into the era of Peranakan opulence and history of the street.

PROJECT AIM

The aim of this project is to **bring back** and introduce the art of letterpress to the current generation and let the guests be pampered/ immersed by the nostalgic atmosphere which at the end will **present a sense of appreciation and respect** with this old printing technique. The old technique of printing service has been in the industry for 70 years and the preservation of it is also a unique aspect of Melaka's cultural history.

TARGET MARKET



Tourists



Youth

Family

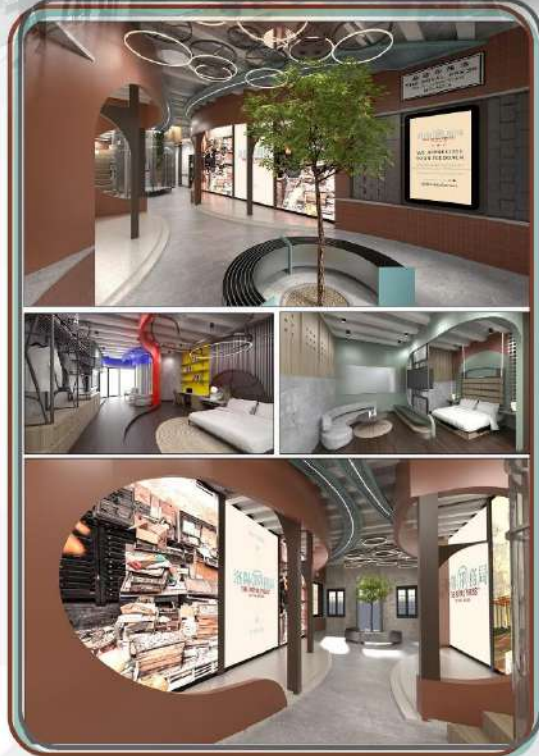
EXPERIENCE

REJUVENATING

KNOWLEDGE



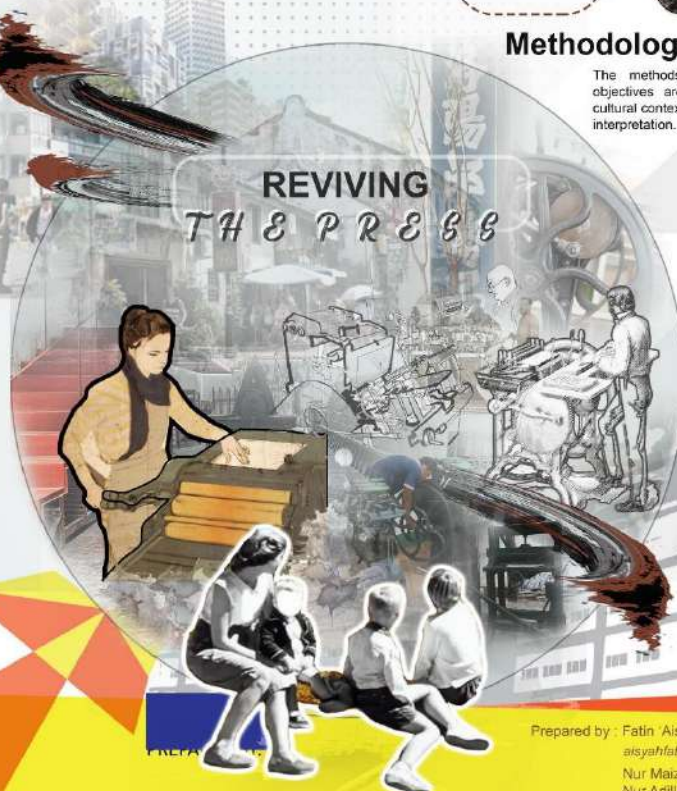
Findings.



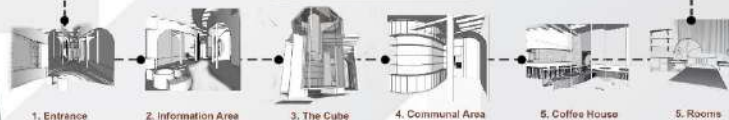
Methodology.

The methods used to achieve these objectives are cultural mapping on the cultural context of Jalan Hang Jebat and by interpretation.

REVIVING THE PRESS



BUILDING PROGRAMME



Novelty.

The potential offer for this project is The Royal Press. The Royal Press is one of the oldest surviving polyglot letterpress museum in the world dedicated to preserving the craft of letterpress printing. This project provides a venue to exhibit the historical old printing techniques which was once in the limelight during its glorious era. The building gathers people to learn more about their ancestor's innovation.

Conclusion

Jalan Hang Jebat is in the vicinity of Jonker Walk. It is located at a strategic area as it is a community hub which provides the linkage between the local and various as well different social and economic groups. Further, Jalan Hang Jebat itself, as its name suggests is known for its historical warrior figure during the ancient times. It is vital and a big responsibility for us to ensure that such place is well preserved for the sake of our future generation.

Commercialization.

The design of this Boutique Hotel offers a "one of a kind experience to the guests". The guests will be enchanted by the details of the unique old printing technique letter press. The quaint and unassuming atmosphere/ambience that one can easily mistaken this accommodation as a mini museum at Jalan Hang Jebat.

The guests will be able to soak themselves in its beauty which has been preserved for more new generations to appreciate the lost pre-digital era.

Also this is an Insta-worthy boutique hotel featuring the nostalgic atmosphere which able to attract the guest, travellers and tourists to feel the authentic experience. And this is truly the best way to educate the public to appreciate and respect the uniqueness of this old printing technique.

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INTRODUCTION

The world is facing a climate crisis, and the effects are already being felt all across the world. From unprecedented heatwaves to deadly flash floods, rising sea levels to biodiversity loss, it is clear that climate change is not a future threat, but a present reality.

Textile waste is becoming a global phenomenon and has become a worldwide concern for several decades including in Malaysia. It adds up to 10 million tons each year, and 85% of textiles go to the dump each year.

METHODOLOGY



Objective 1

To raise general public awareness about the impact of textile waste on the environment.

FINDINGS

"There's no such thing as away. When we throw things away they must go somewhere."

According to both cases, a world-wide movement towards the history of European Decadence is being used as a means of a counter-attack to the effects of climate change. The effects of climate change are being used as a means of a counter-attack to the effects of climate change. The effects of climate change are being used as a means of a counter-attack to the effects of climate change.



NOVELTY

The project proposal came from the awareness of the impact of fast fashion to the planet which is the main aim of the exhibition. The project proposal and its advantages, the project proposal and its advantages, the project proposal and its advantages.

Objective 2

To advocate recognition of environmentally conscious garments.

CONCLUSION

Textile waste diversion is an important issue because it is growing into a major component of landfills. The textile industry also contributes to environmental degradation by using water, energy, and other resources to produce textiles.

If efforts to reduce are not rapidly accelerated within the next 10 years, emissions are predicted to rise to 2.7 billions tonnes a year by 2030.

COMMERCIALIZATION

The project proposal aims to establish an exhibition area that will exhibit information and textile waste recycling. It will also have a retail, studio, and learning area. The project proposal aims to establish an exhibition area that will exhibit information and textile waste recycling.

The project proposal is hoping to help in achieving a more sustainable Malaysia through innovation and an initiative to support the Malaysia's Twelfth Plan. IIIDBEE is advancing green growth for sustainability and resilience that is set to be achieved by 2030.



The Environmental Graphics Identification in Malaysia's Autism School Design

Methodology

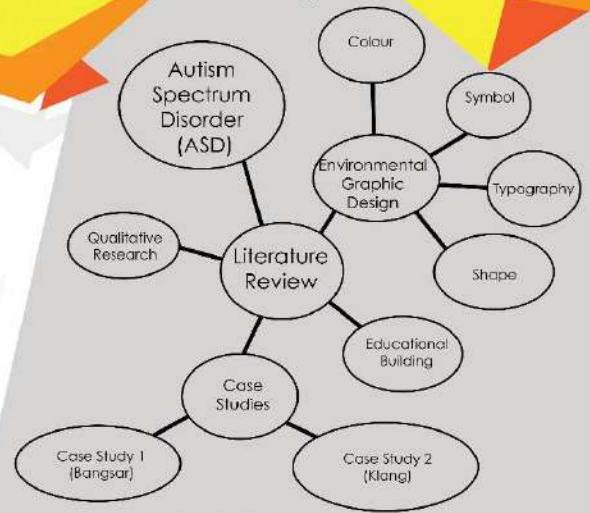


Figure : Research Methodology Framework

This research used a **qualitative method**. **On-site observation** requires the researcher to observe the environmental graphic design elements by **field photographed analyses**. All the data that have been collected will be presented in the **form of tables**.

On-Site Observation

On-site observation is used as one of the research instruments by researchers to **identify the implementation of environmental graphic design in educational spaces and its impact on children with autism spectrum disorder**. This method is suitable for this study as it is related to the researcher's problem statement to find the suitable environmental graphic design element in educational space. This method is advantageous for the researcher as it is **conducted directly on the site**, allowing the researcher to **list complete access during the observation**. During the observation, there will be data that are provided with **comments and photographic evidence**.

Finding

According to the researcher's findings, the adaptation of environmental graphic design in autism schools in Malaysia, such as **shape, colour, typography, and symbol**, is **still less than satisfactory**. The proper **implementation of environmental graphic design** can aid in the development of autistic children and **provide autistic children with an understanding of an environment**.

Novelty

Design professionals, educators, and parents must be aware of the sensory dysfunction experienced by individuals with autism spectrum disorder in order to **provide appropriate environments**. The underlying premise of this research is that systemic, empirical research combined with pragmatic approaches to design development can **contribute to the planning and management of environments** that enhance organizational effectiveness. This research will serve as a **valuable tool for professionals involved in designing, building, developing, and administering** the design of physical environments for individuals with autism spectrum disorder throughout the lifecycle. Educators and parents will also benefit from the contents. Environmental design theories, symptoms of autism spectrum disorder, and design solutions for a variety of spaces will be **addressed**.

Introduction

Autism is a developmental disorder that has a substantial impact on a person's verbal and non verbal communication skills, as well as social interaction. This condition usually embodies itself before the age of three and has a **negative impact on a child's academic performance**. LINDUNG is a place where students with autism can get an education, socialize and train to live independently in line with the statement issued by the Disability Policy that the disabled are the basis of equal rights and opportunities for disabled people for full participation in society. This policy also prioritizes the values of human rights such as dignity and honor to enable them to live independently.



Problem Statement

Autism and intellectual disability are diagnosed separately, but the line between them is blurred (Sahn 2020). Many social communication deficits that define autism spectrum disorder would be expected to occur to some extent in all individuals with intellectual disability (Thurm et al. 2019). For these reasons, this study **focuses on the characteristics of children with autism spectrum disorder** and addresses the physical environments that affect them in special schools.

Objective

This study is to **identify environmental graphic design elements in autistic educational space** that contribute to the autistic children learning process.

Conclusion

Based on the data found, the researcher can conclude that autistic children are **more likely to understand the environment through visuals**. The use of environmental graphic design in the learning space **helps autistic children to communicate better**. The implementation of environmental graphic design also **trains children to be more sensitive to the environment**.



1- play area wall with lettering at the facade.
2- seating with the pastel colour at the main entrance.

Case Study 2 - Klang

3- graphic at the main entrance with cool colour.
4- arrangement of furniture and the use of warm colour colour at the classroom.

Case Study 1 - Bangsar

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"A concentric of Hybrid Techno Market by implementing innovations services for urban safety environment".

Introduction

Markets have always been essential for the formation of cities throughout the world. The economy is driven by the wet market and factors that influence urban marketplace redevelopment are highlighted, also crucial for food security. It is important for development to have an adequate supply of food to meet user need and improve safety and secure.

Therefore, the project proposed for modern approach for wet market technologies advanced urbanism towards potential to rehabilitate economically disadvantaged communities and improve consumer behaviours. In terms of environmental-friendly, online system, digitalisation movement in system plan, innovation packing and deliveries products to the end consumers will become as a high-quality food production, integration and interaction technologies can also serve as an opportunity for public health, small business development, and food safety.

Issues

LOCAL ENVIRONMENT

Visitors in a state of unpleasant, smudges and unclear to see in the situation. As well as the narrow and crowded hallway makes it hard for circulation and to make a space that assists air ventilation for each user.

SOCIAL

Wet markets are experiencing huge changes in social tensions and interactions as a result of global crises, which are affecting their operations and activities due to a lack of user-friendly distinction.



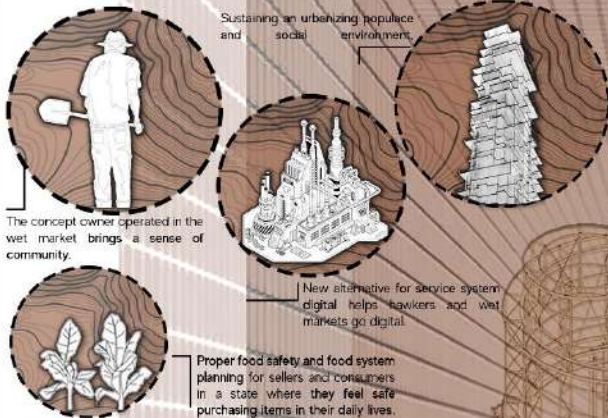
Novelty

ECONOMY

Wet market are where smallholder farmers sell their produce, and they rely on them for their livelihoods. The social functions that exist in wet markets should be preserved, as they have an impact on businesses and individuals who support local products.



New approach innovation of services and system improvements towards urban intervention and economic benefit.



"Why do wet markets matter?"

Data Research

Precedent Studies

Site Mapping & Analysis

Analysis & Synthesis based on the issue occur

Objectives

Literature Studies

Questionnaire to the users

Methodology

Findings

The starting point is where everything begins to fit in with the local and surroundings, allowing them to adopt new approaches inside the area. Planetary Health is concerned with the environment and global challenges, therefore it aids in the solution of problems in the food service business for endeavours. This new method for the future wet market will assist in the economy based on local

Commercialization



Conclusion

The process during food preparation has improved in terms of hygiene, which encourages more people to come to support local market. The prices are reasonable and the food is has always been fresh. Thereby, the wet market should be strategies flexibly according to the need and the users satisfaction of the communities or regions wherein the location are which are guaranteed by the government and communities towards the new wet market normalization in Malaysia.

Publications

The Zhenning Wet Market, at 442 Zhenning Road in Jing'an District

Online Grocery Delivery Services Malaysia Happy Fresh

Ministry of Health Malaysia New Digital Normal

Ministry of Health Malaysia Standard Operating Procedure (SOP) Reopening Safety

HYBRID TECHNO MARKET

PROPOSED INTERIOR DESIGN FOR ARTISAN: MALAY HERITAGE BOUTIQUE HOTEL

INTRODUCTION

To propose an interior design for ARTISAN: Malay Heritage Boutique Hotel by Campbell House at Kuala Lumpur Performing Art Centre, Sentul.

ISSUES

- There are few issues that contributed to the root of this project:
- Malay culture especially Malay Textile is dying.
 - Lack of Malay Heritage Boutique Hotel in Kuala Lumpur.
 - People's perception towards Malay Textile due to lack of awareness.
 - Compete with other country of Textile as theirs are more well known.

OBJECTIVES

The proposed interior scheme aims to promote the Malay culture and educate young generation, maintaining the historical character and identity as well as to provide a great experience for the user or guest to explore the Malay History: culture, textile and food.

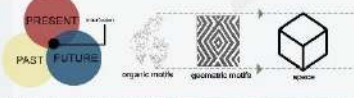
CONCEPT

The concept of this project is called **"INTERFUSION: Reviving The Forgotten Past: Morphing Traditional Malay Textile Into Modern Context"**. The word interfusion is defined as the process of intermingling, or the state of being interfused. This concept idea idealizes the metaphor to blend and mix (two or more things) together. In this case, interfusion happens when the design or elements throughout the past, present and future of Malay Heritage such as the motifs are intertwined into the space.

Therefore, in order to revive the 'forgotten past', we have to bring the Malay Textile into the modern context by implementing the development of interfusion. Hence, it is very critical to understand from the beginning about the past or backstory of **Batik & Songket to comprehend the space emotionally.**

The past of this concept is all about the beauty of motifs, the patterns and the perception of how Batik & Songket are produced. It also includes the technique, the tool used of Batik & Songket making, colors as well as the elements needed to create the magnificence of our Malay Heritage: Batik & Songket

But why we have to consider the element of the present? In modern context?



This is because the world has undergone many changes in the past. This change progresses day by day. As technology and innovation advances, the Batik Songket and concept of interior design also have changed. There are many differences between the past and present, such as consumer's perspectives and current needs. Thus, understanding the target market for the hotel, tourists, or young generation that loves to know about the past but entirely in the modern context is required. Furthermore, the spaces must be designed to anticipate future needs. In conclusion, through interfusion, the design will be seen as a single complete piece, as a whole and not a group of disparate parts.

LAYOUT PLAN



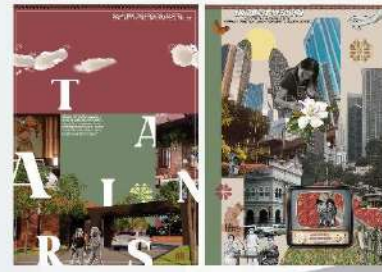
PERSPECTIVES

MOTIFS INSPIRED BY THE SHAPE OF SONGKET AND BATIK



The bed head panel is inspired by the six elegant of songket. Besides, the ceiling of the bed area is lowered to make the guest feel cozy.

Eye Level



et.nik TEXTILE GALLERY

20 JANUARY 2023

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et.nik:
MULTICULTURAL

PROPOSED NEW INTERIOR DESIGN SCHEME OF
ET.NIK TEXTILE GALLERY AT 131, JALAN TRUS,
BANDAR JOHOR BAHRU, 80000 JOHOR BAHRU,
JOHOR FOR NATIONAL TEXTILE MUSEUM

01 INTRODUCTION

et.nik is a place that set up by National Textile Museum that purpose to uphold the traditional cloth of the culture in Malaysia under one roof as well as the process of textile making and history of every culture. The aim of this project is to attract tourists to know the culture of the Malaysians as well as local people to explore more about their own culture and textile.

Definisi et.nik: sesuatu kaum; masyarakat majmuk mempunyai kelompok ~ yang hidup berlainan, tetapi di bawah sistem politik yang sama



FACADE ELEVATION

FLOOR	LEGEND
GROUND	1. TRADITIONAL CLOTH DISPLAY
FIRST	2. WORKSHOP AREA
	3. RETAIL AREA
	4. CASHIER AREA
	5. WORKSHOP
	6. CLOTH DISPLAY
	7. WORKSHOP
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	99. WORKSHOP
	100. CLOTH DISPLAY

02 PROJECT ISSUES



- The gap between culture have become a normal situation
- Cultural origins that being forgotten
- People view about traditional clothing as uncomfortable and old-fashioned that can't be worn year-round



- To create opportunities and reunite the races under one roof
- To enhance multicultural traditions in Malaysia and spread awareness
- To change people's perception on traditional clothing that can still relevant to wear

03 PROJECT OBJECTIVES

PROJECT JUSTIFICATION

SURROUNDING

Many shops sell traditional clothes around Jalan Trus but none of the shops combine clothes of all races under one roof.

COMMUNITY

All culture are in one area but lives in clans and there are rarely any activities involving among culture.

ECONOMY

Most of the people in the area are 840 category people so the economy in the area is suitable to unite the races without any rank discrimination.

PROJECT SIGNIFICANCE

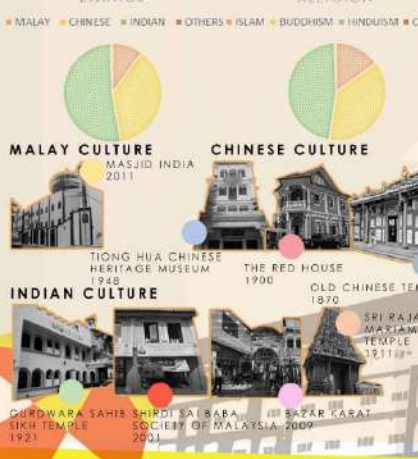
BENEFITS TO THE TEXTILE INDUSTRY

Able to raise multicultural culture in Malaysia and spreading awareness of the importance of traditional cloth while increase the economy in textile industry.

BENEFITS TO THE COMMUNITY

Gain experience and knowledge about the culture in Malaysia as well as can feel the old vibe wearing traditional cloth in '90's gathering.

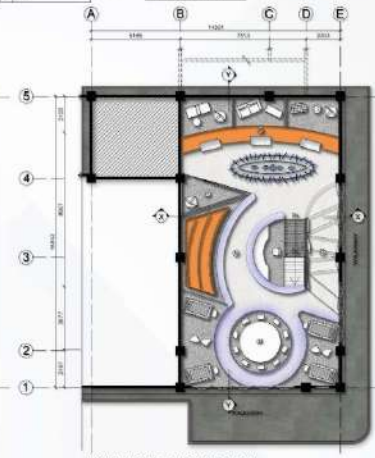
MULTIRACIAL PLACEMAKING



Jalan Trus located in the middle of the city of Johor Bahru and surrounded by racial areas in Malaysia which is Chinese, Malay and Indians. Most of the building are categorized as historical building and many places of worship for each religion.



GROUND FLOOR LAYOUT PLAN
SCALE 1:100



FIRST FLOOR LAYOUT PLAN
SCALE 1:100



VIEW AT EXHIBITION 1 (Malaysian tradition)



VIEW AT EXHIBITION 2 & 3 (Multicultural Exhibition & History of Textile)



VIEW AT RETAIL AREA (Cashier Counter & Display Area)



VIEW AT WORKSHOP AREA (Textile Designing & Making Area)



SECTION X-X
SCALE 1:100



SECTION Y-Y
SCALE 1:100

PREPARED BY : AISYAH ATHIRAH BINTI KAMAL
LECTURERS : NOORUL NADYA SHAHARUM, HAFIZUDDIN HARON, NUR HAZIRAH HASRI & AZLAN KASROH
DEPARTMENT : CENTRE OF STUDIES FOR INTERIOR ARCHITECTURE
COLLEGE OF BUILT ENVIRONMENT (CBE)
UNIVERSITI TEKNOLOGI MARA (UiTM) PUNCAK ALAM

À ELLE

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SHIRO KURAMATA

Shiro kuramata is an icon of minimalism movement. As he was born in World War II, he wanted to express freedom in his design. Kuramata demonstrate a sensitive exploration of light, color and form, considered the surrounding space. He also applied a combination of Western and traditional Japanese design into one of his iconic furniture, Miss Blanche.

BACKGROUND

- 1953 - Graduated in Architecture from Tokyo Polytechnic
- 1954 - Studied interior design at the Kuwasawa Design Institute in Tokyo
- 1965 - Founded his own studio
- 1991 - Died in Tokyo, Japan

DESIGN

INNOVATION

After doing a thorough investigation and analysis, the chosen furniture is determined utilising physics. This is because it is impossible to create a gravity-free state with simply art. Tensional integrity, also known as tensegrity, is a structural principle based on a system of separated components under compression that are structured so that the compressed elements do not contact each other and the prestressed tensioned members define the system's spatial boundaries.

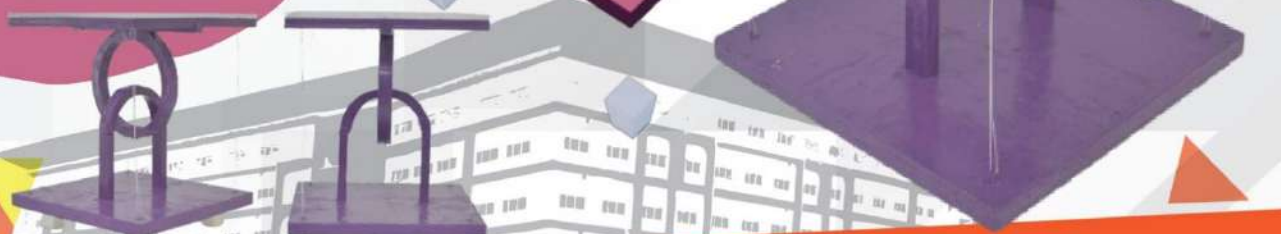
MISS BLANCHE

à elle

This side table is referred to as à elle since the chair was designed as a tribute to Miss Blanche Dubois from A Streetcar Named Desire. With the phrase "à elle," which his believe is the appropriate term. It was to highlight the consistency of the furniture's designs and elegance.

DESIGN INTERVENTION

In order to achieve the philosophy of wanting to float and be weightless. The centre of gravity was done precisely strong. Regarding construction, the original chair's style is maintained by using acrylic and artificial roses as tabletop finishes. Clear fishing nylon also contributes in creating floating illusion.



Titik Temu : Central Market



Introduction

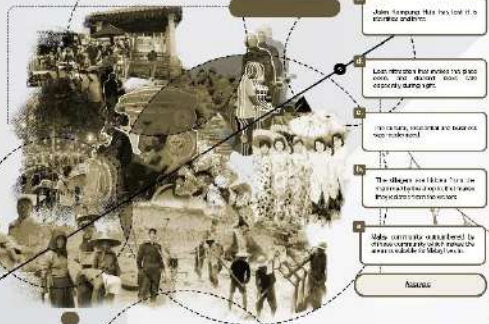
The outbreak of Covid-19 has been affected internationally. This situation has had a significant impact on the tourism industry, with severe consequences for jobs and businesses. Tourism was one of the first industries to be severely hit by the pandemic, as efforts to contain the virus resulted in a near-complete stop of tourism activity. A lot of people were affected by losing jobs and opportunities which led to decreasing in economy.

Cultural heritage is the experience of historic, cultural, and natural attractions that genuinely depict the tales and people of the past. Cultural Heritage is the customs, practices, places, artifacts, and artistic expressions that have been formed by a community and passed down from generation to generation.

Many people are ignorant of the culture, customs and beliefs of the others.

Issue / Problem Statement

As Malaysian cities compete to derive a cosmopolitan image, there is a risk of losing local uniqueness in culture and identity. The historic form, massing, scale, proportion, material and features in the Jalan Kampung Hulu setting had a unique identity which is now threatened by insensitive urbanization. Jalan Kampung Hulu was a one of the busiest harbor in Malacca for trading activities as it's located near to Sungai Melaka.



Objectives

The project of **TITIK TEMU : Central Market** is to create an opportunity for local entrepreneurs and Artisan to build up their businesses as a platform to promote their products. This market is a meeting place for sellers and buyers to offer their goods or services. This is in line with the notion of exhibiting that traditional markets are markets where sellers and buyers bargain directly so that a price agreement is reached between the two parties. As a shopping experience it combines with food markets and craft-based trades.

Activities



Human interaction is crucial and most shoppers come to the store for socialization, not just for a simple purchase they can make online.

Experiences



Create an encounter between shoppers and seller where they share their choice of items and bring more value to the small vendors of the market space in your town.

increase customer retention which will increase a profit in the store.

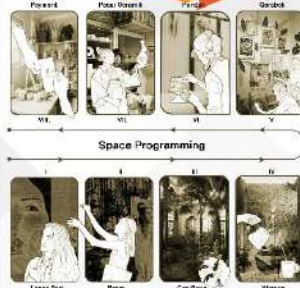


Commercialization



Findings

Cultural heritage is the experience of historic, cultural, and natural attractions that genuinely depict the tales and people of the past. Cultural heritage is the customs, practices, places, artifacts, and artistic expressions that have been formed by a community and passed down from generation to generation. Maintaining the originality of Malaysia's culture and heritage are beneficial to the young generation to live in the urban and modernization while preserving it.

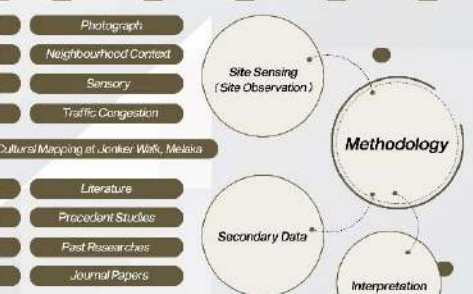
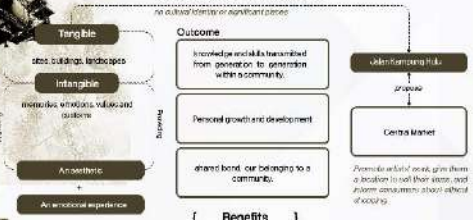


Novelty

The proposal significantly will give a positive impacts to the Jalan Kampung Hulu. It is an initiative to improve the economy growth and to bring back the treasure of Kampung Hulu like old days. This proposal also will help community to create opportunities for local entrepreneurs and Artisan to build up their businesses as a platform to promote their products and a space accessibility for all races engagement to create diversity and unity with out any form of discrimination.



* Cultural Heritage is often expressed as either Intangible or Tangible (ICOMOS, 2002).



Conclusion

The design of the study area is the distinct heritage buildings that give the place meaning and symbolism. It is not an exaggeration to say that Malacca's extremely wealthy due to its day's prominent number of historical sites as well as its vast variety of cultural traditions. Despite this, there are still some things that may be done to enhance the quality of the heritage tourism that is offered to Malacca people when Jalan Kampung Hulu.

The project was developed to Strengthening tourism position as a sustainable approach since it creates direct of economic growth as a key component of plan to the National Tourism Policy with the United Nations Sustainable Development Goals (SDG) 8.

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Cultural Sustainability in Regards to National Architectural Identity in the City of Kuala Lumpur

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INTRODUCTION:

People associate themselves with the places where they reside and distinguish between dissimilar areas. Although there is an interrelation between these two sorts of identification, how a place affects individualistic and communal identity and how people recognize different places are not the same. (Adam, 2012)

Architects have a particular role to play in the transformation and creation of built symbols that contribute to the elaborate web of phenomena that form people's and communal identities. While a new or renovated structure or location may be distinctive, it may also detract from a location's character that a community regards as a vital part of their identity. (Lewis, 2002)

The identity and visual of the places we live are really just a seamless extension of our own; it is human nature for us to identify ourselves with our city, region, or country. Our concept of individuality extends beyond our bodies to include our families, neighbourhoods, districts, regions, nations, continents, and, ultimately, the human race. (Anholt, 2010)

The call for national architectural identity in Malaysia has been a winding road ever since we reached independence in 1957. Each person adopts three distinct identities which are his ethnic, national, and personal identities. All three identities will not be adopted simultaneously, and their main purpose is to establish originality when contrasted to others. Similarly, an architectural identity can be discussed in terms of its environment, location, time, and consumerism status. (Mohammad, 2001)

ISSUES/ PROBLEM STATEMENT:

Malaysian architecture has never been a definitive although many have come to various interpretations. The constant variable in most of these interpretations are often relative to the factor of Malaysian culture and heritage. In addition to that, cultural sustainability plays a critical role in shaping and preserving the national architectural identity of a country.

Unfortunately, we are often susceptible to imitate architecture from abroad instead of celebrating and embracing our local architectural language when practicing. Climate, context and other socio-cultural factors are disregarded completely by designers of today as their primary focus is on aesthetic and form. (Surat et al., 2010) Henceforth, the identity of our architecture scene seemingly does not express the diverse community and spirit of Malaysia as a result of our impertinence.

The education system also limits our ability to dissect and critique the means of current practices. The lack of architectural discourse leaves little to no room for us to develop our thinking skills. This is supported by (Surat et al., 2010) who stated that the graduates of this era are predominantly focused on being a skilled worker instead of being an analytical and critical thinker. In short, architects should be able to solve problems and issues that arise within the community through practice. This paper will contemplate the approaches to Malaysian architectural identity and its means to the urbanisation of the country.

OBJECTIVES:

- To appraise the significance of Malaysian architectural language in its affects towards urbanisation in developing countries
- To explore the stylistic characters of Malaysian architectural identity and its relevancy in the urban context.
- To analyse the perplexities in the nature of Malaysian culture in influencing the spirit of local architecture.

METHODOLOGY:

This chapter encompasses the fundamental means and method of research for data collection in which its purpose is to serve the main objectives of this research. The method of this research will be done by a case study methodological approach was used as well as an autoethnography. In order to meet the research issues and intents of this particular paper, this chapter also delves into several sub-categories to acquire a better comprehension of the subject matter.

This study was conducted through qualitative technique. In order to obtain the findings necessary for analysis and tabulation, a case study methodological approach was used as well as an autoethnography. Due to the subjectivity toward their abstractive interpretations of various subject matters in the context of national architectural identity, the participants' submitted data were intended to be guided in order to objectify the subjective answers. These variables are then analysed in order to obtain illustrative qualitative data.

The case study for this paper will be within the urban vicinity of Kuala Lumpur, particularly in Kampung Baru, the Malay enclave of Kuala Lumpur, Chinatown of Petaling Street and Little India in Brickfields. The regions of choice were selected due to its historical significance in influencing the national identity of Malaysia in the urban setting of Kuala Lumpur. This qualitative methodological approach will provide a deeper understanding of how the multiplex of cultures has shaped the identity of Malaysia in which will gradually evolve over time.

Autoethnography is a qualitative analysis method in which the researcher summarises the material to be analysed using self-reflection and personal experience. The strategy aids in a better understanding of how Malaysia's identity has been moulded by a multiplicity of cultures, which will continue to evolve over time.

FINDINGS

Name of	Chinatown	Kampung Baru	Little India
Attributes			
Typology	Shophouse	Dwelling	Mosque
Years	1870s	1900s	1900s
Architectural Style	Sino-eclectic	Traditional Malay	Mughal Architecture
Materiality	<ul style="list-style-type: none"> Timber Brick walls 	<ul style="list-style-type: none"> Timber Brick Zinc roofing 	<ul style="list-style-type: none"> Brick Glass
Spatial Organization	Linear	Clustered	Radial
Building Elements	<ul style="list-style-type: none"> Column shafts and capitals Parapet wall Louvre shutters Decorative transoms Canopy roofs 	<ul style="list-style-type: none"> Roof - Pitch Long Window Gable End On stilts 	<ul style="list-style-type: none"> Heavy ornamentation Bright colours
People	Predominantly Chinese	Predominantly Malay	Predominantly Indian
Spaces	<ul style="list-style-type: none"> Rooms Second hall/Dining Terrace Verandah 	<ul style="list-style-type: none"> Serambi Bambak/Pau Anjung Kitchen Pelantar 	<ul style="list-style-type: none"> Prayer hall Ablution area Dining hall
Social Activities	<ul style="list-style-type: none"> Sales of goods Cooking Resting 	<ul style="list-style-type: none"> Cooking Socializing Resting 	<ul style="list-style-type: none"> Praying Eating Interacting

CONCLUSION:

The sporadic amalgamation of cultures in Malaysia birthed unique architectural types in regards to the urban community. Hence, it developed the symbiotic relationship between building and context which is quintessential as it frames the narrative of the spaces we inhabit or choose to inhabit. In essence, locality or localisation is a relatively constant variable in a complex breakdown of identities. The initiative of this paper was to understand the meaning of cultural sustainability in regards to national architectural identity within the urban context of Kuala Lumpur. It aims to provide personal and observative insight on how culture is reflected within the architectural identity of Malaysia and how it influences our social status and ideologies.

This particular paper was intended to grasp three main objectives; to appraise the significance of Malaysian culture in its national architectural identity, to explore the stylistic characters of Malaysian architectural identity and its relevancy in the urban context as well as to analyse the perplexities in the nature of Malaysian culture in influencing the spirit of local architecture. The collective of diversity and resulting "cultural multiplicity" has favoured places where migrant ethnic communities have congregated, as it has boosted the quality of life. Cultural variety has become a distinctive commercial feature to attract "ethnic enclave tourism," according to the exotic tourist product.

In order to meet these aims, a literature review was done to ascertain an understanding regarding the subject of cultural sustainability in regards to national architectural identity within the urban context of Kuala Lumpur. A collective of writings and studies relative to the topic done by prior researchers were accumulated in this review. An observative case study was carried out at three cultural enclaves set in the urban vicinity of Kuala Lumpur. These sites were chosen as they are some of the oldest cultural terrains in the city.

On a final note, the search for the architectural identity is a multifaceted process in which we should strive to look for. Finding the true meaning of a national architectural identity grows deeper than just surface level research therefore it is imperative that we fully grasp the nuances that an architectural identity entail. The inquiry of identity is consequently built on the notion at which we find ourselves questioning the perplexities it is entangled to. The precarious inundation of political schemes has caused our local architectural language to be farcical and the essence of our architectural void to become scarce.

THE EFFECTS OF INDUSTRIALIZED BUILDING SYSTEM (IBS) APPLICATION IN INCREASING THE EFFICIENCY OF BUILDING CONSTRUCTION PROJECTS

INTRODUCTION



Figure 1: Biorial Hollow IBS Precast Slab System, PAM Building. Source: Bubbledeck Construction Sdn. Bhd.

In today's world, the construction sector is seen as a critical industry for boosting economic growth in both emerging and established countries. In conjunction with that, the increasing demands for more residential and commercial buildings come with a big risk when the manpower is not up to par to deliver the project in time [1]. Industrialized Building System (IBS) is one of the newly found efforts developed in the construction industry in tackling the glaring issue. Malaysia has begun to adopt the IBS idea to cater to its growing population and housing needs [2]. The main selling point of IBS is to increase construction project efficiency, i.e., energy consumption, waste management, and project completion period, to meet the consumer's demands [3].

PROBLEM STATEMENT

The construction industry has had many setbacks in terms of its development over these past few years. Several construction projects are in a precarious situation due to inefficiencies in worker productivity, coherence, quality, and cost consistency [1].

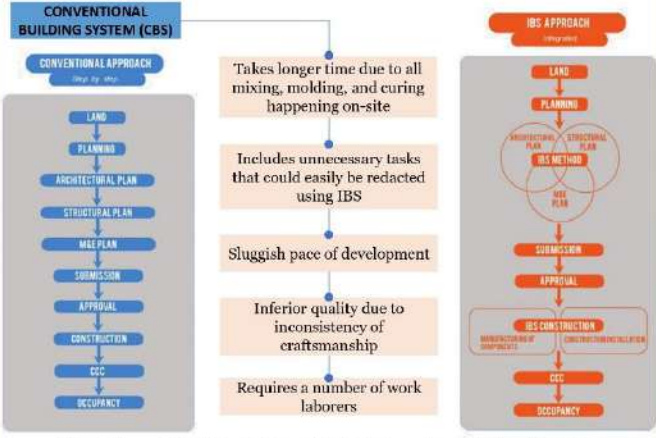
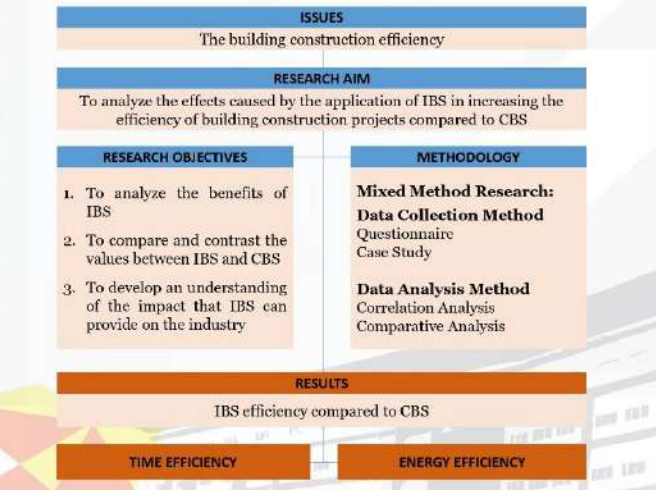


Figure 2: Process of using CBS and IBS approach by the developer. Source: Chee Heng Foo, 2015.

FRAMEWORK



FINDINGS

IBS Performance

The IBS performance factors are as listed in Table 1 (Q1 – Q8). Based on the findings, it can be seen that two significant factors are Q2 and Q4 with a CI of 1.00 highlighting a high significance of increasing the value of the IBS's efficiency.

Table 1: Conformity Index on IBS Performance

Performance Factor	(Disagree) 2	2	3	4 (Agree) 5	Confirmity Index (CI)	
Q1: Improve construction production	0	0	2	28	27	0.8798
Q2: Reduce construction duration	0	0	0	81	33	1.0000
Q3: Reduce usage of raw materials	0	0	1	28	23	0.8848
Q4: Reduce a foreign labour	0	0	0	0	53	1.0000
Q5: Decrease construction waste	0	0	7	34	9	0.8077
Q6: Increase building quality	0	4	24	30	1	0.6735
Q7: Reduce project's cost	0	7	35	18	4	0.6577
Q8: Increase safety level	0	0	5	23	22	0.8584



Figure 3: IBS Performance Index

Figure 3 shows the gap scores between the top two factors in contrast with the other factors where Q2 and Q4 yield a bigger significant advantage of IBS over CBS. However, most of the respondents do not guarantee that IBS could increase the building quality and reduce the project cost.

Contractors' Satisfaction

Figure 4 shows most of the respondents are satisfied using IBS with satisfaction factors of C1, C2, C4, C10, C11, C12, C13, C14, and C15 exceeding 50%.

Satisfaction Factor	Freq	Category	Percentage
C1: Reduce time of completion	33	C1: Reduce time of completion	33 (63.6%)
C2: Better safety management	29	C2: Better safety management	29 (55.6%)
C3: Reduce cost for material disposal	11	C3: Reduce cost for material disposal	11 (21.2%)
C4: Reduce foreign labour	47	C4: Reduce foreign labour	47 (89.4%)
C5: Higher production quality	6	C5: Higher production quality	6 (11.5%)
C6: Higher energy quality	12	C6: Higher energy quality	12 (23.1%)
C7: Higher energy quality	11	C7: Higher energy quality	11 (21.2%)
C8: Material cost reduction	4	C8: Material cost reduction	4 (7.7%)
C9: Reduce labour cost for site workers	24	C9: Reduce labour cost for site workers	24 (45.3%)
C10: Reduce labour cost for site workers	26	C10: Reduce labour cost for site workers	26 (49.1%)
C11: Reduce concrete work on site	47	C11: Reduce concrete work on site	47 (89.4%)
C12: Time certainty	58	C12: Time certainty	58 (100%)
C13: Reduce on-site energy usage	38	C13: Reduce on-site energy usage	38 (71.7%)
C14: Sustainable process and product	36	C14: Sustainable process and product	36 (67.3%)
C15: Sustainable process and product	30	C15: Sustainable process and product	30 (56.6%)
C16: Reduce on-site construction waste	49	C16: Reduce on-site construction waste	49 (92.3%)

Figure 4: Satisfaction Factor

Table 2: Satisfaction Factors Categorization

Index	Satisfaction Factors	Category	Score
C12	Time certainty	Time consumption	50
C13	Reduce on-site energy usage	Energy consumption	50
C15	Reduce waste construction on site	Energy consumption	49
C11	Reduce concrete work on site	Time consumption	47
C4	Reduce foreign labour	Energy consumption	47
C14	Sustainable process and product	Energy consumption	34
C1	Reduce time completion	Time consumption	33
C2	Better safety management	Energy & Time consumption	29
C16	Sustainability	Energy & Time consumption	26

The figure above shows the gap difference between scores is not too far fetch between each other aside from the lowest scoring factors. Instead, the graph shows a similar level of satisfaction for about half of the factors. The top 9 factors are then classified into a more concise classification of category, i.e., time and energy consumption. This indicates that the respondents are most content with the time and energy efficiency of IBS productions.

IBS and CBS Application

Indah Heights was selected as a case study due to its two phases of development, i.e., in phase 1 the units were solely based on CBS meanwhile phase 2 utilizes IBS. Table 3 highlights the differences between CBS and IBS for on-site building work only, factory work is not included. The two main factors that significantly make the difference are time efficiency and energy efficiency. As seen in the comparison, the construction period is reduced by 30%, energy consumption is also reduced by 30%, and energy waste is reduced by 8%.

Table 3: Indah Heights Building System (Source: Kimion Group, 2018)

Category	Conventional (CBS) (2018)	IBS (2018)
Construction period (Excl. of construction and on-site construction work)	8 weeks 13 weeks	6 weeks 10 weeks
Material usage		
Concrete	11	16
Rebar	7	7
Formwork	18	2
Labour for construction work	47	26
Material usage (Excl. of construction and on-site construction work)		
Quality (500C Assessment)	500	500
Material usage	11%	7%
Timber used in packages	- Steel framing galv. - Steel framing - Ply on top of slab - Clay masonry - 25.4mm concrete	- Gravel wall framing - Steel framing - Lumber on timber - 25.4mm concrete

CONCLUSION

Time Efficiency: Time efficiency is classified as the main advantage of IBS due to its consistency and insurance.

Energy Efficiency: The main contributor to this is the usage of prefabricated building components which reduce the concrete work on site, hence reducing energy consumption.

Project Efficiency: To conclude, IBS is a new alternative in the construction field that increases overall construction project efficiency proving that IBS is better in practice.

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THE DEVELOPMENT UITM BTECH. COURSE APPLICATION FOR STUDENTS

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



INTRODUCTION

The use of technology in higher education has increased significantly in recent years, with many universities offering online courses and resources to students. To meet the needs of a tech-savvy student population and prepare them for the demands of the modern workforce, the development of a new Bachelor of Technologies app course will make learning more engaging and effective by incorporating interactive elements such as tutorials and videos, as well as eliminating the need to rely on textbooks as the primary source of knowledge.

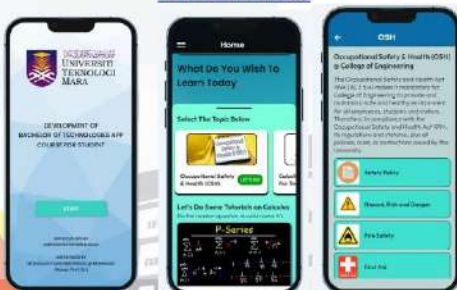
ISSUES/ PROBLEM STATEMENT

- Some students lack resources to study,
- Students yearn for more interactive ways of learning
- Books at the library are limited

OBJECTIVES

- To develop an app for BTech students in enhancing their learning experience
- To adapt to the needs of the students and incorporate new technologies and teaching methods as needed.

FINDINGS



METHODOLOGY

Flutter Flow is the programming tool used in this study where Flutter flow is an online app builder that major focus is to make it possible to create high-performance, high-fidelity applications from a single code base for desktop operating systems (Windows, macOS), Android, web, and iOS. With Flutter flow, programmers can create applications with just one code base that can work with multiple operating system.

NOVELTY

This research works to develop a novelty app for BTech students. This app focuses on two (2) particular subject..

CONCLUSION

With the Flutter Flow coding platform, an interactive course app successfully be built to include interactive elements such as tutorials and videos to make learning more engaging and effective.

COMMERCIALIZATION

Currently, there are no plans to charge this app to students, although the researchers are able to do so.

RECOGNITIONS

This research has been approved by the college of engineering.

CONFERENCES & PUBLICATION

A conference paper is currently being worked on and should be published by year end.

GREEN ROOF SYSTEM IN MALAYSIA: THE CONSTRUCTION PRACTITIONERS' PERSPECTIVES

INTRODUCTION

- Green Roof System is one of the methods that can sustain the environment. It is also a vegetated system where plants are planted on the roof using an engineered growing medium laid on certain layers of the system [1].
- Green roofs are turfed as open spaces that are positioned atop buildings with artificial landscaping and greenery surrounding them. These spaces are suitable for a variety of outdoor activities and leisure pursuits [2].
- From a global viewpoint, the green roof industry began in Germany in the early 1970s and in Central and Western Europe in the middle of the 1980s. Singapore, Eastern Europe, and the United States began using green roofs in the early 2000s, while Hong Kong, Manila, and China did not begin using them until the mid-2000s.
- Recently, green roofs have gained popularity in Malaysia [3].

ISSUES/ PROBLEM STATEMENT

- Globally, green roofs are recognized as one of the most effective and impactful green building techniques for reducing carbon footprint in fully developed urban areas [4].
- Due to rising urbanisation and increased investments in the housing, transportation, and energy sectors, the need for both horizontal and vertical infrastructure on a global scale. A significant burden has been imposed on resources and the environment as a result of this increase.
- Instead of being welcomed as a potential component of an accessible public area, green roofs are currently seen as a unique architectural feature for sustainable development strategies in Malaysian cities.
- However, material resources, product design, and manufacturing process delivery are a few of the challenges that Malaysia's construction sector must overcome to install Green Roof Systems [5].

OBJECTIVES

- This paper aim to investigate the Green Roof System implementation from the construction practitioners' perspectives.

- The objectives of this research are :

- To study the development of Green Roof System in Malaysia
- To investigate the awareness of Green Roof System among construction practitioners
- To study the challenges of Green Roof System implementation in Malaysia. *4.2 Objectives 3: The Development of Green Roof System in Malaysia*

The integration of aim and objective will lead to clear direction of the future for Green Roof implementation in Malaysian urban areas.

METHODOLOGY

- To acquire the answer for each objective in this research, sets of questionnaires were distributed to the registered Quantity Surveyor companies in Johor Bharu via Google form through email and WhatsApp's, the questionnaires were distributed to the companies with total of 75 sets of questionnaires.
- According to the company background, there were 75 numbers of practitioners in the company.
- However, out of 75 sets of questionnaires that has been distributed, only 49 of them responded to the questionnaires.
- The response rate of these questionnaires is 65% where it is good enough to be analysed.

FINDINGS

4.1 Objectives 1: The Development of Green Roof System in Malaysia

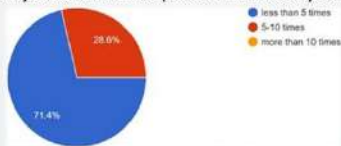


Figure 1: The experience in Green Roof System

- Based on the Figure 1, Malaysia has less than five times experiencing with Green Roof Systems.
- 71.4% of the respondents' responses less than five times in their experience demonstrates that Malaysia still lacks structures with green roofing systems installed.

4.2 Objectives 2: The Awareness of Green Roof System Among Construction Practitioners

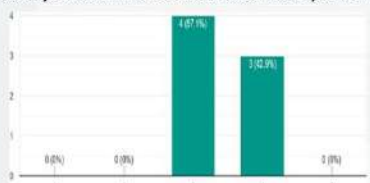


Figure 2: The awareness of Green Roof System in Malaysia

- Figure 2 shows that most respondent have medium knowledge about green roof implementation which is 57.1%.
- It follows by 42.9% of them have a higher knowledge in green roof implementation.
- This analysis shows that even a practitioner themselves do not have a strong knowledge in Green Roof System.
- Therefore, study has been made to create awareness for them to learn about this system for future uses.

4.2 Objectives 3 : The challenges of Green Roof system implementation in Malaysia

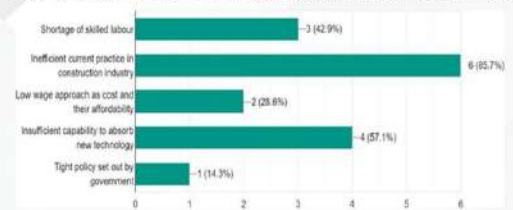


Figure 3: The challenges of implementing Green Roof Systems

- Figure 3 state that the inefficient current practice (85.7%) is the highest challenges in Green Roof implementation.
- The following 57% is lack of capability to adapt new technology.
- Shortage of skilled labour (42%); Cost (28%) and Rigid policy (14%) are the following three challenges in Green Building implementation.

NOVELTY

- All parties in the industry and government body have the responsibility to promote Green Roof System as one of the approaches for green technology application in the country.

CONCLUSION

- Due to certain barriers including lack of knowledge and technical expert, expensive cost of green roof and green roof application techniques are not widely disseminated or spread among professionals led to less interest to use the system.
- Malaysian professionals involved in the construction of green roof need to import construction materials from abroad the western countries.
- However, the cost of green roof construction could be decrease if we have our own green roof supplier and manufacturer in the country.
- Thus, all parties in the industry and government body have the responsibility to promote Green Roof System as one of the approaches for green technology application in the country.

COMMERCIALIZATION

- Malaysian professionals involved in the construction of green roof need to import construction materials from abroad the western countries.
- However, the cost of green roof construction could be decrease if we have our own green roof supplier and manufacturer in the country.

RECOGNITIONS

- Submission of the student Final Year Project (FYP) as part of partial fulfilment of the requirement for the award of Bachelor of Quantity Surveying (Honours).

CONFERENCES & PUBLICATION

- Submission of the student Final Year Project (FYP) to Centre of Studies for Quantity Surveying in July 2022.

THE PRELIMINARY STUDY ON THE EFFECT OF INTERNET WORD-OF-MOUTH AMONG TOURISTS' PERCEPTION TOWARD RESTAURANTS IN MELAKA

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



INTRODUCTION

This study aimed at the effectiveness of "word of mouth" among tourists toward restaurants by developing a framework for measuring the effectiveness of social media toward restaurants in Melaka by testing the restaurant's identity, interactivity, and invisibility to the tourists' perception.

ISSUES/ PROBLEM STATEMENT

1. Sue Idris and her friends had decided to visit this restaurant while on vacation in Melaka since it reportedly has positive TripAdvisor reviews and has been featured on the well-known TV programme "Jalan-Jalan Cari Makan." The girls paid an outrageous RM120 for their lunch. Furthermore, they claimed that the food wasn't even particularly good.
2. The victim, a Facebook user, describes how when her family and Singaporean relatives arrived at the restaurant at 2 p.m., they discovered that most of the food (lunch buffets and side dishes) had already run out. When the victim went to pay, she was startled to see that the lunch had cost her RM240, and the owner had also made fun of her for ordering it.
3. Ling Kwan (2018) reported that a diner recently spotted maggots on the fish and "swimming" in the kuah at a restaurant specialising in Asam Pedas in Kota Laksamana, Melaka. Since the customer was so repulsed, they decided to record a video and post it on Facebook, which quickly went viral.

OBJECTIVES

1. To investigate the effectiveness of word-of-mouth among millennials toward restaurants
2. To determine the perception of the millennial generation toward restaurants
3. To examine the effects of social media expose toward restaurants

METHODOLOGY

The possible test that will be used in this research is regression. Regression is defined as a method for simulating the connection between a scalar response and one or more explanatory variables which is dependent and independent variable. The analysis method allowed us to understand how strongly different variables are related. In this research, regression analysis aims to use one or more independent or control variables to explain variation in the dependent variable. Regression analysis uses P values and coefficients to show whether correlations in the research are statistically significant and what those relationships are like. This method used to know the impact of the research and estimate relationships among variables.

FINDINGS

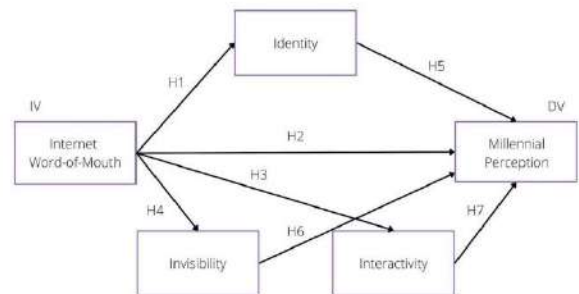
Ardi, Z., & Putri, S.A. (2020). The Analysis of The Social Media Impact on the Millennials Generation Behavior and Social Interaction. *Southeast Asian Journal of Technology and Science*, 1(2), 70-77. <https://doi.org/10.29210/8106570>

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Huete-Alcocer, N. (2017). A Literature Review of Word of Mouth and Electronic Word of Mouth: Implications for Consumer Behaviour. *Front Psychol* 8:1256. doi:10.3389/fpsyg.2017.01256

Puriwat, W. & Tripopsakul, S. (2021). The Role of Viral Marketing in Social Media on Brand Recognition and Preference. *Emerging Science Journal*. 5,6. DOI: 10.28991/esj-2021-01315

NOVELTY



CONCLUSION

The conclusion of this research this would help the food and beverage industry to study about the customers towards the services

COMMERCIALIZATION

Academic Perspective: From a theoretical point of view, this study will contribute to the researcher for future studies in the food and beverage industry. This research would create the path for upcoming researchers to explore more about the effect of Internet word-of-mouth on restaurants because this issue is still relevant in this current era. This would give the researchers insight into the perception of the millennials.

Industry Perspective: Through this study, the restaurateur has a better understanding of how social media would reach a larger audience and influences the customers' visit and revisit intention. By understanding, the tourists' intention would help the restaurateur improve their service or the food and beverage quality based. The restaurateur has to grab the opportunity to hit the demand of the customers, it would help the restaurateur to maximizing the profit.

RECOGNITIONS

As a students of Bachelor of Science (Hons.) Tourism Management in Faculty of Hotel and Tourism Management, this research was conducted to fulfill the requirement of subject Undergraduate Project (HTM 655).

CONFERENCES & PUBLICATION

Not available.

**FACTORS AFFECTING PLACE ATTACHMENT
AND LIVING ARRANGEMENT AMONG
GENERATION IN
SHAH ALAM, SELANGOR**



INTRODUCTION

Each house has its own differences. The outcome will be accomplished when the house bought adjusts to their desires and assumptions. In this study, it will be more attentive on the what the factors of attract people on a certain place that called as "place attachment" and so on that cause of the living arrangement to the among generations. Place is comprehensive and expressed in a variety of contexts and of them can be defined as positive affective relationship. It implies that a person has a proclivity to preserve a closeness to a location as well as an affective connection between individuals and specific places (Akinjokun et al., 2018). Every place has their own characteristic and uniqueness such as areas that can bring revenue to the tourism industry and also the residents who are in the vicinity. The way of living arrangement also an aspect that is taken. Literarily, living arrangement can be consider as a household patterns of individual. On other perspective of people, they prefer to lonely living, some more prefer to stay in with the family not to forget there is also preferring to live with friends. In general, investigations on living arrangements have assumed that in any community, there is a convergence between preferred and actual living arrangements (Panigrahi, 2009).

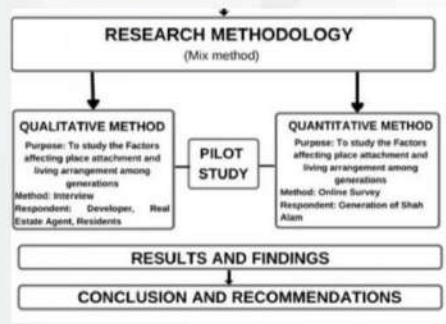
ISSUES/ PROBLEM STATEMENT

- choices about kind of place generation prefer to live is still uncertain
- Difficult life stages such as leaving parental home for career prospects and marriage, is a one of the issues faced among people to have a wide range of structure of living in housing choices (Ling et al., 2016).

OBJECTIVES

- To explain the meaning and categories of generations for housing
- To identify the factors of place attachment and living arrangement preference.
- To determine the factor of affecting place attachment and living arrangement preferences among generations in Shah Alam, Selangor.

METHODOLOGY



NOVELTY

1. The Details about Living arrangement structure among generation.
2. Determine what is the reason for living with the flow of the (current) living arrangement among generations.

CONCLUSION

In nutshell, each generation in Shah Alam has a different preferences for how their living arrangements should be structured and the factors that affecting in place attachment towards of their housing.

COMMERCIALIZATION

The Generational Place Attachment and Living Arrangement Preferences Conceptual Framework

FINDINGS

Generation	Baby Boomers	Generation X	Generation Y	Generation Z
Level of important				
1 st	Well-being engendered	Human Characteristics	Facilities & Amenities	Job prospect
2 nd	Physical Attributes	Economic	Cost of living	Education
3 rd	Human Characteristic	Region	Culture & entertainment	Economic

Generation Factors	Baby Boomers		Generation X		Generation Y		Generation Z	
	mean	Std. deviation	Mean	Std. deviation	Mean	Std. deviation	Mean	Std. deviation
1. Living Alone								
Level of dependency	2.1786	.88257	2.0800	.75938	2.6071	1.34272	2.0000	92582
Connectedness	1.9843	.74447	2.1600	.80000	2.5000	1.07152	2.1724	1.03748
Problem with the activities of daily living	2.8571	.80343	2.4400	.71181	2.5357	1.03574	2.3448	85673
2. Living with Parents								
Responsibility	1.8429	1.09593	1.8000	.70711	2.3571	1.19301	1.8986	93903
Family formation	1.8429	1.09593	1.7600	.72342	2.4286	1.16837	1.8821	87522
3. Living with spouse								
Aging of householders	1.7500	.75154	2.0000	.64550	2.0000	1.15470	1.8821	74276
Physical needs	1.5714	.89007	1.9200	.84031	2.0000	1.12217	1.8621	74276
Geographic relocation	1.8429	87847	2.0800	.84031	2.0000	1.08666	2.0345	90565
4. Living with Married sons/daughter								
Marital/family status	2.5000	.79349	2.5600	.76811	2.7500	1.10072	2.5172	78471
Support system	2.1429	.75593	2.1600	.74610	2.7857	1.13389	2.4828	88788
Health and wellbeing of the elderly	1.8571	.70523	2.1200	.69583	2.5714	1.06904	2.4138	68229
5. Living with members (Not relatives)								
Cultural differences	3.3214	.81892	2.5200	.71414	2.8786	1.15642	2.3446	72091
Community involvement	3.2143	.91721	2.4400	.65064	2.8071	1.18553	2.4483	78314
Career	2.1071	1.34272	2.2000	.76376	2.5000	1.23228	2.2759	79716

CHILD SAFETY CAR REVERSE PARKING SYSTEM

IIIDBEE
20 JANUARY 2023

X 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



INTRODUCTION

Every year, thousands of children are killed or seriously injured because a driver backing up didn't see them. A back over incident typically takes place when a car is backing out of a driveway or parking space.

This accident always occurs on private property or home due to the situation and blind spot of the car. Even the best vehicle had a "blind area" of more than 2 meters behind it. By proposing the car reverse parking with sensor and buzzer, the blind zone behind vehicle can be reduced.

In this project, car reverse parking sensor is to warn the driver and people around it while the car is being reverse. This project is programmed to have six different level of output feedback. This output will result with the activation of Buzzer and light up the LED. Different distance setting range will result with different frequency of sound and number of LED light up. The less the distance between the car and the object behind it, buzzer will make higher tone of sound and more LED will light up and vice versa.

ISSUES/PROBLEM STATEMENT

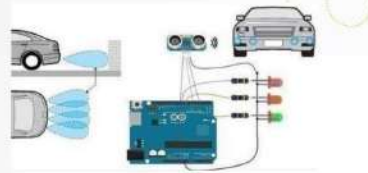
In recent years the problem of young children being struck by reversing motor vehicles has come to attention. Many of these accidents occur on private property and therefore are not recorded in road accident statistics. Most cases in Malaysia the victims are their own family member. This accident always occurs on private property (home) due to the situation and blind spot of the car. Even the best vehicle had a "blind area" of more than 2 meters behind it. By proposing the car reverse parking with sensor and buzzer, the blind zone behind vehicle can be reduced.

OBJECTIVES

- To trigger the ultrasonic sensor so it can measure the distance between car and object behind it.
- To activate the Buzzer sound and light up LED when the distance between car and object in the certain setting range.

METHODOLOGY

The project aims to develop a car reverse parking sensor that detects objects behind the car using an Ultrasonic Sensor, an Arduino Uno, a buzzer, and a light-emitting diode. It uses Arduino Integrated Development Environment (IDE) programming, and Proteus Software for circuit simulation.



How it work.. The Arduino UNO will function as a microcontroller, controlling the output result. This project's output is a buzzer and an LED. The narrower the distance between the automobile and the item behind it, the LED will light up and the frequency of sound produced by the buzzer will increase.

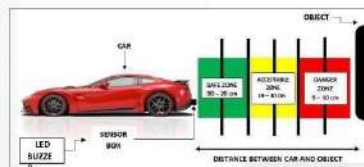


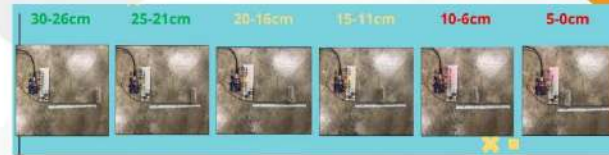
Figure 1.1: System Diagram of Child Safety Car Reverse Parking System



Figure 1.2: Block Diagram of Child Safety Car Reverse Parking System

The system's primary goal is to determine the distance between the automobile and the item behind it to inform the driver and anyone nearby when the car is being reversed. This system's input is the HC- SR04 Ultrasonic Sensor, which it utilizes to compute the distance between two objects by broadcasting and receiving a signal. In this example, the HC- SR04 will send the signal and then send back the receiving signal, which has already read the distance to the Arduino UNO. The Arduino UNO will then function as a microcontroller, controlling the system's output. This system's output is a buzzer and an LED. Only when Arduino receives a specific setting range reading of distance between car and item behind it will the buzzer and LED be activated. When this occurs, the buzzer will activate, and the LED will light up.

FINDINGS



RESULT OF EACH RANGE.

Table 1: Child Safety Car Reverse Parking System Test

Distance (cm)	LED1	LED2	LED3	LED4	LED5	LED6	Sound of Buzzer
30	ON	OFF	OFF	OFF	OFF	OFF	250
25	ON	ON	OFF	OFF	OFF	OFF	260
20	ON	ON	ON	OFF	OFF	OFF	270
15	ON	ON	ON	ON	OFF	OFF	280
10	ON	ON	ON	ON	ON	OFF	290
5	ON	ON	ON	ON	ON	ON	300

The LED will light up based on the distance between the object and the sensor, and the buzzer will sound louder as the distance between the object and the sensor increases.

NOVELTY

Child Safety Car Reverse Parking System can reduce blind area behind the vehicle. This system is capable to warn the driver and people around it while the car is being reverse at certain distance.

CONCLUSION

Child Safety Car Reverse Parking System aims to be one of the alternatives to help the driver alert if any obstacles behind the vehicle. The system will activate the ultrasonic sensor that is installed on the back bumper of the car so that it can measure the distance between the car and the object behind it, as well as to activate the buzzer sound and light up the LED when the distance between the car and the object behind the car is within a certain setting range.

COMMERCIALIZATION

The Safety Child Car Reverse System shows great potential for parents or driver to leverage on its benefit to prevent any fatal incident from happening.

INTERNET OF THINGS (IOT) APPLICATION IN THE MALYSIAN CONSTRUCTION INDUSTRY: THE TYPES AND CHALLENGES DURING THE CONSTRUCTION STAGE

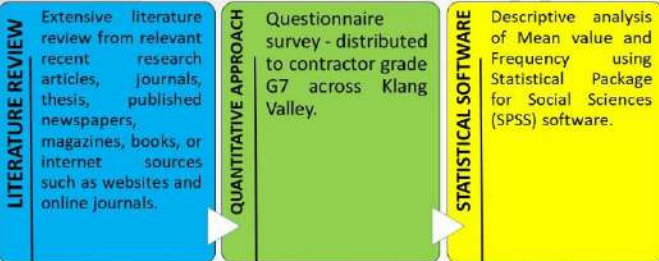
INTRODUCTION

Construction Industry Development Board (CIDB) has already introduced the Construction 4.0 Strategic Plan for the year 2021 until 2025, focusing on the industrial revolution 4.0 to meet the standard of future development that is predicted to be more technological. Based on the Construction 4.0 Strategic Plan (2021-2025), there will be an addition of the Internet of Things (IoT) tools that will be introduced to the Malaysian construction industry, such as Augmented Reality (AR), Big Data, etc. Moreover, this is in line with the importance of the Sustainable Development Goals (SDG) to obtain technological solutions based on IoT. These IoT tools would encourage modern digitalization, which could indirectly boost the industry's productivity. Even with these advantages, the implementation of IoT in the construction industry is still low, and many challenges are faced by the construction players during the implementation of IoT (Gamil et al., 2019), especially in the construction stage. However, this stage is the most crucial in the construction process. Any issues arising during the construction stage would result in time and cost overrun, leading to project failure and abandonment. To realize the government's aspirations in moving towards better technological advancement, it is an urgent need and a wholesome effort by contractors to understand the type of IoT used and the challenges in adopting IoT during the construction stage. Thus, this research will contribute to the enhancement of IoT usage and encourage modern digitalization, which indirectly boosts the performance of the contractor's practices in the Malaysian construction industry.

OBJECTIVES

- 1) To identify the type of Internet of Things (IoT) used during the construction stage.
- 1) To determine the challenges in adopting the Internet of Things (IoT) during the construction stage.

METHODOLOGY



NOVELTY

- Theoretical contributions to body of knowledge:**
- Identification of the type of Internet of Things (IoT) used and the challenges during the construction stage.
- Practical contributions to construction industry:**
- Provides more depth to the assessment of IoT that facilitates the future direction of successful IoT implementation in Malaysia
 - To be used by contractors and industry professionals (government or private sectors) as a benchmark to improve the application of IoT
 - Offer new knowledge and skills for appropriate education and training purposes.

CONCLUSION

Based on the data that have been analysed, several IoT tools can help to solve the issues. However, there are also many challenges in adopting IoT during the construction stage that has been discovered. Therefore, the research outputs seek to understand better IoT usage and the challenges during the construction stage. In future studies, the researcher can enlarge the scope by focusing on and emphasizing different locations, comparing the reasons behind the differences, and comparing the challenges of implementing the IoT between the older and younger generation in the construction industry.

ISSUES/ PROBLEM STATEMENT

- ❖ **Lack of skills and knowledge**
 - Lack of skills and knowledge results in insufficient training for the construction practitioner to learn IoT. Hence, there is a need for IoT expertise in this industry (Jesse, 2018).
 - With a lack of IoT expertise, the cost to provide training classes will also be high since there is a lack of training centres.

- ❖ **Lack of security and safety**

- With IoT, all information regarding the construction projects will be compiled into an online database such as cloud storage. Therefore, online data is fragile to external threats such as malware and ransomware attacks. According to Humayun (2021), these attacks may lead to several consequences, such as data destruction, loss of data and loss of productivity since much time is needed to retrieve the lost data, which may also result in money losses. Furthermore, loss of confidential data will lead to loss of reputation for the companies.

- ❖ **Lack of robustness in connectivity**

- Lack of robustness in connectivity can be referred as the system's inefficiency in performing when any failure occurs throughout its usage (Gamil et al., 2020). This can affect the interoperability of the device (GSM Association, 2014), thus leading to a problem in transferring and receiving the data since the information might change within seconds.
- Based on Vidal et al., (2021), mistakes like this without any mitigation plan to solve this issue can also result in delays and increased costs.

FINDINGS

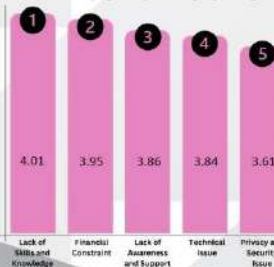
TYPE OF IoT USED DURING THE CONSTRUCTION STAGE

RANKING

- 1 Building Information Modelling (BIM) [4.31]
- 2 Drone technology [4.22]
- 3 Big data [3.86]
- 4 Augmented Reality (AR) [3.73]
- 5 Radio Frequency Identification (RFID) [3.71]



CHALLENGES IN THE ADOPTION OF IoT DURING THE CONSTRUCTION STAGE



- Lack of Skills and Knowledge**
 - Lack of expertise [4.00]
 - Lack of training centres [4.06]
 - Unfamiliar and complex [3.98]
- Privacy and Security Issue**
 - Leakage of data [3.51]
 - Prone to malware attack [3.58]
 - External cyber-attacks [3.73]
- Technical Issue**
 - Connection between IoT device [3.75]
 - Interoperability issue [3.92]
 - Slow data processing [3.84]
- Lack of Awareness and Support**
 - Unaware on IoT benefits [3.63]
 - Lack of management support [3.94]
 - Lack of industrial support [3.84]
 - Lack of government support [4.02]
- Financial Constraint**
 - Inadequate initial capital [4.04]
 - Lack of financial support [4.00]
 - Limited budget to upgrade software [3.84]
 - Insufficient fund for hidden charges [3.90]

FIELD MEASUREMENT STUDIES ON THERMAL COMFORT IN AN AIR-CONDITIONED CAFE

IIIDBEE
20 JANUARY 2023

2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



College of
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Environment
(CBE)

INTRODUCTION

Cafes have become popular social gathering spots as well as a "third space" for relaxation, socialising, and work, particularly among young customers. This trend can also be seen on Malaysian university campuses, such as Universiti Teknologi MARA (UiTM). Indoor thermal comfort is an important aspect in the establishment of comfort in a building including cafes.

ISSUES/ PROBLEM STATEMENT

The mechanical, ventilation, and air conditioning (MVAC) control systems have an impact on the temperature difference across various cafes, which can result in variable degrees of thermal comfort. However, the air-conditioning system had a significant impact on energy consumption.

OBJECTIVES

The objective of this study is to evaluate the indoor thermal of an air-conditioned cafe environment in a hot-humid climate.

METHODOLOGY

Cafe A is a rectangle-shaped building, approximately 43.81m², cafe B is a square-shape building with about 47.53m² and cafe C is a rectangle-shape with area about 55.74m². The four thermal variables that were measured in this were air temperature, air velocity, relative humidity, and mean radiant temperature. These variables were recorded using the OHM Delta Thermal Microclimate HD32.3TC instruments. The data was collected at 10-minute intervals between 1100 and 1600 hours each day for a two-week sampling period. The instruments were positioned at a height of 1.5 to 1.6 meters, which is the head height of a standing person.



Cafe A



Cafe B



Cafe C

FINDINGS

The results of this study also showed that all the thermal environmental parameter for all the cafe were within the suggested guidelines except for air radiant temperature which slightly higher from the ASHRAE guidelines. The surrounding features such as trees outside the building, can influence the indoor air temperature by blocking the cafe's glass walls from direct sunlight.

Thermal Environmental Parameters	Cafe					
	A		B		C	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Air Temperature (Ta) (°C)	25.9	0.48	24.4	0.56	24.8	1.62
Mean Radiant Temperature (mTr) (°C)	26.7	0.66	24.5	0.57	25.5	1.61
Air Velocity (Va) (m/s)	0.02	0.03	0.02	0.03	0.29	0.25
Relative Humidity (RH) (%)	51.30	3.78	55.06	2.38	60.44	2.17

NOVELTY

This research aims to determine thermal comfort in cafe UiTM Shah Alam through field measurement. This research is important to improve students' satisfactions by providing guidance to cafe designer and operators on how to manage the internal temperature of cafe. Furthermore, this research will contribute to better knowledge of the benefits for improving the indoor environment and overall occupants well-being. This research very useful in designing MVAC system in the cafe.

COMMERCIALIZATION

This research is important as it can provide knowledges that can be used to solve current indoor environment issues especially MVAC system in any cafes. Commercialization through collaborating with university and other helps to increase quality and value of this research.

CONCLUSION

Field measurement of thermal comfort helps to assess the effectiveness of a cafe's MVAC system in maintaining a comfortable environment for occupants. Findings from these investigations showed that all three cafes had environmental parameters within ASHRAE and DOSH guidelines.

RECOGNITIONS

Gloria Jeans Coffees Dataran Cendekia, The Cups Coffee & Kitchen Kolej Mawar UiTM Shah Alam, Rotiboy Dataran Cendekia, Faculty of Applied Sciences (FSG), Faculty of Architecture, Planning and Surveying (FSPU)

CONFERENCES & PUBLICATION

Conferences: College Built Engineering, UiTM Puncak Alam during the programme of International Invention, Innovation & Design Exposition for Built Environment and Engineering 2023.

DETERMINANT OF YOUTH INSIGHT ON SUSTAINABLE HOME FEATURES TOWARDS HOMEOWNERSHIP IN PERAK

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition for Built Environment and Engineering 2023



INTRODUCTION



CONTRIBUTE
40%
(Huynh, 2021)



SUSTAINABLE HOME IS ACCURATE CHOICE TO COMBAT CLIMATE CHANGE

- According to the Brundtland framework, **sustainable home development plays a critical role** in reducing negative human influence on the natural environment. Due to that, sustainable homes raise the interest of potential homebuyers and become significant housing trends shaping the future of sustainable living.
- This can be supported based on research conducted by (Ling et al., 2011); potential homebuyers in Singapore are willing to pay more for environmentally friendly homes. Besides, **Hemingway & Charles Scribner's Sons (2011) also state that house buyers in Malaysia, in general, were willing to pay more to live in a sustainable neighborhood.**
- This research aims** to identify the youth's preference for owning a sustainable home and explore their perception of the importance of sustainable home features towards homeownership.

ISSUES/ PROBLEM STATEMENT

- Most of the public policies and regulatory **framework do not encourage the sustainable housing development.** The government policies keep changing and makes them confuse about the industry's real condition. Malaysia Plan (Housing), it did not set the rules to implement sustainable housing concept, according to Chen Goh., et al (2013).
- Many parties, particularly **stakeholders and homebuyers, misunderstanding sustainable housing concept,** hence the approach towards sustainability has become ineffective (Kamaruddin et.al., (2020).
- In Malaysia, stressed knowledge and local experience in green technology are still scarce.** Developers are unable to include the affordability and sustainability notion into their project development due to a scarcity of experts.
- This concept **mainly focuses on higher-end features, the housing price became more expensive.** As a result, it became a challenge for most of the public, especially youth, to own a house.
- Economic and financial issues** in implementing sustainable housing concept

OBJECTIVES

Objective 1
To explore the sustainable features of homes development

Objective 2
To determine the youth's perception of the importance of sustainable home features towards homeownership.

METHODOLOGY

This study is based on the quantitative method and the stratified random sampling approach is used for sampling



Questionnaire was distributed **via online** to 269 youth as sample



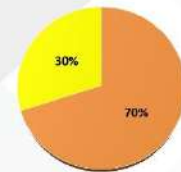
Perak was selected as the study area.



Data were analyzed for **Descriptive and Frequency analysis** by using the **Statistical Package for Social Sciences (SPSS) version 27**

FINDINGS

Analysis on the youth's preference for owning a sustainable home



Majority respondents **188 (70%) have the intention to buy a sustainable home feature** in Perak. This have given a **good reflection towards the stakeholders** to develop sustainable home features in the future. **There are only 81 respondents (30.1%)** did not have the intention to buy sustainable house feature in Perak.

Analysis on Youth's Perception of The Importance on Sustainable Home Features Towards Homeownership

Code	Features	Mean	Standard Deviation	Scale Importance
Features 1: Building materials and concept				
FB1	Uses of energy efficiency materials	4.04	0.9880	Very Important
FB2	Use of quality innovation materials	3.70	1.0485	Important
FB3	Reuse building materials resources	3.91	0.9694	Neutral
FB4	Adapt appropriate green technology in construction	4.07	0.9135	Very Important
FB5	Adequate and proper maintenance and management plan	4.23	0.8750	Very Important
Features 2: Government incentives and policies				
FG1	Adequate funding and provision	4.10	1.0212	Very Important
FG2	Effective legal and policy framework	4.12	0.8956	Very Important
FG3	High-rate approval of Certificate for Occupancies (CFO)	4.10	1.0594	Very Important
FG4	Rebates for buying green homes	3.95	1.0551	Important
FG5	Special loans for sustainable homes buyer	4.07	0.9574	Very Important
Features 3: Property characteristics				
FP1	Property is in flat topography	4.10	0.943	Very Important
FP2	Property with aesthetic quality	3.83	1.013	Important
FP3	Property developed with natural ventilation	4.14	0.982	Very Important
FP4	Property with green landscape	4.20	0.933	Very Important
FP5	Property near with public transport hub	3.91	1.046	Important
FP6	Appropriate land use plan	4.10	1.048	Very Important
Features 4: Environment				
FE1	Elimination of nuisance	4.17	0.878	Very Important
FE2	Mitigate risks for natural disasters	3.94	0.981	Important
FE3	Maintain the environment clean	4.30	0.940	Very Important
FE4	Capable to adapt with current climate change	4.35	0.822	Very Important
Features 5: Community development				
FC1	Homes environments create job opportunities	4.29	0.831	Very Important
FC2	Encouraging social communities	4.02	0.932	Very Important
FC3	Homes environment that enhances resident's livability	4.16	0.923	Very Important
FC4	Well connected to workplace or job	4.36	0.806	Very Important

Very Important
Important
Neutral
Less Important
Not Important

NOVELTY

- According to the author's knowledge, **there is a lack of thorough studies dedicated to finding out how essential and crucial sustainable home features are to youth perceptions of homeownership.** There is lack of published analysis on the insights of the youth towards sustainable home features **using the descriptive analysis.**
- Although the success of earlier studies on sustainable housing features has been acknowledged, **these studies have not comprehensively considered on youth perspective, and none have thoroughly evaluated the sustainable elements, such as government incentives and policies and climate change**
- Therefore, this study contributes the novelty of fulfilling the gap in order to improve the stakeholder's development on sustainable homes via youth's insight

CONCLUSION

- Most youth wanted to own a sustainable home** because they believed that such homes greatly reduced pollution and promising better lifestyle
- The study suggested **stakeholders should take the youth's perception in order to increase the ownership of sustainable homes.**
- It would be preferable if the **study continued to use a qualitative methodology** to solicit judgement from experts in the academic field.
- Thus, **the findings of this study will enhance the real estates player,** such as developers and the government, to be critically aware of the needs of the youth generation for suitable sustainable homes.

PREPARED BY:

NurFaiz Hakim Bin Nazari and Anis Syazwani Binti Sukereman

Center of Studies for Estate Management, College of Built Environment, Universiti Teknologi MARA (UiTM) Shah Alam, Malaysia

Evaluating the Thermal Environment in a Naturally Ventilated High-Rise Residential College Building

IIIDBEE X 2023
20 JANUARY 2023
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for Built Environment and Engineering 2023



INTRODUCTION

In student hostels, thermal comfort is important because it can impact students' comfort, health, learning, and overall quality of life. To achieve thermal comfort in free-running buildings, it is important to consider factors such as the climate-responsive envelope, ventilation, and behavioral controls.

ISSUES/ PROBLEM STATEMENT

One problem with natural ventilation in buildings is that it relies on natural forces, such as wind and buoyancy, to move air through the space. This means that the effectiveness of natural ventilation can be unpredictable and may not always provide sufficient airflow to maintain comfortable temperatures.

OBJECTIVES

This research aims to investigate the thermal environmental ranges for students in residential college universities in Malaysia, study case in high-rise building at Universiti Teknologi MARA, Shah Alam.

METHODOLOGY

There are four parameters in this study that influence thermal comfort: room air temperature, humidity, air velocity, and mean radiant temperature. These parameters were measured using the thermal microclimate HD32.3TC and HD32.3 instruments. The instruments were placed in the center of the hostel room at a height of 1.1 m from the floor and were used to record data for 48 hours in each hostel room.

FINDINGS

The data showed that the air and radiant temperatures in each room were lower on higher floors, with air temperatures of 29.6 °C, 29.1 °C, and 28.4 °C and radiant temperatures of 29.5 °C, 28.9 °C, and 28.3 °C respectively. The relative humidity data showed a correlation with the level of the building, with higher values on the upper floors. There was no significant difference in air speed between the rooms. These findings suggest that there is a difference in surface temperature of more than 2°C between the lower and upper floors.

NOVELTY

This research aims to broaden the understanding of thermal comfort in residential buildings on campus by investigating the comfort temperature of university students in Malaysia. This study will be helpful in improving occupants' learning performance by providing a comfortable and healthy microclimate, which is especially essential for residential buildings on campus in Malaysia.

CONCLUSION

The study found that several environmental parameters, including air temperature, relative humidity, air velocity, and mean radiant temperature, can affect thermal comfort, and should be properly controlled to provide a comfortable living environment for students. The data showed that the level floor of the high-rise building influences the indoor thermal environment.

COMMERCIALIZATION

This study can be commercialized by selling the research to the institution as a reference for where they can make improvements or conduct further research on thermal comfort in residential college universities.

RECOGNITIONS

Kolej Kediaman Mawar Universiti Teknologi MARA, Faculty of Applied Sciences (FSG), Faculty of Architecture, Planning and Surveying (FSPU).

CONFERENCES & PUBLICATION

Galeri Kolej Alam Bina, Kampus Puncak Alam, UiTM Cawangan Selangor.

Environmental Parameters		Air Temperature (°C)	Relative Humidity (%)	Air Speed (m/s)	Radiant Temperature (°C)	
Ground level	Room 1	Mean	29.6	68.9	0.16	29.5
		Standard Deviation	0.3	2.8	0.04	0.3
		Range	29 – 30.2	62.2 – 73.3	0 – 0.31	28.9 – 30.1
Level 6	Room 2	Mean	29.1	72.1	0.05	28.9
		Standard Deviation	0.3	2.8	0.03	0.3
		Range	28.5 – 29.7	64.6 – 76.6	0 – 0.18	28.3 – 29.5
Level 9	Room 3	Mean	28.4	73.5	0.10	28.3
		Standard Deviation	0.5	2.5	0.05	0.4
		Range	27.4 – 29.5	67.7 – 78.8	0 – 0.28	27.3 – 29.5

PREPARED BY: Nur Ain Syahirah binti Dalid¹, Fairus Muhamad Darus¹ and Rabiatul Adawiyah Nasir²

¹Faculty of Applied Science, ²College of Built Environment, Universiti Teknologi MARA, Shah Alam, Selangor.

INVESTIGATING THE INFLUENCE OF GENDER AND BODY-MASS INDEX ON THERMAL SENSATION

IIIDBEE
20 JANUARY 2023

2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



College of
Built
Environment
(CBE)

INTRODUCTION

Thermal comfort is an essential aspect of human well-being and can be defined as a state of satisfaction with the thermal environment. It refers to an individual's perception of the temperature and airflow in their surroundings and can be influenced by a range of factors such as personal characteristics, clothing, activity level, and the physical characteristics of the environment.

ISSUES/ PROBLEM STATEMENT

Thermal comfort is a personal experience that can vary greatly from person to person. Some individuals may prefer warmer temperatures while others may prefer cooler temperatures, and these preferences may be influenced by factors such as gender and body mass index (BMI). It is important to take these differences into consideration when designing indoor spaces and considering thermal comfort.

OBJECTIVES

To understand the relationships between thermal comfort, gender, and BMI.

METHODOLOGY

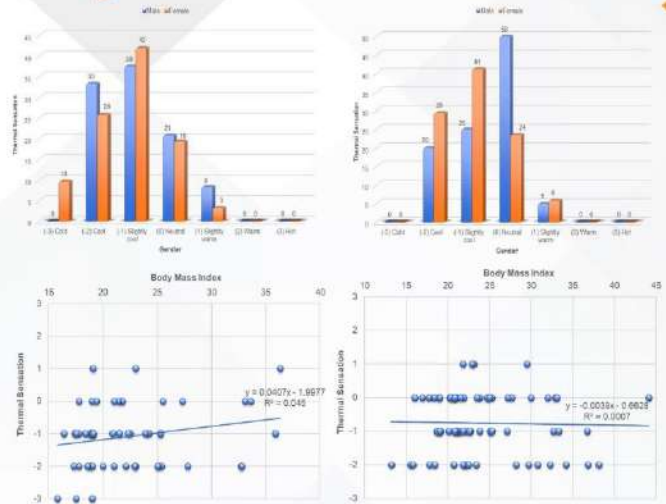
A questionnaire was used to collect their responses on thermal comfort, which was administered through a Google Form. The questionnaire contained questions about the students' thermal comfort sensations as well as their personal information, including gender, height, weight, and BMI. Both male and female students were invited to participate in the study and were asked to complete the questionnaire in person at the study location.

FINDINGS

The results of this study showed that, even though both genders reported similar temperature settings at two different sites, females tended to perceive the temperature as colder than males did in a particular location. While obese and extremely obese BMI groups' respondents generally did not show a clear preference for any specific temperature in the air-conditioned building, but they tended to feel more comfortable in a slightly cool environment. Based on the linear regression, BMI did not have a strong contribution to thermal sensation as only 4.5% and 0.7% for each site were reported in this study.

COMMERCIALIZATION

This study give a better understanding of career and education path especially in the process of collecting the data where I can apply the knowledge that I gain from the study in my future career in this course. A good publication research helps secure a job and also help in collaborating with other to earn some profits and benefits



CONCLUSION

This study found that gender and BMI can influence an individual's sensitivity to temperature, with female respondents being more sensitive to lower temperatures and individuals with higher BMIs potentially having some issues with temperature.

NOVELTY

The objective of this paper was to understand the relationships between thermal comfort, gender, and BMI. This study provided data and a better grasp of the idea and the meaning of thermal comfort on gender and BMI. There were explanations about the responses of the students that use air-conditioned building in university on thermal comfort and give the understanding on why gender, BMI, and thermal sensation were linked to each other. This research was since it improved knowledge on how to use the indoor environmental instrument as well as how to effectively use and apply the survey results.

RECOGNITION

Perpustakaan Tun Abdul Razak (PTAR) 1, Faculty of Applied Sciences (FSG) UiTM Shah Alam, Faculty of Architecture, Planning and Surveying (FSPU) UiTM Shah Alam, the students

CONFERENCES & PUBLICATION

Conferences: CBE, UiTM Puncak Alam during the programme of International Invention, Innovation & Design Exposition for Built Environment and Engineering 2023.

X-Ray Baggage Object Detection Using Neural Networks for Safety Purposes

IIIDBEE

20 JANUARY 2023

International Invention, Innovation & Design Exposition for Built Environment and Engineering 2023



UNIVERSITI
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MARA
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INTRODUCTION

- X-rays have been employed to assist in object detection for airport security purpose. X-ray machines usually scans the content of baggage used by travelers to detect if there are any anomalies contained.
- Images that are generated by the x-ray machines are carefully checked by officers onsite to ensure the travelers do have any prohibited items in their baggage. The entire inspection process usually takes 5-15 seconds, depending on the quality of the x-ray image produced as well as the years of expertise and knowledge of security officer.
- Convolutional Neural Network (CNN), and emerging concept comes under the umbrella of Artificial Intelligence and Deep Learning is the subject of interest that can increase the efficiency of object detection via X-Ray images whilst eliminating the discrepancies of human inspection.

ISSUES/ PROBLEM STATEMENT

The conventional way of x-ray baggage object detection has relatively low accuracy, i.e., only 50%, due to fatigue experienced by the airport security officers that perform checking the baggage. Sometimes, it is also difficult for officer to identify suspicious objects stored in baggage due to the poor quality images produced by X-ray machine.

OBJECTIVES

- To develop an innovative solution to address airport security issue by leveraging the benefits of deep learning method.
- To develop a threat object detection model using CNN.
- To analyze the effect of key parameters on the proposed framework and compared its performance with state-of-art methods.

METHODOLOGY

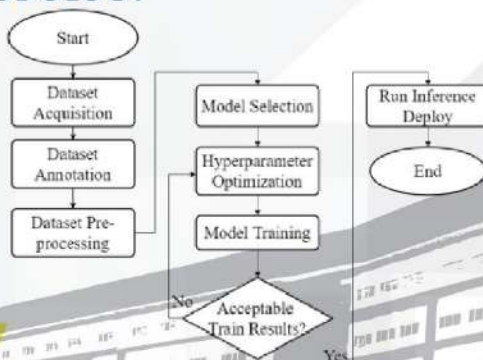


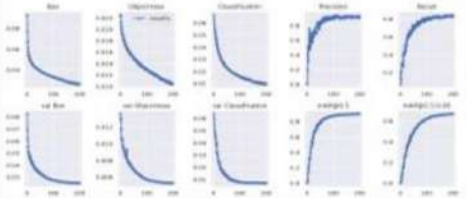
Fig 1: Holistic Steps to Build The Model

FINDINGS

Table 1: Comparison of Different Models

	Recall	Precision	F1-score	mAP@0.5	mAP@0.5:0.95
YOLOv5	84.6	90.4	87.4	90.0	66.67
YOLOv3	73.7	75.6	74.3	76.8	-
MobileNetSSD v2	38.0	44.0	40.8	23.1	-

Fig 2: Graph of Precision, Recall, mAP, and losses.



COMMERCIALIZATION

This project stands a chance to be commercialized, however for full scale commercialization it is important to use high-end computers to build the neural networks in order to get good performance metrics and speed.

RECOGNITIONS / CONFERENCES

- Gold Award Recipient at Thesis in 5 Minutes.
- Silver Award Recipient at InIC Series 2/2022.
- Manuscript Accepted to be Published by Springer Singapore.
- Bronze Award at VIC 3/2022.
- Bronze Award at RICE 2023

NOVELTY

Hyperparameters are optimized by stochastic descent gradient. The proposed model uses the dense prediction, Cross Spatial Network, and Path Aggregate Network (PANet) for its head, backbone, and neck respectively.

CONCLUSION

The proposed model has mAP of 90.0%, precision of 90.4%, recall of 89.6%, and f1-score of 87.4%. The model can achieve at least 83.0% of accuracy level with the inference time of 0.008s, hence it is suitable for real-time application to address airport security issue.

Night Light Changes in Kuala Lumpur caused by Human Activities due to the Pandemic COVID-19

INTRODUCTION

In reaction to the COVID-19 pandemic, the Malaysian government has established extensive physical distancing measures to prevent and control the spread of the virus. Visible Infrared Imaging Radiometer Suite Day/Night Band (VIIRS-DNB), a new generation of spaceborne low-light imaging, has the potential to detect changes in nighttime light (NTL) caused by changes in human activities. However, to understand how the community has complied with COVID-19 regulation by measure the value of NTL before, during and after the occurrence of COVID-19. Therefore, this study aims to measure night-time light (NTL) before and during COVID-19 using multi-year monthly time series data (2019–2021) obtained from the VIIRS night-time light (NTL) product. This study covers urban areas in Kuala Lumpur and NTL has been processed using the Google Earth Engine (GEE) platform.

DATA & METHODOLOGY

1. The National Oceanic and Atmospheric Administration (NOAA) produces monthly composite products and conducts VIIRS-DNB at the Suomi National Polar Orbit Partnership (Suomi-NPP).
2. The product spans the globe from 75 N to 65 S latitude and is stored with a 15-second arc geographic grid (about 500m at the equator). The monthly product's average radiance value is expressed in nanoWatts/cm2/sr, and the data accuracy is eight decimal places.
3. With data set size up to petabytes, remote sensing (RS) needed a great system to manage and analyse large volumes data and it was impractical to use standard software packages and desktop computing to process all the RS images.
4. Therefore, Google has developed a cloud computing platform called Google Earth Engine (GEE) to address the challenges of big data analytics effectively. Starting in 2010, the platform has proven its high potential for different applications until the last few years.
5. The GEE platform is used to access VIIRS DNB data using JavaScript code.
7. Meanwhile, information on movement control orders (MCO) was obtained from the National Security Council (NSC) (<https://www.mkn.gov.my/web/ms/>).

RESULTS

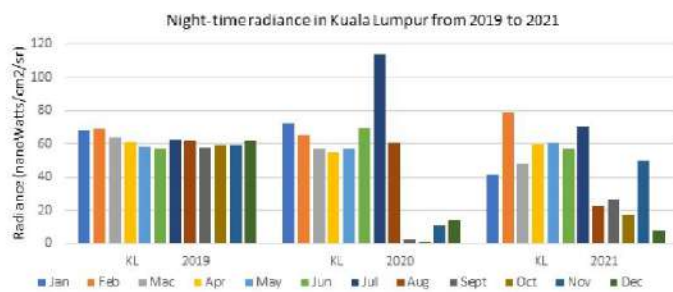


Fig. 1: Bar graph of nighttime light in radiance for Kuala Lumpur from VIIRS data

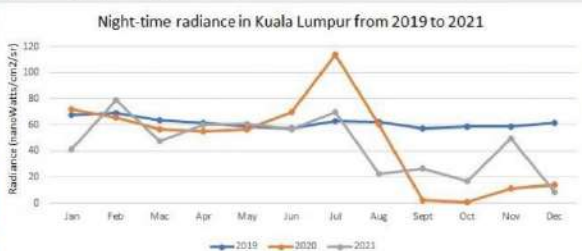


Fig. 2: Line Graph of monthly NTL values from 2019-2021

PROBLEM STATEMENT

Numerous studies in applied economics have recently used satellites to measure nighttime light (NTL). The vast majority understood the connection between human actions and our environment globally without depending on frequently disparate national statistics. There are two data sets give the NTL values are from the Defense Meteorological Satellite Program (DMSP) and the Visible Infrared Radiometer Suite (VIIRS). Compared to DMSP, VIIRS data demonstrated an 80 per cent higher efficacy for data on subnational GDP. No other studies in Malaysia use NTL from satellite remote sensing to detect human activities. Thus, this study aims to measure NTL before and during COVID-19 using multi-year monthly time-series data (2019–2021) obtained from nighttime light products (NTL) VIIRS covering urban area in Kuala Lumpur to comprehend how people have complied with COVID-19 dealings within two years of the outbreak. These images are processed in the GEE platform.

OBJECTIVES

To measure NTL before and during COVID-19 using multi-year monthly time-series data (2019–2021) obtained from nighttime light products (NTL) VIIRS covering urban area in Kuala Lumpur to comprehend how citizen have complied with COVID-19 regulations within two years of the outbreak.

RESULTS

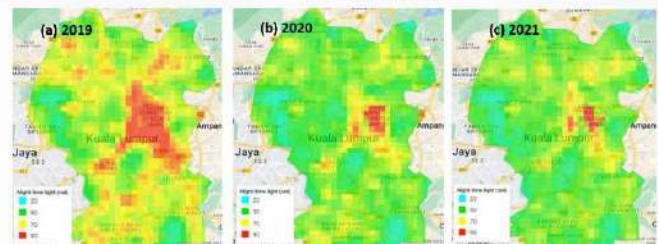


Fig. 3: Map of nighttime light in radiance for Selangor, KL and Putrajaya (a) 2019, (b) 2020 and (c) 2021 from VIIRS images



Fig. 4: Centre of Kuala Lumpur showing NTL Map from 2019-2021

The zoom-in map (Fig. 4a-4c) of KL for 2019 clearly shows red with a large area compared to the map in 2020 and 2021. The bright red area is the main city centre area namely Bukit Bintang, Pudu, Brickfields, Mid Valley City, Chow Kit, Kuala Lumpur Sentral, Kampung Baru and Titivangsa Central. Different from the 2020 and 2021 maps, the areas that show bright red are only Bukit Bintang and Kuala Lumpur City Center.

An independent sample t-test was used to check for NTL reduction before COVID-19 and during COVID-19 for Kuala Lumpur. The p value for Kuala Lumpur is 0.01687 and less than 0.05 means that there is a significant difference between the reduction of NTL before and during COVID-19.

CONCLUSION

Examination of night light (NTL) data from VIIRS satellite images (DNB) proves that night light can be used to estimate human activity before and during the COVID-19 pandemic quite accurately. Next, this study also shows that high-quality night light datasets can be efficiently developed on a large scale coverage using cloud computing in Google Earth engine.

NOVELTY

There was no study yet to determine human activities in Malaysia using NTL from satellite images.

PUBLICATION

This study is part of a study from research published in articles DOI: 10.1109/IIIDBEE55096.2022.9845177

PREPARED BY:

1. Nurul Shuhadah Salehudin,
2. Siti Aminah Anshah,

Spatio-temporal of Aerosol Optical Depths (AOD) during Southwest Monsoon over Peninsular Malaysia

DATA & METHODOLOGY

- SATELLITE DATA :
 - MODIS – Terra & Aqua MAIAC Land Aerosol Optical Depth Daily 1km 55nm [Southwest Monsoon (Jun – Sept) years 2018 to 2021)
 - Chirps Perception Data Jun – Sept for the year 2018 to 2021
 - DEM STRM V3 product (STRM Plus) is provided by NASA JPL at a resolution of 1 arc-second (approximately 30m)
- Ground-based data (CAQM) was using only in 2019
- All the data satellite which are MODIS terra and Aqua, Chirps Precipitation and DEM(STRM) were processed using the Google Earth Engine Platform

INTRODUCTION

In September 2019, a transboundary haze from large forest fires, especially from origins in Sumatra and Kalimantan, significantly worsened measured air quality and reached Singapore and Malaysia. Numerous fires were raging nearby oil palm fields and pulp and paper factories. The fires increased the particulate matter in the air. On the other hand, in 2020, an unprecedented outbreak of COVID-19 occurred worldwide, including in Malaysia. At the same time, it has changed the measurement of air quality for the better due to the Movement Control Order (MCO) carried out by the Malaysian government.

OBJECTIVES

This study aims to determine the spatial-temporal of Aerosol Optical Depth (AOD) in Peninsular Malaysia during the dry season in Southwest monsoon (June - September) from 2018 to 2021 using remotely sensed satellite measurement.

PROBLEM STATEMENT

Biomass energy that has a negative impact often involves the burning of forests such as oil palm plantations. The burning of biomass (BB) that occurs in Indonesia due to forest and peat fires has a severe negative impact on air quality in Southeast Asia (SEA). Transboundary haze from large forest fires that occurred in September 2019, mainly originating from Sumatra and Kalimantan, worsened air quality involving Singapore and Malaysia to the extent of increasing particulate matter in the air. In March 2020, there was an outbreak of COVID-19 which simultaneously changed the air quality for the better as a result of the Movement Control Order (MCO) implemented by the government. Therefore, it is important to know the aerosol optical depth (AOD) concentration during haze episodes and throughout the MCO.

RESULTS

RESULTS

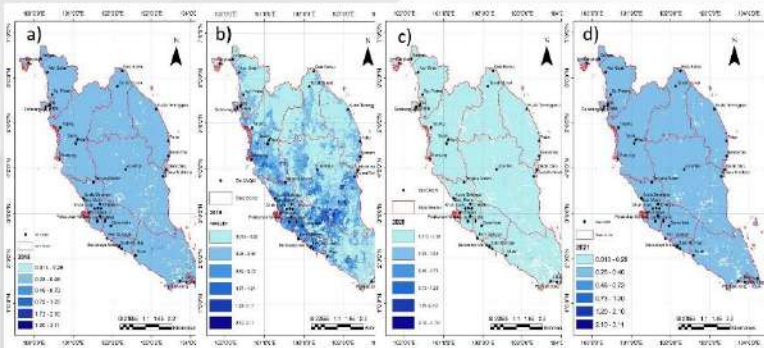


Fig. 2 a) is satellite MODIS image from Jun to Sept 2018, Fig. 2 b) is satellite MODIS image from Jun to Sept 2019, Fig. 2 c) is satellite MODIS image from Jun to Sept 2020, and Fig. 2 d) is satellite MODIS image from Jun to Sept 2021 in Southwest monsoon (Dry Season) over Peninsular Malaysia.

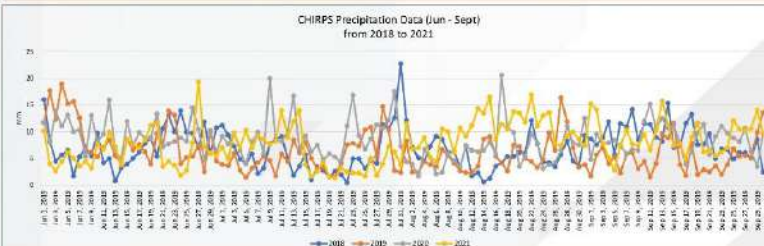


Fig. 3: A graph of multiple years for daily rainfall from Jun to Sept in 2018, 2019, 2020 and 2021 data extracted from CHIRPS Precipitation data.

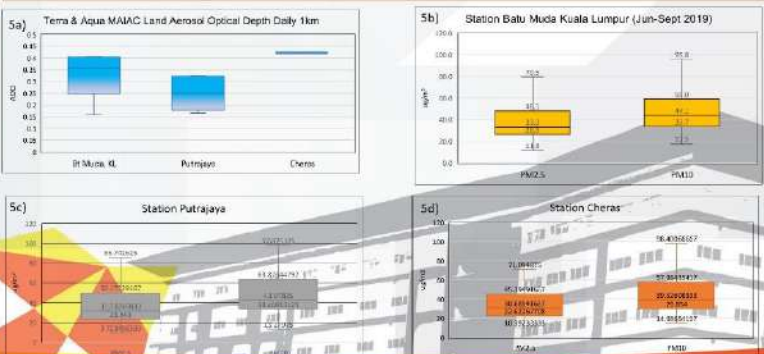


Fig. 5 a) is satellite MODIS image from Jun to Sept 2019 for station Bt. Muda, Putrajaya and Cheras
Fig. 5b to 5d are ground data from CAQM station in Malaysia

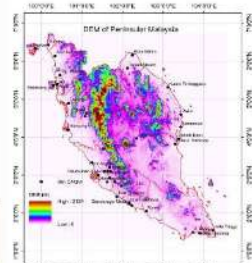


Fig. 1: Map shows the study area in Peninsular Malaysia, location of CAQM, DEM

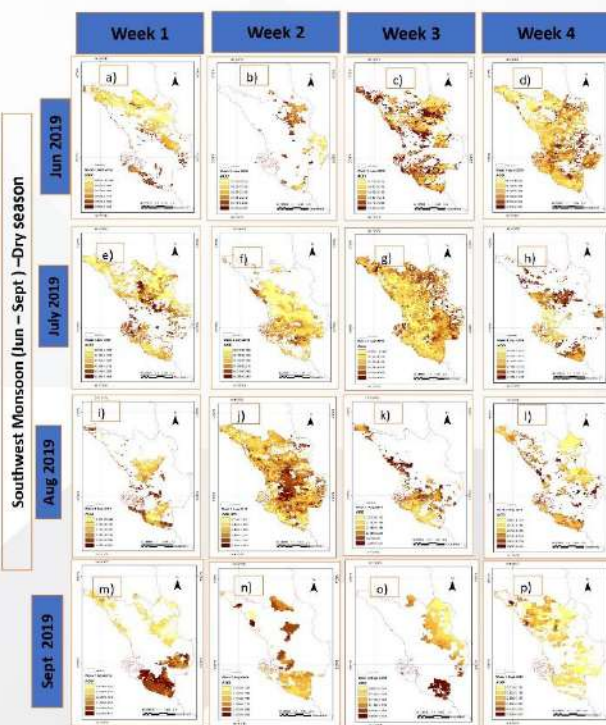


Fig. 4 Map shows weekly spatial temporal of AOD data from Jun to September in 2019

CONCLUSION

- ❑ High AOD values (>2) were obtained in most of the southern parts of the Klang Valley.
- ❑ Decreasing patterns of AOD were observed in 2020 for all states in Peninsular Malaysia.
- ❑ MODIS data needs to be supported with other satellite data to improve the result of no data AOD at certain places because of clouds.
- ❑ The future study can focus on method of combining MODIS data with other satellite using machine learning technique.

NOVELTY

This study focuses to measure AOD value increasing during transboundary haze and decreases during COVID-19

PREPARED BY:

1/ Siti Nurathirah Norliyan,
2/ Siti Aminah Anshah,
3/ Murnira Othman (Dr.)

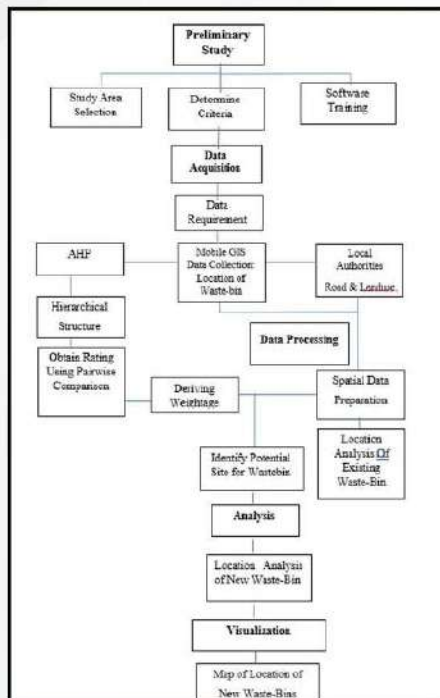
POTENTIAL SITES FOR WASTE-BINS BY USING GIS-AHP

INTRODUCTION

Rapid urbanization, population growth and economic development have resulted in increased waste generation in countries across the world. This situation has become one of the most important problems in cities today. In certain cities like Jerlun, Kedah, Solid Waste Management (SWM) operator did not collect the waste at each property unit like in Klang Valley. Instead, the waste will only be collected at waste-bins which had been places in certain area. Therefore, the location of waste-bins need to be at a place that could serve the demand well. Meaning that, people need not to travel far to throw their garbage, and it should not be overflowed – perhaps when their catchment area is bigger than other bins. Thus, this study aims to determine the optimal location of waste-bins by using Spatial- MCDA. The existing location of waste-bins was first analysed to understand the current scenario before new locations determined based on criteria that had been used by the local SWM operator which includes User Accessibility, Route and Avoiding Pollution. Once new locations of waste bins had been found, the location analysis was performed again to analyse the improvement in terms of accessibility made when the new sites were discovered. The analysis compared the user's trip distance to the nearest waste-bin with their origin. Ten (10) potential sites for waste-bins had been found in this study which provides improvement of 0.4km for average travelling distance and 4km for maximum travelling distance from demand.

METHODOLOGY

- Preliminary Study** to determine criteria to find new waste bins
- Data Collection**
 - AHP: Pairwise Comparison for Criterion rating
 - GIS: Spatial Data collection for each criteria
- Data Processing**
 - Location analysis of existing waste-bins using p-median
 - Weighted Overlay analysis in finding location of new waste-bins
 - Location analysis with new waste-bins
- Analysis** on Improvement on accessibility with new waste-bins based on user's trip distance to waste-bins
- Visualization** of Location of new waste-bins



ISSUES/ PROBLEM STATEMENT

Bin overflow is a problem that arises for a number of reasons, including where it is placed. Whether it could support the demand well or not. This, this study was conducted based on these three (3) research problems:

How well the existing location of waste bin serve the demand?

What are the criteria needed in finding the optimal location of waste-bin?

How can the optimal location of waste-bins be determined?

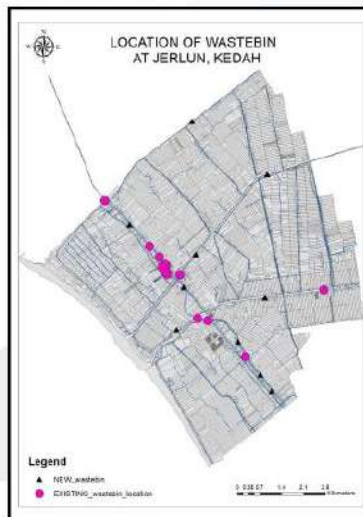
OBJECTIVES

To determine the accessibility of the existing location of waste-bins

To identify the criteria influencing the optimal location of waste-bins

To analyse the optimal location of new waste-bins

FINDINGS



The new locations of waste-bins with the highest suitability index had been selected after their location had been verified. Open spaces which are identified to be possible to put waste-bins were selected. In total, 10 new waste-bins had been found.

User's Trip Distance	Differences (m)
Minimum	0
Maximum	-4287.97
Average	-426.594

With additional of 10 new waste-bins, the maximum and average in user's trip distance had been improved. Previously, user need to travel as far as approximately 10km to throw their rubbish. Now, it is 6km – reduced by 4.3km. The average travelling distance also had been improved by 0.43km when additional 10 new waste-bins were to be added.

CONCLUSION

Spatial-MCDA is the most popular technique in site suitability analysis. This study had used the technique to find the location of new waste-bins. In addition, location analysis was also conducted to determine the current problems in accessing the waste-bins. With these analysis, it had been found that, additional 10 new waste-bins are needed in Jerlun, Kedah to make waste-bins more accessible to the residents.

NOVELTY

This study had implemented GIS-AHP in decision-analysis to find the new waste-bins. AHP uses experts' choice for weighing the criteria while GIS uses the weightage in analysing the site suitability for new waste-bins. The processes had been automated with modelbuilder to avoid human errors in the data processing and analysis.

IIIDBEE X 2023

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International Invention, Innovation & Design Exposition for Built Environment and Engineering 2023



College of Built Environment (CBE)

TULEN : MAH MERI CULTURAL CENTRE

+ INTRODUCTION

Malaysia is one of the countries that is not exempt from being hit hard by the Covid-19 pandemic. The economy is almost paralyzed, people are losing their jobs, being locked up and also under strict control is a challenge that all Malaysians have to go through. After almost 2 years of gloom, on April 1, 2022, the government has announced that the country has now moved to an endemic phase that encompasses relaxation from various aspects. Therefore, a project has been developed to revive the economy through the culture and uniqueness of the Mah Meri people. This project is also in line with the implementation of the Malaysian Agenda which is the 12th RMK in ensuring that the economy of each race can be improved after the post-pandemic.

"Provide the space to further evolving the uniqueness of the Mah Meri cultural art and product created for experience and business."

'This Mah Meri means Forest People or in their terms it is called 'Pesisik' or 'Sea People'. There are still many Malaysians who are not aware of the existence of the Mah Meri natives. They are believed to have migrated from the islands south of Johor to the coast of Selangor (Pulau Carey) to escape from pirates and robbers. The physical characteristics of the Senoi people are said to be taller and thinner than the Negritos and their skin color is lighter with wavy hair and a wider forehead while having brown eyes and high-jumping gait like the Proto-Malays and Negritos.'

+ ISSUE / PROBLEM STATEMENT

Lack of awareness and knowledge

Indigenous people who are still left behind in various characteristics in entering the modern era which is more digital in promoting something.

Not confident to try to enter this field again after facing a pandemic.



The shortage of culturally skilled workers comprising artists, musicians, dancers and sculptors was due to the pandemic that struck.

The culture and uniqueness of the indigenous people is becoming extinct and also not preserved.

+ OBJECTIVE

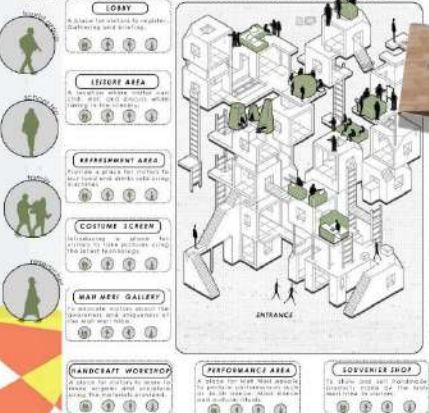
Re-identifying the cultural values of the indigenous people at the same time can help generate their income after going through this pandemic phase.

The uniqueness as found in the culture of the indigenous people in the country which should be marketed in terms of economic and tourism improvement.

Apart from being able to generate new sources of income, they also have the opportunity to highlight talents, culture, uniqueness and advantages that other communities do not have.

+ COMMERCIALIZATION

The RESSURECTION of the Mah Meri people's privileges is the project's top priority. Commercial success and wise planning will be able to improve the Mah Meri indigenous people's economy and raise national income. This project can be managed by the Orang Asli Department (JAKOA) or Mah Meri Cultural Village based on Carey Island.



+ REFERENCE

Isu-isu from Keratan Akbar Malaysia Kini
Article from Slingers
Paster RMK: 12 2022
Sumber Ilmiah dan Pemerintahan di Lapangan
Case Study Primaries

+ METHODOLOGY



+ PRECEDENT STUDIES



+ FINDING



+ NOVELTY

This project is one of the best platforms to highlight the cultural uniqueness of the Mah Meri Indigenous People in this country. The local public and international travelers can learn about long-standing culture of traditions. It is wise to choose a location in the nation's capital because it provides the spotlitation options for visitors to reach this centre. The situation can be made more interesting by adding elements like workshops, performances, cultural exhibitions, and the sale of authentic crafts made by the Mah Meri locals.

+ CONCLUSION

If a privilege that exists in this nation is not dignified and raised, much like the uniqueness of the indigenous people natives. It would be a big loss. To ensure that this culture may be preserved indefinitely, concern from all stakeholders is required, especially from the government. Facilities that promote social growth as well as commercial placement and investment are very much appreciated. Since this indigenous population has been there for more than 40 000 years, it must have its own unique culture and customs.

PREPARE BY : MOHAMAD RIDHWAN BIN MOHAMAD ZAMRI

PUAN NABILAH ARIS WHITE
PUAN ZARINA ZAHAR
PUAN HAZIRAH HASRI

(WITH CAMPUS PUNCAK ALAN - CENTRE OF STUDIES IN INTERIOR ARCHITECTURE)

Interactive Cartographic Visualization for Mapping Residential Property Overhang in Klang Valley, Malaysia 2021

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



Issue

Bernama and EdgeProp news have reported that the flaw in the real estate market is due to a lack of information. Masliza (2020) has suggested establishing real estate big data real-time visualisation. Hence, all housing-related information is reliable, up-to-date, and coordinated with the growing country. This issue can be solved by modelling in ways that communicate information effectively. This is where the cartography discipline will take place as the solution to enhance the delivery of information.

GIS Dashboard System

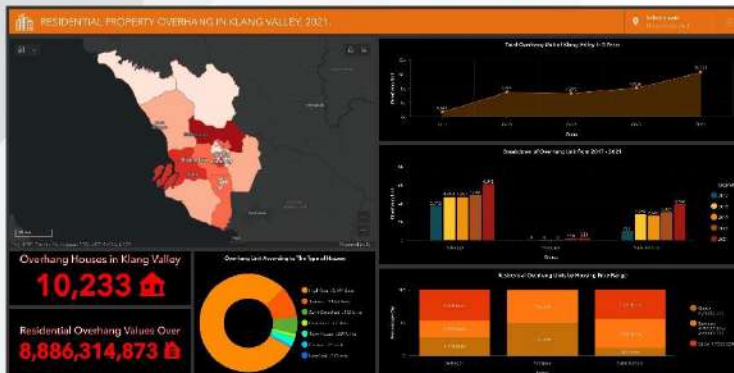
Dashboard is a common visual information display used by individuals to swiftly monitor real-time situations that necessitate a fast response in order to fulfil a certain job [Sarikaya et al, 2018].

A GIS dashboard system enables users to convey information by presenting location-based analytics using intuitive and interactive data visualizations on a single screen

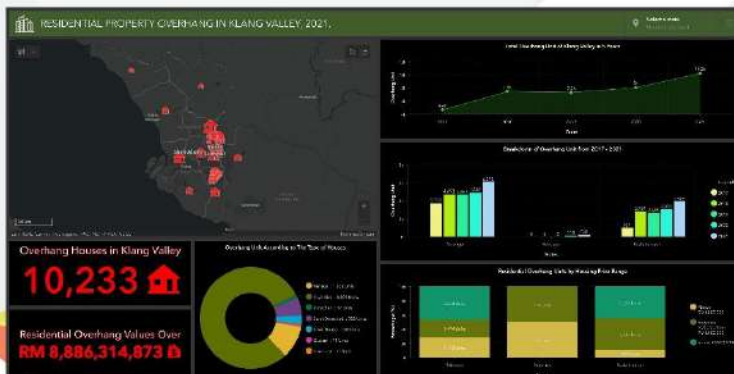
The interactions on dashboards, such as selecting, filtering, searching, organising, and dropping down, would further empower users to view and explore data efficiently [Zuo et al, 2020].



Dashboard 1 – Dot-Density Map



Dashboard 2 – Choropleth Map



Dashboard 3 – Graduated Symbol Map

Dashboard Interface Panels

The interface of these dashboards consists of seven panels:

1. The Title Panel
2. The Spatial Panel
3. Indicator 1
4. Indicator 2
5. The Pie Chart
6. The Line Chart
7. The Bar Chart
8. The Stacked Bar Chart

Dashboard Functionality

Basic functions enable users to explore and interact with the data, including some essential actions like panning, zooming, map extent, data visualisation such as charts, and so on.

Composite functions are composed of several basic functions and mainly help with user interaction and experience, which is the key feature of our dashboard. The main composite functions in the dashboard are Selecting and Location Synchronization.

- Easy to Understand - allow retrieval of on-demand data
- Interactive - auto zoom and flash the corresponding area
- At-a-glance representation – Linked indicators with visualization panels.
- Popup information – overhang district name, overhang unit and overhang percentage.
- Categories selector - indicators and the pie chart flash at once
- Configurable - zoomed in or zoomed out the map, map view reset, dashboard view reset by clicking on one function.

Cartographic Visualization

Three types of maps are to be evaluated to see the potential impact of those maps on users.

DOT-DENSITY MAP

Employs the visual variable composite numerousness, which combines arrangement and size to convey a sense of sparseness or dense grouping.

CHOROPLETH MAP

Visualise the quantitative data that is aggregated to areas which in this study is the number of overhang units.

GRADUATED SYMBOL MAP

Consists of symbols in which the graphic variable of size is used to depict data magnitude.

Prepared By:

Nurul Ain Nasuha Binti Jupery, Muhammad Haqim Bin Zulkifli, Sr Dr Mohd Shahmy Mohd Said

Recognition

National Geomatics/Geoinformatics Student Innovation Competition 2022
Gold Award And Third Place - System Innovation/Gadget Category

QUALITY ASSESSMENT OF GROUND PENETRATING RADAR (GPR) DATASET WITH VARIOUS SOIL-BASED CONDITIONS

IIIDBEE 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



INTRODUCTION

A vast sophisticated network of cables and pipelines runs beneath the surface of metropolitan regions and large cities all over the world, providing crucial utility services that support contemporary civilised life. A surge in demand for utility services in the city led to the burying of a large numbers of utility pipelines, including telecommunication lines, fibre optics, water and gas pipelines, and electrical cables. Many subterranean utilities have reached the end of their useful lives, necessitating their replacement or maintenance. As a result of urbanisation and the evolution of human living styles, such as enhanced communication technology, new utilities are being installed. Engineers, surveyors, utility owners, or contractors will require accurate data and information on these utilities as a reference for excavation work (Desai L. et al., 2016).

Underground utility detection is defined as the process of identifying, separating, and labelling public and private subsurface utilities that are buried beneath the ground surface such as electricity distribution cables, communication lines and pipelines. (Metwaly M., 2015). In the radargram, a cylindrical object like pipelines, would show as black and white streaks in the shape of a hyperbola (Jaw S. & Hashim M., 2013). This study is to assess the quality of radargram images for different soil types with different soil characteristics: fine sand, topsoil and silt soil.

ISSUES/ PROBLEM STATEMENT

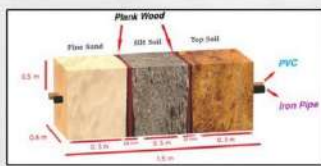
GPR is the best approach for detecting and identifying underground utilities. This technology can precisely find a wide range of underground services, including both metallic and non-metallic pipelines and wires (Mwshab et al., 20). It analyses the ground by emitting a signal from an antenna at various frequencies of electromagnetic (EM) pulses. A radar trace is made up of these reflected signals. However, undesirable echoes created by heterogeneous substances such as sand, clay, rock, gravel, and utilities are always present in these reflected signals.

The composition of the soil on site will have a direct effect on how accurate the GPR reading will be. If high concentrations of minerals, salts, etc. exist, the GPR can be obstructed. This is because, for a good transmission to take place, magnetic and electrical waves must be unhindered as they interact with one another.

OBJECTIVES

- To interpret the resolution of radargram images on different soil types due to different soil characteristics
- To determine the characteristic of different Soil-based condition with with high frequency scanned data (16Hz)

METHODOLOGY



FINDINGS

To reveal which varieties of soil and pipe material are easier and more accurate to identify using 16Hz GPR.

Radargram Images	Radargram	Texture
1) Fine Sand 	The appearance of the parabolic Iron & PVC pipe is clear and easy to interpret after processing	The texture for the fine sand with small particle surface and has a bit void
2) Top Soil 	The appearance parabolic of the pipe is clear for Iron Pipe and PVC pipe and easy to interpret after processing	The texture for the topsoil is finer than the surrounding texture compared with silt soil and fine sand
3) Silt Soil 	The Iron and PVC Pipe parabolic more upward compared to others and there is void in the middle of image	The texture for the Silt Soil has the highest rough surface compared with fine sand and topsoil

NOVELTY

The expected outcome from this study is hoping that it opens many eyes about the difference in soil characteristics will affect the quality radargram images. Accurate positioning method with using Ground Penetrating Radar (GPR) is needed in which the principle on types of different soil-based characteristics propose in this study is becomes relevant in ensuring reliability and high quality data in underground utility determination for mapping purpose, not only for surveyors from land survey industries (private firm), but also for Government agency. This is aligned with Goal number 9 in Sustainable Development Goals (SDG) which give benefit for industry, innovation and infrastructure.

The research study as proposed shows a big potential to assist many different agencies from private firm and Government department that related to underground utility survey and mapping.

CONCLUSION

Firstly, the radargram obtained shows different texture that giving different presentation for each soil on the radargram images. It can be concluded that each type of soil has its own structure that may impacts on how the radargram appears.

Secondly, the different types of underground utilities (Iron Pipe and PVC Pipe) also may influence in term of the tendency of detection by GPR. Iron Pipe is more accurate compared to PVC in term of accuracy with RMSE statistical model. Furthermore, based on the soil properties structures (texture, moisture, and electrical conductivity), fine sand the is least suitable for soil in detection compared to topsoil and silt soil.

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PREPARED BY:
MUHAMMAD AKMAL KHAIRODDIN ABU HASSAN
SR MOHAMAD HEZRI RAZALI
SR AHMAD NORHISYAM IDRIS
M. HAZIQ MAHADZIR

INTRODUCTION

The idea for this project is to create a map and web map that describe the top cafes that have been reviewed by customers on many websites can be found and we classified them by their rating so the users can use the map as a reference to choose which cafes are suitable to their taste the most. The project will create a map that will show the best cafes in Petaling.

They need a reference to ensure that they have made a correct decision and on the website, they only review the cafes without providing the location of those cafes visually unlike maps that show the location of the cafes on a geographical map.

ISSUES/ PROBLEM STATEMENT

There is a map of the best restaurants in the United States. There is no such map in Malaysia. So we got the idea to make a map that shows the top cafes in the Petaling district based on customer reviews from websites on the internet. By making this, it could ease coffee lovers and also other users find the best cafes for them to visit.

OBJECTIVES

1. To create a cartographic map and web map system of the best cafes in Petaling.
2. To let everyone know about those cafes and use them as references during food hunting.
3. To promote the new and unpopular cafes with the best services.
4. To share the information and the review of those cafes with everyone.

METHODOLOGY

1. Data analysis.
2. Create a base map in ArcMap.
3. Thematic Map editing in Adobe Illustrator (AI).
4. Preparing brochures in Canva and Web System (Wix/ArcGIS Online).
5. Inserting the Thematic Map in the brochure and web system.

FINDINGS

1. Top café at Petaling Jaya.
2. Products produced by the cafes.
3. The location of the cafes.
4. The esthetic design of the café's building.

NOVELTY

1. Promoting the best cafes in Petaling to the public.
2. The system helps to introduce more products produced by these cafes for cafes that do not have their own website.

CONCLUSION

This project shows the best cafes in Petaling Jaya that can be used by the customers as references for them to try those cafes. It has included important information about those cafes such as location, signature food, and trusted comments overall. The cafes were also rated from 4 to 5, allowing guests to make an informed decision based on their services and level of comfort.

COMMERCIALIZATION

This project can be used by all users whether they are tourists or locals as our project is mainly to help in promoting the best cafes in Petaling. Not just that, this map also can be used by Tourism Malaysia which could help in improving the tourism of Malaysia in terms of economy and politics.



SOUND PRESSURE LEVEL IN A LECTURE HALL DURING OCCUPIED AND UNOCCUPIED CONDITIONS

FINDINGS

INTRODUCTION

Good acoustic levels in lecture halls can improve students' learning performance. According to a previous study, long-term and frequent noise exposure might harm students' psychological health and impair their willingness to learn (Buchari, 2017). This is because the sound pressure level can greatly affect the learning input, understanding, and overall experience of the student when receiving information and knowledge in certain learning spaces. Excessive noise can cause impatience, difficulty to concentrate, decreased productivity, frustration, mistakes in judgement, and distraction (Petronc, 2019). The mechanics of noise transmission change throughout a large frequency range and its prediction may be assessed using several approaches depending on the frequency range (Melillo, 2019). This study aims to study whether sound pressure levels comply with the regulations.

PROBLEM STATEMENT

Poor sound pressure level affecting student learning experience.

Poor acoustic conditions in a learning environment can affect the learning experience of students. The findings of a previous study demonstrated that children with additional learning needs, such as hearing impairment or speaking English as a second language, were significantly more influenced by poor school acoustics than students who did not have additional learning needs (Roskams, 2019). According to regulations, noise levels in schools must be less than 40 decibels (dB) (Montiel, 2019).

Acoustic condition in indoor environments.

More than just aesthetics must be considered while designing a space (Siregar, 2022). The size and shape of the classroom, the location, the surface treatment which can affect the sound absorption, the construction of the ceiling, walls, and floor, the total, type, and placement of the sound source, and the strength of the sound created are all aspects to consider.

OBJECTIVES

The objective of this study are stated as below:

1. To measure the sound pressure level in a lecture hall.
2. To compare the findings obtained with other studies carried out in other lecture halls.

METHODOLOGY

A sound pressure level meter was used to measure the sound pressure levels in a lecture hall. The meter has a measuring range of 35dB-100dB, and an accuracy of ± 3.5 dB at 94dB sound level, 1KHz sine wave. The meter was positioned at 1.5 meter from the ground. The measurement was taken in 5 positions throughout the lecture hall, the front, rear, left, right, and centre. 5 readings have been taken on each of the 5 position to know the mean, min, and max sound level. The measurement has been taken in two conditions, occupied and unoccupied.

Empty lecture hall								
Point	Reading 1	Reading 2	Reading 3	Reading 4	Reading 5	Mean sound level	Min sound level	Max sound level
Point A	45.4 dB	45.6 dB	44.0 dB	43.9 dB	44.7 dB	44.72 dB	43.9 dB	45.6 dB
Point B	41.5 dB	42.2 dB	42.7 dB	41.1 dB	42.2 dB	41.94 dB	41.1 dB	42.7 dB
Point C	34.6 dB	35.7 dB	37.8 dB	33.1 dB	35.6 dB	35.36 dB	33.1 dB	37.8 dB
Point D	39.9 dB	36.6 dB	40.0 dB	40.2 dB	37.4 dB	38.82 dB	36.6 dB	40.2 dB
Point E	43.4 dB	47.0 dB	47.5 dB	46.0 dB	48.2 dB	46.42 dB	43.4 dB	48.2 dB
Mean sound level			Min sound level			Max sound level		
41.452 dB			33.1 dB			48.2 dB		

Table 1: Measured sound pressure levels at 5 different points in empty lecture hall

Lecture hall with occupants								
Point	Reading 1	Reading 2	Reading 3	Reading 4	Reading 5	Mean sound level	Min sound level	Max sound level
Point A	76.5 dB	79.3 dB	80.2 dB	78.4 dB	82.3 dB	79.34 dB	76.5 dB	82.3 dB
Point B	83.0 dB	85.3 dB	80.1 dB	87.3 dB	79.4 dB	83.02 dB	79.4 dB	87.3 dB
Point C	81.0 dB	71.4 dB	73.5 dB	76.8 dB	77.3 dB	76.00 dB	71.4 dB	81.0 dB
Point D	83.0 dB	79.3 dB	80.1 dB	78.6 dB	84.7 dB	81.14 dB	78.6 dB	84.7 dB
Point E	69.1 dB	72.4 dB	68.2 dB	74.3 dB	70.1 dB	70.82 dB	68.2 dB	74.3 dB
Mean sound level			Min sound level			Max sound level		
78.064 dB			68.2 dB			87.3 dB		

Table 2: Measured sound pressure levels at 5 different points in occupied lecture hall

Table 1 shows the readings in decibels of the sound pressure level in an unoccupied lecture hall. The maximum allowed background noise in a lecture hall is between 30-35 dB (DIN 18041). Besides, it is preferable to have the decibel readings when to be between 65-75 dB (Eggenschwiler, 2005) when hearing lessons. As shown in Table 2, the mean reading of the classroom with occupants is 78.1 dB, while the highest recorded reading was 87.3 dB. By comparing the mean values for both states, a difference of 36.6 dB was found. It should be noted that only selected spots in the lecture hall were selected for sound pressure level measurements, and the acoustic perceptions of the occupants are not included in this study.

NOVELTY

As lecture halls are essential educational facilities in higher educational institutes, there is a need to ensure that the acoustic conditions are acceptable for the users. This study highlights the sound pressure levels for both occupied and unoccupied states in a lecture hall, and the findings can be referred to for improvement in acoustic performance.

CONCLUSION

The average sound pressure level when unoccupied is 45.452 dB and the occupied average reading is 78.064 dB which is above the range 65-75 dB. Based on the findings obtained, the sound pressure levels at certain locations need further assessment. In future work, more measuring points for sound pressure level measurements will be identified the acoustic perception of the occupants will be gathered to make the findings more inclusive.

COMMERCIALIZATION

The findings of this study can be used as references in future studies on the sound pressure levels in a lecture hall during occupied and unoccupied states.

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THE PHENOMENA BEHIND ASEAN'S HIGH SUICIDE RATE

IIDBEE XX 2023

20 JANUARY 2023

International Invention, Innovation & Design Exposition
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Suicides in Southeast Asia on the rise

- The World Health Organisation (WHO) reported that over 800,000 people commit suicide every year.
- For every suicide there are many more who attempt suicide as well. A life lost to suicide is always tragic and affects everyone in the community.

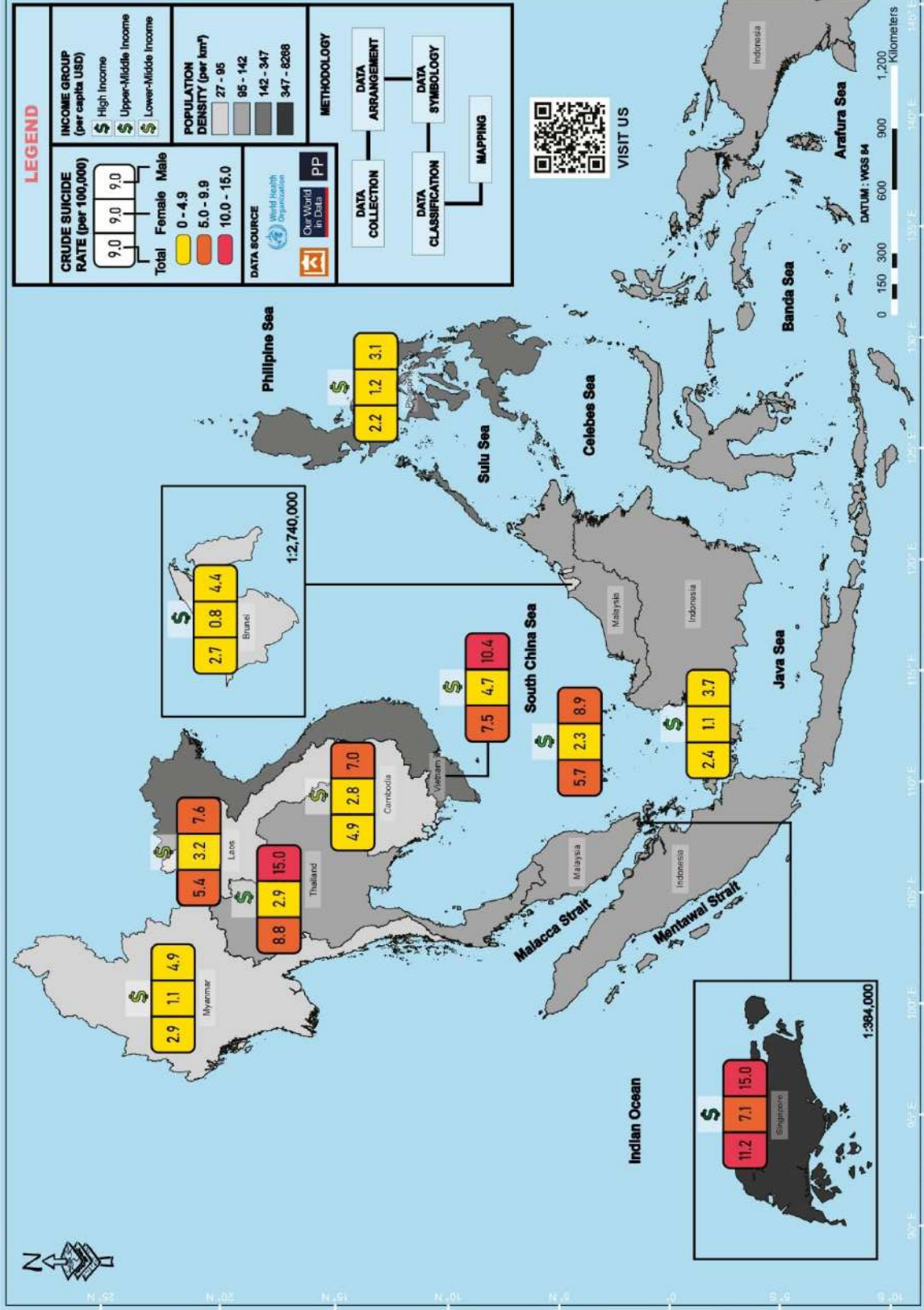
Reasons for Suicide

- Pre-existing mental health conditions and substance abuse.
- Marital problems, financial problems and sexual harassment.
- Anxiety and depression caused by low self-esteem, bullying, a dysfunctional family, a change in environment, pressures of conforming to society or a body-image and the high expectations of parents in academics.
- Poverty and a lack of education.
- Highest in ASEAN's low to middle income countries due to poor access to appropriate care, a large treatment gap, a lack of appropriate services and facilities and stigma and discrimination.

Income Group (per capita in USD) :

Lower-Middle Income - 1,046 - 4,095
 Upper-Middle Income - 4,096 - 12,695
 High Income - > 12,695

Key Map



PREPARED BY:

SYAKIR ZUFAIRY SHAHARIM

SITI A'ISYAH ROFINY

NURAINA FATIN JOHARI

Ts Gs DR ABDUL RAUF ABDUL RASAM

Sr DR ROSLINA IDRIS

ACID RAIN AND NO₂ CONCENTRATION IN PENINSULAR MALAYSIA 2020

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition
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INTRODUCTION

- Acid rain is an environmental phenomena that can exists due to the rapid modernization and increase of development activities without the consideration of environmental aspects.
- Acid rain is closely related to air quality. Deterioration of air quality leads to an increase of acidity in rainwater droplets. Anthropogenic activities, carbon burning in energy sector and increasing number of vehicles using petrol are the main reasons that can escalates the occurrence of acid rain
- Acid rain is studied based on the pH value (Hydrogen Potential), which is a measurement method based on a pH indicator or pH meter device. According Main (2003) and (Wonderfraw, 2014), in the research stated that the acid rain has pH value less than 5.6.

PROBLEM STATEMENT

- Since 1990, acid rain has been recorded in Malaysia (Main,2003). The most significant concentration of acid rain is at the west coast of Peninsular Malaysia which then extends further towards the south. The pH reading value between pH 4.4 to pH 4.8 which is the highest pH recorded in Malaysia occurred in the Sitiawan area, Perak (MHC Omar et al 2021)
- It is a fact that the existence of acid rain is also caused by emissions release of NO₂ and SO₂ (MMS Report 1988), but studies related to acid rain in Malaysia which are decreasing (MHC Omar et al 2021) and there is no study in Malaysia that can relate the occurrence of acid rain and NO₂ pollutant concentration

OBJECTIVES

- To correlate graphically the occurrences of acid rain and NO₂ pollutant sources in Malaysia
- To map the areas that receive the highest acid rain for Peninsular Malaysia.

METHODOLOGY



FINDINGS

- NO₂ hotspot from the satellite able to identified that Sitiawan Perak as one of the highest NO₂ is also having the highest pH recorded in for the same time frame.
- Although pH ground reading identify Klang Valley as having moderate reading of acid rain than Setiawan but the NO₂ reading is found to be higher or equal as in Setiawan.

CONCLUSION

- The study manage to show that satellite data is able to identify NO₂ emission sources which relates well with acid rain occurrences especially over western Peninsular Malaysia.

NOVELTY

- Providing hotspot of NO₂ and acid rain map used as a comparison of the relationship between acid rain and NO₂ emissions

COMMERCIALIZATION

- This map can be use by The Department of Environment (DOE) of Malaysia awareness of air pollution and acid rain phenomenon in Malaysia .

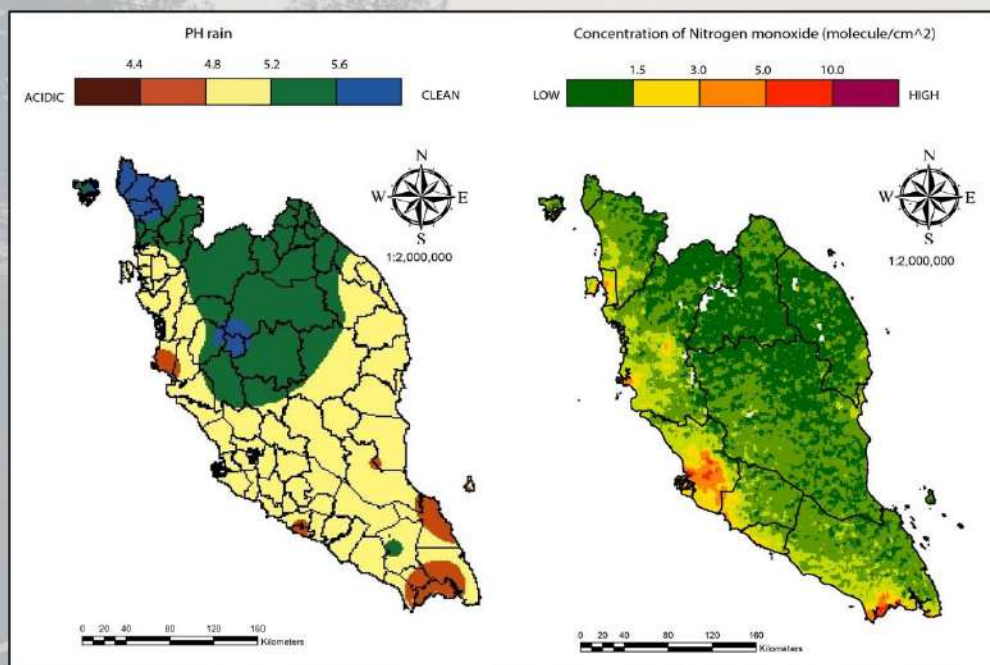
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FULL SCALE MAP



ACID RAIN AND NO₂ CONCENTRATION IN PENINSULAR MALAYSIA 2020



Coal Emission gases

Parameter	Coal emission factor (lb/ton)
SO ₂	38.5
NO _x	22
CO	0.5

Sources of Acid Rain

Volatile Organic Compound (VOC)	Organic that exists in the form of gas, solid or liquid resulting from the emission of vehicle smoke and industrial activities.
Karbon Monoxide (CO)	Type of gas that is colorless and odorless to humans and is toxic.
Karbon Dioxide (CO ₂)	Colorless, odorless and tasteless gas.
Gas Sulphur Dioxide (SO ₂)	Colorless gas with a strong odor.
Nitrogen Dioxide (NO ₂)	Gas that oxidizes in the atmosphere and is very dangerous to the physical environment and humans

Analysis:

- The density NO₂ does not provide the greatest impact on the pH of the acid rain.
- The hotspot of acid rain mostly located at the coal power plant area.

Communities' Resilience: Lesson-learned from 2021 Selangor Flash Floods

IIIDBEE X 2023
20 JANUARY 2023

International Invention, Innovation & Design Exposition for Built Environment and Engineering 2023



UNIVERSITI TEKNOLOGI MARA

College of Built Environment (CBE)

INTRODUCTION

Flash floods can cause significant loss and damages to communities. Community resilience defined by the ability to anticipate and prepare for disaster via awareness, disaster preparation investment, and understanding disaster risks. This involves investing in early warning systems, evacuation plans and community awareness program.



Padang Jawa communities evacuated after water level reach 1.2 meters, on 20 December 2021.

Source: Utusan Malaysia



Aerial View of Inundated area in Taman Sri Muda, Shah Alam, on 21 December 2021.

Source: Selangor Journal, Reuters



Cars stranded at the submerged main road entering Taman Sri Muda, on 21 December 2021.

Source: The Star

PROBLEM STATEMENT

“ In late 2021, Selangor, Malaysia was hit by a flash flood that affected 100,000 families and estimated RM6.5 billion losses and damages. ”

Selangor Journal, 2022

OBJECTIVES

To explore resilience strategies against flash flood among communities in Selangor

METHODOLOGY

- Questionnaire Survey
- 45 respondents in communities in Padang Jawa & Sri Muda, Shah Alam
- Path & Measurement Modeling Analysis of PLS-SEM

FINDINGS

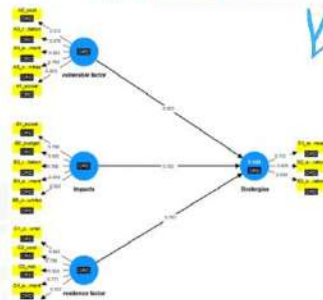
Resilience strategies:

- simulation
- early warning system (EWS)
- disaster awareness & preparedness activity

NOVELTY

Innovative idea on new approaches for building resilience in communities at risk - capacity building through participatory disaster risk assessment (PDRA) (i.e., EWS, simulation, preparedness activities)

ANALYSIS



CONCLUSION

By understanding the challenges faced by the affected communities and the strategies they use to overcome them, it can help to **minimize** disruption and **reduce** on long-term adverse impacts onto community.

CLOUD SEEDING POTENTIAL AREA FROM LOW-LEVEL CLOUD AND AEROSOLS OF SATELLITE REMOTE SENSING

IIIDBEE
20 JANUARY 2023

2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



INTRODUCTION

The global drought phenomenon has become a serious issue affecting the availability of water supply for domestic use, agriculture, fishing, and industrial purposes. Cloud seeding operation is one of the alternatives carried out to increase the amount of precipitation that falls from clouds. In Malaysia, the ice crystal method will ignite an ice crystal flare in the middle of the air, thus causing water to gather at a certain spot and form clouds. However, the success rate of cloud seeding in Malaysia is only between 57 to 65 percent. The low-level cloud and aerosols are the main contributing factors in cloud seeding operations. With satellite remote sensing (RS) technology, the parameter can be detected and analysed. In this study, MODIS RS satellite images were used to determine the potential area for cloud seeding operation based on the low-level cloud distribution and the concentration of aerosol optical depth (AOD) in Peninsular Malaysia for April 2019.

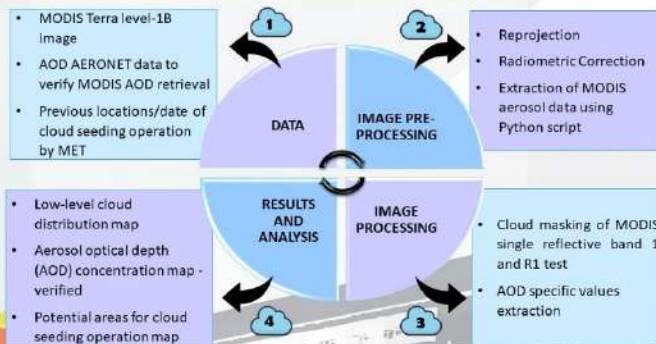
ISSUES/ PROBLEM STATEMENT

1. Hygroscopic or Dry Seeding is one of the cloud seeding method carried out in Malaysia where salts released through flares or explosives in the lower portions of clouds. (MET, 2019)
2. By serving as cloud condensation nuclei, aerosols can influence cloud characteristics, which might impact precipitation efficiency. (Berhane and Bu 2021).
3. It is important to thoroughly review locations for conducting precipitation enhancement experiments and to determine whether clouds suitable for seeding occur. (Kim et al. 2020)

OBJECTIVES

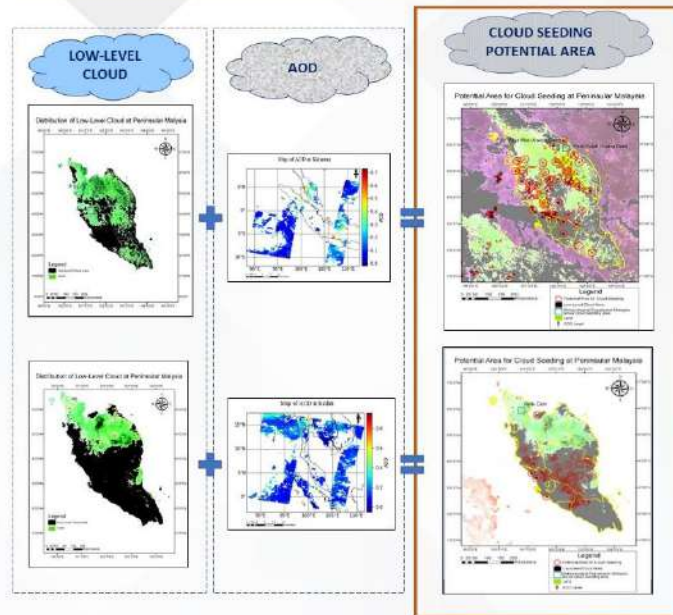
1. To identify the low-level cloud distribution
2. To identify the concentration of aerosol optical depth over study area.
3. To determine the potential areas for cloud seeding operation based on the distribution of low-level cloud and concentration the aerosols.

METHODOLOGY



***AERONET - (AERosol RObotic NETwork) ground-based remote sensing aerosol networks established by NASA and PHOTONS

FINDINGS



The superimposed between the low-level cloud distribution and AOD concentration were also found within the area of the previous cloud seeding operation which was located in Kedah and Kelantan

AREA	DATE OF MODIS DATA ACQUISITION	NO OF POTENTIAL CLOUD SEEDING AREA	NO OF POTENTIAL AREA COINCIDE WITH THE PREVIOUS CLOUD SEEDING AREA BY MET
KELANTAN	16 APRIL 2019	37	1 (Bukit Kwong Dam)
KEDAH	26 APRIL 2019	32	1 (Beris Dam)

NOVELTY

A novel technique for cloud seeding area determination whereby the potential area can be determined and visualised based on the necessary factors and parameters for rain formation in the atmosphere using the technology of satellite remote sensing.

CONCLUSION

The study has proven the cloud-seeding potential areas from the distribution of low-level cloud and AOD concentration of MODIS satellite RS images located within the previous cloud-seeding areas as operated by the Malaysian Meteorological Department (MET). In addition, other potential areas also can be identified and determined. Thus, this technique can be utilized to assist MET or other related agencies to improve the success of cloud seeding operations.

PREPARED BY:

SITI NABILA BINTI SHAMSUL ANUAR & SR. DR. ROHAYU BINTI HARON NARASHID
Surveying Science and Geomatics Studies, College of Built Environment,
Universiti Teknologi MARA, Perlis Branch, Arau Campus, Malaysia.

Mangrove Normalized Difference Vegetation Index (NDVI) Method For Mapping Mangrove Forest In Kilim Geoforest Park Langkawi

INTRODUCTION

- Mangrove forests are present in the intertidal zone, located within small groups of trees and shrubs in the harsh interface between sea and land.
- In Malaysia, the overall mangrove distribution was recorded as only 18 in the peninsular region.
- From Langkawi's total area of 47 837 ha, Kilim's mangrove forest occupies 8 261 ha.

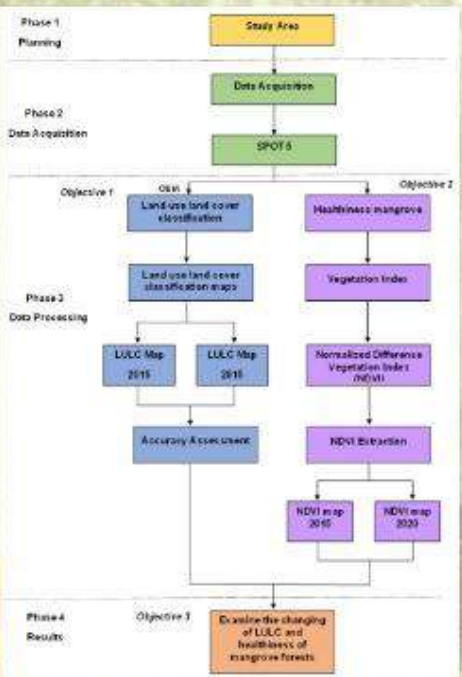
PROBLEM STATEMENT

- Due to the land use land cover (factor, the surrounding mangrove is in risk A boat carrying tourist at a high speed is to fault for causing the water in spread the area of the mangrove forest.
- Mangrove forest habitats must therefore always be protected due to their enormous impact on ecological, biophysical, and socioeconomic factors.

OBJECTIVES

- To classify the land use land cover at Kilim Geoforest Park, Langkawi.
- To determine the healthiness of mangrove forest using vegetation indices.
- To examine the changing of land use land cover and healthiness of mangrove forests using matrix method.

METHODOLOGY



NOVELTY

- To produce a land use and land cover map and a mangrove tree health map in Langkawi.
- To find out the threat of mangrove trees in Geoforest Park Langkawi.

CONCLUSION

- LULC powerful tool to assess the amount of loss and gain, characteristics, and pattern of land cover of a region over time.
- NDVI is classified to have high accuracy in mapping mangrove in an area.

RECOGNITIONS

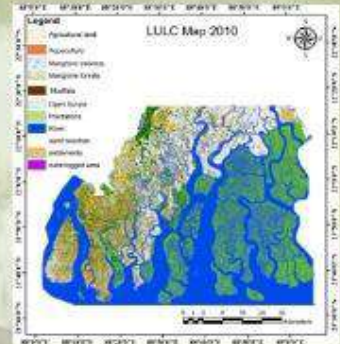
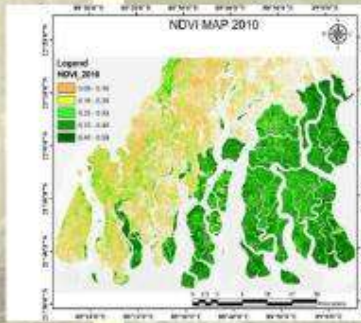
Faruque, M. J., Hasan, M. Y., Islam, K. Z., Young, B., Ahmed, M. T., Monir, M. U., Shevon, S. M., Kakon, J. F., & Kundu, P. (2022). Monitoring of land use and land cover changes by using remote sensing and GIS techniques at human induced mangrove forests areas in Bangladesh. *Remote Sensing Applications: Society and Environment*, 25. <https://doi.org/10.1016/j.rsae.2022.100699>

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FINDINGS

Criteria	C	D	NDVI
Good	Dense ≥ 75	>1500	$0,43 \leq NDVI \leq 1,00$
	Moderate $\geq 50 - < 75$	$\geq 1000 - < 1500$	$0,33 \leq NDVI \leq 0,42$
Broken	Rare < 50	<1000	$-1,0 \leq NDVI \leq 0,32$

Notes: C = Cover (%), D = Density (Tree/ha), NDVI = Normalized Difference vegetation Index



PREPARED BY:
NUR HAJARATUN FATIN BINTI MOHAMAD NOR
AHMAD KAMIL BIN MAT NAWI
SR GS DR FAZLY AMRI BIN MOHD

COMMERCIALIZATION

Multi-criteria evaluation approach to coastal vulnerability index development in Port Klang, Selangor areas using Analytic Hierarchy Process (AHP).

Introduction

- The coastline of Malaysia is vulnerable to erosion because it is continually subjected to harm by the water, which is one of the factors that leads to shoreline erosion.
- Coastal vulnerability index is a commonly used tool to chart the sustainability of the coastal area.
- As part of the data analysis procedure, the coastal vulnerability measures will be analysed using the analytical hierarchy approach. Utilizing AHP will simplify the ranking method for the CVI

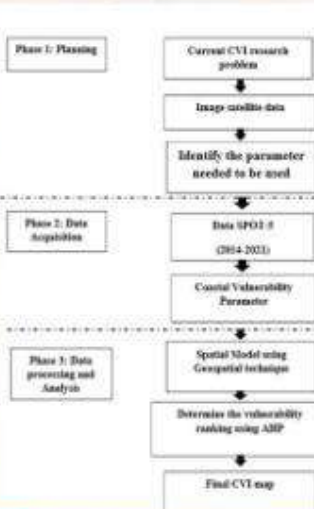
PROBLEM STATEMENT

- As a direct result of global warming, sea levels have been steadily increasing. Even a little increase in sea level might have major effects on the operation of natural coastal systems.
- The parameters of the coastal vulnerability index (CVI) vary depending on the nation.
- A variety of techniques are utilised to evaluate the CVI.

OBJECTIVES

- To identify the parameter used to assessing the coastal vulnerability along Port Klang, Selangor.
- To create spatial modeling of CVI using Geospatial technique of Port Klang, Selangor.
- To determine the ranking of coastal vulnerability using Analytical Hierarchy Process (AHP).

METHODOLOGY



NOVELTY

- Produce parameter map along Port Klang shoreline with vulnerability ranking.

CONCLUSION

- Index measures were utilised to analyse geomorphology, erosion rate, topography (elevation), coastal slope, geology, and mean tidal range. A value from a set of six parameters was needed to create a simulated vulnerability map of Port Klang.
- Six parameter maps exhibit high or low vulnerability in modelled CVI maps. These studies calculated Port Klang shoreline vulnerability using modelled CVI maps.

FINDINGS



Values of coastal vulnerability index for vulnerability levels

Vulnerability class	CVI	length (km) of coastal sectors	CVI	length (km) of coastal sectors
Very high	248-453.6	3.67-4.25	13.5	
High	25.7-240.18	2.89-3.06	13	
Moderate	18.1-25.7	2.89-3.22	20	
Low	12.1-18.1	3.54-2.80	36.5	
Very low	3.7-12.1	1.83	4.89-2.52	39

RECOGNITIONS

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COMMERCIALIZATION



Geo i-Store: THE ENHANCEMENT FOR GEOMATICS INSTRUMENTS APPLICATION

INTRODUCTION

A mobile artifact not only overturns the mobile industry's traditional business model but also creates new avenues of mobile market opportunities. But Mobile Application uses, and development is a unique and rapidly growing sector. This project aims to develop a mobile app that can be accessed by Geomatics students and staff in UiTM Perlis for equipment management. The objectives are to improve user accessibility and time availability of the surveying equipment and to encourage the student to practice a paperless system. In this project, the methodology started with planning and observation, data collection, designing and coding, and lastly results and analysis. Through this project, this mobile app can help the student and staff during the process of borrowing and returning the surveying equipment. Therefore, it can increase awareness regarding the importance of a paperless system among the student of geomatics UiTM Perlis.

ISSUES/ PROBLEM STATEMENT

1. Surveying instrument and equipment management is part of daily management of surveying and mapping unit, and it is closely related to production (Gou, Fan, & Xiang, 2012).
2. Effective management of the instrument and equipment is beneficial to maximize the efficiency (Gou, Fan, & Xiang, 2012).
3. Managing and sharing the latest customer data in multiple places like spreadsheets, emails, and other databases leads to a lot of confusion, stress, and wasted time (Kintone, 2022).

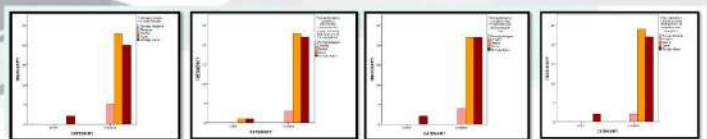
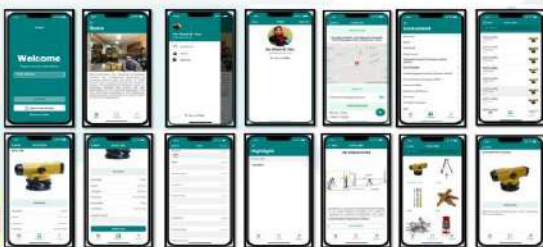
OBJECTIVES

1. To design an app for user accessibility of the surveying equipment
2. To evaluate the reliability of the develop mobile application

METHODOLOGY



FINDINGS



User's satisfactory using the i-Store app

NOVELTY

Provide the accessible equipment management system by using the mobile application technology

CONCLUSION

For the overall conclusion, this mobile application called Geo i-Store was successfully developed in the given period and all the objectives for this research had been achieved. This mobile application could help the users to book the surveying instrument and equipment directly and save time. Last but not least, it is a wish that Geo i-Store application could be one of the favorite management applications in the future

COMMERCIALIZATION

1. Achieve the target for paperless system
2. Reduced the duration taken for the process of borrowing and returning the instrument.
3. Can be commercialize to related department for instrument and equipment management.

RECOGNITIONS

- GOLD AWARD | 2022**
Category: System Innovation/Gadget
National Geomatic/Geoinformatic Student Innovation Competition 2022 (10th NGSIC)
- BRONZE AWARD | 2021**
Geomatic Research Innovation Competition 2022 (GRIC2022)

CONFERENCES & PUBLICATION

1. Mobile GIS data collection using android applications
N Talib
Published 2014, Computer Science, Universiti Teknologi MARA
2. E-PaLuv: Electronic Problem Based Learning for Sustainable Development Course
N Rusli, SN Bohari, N Talib, N Nasron, NM Razi
Conference: i-TeLearn 2017



POTENTIAL LOCATION FOR INSTALLATION OF ANPR BY USING GIS-AHP

IIIDBEE 20 JANUARY 2023

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INTRODUCTION

This study is to determine potential installation of ANPR using AHP and GIS in Kuala Lumpur. To ensure that the installation can be done in KL, some of study has been done and the criteria from the previous study has been propose and validate by the experts and analyse it by using weighted overlay analysis. So far, the results shows the criteria rated by the experts where there are agree that using existing poles with interval 500m apart. From the validation also the results of suitable or non suitable area to establish ANPR Networks

ISSUES/ PROBLEM STATEMENT

The study purposes are to Determining Potential Installation of ANPR By Using Analytical Hierarchy Process (AHP) And GIS We planned to carry out any potential area or point in Kuala Lumpur to install APNR with multiple purposes such as traffic monitoring, crime monitoring, toll automation or congested fee charge and more in Kuala Lumpur. The function of ANPR is to automatically detect plate numbers in real time and can be refer to the database of agencies and the law enforcement can be done. With this kind of actions, it will control the behavior of the people who against the law enforcement.

OBJECTIVES

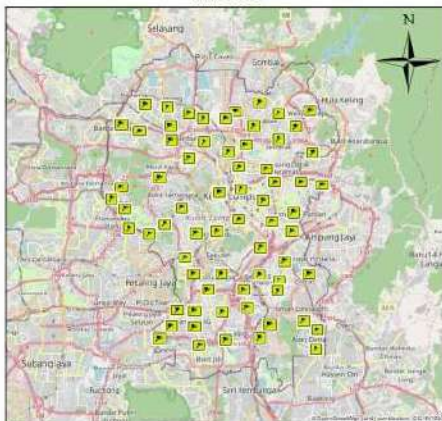
To determine the criteria of the installation of ANPR

To determine potential area for ANPR installation

To create a map for potential area for ANPR installation

FINDINGS

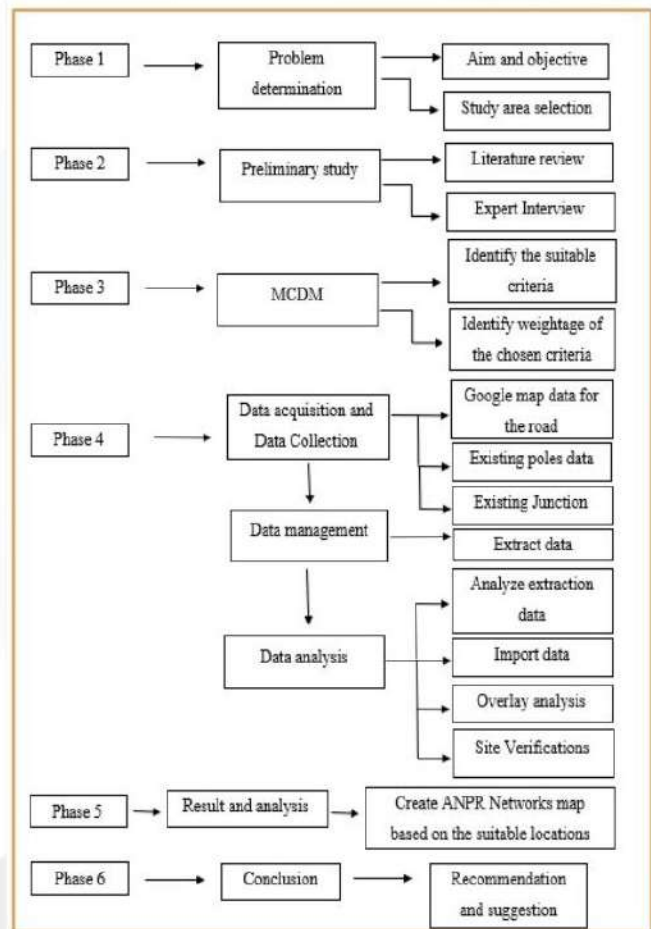
DETERMINING POTENTIAL INSTALLATION OF ANPR USING ANALYTICAL HIERARCHY PROCESS (AHP) AND GIS



Potential locations for ANPR installation were selected as they have the highest suitability index after weighted overlay analysis was conducted.

The potential locations had been verified. They are all either located at junction or existing pole for easier installation.

METHODOLOGY



CONCLUSION

As a conclusion, the ANPR Network for this study has been recognised and has been visualised in point in form of map above. By creating this ANPR Network with hope that some of the issue that occur in Kuala Lumpur such Sosial which is crime, traffic monitoring for fast response by the authorities. Then, ANPR camera can be use as toll automation or creating congested zones to reduce amount of vehicle in the zone.

NOVELTY

The implementation of GIS-AHP in finding potential area of ANPR installation could be the novelty of this study.

PREPARED BY:

Muhammad Ariff Iskandar Abdul Razak, Maisarah Abdul Halim, Nabilah Naharudin

Centre of Studies for Surveying Science and Geomatics, College of Built Environment, Universiti Teknologi MARA, MALAYSIA

ASSESSING SEMI-OUTDOOR THERMAL ENVIRONMENT AT HIGHER LEARNING INSTITUTION IN A HOT HUMID CLIMATE

FINDINGS

Location	Thermal Environment Parameters					
		Air Temperature, T_a (°C)	Globe Temperature, T_g (°C)	Relative Humidity, RH (%)	Air Movement, v (m/s)	PET (°C)
Semi-outdoor A	Mean	31.0	31.9	61.9	1.40	42.3
	Standard Deviation	1.4	1.6	7.1	0.70	2.1
	Range	28.1–33.4	28.5–34.2	51.0–76.0	0.50–3.80	37.4–46.6
Semi-outdoor B	Mean	31.7	32.6	59.7	0.80	44.5
	Standard Deviation	1.0	0.9	4.8	0.30	1.3
	Range	29.8–33.0	31.0–34.1	53.0–69.0	0.30–1.40	41.6–47.6
Semi-outdoor C	Mean	29.3	30.1	66.8	1.34	40.1
	Standard Deviation	0.6	0.7	2.9	0.50	2.4
	Range	27.9–30.3	28.7–31.6	61.9–71.7	0.55–2.42	34.2–45.8

Figure 1 Level of PET at location A, B and C.

The mean PET values for the three different semi-outdoor sites were 42.3 °C, 44.5 °C and 40.1 °C respectively. While the range PET values for all sites studied were between 34.2 – 47.6 °C. These data indicated that all semi-outdoor sites in this study can be classified as between hot to very hot.

NOVELTY

This study might be beneficial to the students in UiTM Shah Alam, especially those who highly engage in the outdoor environment to see whether they feel comfortable outdoors. For instance, we can identify a suitable range of selected outdoor environmental parameters which will bring comfort to students. In addition to that, this study might be useful for designers to grasp the idea of creating comfortable outdoor spaces to bring the most comfort to outdoor life.

CONCLUSION

Thermal environment of semi-outdoor microclimate measurement was carried out in three different area in higher learning institution at hot humid climate. The result reveal that air temperature and relative humidity influenced the level of PET. Also, vegetation or plant surfaces and area features have significant contribution to PET.

COMMERCIALIZATION

This study is crucial as it can give knowledge that can be utilize to enhance the quality of thermal comfort at semi-outdoor. Commercialization through collaborating with university will enhance the value and quality of this study.

RECOGNITION

Kolej Kediaman Mawar Universiti Teknologi MARA, Dataran Cendikia, Kolej Kediaman Melati Universiti Teknologi MARA, Faculty of Applied Sciences (FSG), Faculty of Architecture, Planning and Surveying (FSPU).

CONFERENCES & PUBLICATION

Galeri Kolej Alam Bina, Kampus Puncak Alam, UiTM Cawangan Selangor.

INTRODUCTION

Outdoor thermal comfort (OTC) refers to a person's subjective perception of the temperature and other thermal conditions in an outdoor environment. Outdoor environments on a campus can have a significant impact on students' experience and well-being.

ISSUES/ PROBLEM STATEMENT

The outdoor spaces on a campus can provide students with opportunities for recreation, exercise, and social interaction, which can contribute to their overall physical and mental health. Factors such as the thermal comfort, lighting, and overall aesthetic appeal of the space can all influence how students use and perceive the space.

OBJECTIVES

The objective of this study is to evaluate the outdoor thermal environment by applying PET assessment.

METHODOLOGY

This study was conducted in selected semi-outdoor areas at the main campus of Universiti Teknologi MARA (UiTM) in Shah Alam, Selangor. The locations that have been chosen were Kolej Mawae (Location A), Dataran Cendikia (Location B), and Kolej Melati (Location C). The thermal environment of the semi-outdoor microclimate was measured using a Delta Ohm data logger (HD32.3 instrument). The data was collected at 10-minute intervals between 1000 and 1500 h each day for a two-week sampling period. All microclimate parameters were measured 1.5 m above the ground.



a) Location A



b) Location B



c) Location C

STRATA CALCULATOR: MOBILE APPLICATION TO FACILITATE SHARE UNIT AND CHARGES FOR STRATIFIED AND LANDED STRATA

IIIDBEE X 2023
20 JANUARY 2023

International Invention, Innovation & Design Exposition
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College of
Built Environment
(CBE)

INTRODUCTION

Share Unit value is important in calculating maintenance fee in Strata Title. This study aims to develop a strata calculator mobile application for calculating share unit and charges that include maintenance fee and sinking fund. The party that is responsible in calculating share unit is Licensed Land Surveyor. Meanwhile, the party that involve in calculating maintenance fee and sinking fund is Joint Management Body (JMB) or Management Corporation (MC) of the building. The objectives of this study are to commercialize the share unit calculation to the public. The workflow of this application is using Agile Software Development Life Cycle methodology to ensure that all of the objectives are achieve. The development begun with a research background of the topic. Followed by, conducting a survey for user requirements for the application. After obtaining the result from the survey, the application is built based on the result. The development platform used is Android Studio, Flutter and Java programming. The calculations provide in this app have been tested and the result obtain are correct and precise. During User Acceptance Test (UAT), Strata Calculator mobile application has received feedback from various user such as Licensed Land Surveyor and JUPEM.

PROBLEM STATEMENT

Share unit is introduced to require the collection maintenance and management charges (Rubiah & Siti, 2018). Share Unit is computed based on the area, usage, size and location of the accessory parcel using the formula under strata title rules. The bigger the size of the parcel, the higher the share unit. Nowadays, according to Ghazali (2016), most developer does not have an interest in understanding the share unit. As the result, they tend to change the maintenance fee from time to time at a higher rate. It gives a burden to the house owner or the parcel owner as they do not expose to the share unit.

Nowadays, most of the surveyor used Microsoft Excel in order to calculate share unit for parcel during strata survey. Although it is faster than the conventional method which need to be calculate manually, it is still less convenient as we need to used laptop which some of the laptop need a constant power supply. It also can increase the error as we need to enter many numbers and many equations to calculate the share unit.

OBJECTIVES

- To conduct a survey for users' requirements for the topic.
- To develop a strata calculator mobile application to calculate share unit and maintenance charges for stratified and landed strata.
- To conduct User Acceptance Test (UAT) for the capability of the Strata Calculator Mobile Application.

METHODOLOGY



Figure 1: Agile Methodology

FINDINGS

Screen 1: Share Unit

Figure 2: Result Comparison for Share Unit from Joint Management Body (JMB) Pusat Komersial Seksyen 7, Shah Alam

Rumah	Jenis Susunrtn	Keluasan Lantai(m ²)	Unit syer (dibundarkan)
Intermediate unit	Type 1, 1a, 1b	80.2682	68

Rumah	Jenis Susunrtn	Keluasan Lantai(m ²)	Unit syer (dibundarkan)
Intermediate unit	Type 1, 1a, 1b	80.2682	68

Figure 3: Result Comparison for Maintenance Fee, Sinking Fund and Total Charges Fee from Joint Management Body (JMB) Pusat Komersial Seksyen 7, Shah Alam

Badan Pengurusan Bersama Pusat Komersial Seksyen 7, Shah Alam			
Belanjawan penyelenggaraan 2019:		RM982,908.51	
Kos purata setiap bulan		RM76,409.04	
Jumlah unit syer		108149	
Caj penyelenggaraan semasa		0.73	
Nonbermilik rumah	VG/S	Caj penyelenggaraan	RM66.64
Block	L	Unit Syer	118
		Staking Fund(10%)	RM8.66
Kelulusan Unit	M 7	PT2	
	108.34	1488.00	
		Jumlah Pakej charge	RM95.31

NOVELTY

Through questionnaires and literature studies, it was found that no mobile application used to calculate Unit Share or charges from JMB or MC. Most of Licensed Surveyors or JMB/MCs only use Microsoft Excel to calculate Unit Share, Maintenance, and Sinking Fund Charges.

The features of the design for which novelty is claimed are the shape and configuration of the application as shown in the representations of this application. The application is the first mobile application to facilitate share unit calculation, including maintenance fees, and sinking funds charges.

COMMERCIALIZATION

This application is useful for surveyors, developers, JMB/MC and public user who has an asset under Strata Title as they can directly calculate the share unit in the convenience and shortest way.

CONCLUSION

This Strata Calculator is robust and can be used for all conditions whether stratified building or landed strata. Work on calculating unit share and charge maintenance and sinking fund can be easy

RECOGNITIONS

NGGSIC2022 - System Innovation (Second Place & Gold Award)
JUPEM Subject Matter Expert (SME)

Gerrit Rietveld 1917

RED BLUE CHAIR

REDESIGN FURNITURE BY MAIN PHYLOSOFY

IIIDBEE X 2023

20 JANUARY 2023

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HISTORY BACKGROUND

THE ORIGINAL CHAIR WAS COMPOSED OF UNFINISHED BEECH WOOD AND PAINTED IN THE EARLY 1920s. DE STIJL ARCHITECT BART VAN DER LECK SUGGESTED GERRIT RIETVELD TO ADD BRIGHT COLOURS TO HIS FIRST MODEL. THE NEW MODEL WAS MADE OF THINNER WOOD AND PAINTED BLACK WITH DE STIJL BASIC COLOURS BY GERRIT RIETVELD. THE CHAIR'S DARK WALLS AND FLOOR AT THE RIETVELD SCHROEDER HOUSE MADE IT ALMOST DISAPPEAR. THE CONSTRUCTION SEEMED TRANSPARENT BECAUSE THE COLOUR PARTS FLOATED. THE BROOKLYN MUSEUM POSSESSES AN ORIGINAL.

THE RIETVELD PHILOSOPHY

RIETVELD AND HIS DE STIJL ART AND ARCHITECTURAL COLLABORATORS WANTED TO BUILD A PARADISE WITH A HARMONIOUS HUMAN-MADE ORDER TO ASSIST EUROPE RECOVER FROM WORLD WAR I. THEY THOUGHT REBUILDING REQUIRED NEW FORMS. WITH ITS ORTHOGONAL LINES AND WEIGHTLESS, VIRTUALLY FLAT VOLUMES, THE CHAIR WAS SUPPOSED TO EVOKE THIS MINIMALIST, QUASI-ASCETIC BALANCE. RIETVELD'S SCHROEDER HOUSE AND THE CHAIR WERE UNRELATED, YET THE CHAIR BECAME A COMPANION PIECE (BUILT-IN 1925) THE CHAIR IN THE CENTRE OF THE RESIDENCE COMPLEMENTS THE BUILDING'S LINES, SLEEK GEOMETRIES, COLOURS, AND INTERSECTIONS, EXPRESSING THE DE STIJL STYLE THAT INSPIRED IT.

SERIALIZED ARTISANSHIP

LIKE HIS ARCHITECTURE, RIETVELD VARIED RECTILINEAR FORMS AND EXAMINED VERTICAL AND HORIZONTAL PLANES IN THE RED AND BLUE CHAIR. THE CHAIR WAS DESIGNED IN 1918, BUT ITS BASIC COLORS—RED, YELLOW, BLUE, AND BLACK—ARE CLOSELY ASSOCIATED WITH THE DE STIJL GROUP AND ITS MOST FAMOUS THINKER AND PRACTITIONER, PIET MONDRIAN, WHO USED IT IN 1923. RIETVELD WANTED HIS FURNITURE TO BE MASS-PRODUCED AND SIMPLE TO BUILD. THE RED AND BLUE CHAIR'S WOOD COMPONENTS ARE NORMAL SIZES FOR THE PERIOD.

HOW WAS THE RED AND BLUE MADE?

STRAIGHT PLANKS AND BATTENS FORM THE RED AND BLUE CHAIR'S BLUE SEAT AND RED BACK. BLACK FRAME BATTENS WITH YELLOW CUT SURFACES. THE SCHROEDER HOUSE (1924)'S DARK WALLS AND FLOOR MADE THE CHAIR DISAPPEAR. THE CONSTRUCTION SEEMED TRANSPARENT BECAUSE THE COLOUR PARTS FLOATED. GERRIT RIETVELD CALLED HIS CHAIR A "SPATIAL INVENTION," A SPACE SCULPTURE. NOT A CHAIR. IN A BAUHAUS EXHIBITION AND IN DE STIJL, THE RED AND BLUE CHAIR MADE A BIG EFFECT.

STYLE - MINIMALIST MODERN STIJL

GERRIT RIETVELD



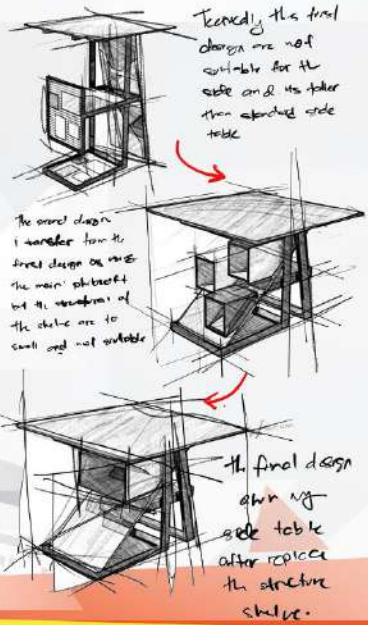
MONDSTIJL TABLE

ABOUT

I MADE THIS SIDE TABLE CONTEMPORARY BY UTILISING WOOD AND STEEL. THE BAUHAUS SIDE TABLE BY PHILOSOPHER GARRET RIETVELT INSPIRED THIS CREATION. THE FLAT TABLE'S STEEL AND WOOD DESIGN, SPACE-SAVING FEATURES, AND OPEN AREA REDUCE FURNITURE SPACE. WITH VERTICAL AND HORIZONTAL LINES, THE MAIN DE STIJL COLOUR, AND FLAIN LOOK.



IDEA DEVELOPMENT



BEHIND THE NAME OF 'MONDSTIJL TABLE'

THE WORD "MONDSTIJL" REMINDS ME OF THE BAUHAUS AND PIET MONDRIAN'S MOST FAMOUS WORKS. THUS, I TERMED MY HANDCRAFTED "MONDSTIJL" MONDRIAN'S MATURE WORKS USED THE SIMPLEST COMBINATIONS OF STRAIGHT LINES, CORRECT ANGLES, BASIC COLOURS, AND BLACK, WHITE, AND GREY. THE ARTIST'S SPIRITUAL CONVICTION IN A PEACEFUL ENVIRONMENT COMES THROUGH IN THE SCULPTURES' FORMAL PURITY.

MATERIAL THAT USED IN MONDSTIJL TABLE

THIS 'MONDSTIJL' SIDE TABLE WAS MADE OF CHIPBOARD, SPRAY-PAINTED CHIPBOARD. THE PRIMARY HUE SYMBOLISES THE DUTCH REVOLUTION. I UTILISED HOLLOW METAL TO BUILD THE SIDE TABLE TO SAVE WEIGHT AND MONEY.



HOLLOW METAL



CHIP BOARD



ABS PLASTIC



METAL WORK

WOODWORK

REPAINTWORK

ASSAMBLE



IRSYAD SYAHMI BIN NORHAGIN

CENTRE OF STUDIES INTERIOR ARCHITECTURE COLLEGE OF BUILT ENVIRONMENT UNIVERSITI TEKNOLOGI MARA KAMPUS PUNJAK ALAM, SELANGOR

OUTLOOK EMAIL: IRSYADSYAHMI@HOTMAIL.COM

TS NORZAIHAN MAD ZIN

CENTRE OF STUDIES INTERIOR ARCHITECTURE COLLEGE OF BUILT ENVIRONMENT UNIVERSITI TEKNOLOGI MARA KAMPUS PUNJAK ALAM, SELANGOR

CORRESPONDING AUTHOR EMAIL: SARAH@UTM.EDU.MY

THE APPLICATION OF LIFE CYCLE COSTING (LCC) IN INDUSTRIALISED BUILDING SYSTEMS (IBS) IN MALAYSIA

Introduction

Developing sustainable and cost-effective built environments is possible if the sustainability of design and construction methods are holistic, combining integrated design with current materials and technologies (F. Olubodun et al., 2010). The manufacturing cost is the most important cost component to consider when examined in selecting the most suitable building approach in most IBS construction. When it comes to building design, equipment, and power systems, an investor in the construction project have typically concerned with the purchase prices. They tend to underestimate the future operating or maintenance cost (Jacob M, 2006). Thus, an inefficient expense method may be chosen, resulting from the loss of a clear perspective of a property's actual expenditures.

Background of Research

Industrialised Building System (IBS)

According to Shamsuddin et al. (2013), IBS offers several economic and monetary benefits. Among the economic benefits given when implementing IBS include quality, timeless construction, and reduction of costs. Furthermore, the excellent quality attributes of IBS have resulted in lower maintenance and operation costs. CIDB Malaysia (2013) stated that many contractors were misled by the stigma of high IBS initial costs, which include material and labour costs.

Life Cycle Costing (LCC)

Life Cycle Costing emphasizes the connection between initial expenses and additional future expenses. LCC make a comparison between all cost involved to determine the future return of extra capital investment required throughout the project's whole life (Olanrewaju, 2013). According to Langdon (2005), LCC is used as an economic analysis method to evaluate numerous design and building element choices to achieve the client's goal of generating greater value of money from the building purchased and used (Langdon, 2005).

Objectives

- ❑ To find out the level of knowledge amongst contractors to apply LCC in the IBS project.
- ❑ To identify the barrier to applying LCC in the IBS project.
- ❑ To propose a strategy to encourage contractors to apply LCC in the IBS project.



Methodology

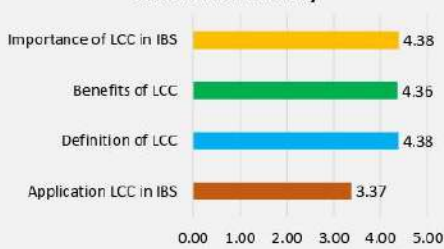
- ❑ The **quantitative method** is used as the research methodology in this study.
- ❑ The questionnaire is designed for people who are experts in the construction field of IBS formwork only.
- ❑ This includes contractors, consultants, quantity surveyors, etc.
- ❑ The Krejci and Morgan table is used to determine the size of sampling for this research and there is 60 number of contractors in Selangor that are experts in the IBS formwork system registered under the Construction Industry Development Board (CIDB). For this study, only 52 respondents are required, and the response rates are excellent.

Results

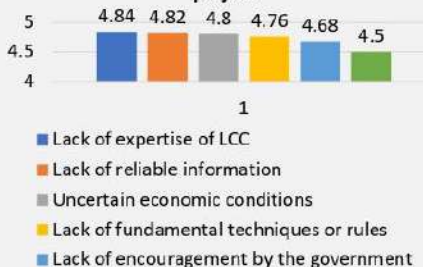
- ❑ Results show the benefits and purposes of using LCC in IBS Project is well-known but **the awareness to apply LCC in IBS project is still low.**
- ❑ It is due to the barriers such as lack of expertise, lack of reliable information, uncertainty in economic situation, lack of fundamental technique and encouragement by the government as well.
- ❑ On the other hand, this study propose several ways to apply LCC in IBS project such as through intensive training, LCC webinar and campaign and apply LCC knowledge in syllabus of higher education

Analysis

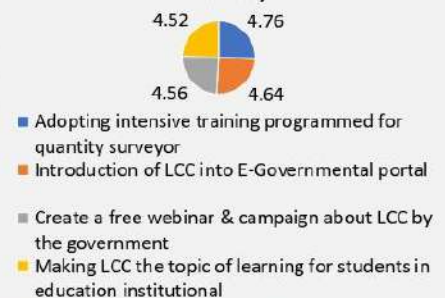
Awareness of Life Cycle Costing in the construction Industry



Barrier to implementing LCC in IBS project



Strategy to Encourage Contractors to Apply LCC in IBS Project



Conclusion

Life Cycle Costing (LCC) is best described as an economic analysis that includes all important expenses of ownership over the lifecycle of an asset, with the significant benefits of optimizing the future cost at the early design stages. Obtaining the optimal strategy to lower asset ownership expenses to produce a financially feasible investment becomes the main reason for using LCC in the IBS project. Despite that, the major barrier to implementing LCC in the IBS project is the lack of expertise of LCC. Therefore, the significant strategy to solve the issues is by adopting an intensive training program for quantity surveyors. Overall, all the objectives of this research have been successfully achieved.

Prepared by:
¹Natasha Aziera Shaifol Bahari, ²Siti Rashidah Hanum Binti Abd Wahab*
^{1,2}Centre studies of Construction Management, Faculty of Architecture, Planning, and Surveying, University Technology Mara (UiTM), Shah Alam, Selangor, Malaysia.

*Corresponding author:
rashidahhanum@uitm.edu.my

ASEAN GEOSOCIECOPOLITICS DASHBOARD

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INTRODUCTION

Our project, "Asean GeoSocioEcoPolitics Dashboard System (2021)" utilizes ArcGIS Online to create a dashboard system showcasing the density, political stability, urban population, GDP per capita, and economic growth of Southeast Asian countries by year 2021.

ISSUES/ PROBLEM STATEMENT

- Assessing the **level of risk** associated with operating or visiting Southeast Asian countries.
- Understanding the **level of development** and **potential for growth** in Southeast Asian countries through urbanization data.
- Comparing the **levels of economic prosperity** and **standard of living** in Southeast Asian countries.

OBJECTIVES

- To visualize and explore the political, economic, and social status of Southeast Asian countries.
- To provide a comprehensive and nuanced understanding of Southeast Asian countries.
- To create a valuable resource for businesses, investors, governments, and tourists interested in Southeast Asia.

COMMERCIALIZATION

- Market the dashboard system to businesses, investors, governments, and tourists.
- Create reports for organizations seeking in-depth analysis.
- Utilize data and insights to provide valuable information and analysis

NOVELTY

This project presents the diverse and comprehensive range of data on Southeast Asian countries, using ArcGIS Online to create an interactive and easily understandable dashboard system. It offers a valuable insight into the political, economic and social status of the region.

FINDINGS

- There is a wide range of political stability among Southeast Asian countries, with some countries scoring highly positive and others scoring highly negative on the political stability scale.
- Urbanization is relatively high in some Southeast Asian countries, with a significant proportion of the population living in urban areas.
- Economic growth rates in Southeast Asian countries also vary significantly, with some countries experiencing strong growth while others have slower or negative growth.

CONCLUSION

This project has provided a comprehensive and innovative perspective on the political, economic, and social status of Southeast Asian countries, using ArcGIS software to create a dashboard system that allows for easy visualization and exploration of the data. The project has the potential to be commercially successful and provides valuable insights and analysis for businesses, investors, governments, and tourists interested in Southeast Asia. It highlights the diverse and complex nature of the region and serves as a valuable resource for understanding the current status and potential for growth

METHOD

DATA COLLECTION

- Related to Political, Economic, and Social Status

PRE - PROCESS

- Clean data using ArcGIS software
- Add administrative map with attributes

CREATE WEB-MAP

- Process the data for a creation of interactive web-based map using ArcGIS online
- Add symbols, Visual Variable

DESIGN DASHBOARD

- Design a dashboard system using ArcGIS Online



" This project presents the diverse and comprehensive range of data on Southeast Asian countries, using ArcGIS Online to create an interactive and easily understandable dashboard system. It offers a valuable insight into the political, economic and social status of the region "

GEO DRUG ADDICTS SYSTEM : ONE STOP INFORMATION CENTRE SYSTEM FOR DRUG ADDICTS IN MALAYSIA

IIIDBEE X 2023
20 JANUARY 2023
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INTRODUCTION

Drug addiction is a major public health concern in Malaysia, with a significant impact on individuals, families, and communities. The prevalence of drug addiction in Malaysia has been increasing in recent years, and there is a need for more research to understand the factors associated with drug addiction in this population.

PROBLEM STATEMENT

- The number of drug addicts in Malaysia has increased significantly in recent years, resulting in significant social and economic costs.
- Current strategies and interventions for addressing drug addiction in Malaysia are inadequate and ineffective.
- There is a lack of reliable data and information on the prevalence of drug addiction in Malaysia, making it difficult to develop effective policies and interventions.

OBJECTIVES

- To show the audience what is thematic map
- To create a Web-based, Flyers and map based on Human Population of drug addict in Malaysia.
- To present to the community what is drug addict and the population people that addict to drug in every state

METHODOLOGY



FINDINGS

- State on a few points on how population affect the surrounding and development about this health cases in Malaysia
- Current numbers of population in each State in Malaysia.
- Numbers of projected population among men and women in Malaysia

NOVELTY

This product is an improved version of existing products. It was designed to be able to display real-time data of drug usage. Knowing the statistics on drug addicts in Malaysia is that it can provide important information on the prevalence and trends of drug addiction in the country, which can be used to inform policy and efforts to address the issue. It can also help to identify potential risk factors for drug addiction and target prevention and intervention efforts. Additionally, understanding the statistics on drug addiction in Malaysia can help to raise awareness about the issue and the impact it has on individuals, families, and communities.

CONCLUSION

In conclusion, this project dissertation entitled Drug addicts in Malaysia is reaching its goal. This study has get into the purpose which is we want to provide the statistic for the drug addict people in Malaysia for every state based on gender. Based on that statistic we hope people will not take easy look for drug addiction because Malaysia also have a many cases in this country. We have together make a zero number cases for drug in Malaysia because we want to Malaysia be a good country for future .

COMMERCIALIZATION

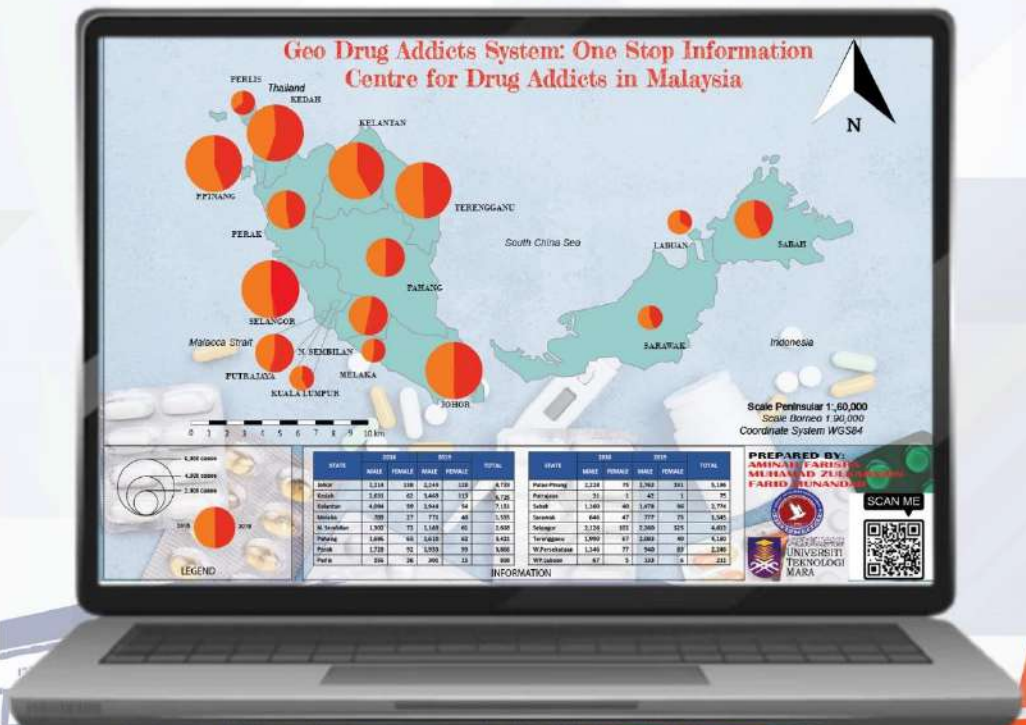
This map can be use by the Agensi Anti Dadah Kebangsaan (AADK) of Malaysia for awareness about the drug addicted cases in this country.

RECOGNITIONS

Since the product is still fresh and new, it has not got any recognitions from others. No copyright request has been made by any party.



SCAN ME



ID-COVID-19 Map: The Spreading Cases in Surabaya, Indonesia

INTRODUCTION

Covid-19 is one of the virus that recently occurred until now all around the world. People are really easy to get infected even just from a small contact from the sufferers. This virus is really dangerous and could cause death. The website we created will provide information needed regarding the places where the most cases usually occurred and lists of hospitals needed.

ISSUES/ PROBLEM STATEMENT

Issues that commonly happened is when someone get affected by COVID-19, they don't really know what to do and where to go. So this what this website is for.

OBJECTIVES

1. To create a map that consists of information about the locations of where the most cases are commonly occurred and lists of hospital nearest
2. To share information to all people who are surviving in this era of Covid-19.
3. To embrace people to go to hospital and take a serious actions on their health.

FINDINGS

1. Cases of COVID-19 which have the most commonly occurred in some area
2. Locations of nearest hospital

NOVELTY

1. Promoting the websites so it can be seen and used by many people in needs
2. Helping other people to seek help

CONCLUSION

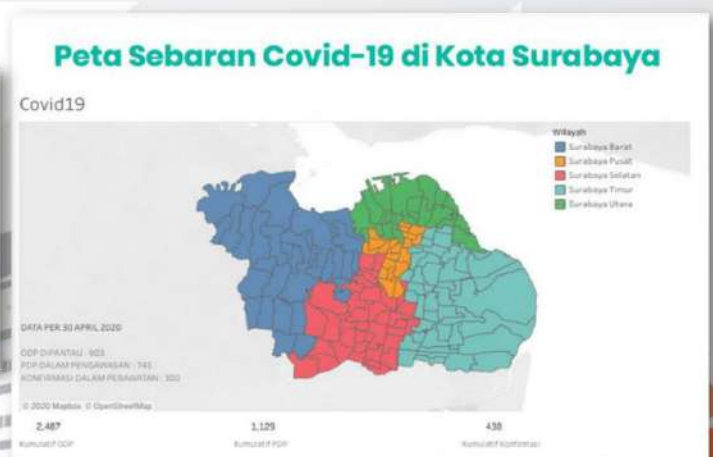
The cases of COVID-19 that increased almost everyday really needs a serious actions about it, This website will help those in needs to find the solutions whenever they try to find nearest locations of hospital to come to and to be aware of which area that has the most cases of COVID-19.

COMMERCIALIZATION

Hopefully, the existence of this website can be useful for all people who are in need regarding the COVID-19 problem. Hope it can help them to seek some help as soon as possible on this era of COVID-19.

METHODOLOGY

1. Data Collection and Analysis
2. Creating base map in QGIS
3. Digitizing
4. Data Editing
5. Data Processing and System Development



e-TOURISM @ PULAU TIOMAN

IIIDBEE
20 JANUARY 2023

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INTRODUCTION

Tourism is the emphasis of this inventive cartography project. Tourism plays a crucial part in Malaysia's economy, which is no secret. Therefore, the tourism sector is essential to Malaysia's economy, and the government should prioritize its growth so that more people choose Malaysia as a holiday destination.

The map is titled "e-Tourism at Pulau Tioman, Pahang". Researchers are aware that local tourists like the beach, and we also know that beach and island holidays are popular with international travellers to Malaysia. Pulau Tioman, one of Malaysia's islands, offers plenty in terms of attraction and natural beauty for tourists.

ISSUES/ PROBLEM STATEMENT

- Covid-19 has hit all activities in Malaysia
- Popularity in Pulau Tioman has decrease
- Tourist often gets lost in Pulau Tioman
- The attraction in Pulau Tioman is not known

OBJECTIVES

- To inform user of the popular places in Pulau Tioman
- To inform user on the popular accommodations in Pulau Tioman
- To inform the user of additional information on the activities that has been provided in Pulau Tioman

METHODOLOGY



NOVELTY

1. Showcases several tourist-friendly activities.
 - Snorkeling and island-hopping are among the exciting activities that have been suggested.
2. A guideline to reach the destination.
 - It would be beneficial for visitors to be able to explore the stunning nature of Pulau Tioman with the use of a comprehensible map.

CONCLUSION

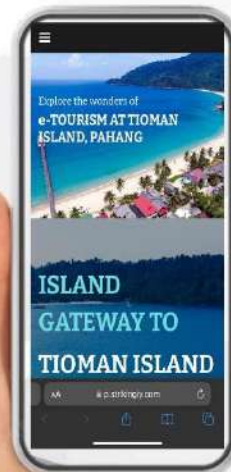
This project has shown that there are several locations where tourists from elsewhere in or inside Pulau Tioman may go. It also included accommodations that people could utilize while on vacation in Pulau Tioman, whether for an overnight stay or a day excursion. The accommodations were also rated from 4 to 5, allowing guests to make an informed decision based on their budget and level of comfort. This project also includes locations where they may engage in locale-appropriate activities such as swimming or snorkeling. The selection of attractive places makes it easier for tourists to plan their trip on Tioman island.

COMMERCIALIZATION

This map can be use either by local or international tourists for providing information about location, help in making the choice of the location visit and in planning the journey. Besides, this map can be used by Tourism Malaysia, a government agency under the Ministry of Tourism, Malaysia.

FINDINGS

- Shows the most visited and attractive places for vacation in Pulau Tioman, Pahang especially for non-local tourism
- 11 locations of current favoured places in Pulau Tioman
- Few popular accommodations with stars rating
- Water games that involved for a vacation in Pulau Tioman, Pahang



PREPARED BY: NUR ASYIQIN BINTI SUHAMI (2021852882), NURUL AFIQAH BINTI MOHD NAZRI (2021868158),
NUR FATIN MAISARAH BINTI ROSLEE (2021861924), TS GS DR ABDUL RAUF ABDUL RASAM

CENTRE OF STUDIES FOR SURVEYING AND GEOMATICS, COLLEGE OF BUILT ENVIRONMENT, UTM SHAH ALAM, SELANGOR

Malaysia Crime Awareness Mapping System (MyCAMS)

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



INTRODUCTION

- Crime is a critical issue that has gained significant attention in many countries including Malaysia.
- The Malaysian government has invested in a system known as the Geographical Information System (GIS) to map the crime rate in high prospect zones.
- Crime mapping has been proposed to identify crime rate in the country.
- This project applies crime mapping to identify the crime rate in Malaysia. Data on crime for 14 states in Malaysia from 2018–2019 were obtained, with permission, from the Royal Malaysia Police or known as Police DirRaja Malaysia (PDRM) in Bahasa Malaysia.

ISSUES/ PROBLEM STATEMENT

- Situation? Malaysia is a relatively safe country to visit. Malaysia was rank in 31st and 25th in Global Peace Ranking 2018 and 2019.
- Issue? However, crimes do happen, sometimes even involving weapons, this situation often time being neglected by people
- Solution? This project will help spread awareness among the people of this issue so people can be more careful in the future. This also help the government to enhancing the protection of citizen and contain the crime rates

OBJECTIVES

- To help people identified type of crime in Malaysia
- To make realize people about the state of crime rate in Malaysia
- To design and develop a thematic map and multimedia web-based system of crime rates in Malaysia

METHODOLOGY

Data for this report was collected from a range of sources, including police reports and incident logs from the Royal Malaysia Police (RMP) and the Malaysian Crime Prevention Foundation (MCPF). All reported crimes in Malaysia for the years 2018 and 2019 were included in the analysis. The data was analyzed using statistical software to identify trends and patterns in crime rate across the country. A map was then created to visually represent the findings, with each state in Malaysia assigned a color code to indicate the crime rate.

NOVELTY

One of the key novelties of this report is the use of a map to visually represent the distribution and prevalence of crime in Malaysia. This approach allows for a more intuitive understanding of the data and makes it easier to identify trends and patterns.

CONCLUSION

The map of crime rate in Malaysia for 2018 and 2019 highlights the distribution and prevalence of crime across the country. It shows that crime is more prevalent in urban areas and that there are some differences in crime rates between different states. The map also suggests that crime rates have remained relatively stable over the two-year period, with only slight fluctuations in some states. These findings can inform the development of targeted interventions and strategies to reduce the incidence of crime in Malaysia.

COMMERCIALIZATION

This map has the potential to be commercially valuable for law enforcement agencies and policymakers in Malaysia, as it provides valuable insights into the distribution and prevalence of crime in the country. It could also be of interest to researchers and academics studying crime and criminal justice.

FINDINGS

The findings of this report are presented in the form of a map, which shows the crime rate for each state in Malaysia. The map shows that crime is most prevalent in the urban areas, with higher rates of property crime and violent crime.



RnR Web Mapping System @ Peninsular Malaysia

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



INTRODUCTION

According to PDRM Statistics from January - September 2022 the road accidents that are recorded in Malaysia are 402,626 cases. For the first nine month of the 2022 the death toll has increased by nearly 32% (paultan,2022)

What is RnR?

Rest and Services) areas are really common in PLUS North-South Expressway. It is usually known as RnR or Rest & Relaxation which become an integral aspect of any Malaysian road trip experience

ISSUES/ PROBLEM STATEMENT

Certain people that come from other state are not really knows that in Malaysia there are a lot of RnR (Rest and Relaxation) stops that available. So, they are prefer to stop at the popular RnR instead of the unpopular stops. This can caused the slow movement on certain RnR Stops.

OBJECTIVES

- To create a creative map and poster map of RnR in Peninsular Malaysia for North-South Highway
- To design a flyer or brochure of Rnr in Peninsular Malaysia for North-South Highway
- To develop a geo-multimedia web-based system of RnR Stops in Peninsular Malaysia for North-South Highway

COMMERCIALIZATION

- Quick and easy reference for the user
- Filled with infographics
- Provide QR for the website

For More Information Visit Our Website!



METHODOLOGY

1. Digitizing the base map; using ArcGIS
2. Adding 5 basic elements; data frame, title, north arrow, legend and scale
3. Collecting data from PLUS Website; types of RnR Stops, facilities available for each RnR Stops
4. Adding additional information; facilities, location, qr code and logo
5. Design a proposed map. brochure and system

FINDINGS

PLUS Website

NOVELTY

- Creative and innovative map
- User friendly
- Accessible for all users

CONCLUSION

The innovation of the Rest and Relaxation was created for users to plan their long journeys. By having this innovation the users can identify which stops they want to go to and take a rest. User can easily use it without asking for others help.

URBAN RENEWAL DEVELOPMENT OF AFFORDABLE HOUSING IN TAMAN FREE SCHOOL, PENANG

INTRODUCTION

Affordable housing was often seen as a last resort for low-income families, with substandard living conditions, poor maintenance, and inadequate amenities. The focus was mainly on providing shelter, rather than creating livable and safe communities. In recent years, there has been a shift towards creating more comprehensive and sustainable affordable housing developments. These developments now often include mixed-income housing, quality amenities, and a focus on transit-oriented development to improve access to jobs and services. Many affordable housing projects now incorporate safety measures and community policing programs to create safe and secure living environments for residents.

OBJECTIVES

1#

Develop mixed-income housing with high-quality amenities to **improve overall quality of life** for residents.



3#

Incorporate safety measures to ensure residents feel safe and secure in their homes and surrounding neighborhoods.

2#

Prioritize transit-oriented development to increase access to jobs, services, and amenities for residents.

NOVELTY

- DESIGN**
- CRITERIA**
- SOCIAL IMPACT**

Design approach are based on the situations in Pulau Pinang.

Affordable housing that emphasise criteria of TOD and liveable

Taking green neighborhood and CPTED approach to tackle societal problem in high-development

QUALITY OF LIFE
Green Neighborhood
Active Community



TRANSIT-ORIENTED DEVELOPMENT

Public Transport
Walking
Biking



PLACES
CPTED
Natural Surveillance



Urban Soul

ISSUES / PROBLEM STATEMENT



FINDINGS



AFFORDABLE HOUSING

- QUALITY OF LIFE**
 - Relation to the built environment
 - Accessibility for people
 - Opportunities for social interaction
 - Community engagement
- TRANSIT ORIENTED DEVELOPMENT**
 - Proximity to public transportation
 - Affordable housing
 - Sustainability
 - Mixed-use development
 - Walkability and bikeability
- PLACES**
 - Safety
 - Activities
 - Access to nature and green spaces

Urban Soul

A design framework on urban renewal development of affordable housing that emphasise liveable impacting quality of life, transit-oriented development and places.

OUTPUT

COMMERCIALIZATION



Housing Developer



Government Agency that offer Affordable Housing

RECOGNITIONS

CONCLUSIONS

2ND RUNNER-UP

Competition Urban Renewal Masterplan in Taman Free School, Penang.
(PlanMalaysia@Pulau Pinang)

Urban renewal development of affordable housing can improve communities by promoting sustainable transportation, increasing access to amenities, and providing affordable housing options. However, it is important to involve local stakeholders and consider potential negative impacts on existing communities to ensure that the goals align with their needs and values.

PREPARED BY:

NUR FATIN HUMAIRA BINTI HARUN
NUR ALIYA ANISHA BINTI MOHD RASHDY
MUHAMMAD ANIQ DANIEL BIN KASMIN
NUR AMIERA FIEZAH BINTI ZULYAZAD
YUHAINES BATRISYHIA ARIFF BINTI SUKUR

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SUSTAINABLE GEO TOURISM BRIDGING GEO HERITAGE AND CULTURE THROUGH NATURAL AND LANDSCAPE CONSERVATION

IIIDBEE X 2023

20 JANUARY 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023

PREPARED BY: WAN NORAZIAN MOHAMAD RAMLI

ALAMAH MISNI

MUHAMMAD ADAM ZAKARIA

CENTRE OF STUDIES FOR LANDSCAPE ARCHITECTURE, COLLEGE OF BUILT ENVIRONMENT
UNIVERSITI TEKNOLOGI MARA, 41300 PUNJANG ALAM SELANGOR



College of
Built
Environment
(CBE)



INTRODUCTION

Gunung Lang development collaboration by Ipoh City Council and National Landscape Department in 1999 is only for eco-tourism, research and education.

Have a natural landscape of limestone hills in the center of Lembah Kinta which is declared as a National Geopark.

PROBLEM STATEMENT

Gunung Lang was already known by Ipoh folk and foreigners as the park itself has potential more than that.

Unfortunately the uniqueness of Gunung Lang was not outstanding among the community of Ipoh.

Limestone hills are seen to be very difficult to maintain and restore due to the damage.

DESIGN GOAL

To sustain geo tourism of Gunung Lang by bridging the geo heritage and culture through natural and landscape conservation.

SWOT

STRENGTH
Geology features and strategic location make it unique from another geopark areas in Kinta.

WEAKNESS
Improper facilities and amenities cause lost spaces and bad visual quality for visitors.

OPPORTUNITY
As a main attraction for foreigners and accessible by road and public transport.

THREAT
Surrounding rapid development cause the degradation of limestone hills and the ecosystem.

ISSUES

Unintegrated landscape with user interaction and managing space for social activities, it is risky as there is limestone collapse.

Neglecting the uniqueness of limestone features and the geological formation of Gunung Lang leads to partial loss of physical damage.

The natural disturbances in parks are wildlife disturbances and soil erosion makes the place unsafe for visitors and other wildlife sanctuaries.

OBJECTIVES

GEOLOGY TOURISM
To preserve the geological potential and its cultural at limestone hill and cave area with geo heritage trail towards sustainable geo tourism.

KARST APPRECIATION
To maintain the limestone hills and its natural karst landscape for the appreciation of its own beauty and uniqueness.

BIODIVERSITY CONSERVATION
To conserve the existing biodiversity, include the natural forest and wildlife thus integrate its landscape through geo-ecological approach.

DESIGN PRINCIPLES

Heritage trail, Recreational, Cave lighting, Karst-cape, Sustainable, Mine lake, High trees, Trail, Swamp.

METHODOLOGY- Ian McHarg (Overlay map)

SLOPE AND STABILITY, RISK OF LANDSLIDE, ECOLOGICAL SENSITIVITY, SOIL EROSION ANALYSIS, PROTECTED AREAS, WILDLIFE SANCTUARIES.

GO TOURISM SUSTAINABILITY, RISK ON SENSITIVITY PROTECTIVE ZONE, BIOLOGICAL DIVERSITY PROTECTION ZONE.

SYNTHESIS MAP



CONCLUSION & RECOMMENDATION

In conclusion, Gunung Lang geological significance has been proven can be used to develop as a geo tourism site. This will ease the Geo Park Lembah Kinta to entitle as a national geopark and will lift the tourism sector in Perak. Meanwhile, the uniqueness of geological features in Gunung Lang will be exposed to the community which help awareness on overcoming the degradation of limestone hills due to unplanned urban development. From the geological approach, Gunung Lang is truly a geo park with a unique nature of limestone hills. Thus, the tropical rainforest itself is a living habitat that will continue to live for our future generations to make use of it. As landscape architecture, this opportunity should be taken to distinguish us from geotourism because it is not just a difference for landscape design in the area. Finally, the geotourism initiative is to preserve and conserve geo sites that have geo-heritage, geo-formation, and provide an scenery of the world. I would highly recommend National Geopark look forward to improving identity and design methods in the form of landscape conservation on Gunung Lang more for geotourism.

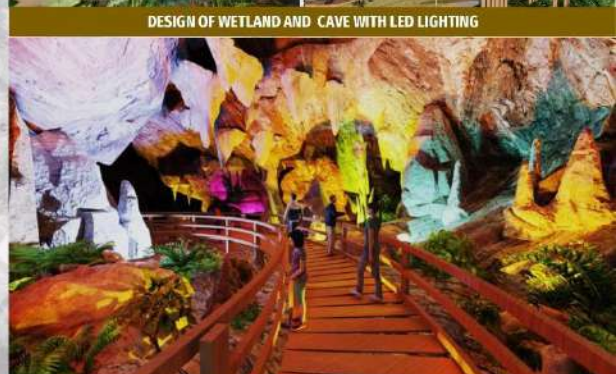


NOVELTY DESIGN AND INNOVATION

UNESCO Global Geoparks promote sustainable local economic development mainly through geo tourism. The geopark's approximately 480 million years of geological heritage provides a resource for developing geo tourism and for educational activities.

Cave light is a show cave, mainly to ensure the safety of the visitors as well as to provide an amazing vibrant light and maximum aesthetic effect. They are low cost and low maintenance as they are powered by the solar energy system.

Next, rockfall barrier structures also known as fences placed at 20 meters and 3 meters above boardwalks. When there is a rockfall occurred, the flexible net will catch and holds the rocks strongly. Cliffside will safe from sudden rockfalls and proposed slope for machines.



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3D WEB-BASED RESIDENTIAL COLLEGE SYSTEM

INTRODUCTION

The innovation product of the 3D interactive web-based Residential College System is where the system utilizes an advance technology of geospatial analysis (Geographical Information System). The existing college system is incompatible since it is **time consuming and unattractive because the majority of the data is stored semi-manually and alphanumeric database**. As a result, a 3D geographic information systems (GIS) have arisen as a critical component of the residential college administration system.

PROBLEM STATEMENT

Residential college system has been facing the same problems from many years where the system is not compatible and an outdated system. This management system only includes the database of the students where it is not on par with the technology that has been evolving over the years. The existing system has been time consuming as most of the information are stored semi-manual in the system where it will be time consuming to cover the thousands of students' profile and unattractive as well as unable to be visualize the exact building or location of the blocks or rooms.

OBJECTIVES

- 1 to develop an interactive and informative 3D Residential College System based on analyzed user specific requirements
- 2 to perform a 3D geovisualisation database query and system performance test of developed web-based Residential College System
- 3 to establish the system to be used by college administration in organizing the college

METHODOLOGY

AutoCAD • Floor plan construction

A

ArcGIS Pro • CAD imported spatial and attribute data

ArcGIS Online • Configuration



Experience
Builder
System 3D

WebApp
Builder
2D System

NOVELTY & COMMERCIALISATION

- ✓ *User Acceptance Test (UAT) revealed: effective monitoring and feedback, better visualization on the system, the information of the students can be extracted easily from the database system, and containing query system*
- ✓ *Interactive and Interesting query system with visual location map (room, block and level)*
- ✓ *User friendly query tool: vacant room, occupied room, status and states together with spatial (map location information)*
- ✓ *Can be visualized 3D/2D on the system rather than conventional database system query and development.*
- ✓ *Integration of both spatial (map) and non-spatial (attribute) for better strategic decision-making solution the development*

RECOGNITIONS

10 NGGSIC
NATIONAL GEOMATICS/GEOSPATIAL
STUDENT INNOVATION
COMPETITION 2022



2ND GRADUATE
DIGITAL INVENTION, INNOVATION & DESIGN
GSDI 2021

CONCLUSION

In summary, the system able to reduce time and cost, enhance management efficiency from semi-automatic to fully dynamic online system, fast action if maintenance of room if required since the exact room easily be located, and the system can be continuously updating from time to time with the availability of internet networking for any assign administration staff. This innovation product has resulted in the development of a GIS web-based residential college system that could improve the organization's ability to handle future building data

2D

3D



EYE IN THE SKY: DETERMINING NO2 EMISSIONS SOURCES

IIDBEE

20 JANUARY 2023

2023

International Invention, Innovation & Design Exposition
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COLLEGE OF
BUILT
ENVIRONMENT
(CBE)

INTRODUCTION

- Globally, Nitrogen Dioxide (NO₂) is a greenhouse gas emissions from human activities. It is also a pollutant of concern in urban areas. Urban area, oil and gas industry and powerplant is the main sources of NO₂ emissions.
- Daily satellite data of the Sentinel-5P NO₂ and other traces gases is available since 2018.

ISSUES/ PROBLEM

STATEMENT

- The Continues Air Quality Monitoring Station (CAQMS) used to monitor air quality in Malaysia are limited in number thus covered sparse area.
- Using GEE allows a fast production of map in determining perhaps new sources of emissions location.
- Using GEE allows for the latest daily high-resolution air quality satellite.

OBJECTIVES

- To use satellite in order to produce daily, weekly, monthly NO₂ emission maps.
- To relate NO₂ emissions hotspot from satellite with activity on the ground.

Full Scale Map Scan Here:



METHODOLOGY



FINDINGS

- The area that have power plants and located near the urban area, providing the highest NO₂ which is the hotspot of air pollutions in peninsular Malaysia.
- The urban area, oil and gas industry and power plants is the main of NO₂ emissions sources in peninsular Malaysia.

CONCLUSION

- The power plant that has the highest watt capacity is the biggest contribution in NO₂ emissions.
- Air quality monitoring using satellites is better than using continuous and manual methods because it can cover the entire Malaysian peninsula.

NOVELTY

- Providing locations capital city each sates, locations of power plant with the NO₂ pollutions hotpots.
- using GEE which help in processing the satellite data with very fast processing capability and speed

COMMERCIALIZATION

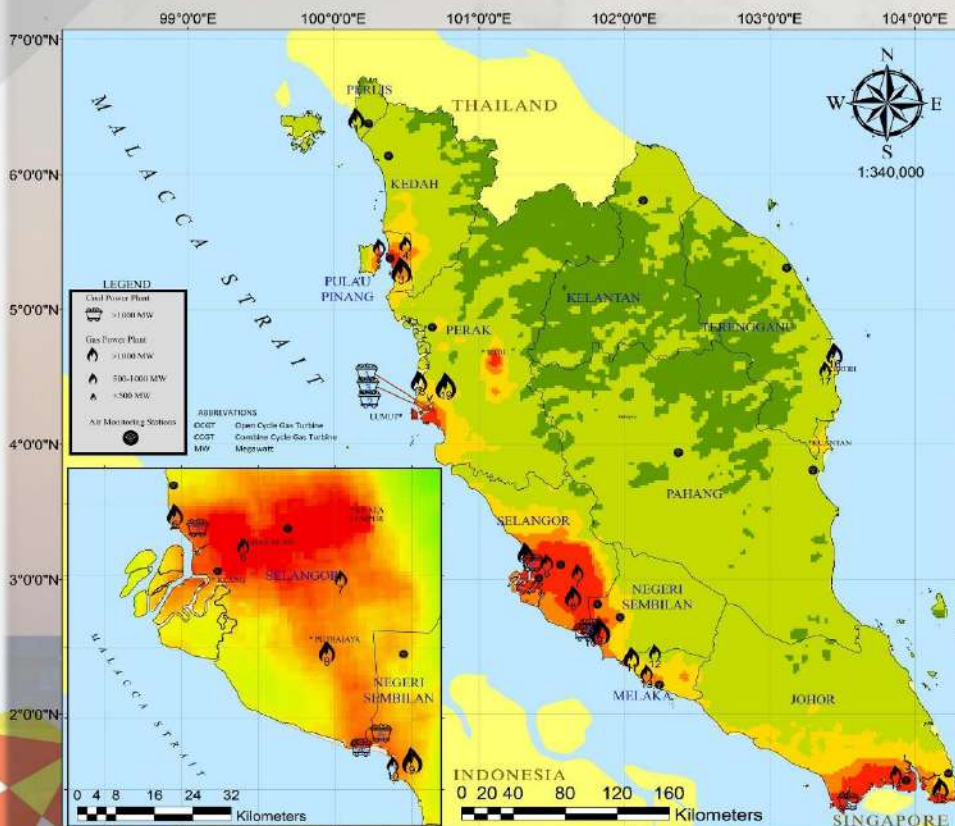
- This can be develop as an app for public and government body update of pollution sources.
- Can be use to calculate malaysia GHG emission rate as to comply to Paris agreement which has been done by other country

CONFERENCES & PUBLICATION

- Quantifying NO₂ Reduction Before and During Covid-19 Movement Control Order In Major Cities And Industrial Area In Peninsular Malaysia Using Satellite Data Observation Nurul Farhani Binti Hashim, Pauziyah Mohammad Salim, Siti Aekbal Salleh and Ainon Nisa Othman DICREMBEE 2021

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geomass
GEOMATICS SCIENCE STUDENT SOCIETY

NO2 EMISSIONS SOURCES IN PENINSULAR MALAYSIA 2022

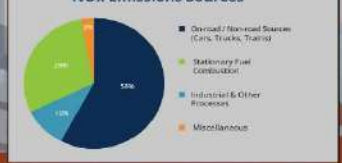
No.	Power Station (MW)	Plant Capacity (MW)
1	Perlis COGT	150
2	Belaga COGT	150
3	Perlis TMS COGT	207.5
4	MBM COGT	190
5	Kepong Energy Services COGT	150
6	Cameron Highlands CCS	125
7	Kuala Lumpur COGT	340
8	Perlis Lagan COGT	325
9	Perlis Bukit Cempaka COGT	300
10	Perlis Daklan COGT	430
11	Perlis TMS COGT	420
12	Perlis COGT	410
13	Perlis TMS COGT	322
14	Tekong COGT	175
15	Kepong Energy Services COGT	650
16	TMS COGT	185
17	Perlis TMS COGT	170
18	Perlis TMS COGT	440
19	Perlis TMS COGT	1,000
20	Perlis TMS COGT	1,100

No.	Power Station (MW)	Plant Capacity (MW)
1	PERLIS PERLIS	150
2	Perlis TMS COGT	107.5
3	Kepong Energy Services	207.5
4	Kepong Energy Services	200
5	Kepong Energy Services	190
6	Kepong Energy Services	125
7	Kepong Energy Services	150
	Total	3,000

Percentage of NO2



NOx Emissions Sources



THE INTERPRETATION OF ARCHITECTURAL STYLES OF MOSQUES IN CHENOR, PAHANG

IIDBEE X 2023
20 JANUARY 2023

International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



College of
Built
Environment
(CBE)



METHODOLOGY

The analysis approach will be focused on three on-site observations of traditional mosques in Chenor, Pahang. The selected mosques will be Mosque Kampung Pantai (1918), Mosque Istiqomah Kampung Baru Sg. Ling (1950), and Mosque Jamek Chenor (1982). Each mosque has a different type of typology and comes from a different era. The analysis will be drafted and summarised into a few elements and classification based on the result obtained. Thus, this shall be strengthened with 5 interview sessions held with Pahang's residents (3 Chenor, Pahang Villagers, 2 JKR Pahang Employee). The feedback received will support further suggestions or recommendations for this study.

INTRODUCTION

ISLAMIC ARCHITECTURE.

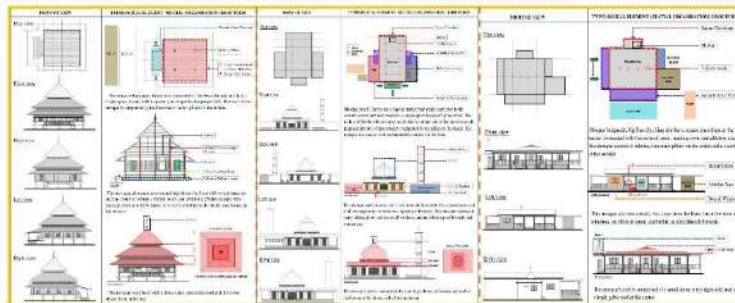
The development of mosque Islamic architecture in Malaysia has brought a massive evolution and transformation. It has been developed into six traditional types of typologies according to the different regional cultures. This added to the increasing Muslim population and culture in Malaysia. Due to the rapid expansion, This prompted people to do some research on Islamic origins starting from ancient times in order to gain a deeper understanding of Malay architectural style. This study aims to investigate and identify the noteworthy traditional mosque design in Chenor, Pahang as a regional identity through the study of style interpretation.



FINDINGS

Three on-site observations were held in three different mosques:

Mosque Kampung Pantai, Mosque Istiqomah Kampung Baru Sg. Ling, and Mosque Jamek Chenor.



The study of the on-site observation found out that **Mosque Kampung Pantai can be classified into Malay traditional vernacular style.** Meanwhile, **Mosque Istiqomah Kg. Baru Sg Ling and Mosque Jamek Chenor are not resembled any of the styles.**

ISSUES



More Modern Mosque In Modern Era

Architects in the modern era frequently focus on designing a modern mosque based on its form rather than understanding the deeper meaning behind it, which can lead to concerns with imitation. According to Rafique (1982), changes are done in order to face modernization and adapt new elements, where the adaptation will then alter the traditional shape and give a new look to the overall design. Due to that, the purpose of this research is to **determine the roots and uniqueness of traditional mosque design in Pahang.**

CONCLUSION

Throughout the study, the outcomes of the findings can be concluded into a few aspects and perceptions. The study focused on the key findings as the purpose is to highlight the style interpretation applied in mosques in Chenor, Pahang. From the discovery of an on-site observation of three selected mosques These mosques are still classified as one of identical, culturalist and historical mosques. Even though the mosque underwent changes as a result of being exposed to modernization, characteristics expansion, and natural disasters between 1900 until 2000, the development had no effect on its identity, and it still can be described in the detail study as below.

OBJECTIVE

The major goal of this research is to identify the regional identity of Pahang's traditional mosques through the study of style interpretation in terms of the following factors:

OBJECTIVE ?

- To investigate the differences between mosque typology and its style.
- To investigate various design approaches of the traditional mosques through a few case studies in Pahang.
- To explore the comparison of the architectural design form and style of a mosque in Pahang.

- Each mosque has a different style and typology
- The Chenor mosque's design must be associated with JKR
- Mosques in Chenor, Pahang are still well preserved by the villagers and are owned by the Islamic religious Pahang Council.

According to sazari nazi, 2016, mosque kampung Pantai is influenced by the architecture of the oldest mosque in Melaka which made it a categorization of traditional Malay vernacular mosque design. Masrumsa, Pa, Rossari and En. Imad, 2022, stated that mosque Jamek chenor in the modern era is influenced by the earliest Pahang district designs.

Mosques in every era need to follow its standard design from JKR and fulfill the criteria given in order to give comfort and the right capacity to the people.

Pn. Hidayah (2022), stated that the oldest mosque in Chenor, Mosque Kampung Pantai built in 1918 is still well managed by its committee. In fact, the mosque also is seen to be in a good condition even though every year there will be flood disaster strike in the area.

STYLISTIC CHARACTERS OF SHOPHOUSE IN BENTONG, PAHANG

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition for Built Environment and Engineering 2023



INTRODUCTION

Shophouse is a common urban building typology found in Southeast Asia and China, consists of commercial use on the ground floor and residential on the top floor. It is a fundamental unit of urban structure in Malaysian cities and towns. Malaysia's vernacular shophouse has a unique stylistic elements that differs itself from the rest of shophouse design around the world due to the design revolves around its multi-cultural background. The syncretic nature of Malayan culture and history in colonialism has created a unique identity for its shophouse with the amalgamation of different architectural elements, result of intertwining both vernacular and foreign technologies. Consequently, across various regions of Malaysia, the shophouse styles has also developed into variations with each region having its own distinctive stylistic characters that represents the region. George Town, Penang and Malacca City were successfully listed on the UNESCO World Heritage, due to its unique heritage identity. From this, there's no doubt that the stylistic elements of shophouse poses significance to the identity of a place (Han, J. Basi, 2015).

ISSUES

Rapid urbanization on developing towns has led to many demolitions on shophouses without concerning its potential heritage value. An article stated that 70% buyers of George Town, Penang heritage properties are reported to be Singaporeans (Wee, 2019). This proves a clear gap between Malaysia and Singapore regarding public awareness on the heritage value of shophouse. Hence, the lack of comprehension on the importance of retaining shophouses culture as well as the absence of appreciation in its cultural significances among Malaysian has caused difficulty in identifying stylistic characters of shophouse in towns like Bentong, Pahang. This will affect the architectural identity of the shophouse and will simultaneously decrease its architectural value and Bentong's heritage value.

Heritage Properties Buyers in George Town, Penang are

70% SINGAPOREAN



FINDINGS

Case studies

The main location of the case study is set in Bentong, Pahang, Malaysia. Various selection of shophouse along three parallel streets, including Jalan Loke Yew, Jalan An Peng and Jalan Chui Yin is taken as the subject for this case study. However, the selection only include shophouse that were built from 1890s, when Bentong was form, until 1970s. Newly constructed shophouse, that of Modern style, are not included in this study as they do not reflect an appropriate style because of drastic development in technology. The selected study area has a various diversity of styles.



Classifications of Shophouse Stylistic Timeline in Bentong

Nine essential architectural components of the shophouse facade were recognized, namely beam, column, roof, external wall, door, window, air vents, fenestration and ornamentation. All of these components were further divided into 41 visual elements.



The above demonstrate the stylistic timeline of shophouse in Bentong, further proving Ali et al., 2015 studies on the matter. It starts from a simple form with no ornamentation to grandeur facade with fine plaster works mimicking the colonial influences the British brought in. Due to its booming tin mining industry, shophouse 4 until 6 portrays Bentong's economic growth and prosperity with metal awnings and metal network fascia, along with golden finished Greco-Roman capitals and architecture, adorning the facade of its shophouse.

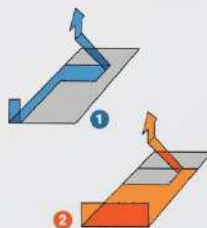
Comparative Analysis

The right shows the stylistic timeline classification of shophouse 1 from Bentong and shophouse 2 from Pahang. Both shares the same styles as they have the similar features of full width timber shutter windows or a parapet wall with indented panels. Solid timber shutters are commonly seen on an Early Penang style shophouse. Therefore, the solid timber shutters with glass infills on shophouse 1 is different from the conventional louvered timber shutters of shophouse 2. It portrays a hybrid of styles between Early Penang style and Southern Chinese Eclectic style which are unique to Bentong. The upper floor entrance on ground floor for both shophouses are quite different. Based on figure below shophouse 1 provide entrance through a separated passageway straight to the courtyard with an access of staircase to upper floor while on shophouse 2, the entry is through the single main entrance through the commercial or residential block to the courtyard. Both shophouse 1 and 2 have its differences even though sharing the same styles. This proves Bentong's shophouse features to have its own distinctive features than others. The distinctions between shophouses 1 and 2 exist despite having similar styles. The findings demonstrated that Bentong's shophouse characteristics set them apart from others. Most facades contain streamlined, utilitarian linear features like fins and canopies for shading. The facade design and the structure are kept well-integrated with a flat plaster finish made of lime or cement over reinforced concrete (RC) construction of beams and pillars with cement or clay brick infill. The differences are mainly in the posts and beam design, which are de-emphasized and incorporated into the facade. The elements of decorations such as keystones, architraves and motifs are the stylistic components that help define the shophouses' typology. Plenty of shophouses from Eclectic styles until Neo-Classical styles, like shown in Fig. 3, have architrave covering only the transom light or lintel part of the window. This unique feature of Bentong being the most architrave on shophouse from other regions covers the whole window, as shown below on window 3 until 7.

Southern Chinese Eclectic Style



Transitional Style



OBJECTIVES

Thus, this study aims to investigate the many stylistic characters and its origin of shophouse in Bentong to find its architectural identity in order to elevate the heritage value of Bentong.

METHODOLOGY

Throughout the research, the data were mainly collected through three methods, which are matrix taxonomy, case study observation, comparative analysis, and literature research. To increase the accuracy of the analysis, various data sources and evidence were collected using these methods to prove the data.

Primary Data Sources

Case study observations were made to understand the subject better. Photographs will be taken from each shophouse that displays a unique SC. Inventory classifications on the shophouses style will be done to classify it further, enabling the categorization of its elements: structure, ancillaries, openings, fenestration and ornamentation, as in Table 3. Then each of the features will be classified and analysed. After that a comparative analysis is done by comparing Bentong shophouses with another region in Malaysia for its correspondence and uniqueness in the SC. Wan Ali (2022) specified 48 characters; however, this research there will only examine forty-one (41) characters of Transitional, Eclectic, Neo-Classical, Art Deco and Modern architectural styles had been listed from the analysis and drafted in a checklist to develop an inventory sheet which also known as matrix taxonomy. The matrix is a reference to formulate an inventory form to classify and grade the architectural styles of heritage shophouse facades.

Matrix Taxonomy

The matrix taxonomy is an inventory form with a specific calculation method. Its purpose is to classify and grade the architectural styles of the heritage shophouse facade based on the characters and physical condition seen on the facade.

Secondary Data Sources

Information is searched through architectural journal articles, books, magazine, research paper and internet. This section contains all the main topics and information that is related and relevant to the study, which can be obtained through both method above. Topics are divided in to specific sub-topics to get more understanding on the matter. The topics are:

- History of shophouses in Malaysia and Bentong, Pahang
- Architectural identity and stylistic characters of a building
- Stylistic timeline of shophouse in Bentong

Feature Elements	Traditional	Modern
Roof	1. Clay tile	1. Concrete
Column	1. Clay brick	1. Concrete
Wall	1. Clay brick	1. Concrete
Window	1. Timber shutter	1. Glass
Door	1. Timber	1. Metal
Architrave	1. Timber	1. Metal
Keystone	1. Stone	1. Concrete
Parapet	1. Clay brick	1. Concrete
Lintel	1. Timber	1. Metal
Transom	1. Timber	1. Metal
Beam	1. Timber	1. Metal
Staircase	1. Timber	1. Metal
Canopy	1. Timber	1. Metal
Awning	1. Timber	1. Metal
Decorative	1. Stone	1. Concrete
Finial	1. Stone	1. Concrete
Capitol	1. Stone	1. Concrete
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IMPACT AND CHALLENGES OF ICT-BASED INFORMATION SHARING TOOLS IN MALAYSIAN CONSTRUCTION INDUSTRY

IIIDBEE X 2023
20 JANUARY 2023
International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023



INTRODUCTION

Most industries are moving towards the use of technological advancement by using information and communication technology (ICT) including construction industry (CI).

Malaysia has implemented electronic procurement system known as eP in 1999 introduced by the Ministry of Finance (MoF) which allows the government and suppliers to conduct transactions electronically and in September 2000, CIDB also introduced the National e-Tendering system (Jaafar et al., 2007). The government and CIDB are trying to assimilate the ICT application into the CI. However, most companies did not exploit the ICT, and only use basic functions like email (Gaith et al., 2009).

Generally, lots of ICT applications in the CI that can be differentiated by their purposes, ranging from design, planning, administration, scheduling, and databases. The general software used in CI firms is word processor, spreadsheet, email, administration software, databases, and self-developed programs (Gaith et al., 2009; Onyegiri & Nwachukwu, 2011; Onyegiri, 2017). There are also numbers of technical construction software currently e.g., Procore, PlanGrid, Oracle Primavera, and a lot more. For this study, these most common ICT applications are categorised into computer-aided design (CAD), scheduling/resource planning, cost calculation/estimation and geographic information system (GIS).

In Malaysia, there are 12 emerging technologies mentioned in the outline of Construction 4.0 Strategic Plan 2021-2025 (2021) including Internet of Things (IoT), Building Information Modelling (BIM), 3D scanning, photogrammetry, augmented reality, virtualisation, big data, predictive analytic, and cloud and real time collaboration.

PROCORE

PlanGrid

ORACLE Primavera

ISSUES/PROBLEM STATEMENT



Digital technology adoption by Malaysia's CI currently is low and connectivity driver is poor.

CIDB planned to implement cloud and real-time collaboration technology.

The Malaysian CI's readiness to implement the digitalization in the current conventional practice.

This research could provide essential information to aid the current scenario faced by the Malaysian CI.

OBJECTIVES



- To determine the impacts of the application of ICT-based information sharing tools on the construction project performance
- To identify the challenges faced by construction participants on the application of ICT-based information sharing tools in construction project performance

METHODOLOGY



Literature Review - articles, papers, books, publications

Quantitative approach via online questionnaire survey



Research background, problem statement, aim and objective establishment

Descriptive statistical analysis - 74 respondents

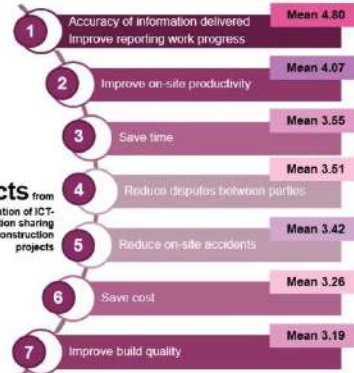
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FINDINGS



Impacts from the application of ICT-based information sharing tools in construction projects



FINDINGS



NOVELTY



Theoretical contributions to body of knowledge:

- Highlighting the importance of synergising information technology in the construction industry.
- Emphasize the current condition and challenges faced by construction participants in adopting ICT-based information sharing tools.

Practical contributions to industry:

- To strategise the plan to adopt digital technology for Malaysia's CI by mitigating the highlighted barriers faced by the construction participants.
- Professional bodies who govern, monitor and honor the accreditation of the academic programme to include the intended ICT application and software as the input for the students.
- Educators and students to pay full attention to ICT-related to prepare themselves for the upcoming evolution of CI.
- Preparing universities to be equipped with proper hardware and software for the students to utilise along their study journey in terms of financial support i.e., reimbursement of cost.

By focusing on these strategies, the adoption of digital technology and ICT in Malaysian CI is foreseen to be grow in the upcoming years, realising the agenda Construction 4.0 Strategic Plan 2021-2025 (2021).

CONCLUSION

IMPACTS

- The accuracy of information delivered via ICT is as accurate as it is.
- ICT improve reporting work progress between personnel.
- ICT helps to improve on-site productivity as well as save time in sharing information



CHALLENGES

- Speed and the availability of internet connection are the most challenging factor to implement ICT.
- Lack of IT specialist to help whenever ICT-related problem occurs



APPRECIATION

APPRECIATION

Penasihat I	1	Profesor Sr. Dr. Zulkiflee Abd. Latif
Penasihat II	1	Prof. Madya Sr. Ts. Dr. Zuhabri Ismail
Pengerusi I	1	Sr. Nurzafira Zainul Abidin (KAB Shah Alam)
Pengerusi II	1	Dr. Aidatul Fadzin Bakri (KAB Puncak Alam)
Setiausaha I	1	Nur Idzhaine Hashim
Setiausaha II	1	Firdaus Chek Sulaiman
Bendahari I	1	Sr. Muhammad Saiful Alizan Nordin
Bendahari II	1	Nurul Afida Isnaini Janipha
AJK Extended Abstract & IPR	1	Ts. Gs. Dr. Abdul Rauf Abdul Rasam Dr. Noor Akmal Adillah Ismail Dr. Har Einur Azrin Baharuddin Dr. Aidatul Fadzin Bakri
AJK Poster/Pameran	1	Ts. Norzaihan Mad Zin Profesor Madya (Dr. Ts. Dr. Rostam Yaman Prof. Madya Sr. Dr. Siti Aekbal Saleh Mohd Ridzwan Mohd Yusoff
AJK Teknikal/ Peralatan/Logistik	1	Sr. Mohamad Hezri Razali Sr. Abdul Aziz Ab Rahman Sr. Gs. Haris Abdul Rahim Mohd Som Yaman
AJK Pendaftaran, Sijil & Hadiah	1	Dr. Che Bon Ahmad Nurul Akmaniza Mohd Nasir Dr. Nurulhusna Qamaruz Zaman Siti Nursakinah Mohd Sarudin Muhammad Shafiq Muhammad
AJK Hakim & Penjuaan	1	Sr. Dr. Mohd Arif Marhani Dr. Nabilah Nahrudin Dr. Nafisah Khalid
AJK Makanan	1	Dr. Raziah Ahmad Ts. Dr. Shaibatul Islamiyah Che Man Dr. Noraini Bahari
AJK Buku Program Pembantu	1	Dr. Arniatul Aiza Mustapha Muhammad Syafoq Hazwan Mohamad Jaafar
AJK Promosi / Juru Kamera	1	Ts. Elma Dewiyana Ismail Muhammad Bahtiar Masidin Ts. Mohd Shariful Hafizal Aminuddin Mohamad Hazhami Baharudin
AJK Protokol	1	Sr. Dr. Ainon Nisa Othman Sr. Dr. Roslina Idris Sr. Dr. Hafiszah Ismail Ts. Dr. Nor Hanisah Mohd Hashim Sr. Ts. Dr. Azwan Sulaiman Sr. Muhammad Saiful Alizan Nordin Mohd Suhaizal Sufian Nory Norshafiqah Shaari
Pembantu	1	Wan Intan Mastura Wan Azri Wan Nur Ayuni Wan Ab Rashid
Pengacara Majlis	1	Sr. Abdul Izz Mohamad Kamil Suzana C. Alih

COMMITTEE



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