

Emerging A Socio-Economic and Psychological Impact Assessment Model for Urban Riverfront Development in Malaysia

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Abstract

Developing an urban riverfront requires an appropriate impact assessment to avoid any impairment in future. Impact assessment indicators and its parameters often be a set of guidelines in developing an expedient riverfront within urban area. Nonetheless, the impact assessment indicators and its parameters that could be used as standard pillars of local practices is currently concerned. Therefore, this paper aims to incipient a socio-economic and psychological impact assessment model for Urban Riverfront Development (URD) in Malaysia. Melaka River, Malaysia has been chosen as a case study to measure the socio-economic and psychological indicators including its parameters suited with the local area. Partial Least Squares Structure Equation Modeling (PLS-SEM) was utilized to generate the model. A stratified random sampling was adopted for sample selection technique and structured questionnaires were disseminated among 500 respondents. However, after screening process, only 421 questionnaires were accepted to be analyzed. An exploratory factor analysis has been done to observe underlying constructs measuring the property building owners' perception of socio-economic impacts of URD. There are eight (8) hypotheses by eight (8) indicators and forty-three (43) parameters have been tested using PLS-SEM. Results show that only seven (7) indicators were accepted for the model which are property market, property development, social development, demographics, economic development, neighbourhood location and environment. Whereas, government policy was rejected from the model.

Keywords: Socio-economic and psychological Indicators, Impact assessment, Urban Riverfront Development, Malaysia.

1. Introduction

Developing an Urban Riverfront Development (URD) needs a prerequisite evaluation and investigation on the site in order to evade any faults in forthcoming years. In this regard, impact assessment become as essential element in the riverfront development process. The significance of assessing the impact of infrastructure developments including URD is appreciable as practicing by numerous practitioners throughout the world. According to previous literature, the impacts of other infrastructure developments are assessed in a good manner that has a great deal of focus on sustainability. It is underpinning of social, economic and environment. For example, road or highway project [1]-[2]; transportation or railways project [3]-[4]; electricity or hydropower project [5]-[6]-[7]; airways [8]; etc. However, within impact assessment of URD in real-world practices, these aspects are often not thoroughly evaluated. It has identified that, the assessment focuses either on only one aspect or multiple aspects, but incomprehensive manner. For example, [9]-[10]-[11] focused on ecological and social benefits; [12]-[13] concentrated on environmental attributes; and [14]-[15]-[16]-[17]-[18]-[19]-[20] addressed only on economic benefits. Thus, these inadequate assessments have led to poor standards of urban sustainability especially in URD projects [21]-[22].

Difficulty in achieving sustainability standards has not only occurred in outside countries but yet become as a problem in Malaysia [23]-[24]-[25]. Reviews of past literature have identified that current status of URD in

Malaysia have difficulties in attaining sustainability, further impairing efforts to achieve sustainable urban development in Malaysia. This is due to a few factors that impede URD in Malaysia which are: 1) difficulty in balancing various social, economic and environmental needs of many stakeholders, 2) insufficient financial resources, 3) lack of human expertise, and 4) difficulty in obtaining planning permission [26]-[23]-[25].

On top of that, there is no specific assessment tool that could be used to specifically assess the impacts of URD. Even though, most of stakeholders and practitioners used SIA: Social Impact Assessment and EIA: Environmental Impact Assessment as assessment tools practiced in Malaysia, but it has identified that they tend to focus more on social and environmental aspects in actual impact assessment practices. Moreover, it has also acknowledged that there is still lacking of specific emphasis on socio-economic aspect especially related to property market, which is a driver of economic growth within real estate industry; and an essential in contributing towards sustainable urban development. It perceived was left behind even though it significantly important. It is in line with [27] who revealed that the economic contribution is poorly highlighted in impact assessment practices and therefore, needs to be uplifted.

Hence, this paper aims to emerging a premeditated impact assessment model for assessing URD in Malaysia. Then, this research considered as an effort of improving the impact assessment practice in Malaysia as pointed out by few researchers that there is still have weaknesses and lack of standardization in impact assessment practice in Malaysia.

2. Literature Review

Impact assessment is an assessment that frequently conducted to assess impacts or any consequences if any development projects, policies and programmes [28]. This assessment is essential in order to ensure 1) the development projects are being managed efficiently; 2) the policies and programmes are beneficial to stakeholders; and 3) the verified impacts are promoted to related stakeholders [29].

Impact Assessment Practice for URD in Developed Countries

Ideally, there are a number of countries over the world had practiced Socio-economic Assessment (SEA) in assessing the impacts of URD. Mostly, the coverage of the assessment is including the three pillars of the sustainability which are social, economic and environment. Regarding the main issue of this research which is related to the scope of coverage of economic assessment aspect, it was identified that most of the developed countries had already emphasized on economic indicators that reflected to real estate industry including property market, property development and investment such as US, UK and Europe. In fact, most of researchers such as [30]-[31]-[32]-[33] who studied on this issue had discovered that the URD provided a significant impact in optimizing the property market.

In US, [33] had discussed the findings of Florida's study on economic impact of several URD development projects within the US cities such as Wilmington DE, Chattanooga TN, Des Moines IA, Hartford CT, Louisville KY, Pittsburg PA and Providence RI. The study proved that the URD have a positive impact to the property market value particularly the properties within the riverfront area. Furthermore, the development of URD in US contributed to the US economy which changing from industrial manufacturing base to a knowledge base economy. In addition, it also provided a great opportunity for the job growth as well as increased the local amenities in surrounding area.

Moreover, [30] had also asserted that the quality of places within an urban area in terms of concept of amenities provided which are natural, recreation-oriented, lifestyle, modern and technological-based are the powerful strategy in enhancing the economic level of a city and region. On top of that, [31] revealed that the URD within an urban area could be as one of the creative cities development strategies. This is due to the URD had spurred physical attractiveness of open space towards a focusing zone of outdoor recreation and youth-oriented entertainment as well as mixed-used development along the riverfront area. For the long-term, it was causing zoning changes within the riverfront area. As a result, it's indirectly effects the local economy and simultaneously, enhanced the value of adjacent properties. It showed that URD development not only gave positive economic impacts directly, but provide the beneficial impacts indirectly to the adjacent neighbourhood area, publics as well as local communities.

In UK, the URD projects become as an important landmark of the cities' attraction. The uniqueness and style of architecture had boosted the economic activity especially influx foreign investment in real estate industry and simultaneously enhance the tourism industry in the UK [34]. Additionally, [35] cited that numerous countries over the world including UK, Europe, Australasia as well as Asia had inspired by the US waterfront regeneration projects which had mainly focused on revitalization and redevelopment for the waterfront regeneration programme. Indeed, the US experiences became a paradigm development model in terms of the impacts of the URD particularly in socio-economic and psychological model of URD.

In Europe, the emphasis of every single pillars of sustainability concept in river revitalization within urban areas began since the era of 1980. [36] had studied about the issues and problems including planning and initiatives towards river revival in terms of canal, riverbank and riverfront regeneration projects with regard to the sustainable agenda through a campaign of Mersey River in the North West of England which known as Mersey Basin Campaign was established in 1985. The study discovered the initiatives have promoted positive impacts not only on continuous improvement in river water quality but also on healthy connectivity between social and economic development. Within the impact assessment of URD within the urban area in Europe, [37] had argued that there is lack of standard methodologies for its assessment especially for major regeneration infrastructure projects. Hereafter, they had postulated that it is necessary to develop a framework or model that considers sustainability pillars particularly for waterfront development.

Impact Assessment Practice of URD in Asian Countries

In Asia, there are several countries emphasized on economic indicators within the impact assessment of URD practice. For instance, yet in Singapore, the waterfronts (i.e. URD) within the urban area or known as downtown area became as a new visitors' attraction. Instead of giving impacts on tourism industry of Singapore government, it's indirectly gained impacts to boost the economic development in terms of taxation revenues of the properties and buildings, profit flows and employment opportunities. Additionally, [38] cited that Singapore River within the urban area is one of the eleven thematic zones identified by the Singapore Tourism Board that potentially contribute to the economic development towards sustainable urban development. Besides, the development of Singapore River over the years encouraged the positive impacts to the neighborhood area. It provided a major change to the land use pattern which is becoming a vigorous mix development such as residential, commercial, retail, hotels and others. This change has concurrently affected the economic growth especially on the real estate industry.

In Japan, [32] identified that there were indirect economic impacts within the waterfront development (i.e. URD) which are consisting of gross national product enhancement, job opportunities, increased of property value, economic and trade growth and stimulated of investment intentions. These impacts contribute to the economic sustainability of the URD as well as promoted a sustainable urban development. Therefore, the socio-economic and psychological indicators within Asian countries have been highlighted but it required to exploring more.

Impact Assessment Practice of URD in Malaysia

The nature of the impact assessment practice for URD development in Malaysia focuses more on environmental and social aspects. Upon to this issue, the economic aspect that related to property market is still lacking of specific emphasis within the impact assessment practice. Reviews of the past literature had identified that the economic indicators particularly related to property market is still ambiguous due to lack of academic research in Malaysia. Thus, it is a necessity to ascertain relevant economic indicator and its parameters for the impact assessment of URD.

Within the current status of URD projects in Malaysia, it has identified that there are few problems and issues impede on the URD in Malaysia. Among the identified factors are: 1) difficulty in balancing the various social, economic and environmental needs of the various stakeholders; 2) insufficient financial resources; 3) lack of human expertise; and 4) difficulty in obtaining planning permission [23]-[24]-[25]. These identified factors revealed as evidences for the current status of the URD development and thus, became an obstacle in achieving a sustainable urban development in Malaysia.

On top of that, the knowledge underpins the socio-economic and psychological indicators specifically on spatial dimension is still deficient due to a lack of research. Besides, the researches on specific socio-economic and psychological indicators that also consider the property market spatially are still infancy. According to [39], land use change and distribution of spatial data is a pre-requisite for planning, deployment, and the formulation of policies. In addition, there are have a significant relationship between land use type and economic characteristics such as population density, race, and poverty level. Therefore, this research attempts to explore the specific theoretical knowledge of socio-economic and psychological indicators for URD, and to stimulate a specific assessment tool which integrated with the spatial measurement for the assessment of URD.

3. Research Methodology

This research embarks a quantitative approach which involved a survey to obtain respondents' opinion regarding the socio-economic and psychological impact assessment indicators and its parameters of URD in Malaysia. A stratified random sampling was adopted for sample selection technique and a set of structured questionnaires was disseminated among 500 respondents. They were consisting of property owners, tenants, business operators, retailers or entrepreneurs. However, after screening process, only 421 of questionnaires were accepted to be analyzed. An exploratory factor analysis has been done to observe underlying constructs measuring the property building owners' perception of socio-economic impacts of URD. This research utilizes Partial Least Squares Structure Equation Modeling (PLS-SEM) using SmartPLS 3.0 software to generate the model. This software was used due to as an appropriate tool to analyze several hypothesizes within exploratory research. According to [40], this software is most suitable tool for the research purpose as for prediction or exploratory modeling. There are eight (8) hypotheses by eight (8) indicators and forty-three (43) parameters have been tested using PLS-SEM.

4. Findings and Results

Based on the analysis that has been done, the results show there are only seven (7) socio-economic and psychological indicators were accepted for the socio-economic and psychological impact assessment model with the *p-values* of 0.01 which were considered as significant. The accepted indicators are property market (PROP_MAR), economic development (ECO_DEV), property development (PROP_DEV), demographic (DEMOG), environment (ENV), neighbourhood location (NEIGH_LOC) and social development (SOC_DEV). Whereas, the other one indicator i.e government policies (GOV_POL) was considered as not significant and was rejected from the model.

Furthermore, there are only seventeen (17) socio-economic and psychological parameters were accepted for the model. The parameters are PM_value and PM_rental from PROP_MAR indicator; ED_business, ED_recreational and ED_tourists from ECO_DEV indicator; PD_commercial and PD_residential from PROP_DEV indicator; DA_income, DA_job and DA_population from DEMOG indicator; EA_odor and EA_view from ENV indicator; NL_transport, NL_facilities and NL_access from NEIGH_LOC indicator; SD_social and SD_crime from SOC_DEV indicator.

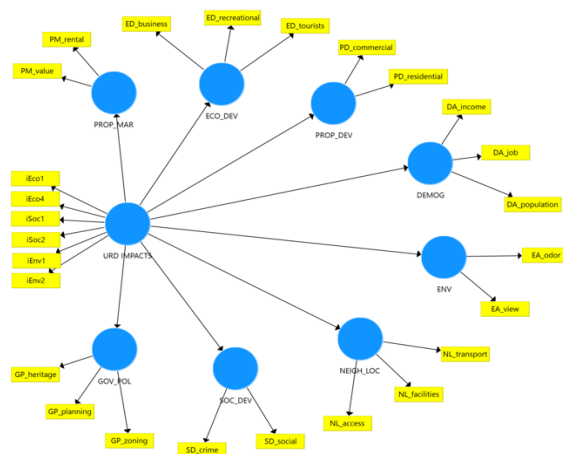


Fig. 1 Socio-economic and psychological Impact Assessment Model After Elimination Process

Fig. 1 shows socio-economic and psychological impact assessment model that has been generated using SmartPLS 3.0. After leading the reliability and validity test for measurement model, twenty three (23) of socio-economic and psychological parameters have been eliminated from the model which are two parameters from PROP_MAR indicator (i.e. PM_ss, PM_dd); one parameter from PROP_DEV indicator (i.e. PD_design); two parameters from ECO_DEV indicator (i.e.ED_productivity, ED_competition); six parameters from SOC_DEV indicator (i.e.SD_crowded, SD_traffic, SD_migrant, SD_image, SD_cultural, SD_health); one parameter from DEMOG indicator (i.e.DA_ratio); one parameter from GOV_POL indicator (i.e. GP_pattern); three parameters from NEIGH_LOC indicator (i.e. NL_road, NL_amenities, NL_light); seven parameters from ENV indicator (i.e. EA_flood, EA_noisy, EA_healthy, EA_pollution, EA_env, EA_safety and EA_lively); and six parameters from URD_IMPACT indicator itself (i.e. iSoc4, iEnv3, iEco3, iSoc3, iEco2, iSoc5).

Table 1 Hypotheses Result for Impact Assessment Indicators of URD.

Hypothesis	Relationship	Path Coefficient(β)	t-statistic	Significance	Result
H ₁	URD_IMPACTS > PROP_MAR	0.546	4.596	$p < 0.01$	Accepted
H ₂	URD_IMPACTS > PROP_DEV	0.280	2.049	$p < 0.01$	Accepted
H ₃	URD_IMPACTS > ECO_DEV	0.579	6.519	$p < 0.01$	Accepted
H ₄	URD_IMPACTS > SOC_DEV	0.178	3.868	$p < 0.01$	Accepted
H ₅	URD_IMPACTS > DEMOG	0.669	5.613	$p < 0.01$	Accepted
H ₆	URD_IMPACTS > GOV_POL	0.125	0.545	NS	Rejected
H ₇	URD_IMPACTS > NEIGH_LOC	0.636	5.364	$p < 0.01$	Accepted
H ₈	URD_IMPACTS > ENV	0.521	5.062	$p < 0.01$	Accepted

(P-value: * $p < 0.01$; ** $p < 0.05$; *** $p < 0.10$; NS = not significant)

Table 1 shows the hypotheses result for impact assessment indicators of URD. Based on the result, there were seven hypotheses accepted while another one hypothesis was rejected. The first hypothesis (H1) which states that “the development of URD has significant impact on property market” was significant and accepted at $p < 0.01$ with path coefficient value greater than ± 0.1 (i.e. $\beta = 0.546$) and t-statistic value higher than 1.65 (i.e. t-statistic = 4.596). The second hypothesis (H2) which is “the development of URD has significant impact on property development” was also significant and accepted at $p < 0.01$ with path coefficient value 0.280 and t-statistic value 2.049. Third and fourth hypothesis (H3 and H4) which states “the development of URD has significant impact on economic development; and the development of URD has significant impact on social development” were accepted at significant level at $p < 0.01$ with path coefficient value 0.579 and 0.178; and t-statistic value 6.519 and 3.868 respectively. Then, fifth hypothesis (H5) which is “the development of URD has significant impact on demographic attributes” was significant and accepted at $p < 0.01$ with path coefficient value 0.669 and t-statistic value 5.613.

Continuing the sixth hypothesis (H6) which is “the development of URD has significant impact on government policy” demonstrates 'not significant' with path coefficient value is poorer than ± 0.1 (i.e. $\beta = 0.545$) and t-statistic value lower than 1.65 (i.e. t-statistic = 0.125). Thus, H6 was rejected. While, Seventh and eighth hypothesis (H7 and H8) which are “the development of URD has significant impact on neighbourhood and location attributes; and the development of URD has significant impact on environmental attributes” were both significant and accepted at $p < 0.01$ with path coefficient value 0.636 and 0.531; and t-statistic value 5.364 and 5.062 correspondingly. The results indicate that all of socio-economic and psychological indicators are significant to be affected by URD. The socio-economic and psychological indicators that have been accepted and significantly correlated are (Property Market, Property Development, Economic Development, Social Development, Demographic Attributes, Neighborhood and Location Attributes and Environmental Attributes). Otherwise,

another socio-economic indicator (Government Policy) was identified as not significant to be affected by URD and thus, it was subtracted from the socio-economic and psychological model of URD.

Based on the results, it can be concluded that hypothesis six (H6) do not approve for development of socio-economic and psychological model of URD. The result indicated that the development of URD was not affected by government policy due to mostly URD areas are fixed under preservation of heritage and cultural restriction of particular government body or local authority. That is because the development of URD has no significant impact on government policy. Through this statistical test and analysis which involves both inner and outer model measurement, it has identified that the government policy indicator (GOV_POL) are unimportant and needless for development of socio-economic and psychological model of URD. Therefore, government policy indicator (GOV_POL) has removed for further analysis.

5. Conclusion

Overall, there was only seven hypotheses were accepted for the socio-economic and psychological impact assessment model with the *p-values* of 0.01 which were considered as significant. Whereas, the other one hypothesis considered as not significant and was rejected from the model. The accepted hypotheses are H1: the development of URD has significant impact on property market; H2: the development of URD has significant impact on property development; H3: the development of URD has significant impact on economic development; H4: the development of URD has significant impact on social development; H5: the development of URD has significant impact on demographic attributes; H7: the development of URD has significant impact on neighbourhood and location attributes and H8: the development of URD has significant impact on environmental attributes. Hence, it was determined that URD has significant impact on property market, property development, economic development, social development, demographic attributes, neighbourhood and location attributes as well as environmental attributes.

In line with the research topic, it can be concluded that there were seven (7) socio-economic and psychological indicators and twenty (20) socio-economic and psychological parameters were setting up as standard pillars of URD impact assessment in local practices in Malaysia. Therefore, the main aim of this paper which is to emerging a socio-economic and psychological impact assessment model for URD in Malaysia was accomplished.

Based on the research findings and results, it could be suggested that the assessment have to focus more on property market (i.e PROP_MAR) and environmental attributes (ENV) instead of other impacted indicators such as demographic attributes (i.e DEMOG), economic development (i.e ECO_DEV) and neighbourhood and location attributes (i.e NEIGH_LOC). It was due to the both of indicators have also larger effect size to reflect on URD development. Therefore, it cannot be simply left behind because the socio-economic and psychological indicators which have interconnected with real estate and environment always led the socio-economic growth within an area especially within an urban area.

Through this research, it could be highlighted that the identified socio-economic and psychological indicators and their parameters could be fundamental attributes for assessing the socio-economic and psychological impacts of URD in Malaysia. To ensure that the socio-economic and psychological impact assessment model be beneficial in current practice, the model should be utilized by policy makers and other industrial players such as planner in Urban and Town Planner Units, *Unit Perancang Ekonomi Negeri* (UPEN), Irrigation and Drainage Department, local authorities, government linked companies (i.e. *Perbadanan Sungai dan Pantai Negeri Melaka*), developers as well as investors who actively involved in URD development and management. Besides, by using the proposed model, they can solve the issues underpinning inconsistency of using appropriate indicators in assessing socio-economic and psychological impacts of URD. Furthermore, the developed socio-economic and psychological impact assessment model provided information for valuers in predicting future property market particularly for properties were located within the riverfront area. Therefore, the stakeholders and practitioners able to uplift the future impact assessment of URD in Malaysia.

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References

- [1] R. Huang and C. Yeh, 'Development of an assessment framework for green highway construction', *Journal of the Chinese Institute of Engineers*, 31(4), pp. 573–585, 2008.
- [2] S. John and U. Sharma, 'An environmental decision-support system based on sustainability for evaluating alternatives of a road project', *International Journal of Ecology and Development*, 28(2), pp. 87–95, 2014.
- [3] A. Amiril, A. H. Nawawi, R. Takim and S. N. F. A. Latif, 'Transportation Infrastructure Project Sustainability Factors and Performance', *Procedia - Social and Behavioral Sciences*, 153, pp. 90–98, 2014.
- [4] V. Simionescu and G. Silviu, 'Assessing Sustainability of Railway Modernization Projects; A Case Study from Romania', in *Procedia Computer Science*, pp. 458–465, 2016.
- [5] M. Keskinen and M. Kummu, *Impact assessment in the Mekong—review of Strategic Environmental Assessment (SEA) & Cumulative Impact Assessment (CIA)*, Espoo: Aalto University, 2010.
- [6] M. Yu and A. Halog, *Solar Photovoltaic Development in Australia—A Life Cycle Sustainability Assessment Study*, Sustainability, 2015.
- [7] S. N. Sahimi, M. F. Turan and K. Johan, 'Development of Sustainability Assessment Framework in Hydropower sector', *IOP Conference Series: Materials Science and Engineering*, 226(1), 2017.
- [8] M. Lenzen, A. S. Murray, B. Korte and J. C. Dey, 'Environmental impact assessment including indirect effects - A case study using input-output analysis', *Environmental Impact Assessment Review*, pp. 263–282, 2003.
- [9] Millennium Ecosystem Assessment, 'Millennium Ecosystem Assessment: Objectives, Focus, and Approach', in *Ecosystems and Human Well-being: Current State and Trends, Volume 1*, pp. 1–23, 2005.
- [10] R. Desai (2012) 'Governing the Urban Poor: Riverfront Development, Slum Resettlement and the Politics of Inclusion in Ahmedabad', *Economic and Political Weekly*, 47(2), pp. 49–56, 2012.
- [11] Y. Che, K. Yang, T. Chen and Q. Xu, 'Assessing a riverfront rehabilitation project using the comprehensive index of public accessibility', *Ecological Engineering*, 40, pp. 80–87, 2012.
- [12] J. Bryson, 'Greening urban renewal: Expo '74, urban environmentalism and green space on the spokane riverfront, 1965-1974', *Journal of Urban History*, 39(3), pp. 495–512, 2013.
- [13] K.-W. Ahn, J.-C. Lim, Y.-K. Lee, T.-B. Choi, K.-S. Lee, M.-S. Im, Y.-H. Go and J.-H. Suh, 'Vegetation Classification and Distributional Pattern in Damyang Riverine Wetland', *J. Environ. Impact Assess.*, 25(2), pp. 89–102, 2016.
- [14] M. Gross, J. Mullin and J. Palmer, 'Assessing economic impacts of urban recreation development: Lowell National Historical Park', *Environmental Impact Assessment Review*, 2(2), pp. 159–174, 1981.
- [15] R. M. Stein, *Hudson River Regional Economic Impact: Impact of Environmental Remediation*, 2001.
- [16] L. E. Development, 'Tourism and Local Economic Development', *Annals of Tourism Research*, 29(4), pp. 1–8, 2002.
- [17] M. V. Levine, 'Tourism-based redevelopment and the fiscal crisis of the city: The case of Montréal', *Canadian Journal of Urban Research*, 12(1), pp. 102–123, 2003.
- [18] C. Spörri, M. Borsuk, I. Peters and P. Reichert, 'The economic impacts of river rehabilitation: A regional Input-Output analysis', *Ecological Economics*, 62(2), pp. 341–351, 2007.
- [19] E. E. Hjerpe and Y. S. Kim, 'Regional economic impacts of Grand Canyon river runners', *Journal of Environmental Management*, 85(1), pp. 137–149, 2007.
- [20] F. A. Nelson, *Economic Impact Study Detroit Riverfront*. City of Detroit, 2013.
- [21] D. Satterthwaite, 'Sustainable Cities or Cities that Contribute to Sustainable Development?', *Urban Studies*, 34(10), pp. 1667–1691, 1997.
- [22] T. J. Dixon and M. Eames, 'Sustainable urban development to 2050', *Urban Retrofitting for Sustainability: Mapping the Transition to 2050*, (October), pp. 19–48, 2014.

- [23] A. B. M. Yassin and S. Bond, S. 'Waterfront development in Malaysia: do we have sustainable governance?', *Pacific Rim Property*, 2011.
- [24] A. M. Yassin and S. Meryam, 'Kelestarian Pembangunan Hadapan Air di Malaysia', *Akademika*, 82(2), pp. 3–13, 2012.
- [25] A. Yassin, S. Bond and J. Mcdonagh, 'Principles For Sustainable Riverfront Development For Malaysia Waterfront and Waterfront Development', *Journal of Techno-Social*, 4(1), pp. 21–36, 2012.
- [26] A. Yassin and C. Eves, 'An evolution of waterfront development in Malaysia', *Proceedings*, 2010.
- [27] L.-Y. Shen, J. Ochoa, M. N. Shah and X. Zhang, 'The application of urban sustainability indicators e A comparison between various practices', *Habitat International*, 35, pp. 17–29, 2011.
- [28] A. Chadwick and J. Glasson, Socio-economic impacts 2: Social impacts, *Methods of Environmental and Social Impact Assessment*, 2017.
- [29] D. Streatfield and S. Markless, 'What is impact assessment and why is it important?', *Performance Measurement and Metrics*, 10(2), pp. 134–141, 2009.
- [30] R. Florida, *Competing in The ge of Talent: Quality of Place and The New Economy*, 2000.
- [31] J. Zimmerman, 'From brew town to cool town : Neoliberalism and the creative city development strategy in Milwaukee', *Cities*, 25, pp. 230–242, 2008.
- [32] W.-C. Huang and S.-K. Kao, 'Public e private partnerships during waterfront development process : The example of the world exposition', *Ocean & Coastal Management*, 92, pp. 28–39, 2014.
- [33] R. Dauffenbach, E. Abrogar, M. Reim and D. Teufel, *The "Economics of Place" and Potential Impacts of Arkansas River Development Project*, 2016.
- [34] City of Edinburgh Council, *Case Studies: Waterfront Regeneration*, 2014.
- [35] A. Jones, 'Issues in Waterfront Regeneration : More Sobering Thoughts-A UK Perspective', *Planning Practice & Research*, 13(4), pp. 433–442, 1998.
- [36] R. Wood, J. Handley and S. Kidd, 'Sustainable Development and Institutional Design : The Example of the Mersey Basin Campaign', *Journal of Environmental Planning and Management ISSN:*, 42(3), pp. 341–354, 1999.
- [37] D. Gilmour, D. Blackwood, L. Banks and F. Wilson, 'A Sustainability Enhancement Framework for the Dundee Central Waterfront Development', in *International Conference on Whole Life urban Sustainability and its Assessment*. Glasgow, 2007.
- [38] V. R. Savage, S. Huang and T. C. Chang, 'The Singapore River thematic zone : sustainable', *The Geographical Journal*, 170(3), pp. 212–225, 2004.
- [39] O. F. Oluseyi, *Urban Land Use Change Analysis of a Traditional City from Remote Sensing Data: The Case of Ibadan Metropolitan Area, Nigeria*. Humanity & Social Sciences Journal, 1, 42-64, 2006.
- [40] G. D. Garson, *Partial Least Squares: Regression and Structural Equation Models*, 2016.