
Cost-Benefit Analysis in The Local Authorities and Effective Decision-Making In Public Investment

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Abstract – Sustainable cities and communities are among of issues which intensely debated among Malaysian Local Authorities (LAs) as they are one of the stakeholders responsible for this matter. However, LAs have received criticism on their financial management which hindered them from performing their duties in fulfilling public expectations. Cost-benefit analysis (CBA) was introduced as a tool that guided their decision on the projects that would be beneficial to the societies and involve an acceptable trade-off cost. This article discusses the literature on CBA, its use in decision-making, and the factors influencing its implementation. Based on content analysis, it shows that project worthiness and inadequate information have become factors that influence the use of CBA in assessing public projects in Malaysian cases. This study provides new dimensions on which area should be improved to encourage the use of CBA in the assessment of Malaysian public projects.

Keywords: “Cost-Benefits Analysis”, “Local Authorities”, “Effective Decision Making”

1. Introduction

The world is experiencing rapid urbanisation driven by economic, social, and environmental changes. Malaysia recorded a cumulative increase in urban population from the year 1970 to 2010, which was expected to be continuous until 2030 (Siwar, Ahmed, Bashawir & Mia, 2016). A report by URBANICE Malaysia (2023) recorded that the

urbanisation rate in Malaysia in 2020 amounted to 77.2%, which was expected to increase by 7.8% in 2040. Overall, this trend corresponded to the growth of the nation's economy. Following the additional population, cities have been facing numerous challenges such as pollution, poor waste management, insufficient infrastructure, and poor public transportation systems. These situations have restricted the potential of cities to develop into viable pillars of sustainable development.

Based on past literature works, there was no single universally accepted definition for sustainable development. Nevertheless, stakeholders who were interested in sustainable development, such as academicians, researchers, and bodies including the Organisation for Economic Co-operation and Development (OECD), created the path determining sustainable development and the methods of achieving it. Notably, the most remarkable efforts could be seen through the introduction of Sustainable Development Goals (SDGs), which subsequently serve as a blueprint to achieve a more sustainable future for all parties. Moreover, SDGs support the idea that every human society should make the most out of their lives without jeopardising the ability of future generations to meet their own needs (The Organisation for Economic Cooperation and Development, 2004; Özge, Eleonora & Trine, 2023). In this case, the current society is required to effectively utilise the resources to ensure that the future generation's need is preserved. Additionally, SDGs outlined 17 goals, each presenting its respective objective.

Notably, the goal closely related to city development is SDG 11, which is sustainable cities and communities. Led by a community-first approach, the Malaysian government is committed to SDG 11 by developing meaningful value for its communities. The most remarkable initiatives include the introduction of the Smart City Framework Malaysia (MSCF), followed by the development of smart city pilot projects including Iskandar Malaysia Smart City. To achieve holistic planning and development of smart cities in Malaysia, MSCF serves as a guide and reference to Local Authorities (LAs) such as city managers, state governments, federal ministries and departments, academicians, industry players, and other interested stakeholders. As the third tier of the Malaysian government, LAs play significant roles in the city's development and maintenance (Atan, Abdul Rahman, Sawiran, Mohamed & Mail, 2010; Samsurijan, Ebekoziën, Azazi, Shaed & Badaruddin, 2022) which include maintaining roads and providing safe transport, ensuring reliable waste management systems, and developing and maintaining leisure amenities and recreational facilities among others (Ab Majid, Mohamed, Haron, Omar & Jomitin, 2014; Said, Amin & Ismail, 2020).

The LAs have been pushed to reevaluate their current functions due to changes in the global environment, the creation and amendment of governmental policies, strategies, and initiatives, and the rising needs of the public for a wide range of services and facilities (Ab Majid et al., 2014; Said et al., 2020). Malaysia's vision of developing into a sustainable nation by the year 2030 has placed additional pressure on LAs to perform major transformations in their method of delivering services. LAs should ensure that no socioeconomic disparity takes place between the population, where all populations can receive equitable services (Atan et al., 2010). The authorities are also required to utilise

their financial resources efficiently to fulfill the public demand and deliver quality goods and services.

Considering the LAs' significant role in stimulating the nation's growth, they constantly receive complaints that also increase yearly (Public Complaints, 2016). The complaints are related to the issue of deficient management of public funds and other resources, poor quality of services, and high reliance on government grants (Atan et al., 2010; Arunachalam, Chen & Davey, 2016; Teruki, 2021). In the progress toward sustainable cities and communities, poor financial management would be among the major obstacles faced by LAs, considering that the cost of fulfilling the mission amounts to approximately USD 18 million (The Cost of Making a City Sustainable, 2020). Nevertheless, LAs as public service providers should not only consider financial aspects in deciding to implement public projects, but they should also consider the non-financial aspects (Atan et al., 2010).

European Commission (2014) highlights that in the selection of publicly subsidised projects, the project that gains higher value through analytical appraisal can offer higher net economic well-being in the society as a whole (European Commission, 2014). Thus, Cost-Benefit Analysis (CBA) was introduced as a tool to assist government agencies in project selection. European and Australian governments are among the countries that have introduced guidelines on the application of CBA in evaluating and assessing public projects. However, there were insufficient past studies conducted on the relationship between the application of CBA in enhancing investment decision-making among Malaysian LAs. Thus, this article aims to review and discuss the factors that potentially contribute to the use of CBA among LAs. Following that, the second section of this article discusses the LAs, CBA, and factors influencing the application by the organisations. In section three, the selected theory that was used in constructing the study framework is elaborated on. Finally, section four presents the conclusions and recommendations for future works.

2. Literature Review

2.1. Local Authorities in Malaysia

LAs were introduced to become the bridge and accountable for providing public goods and services to communities residing within their localities. People who serve as the pillar for sustainable development have become the catalyst in supporting the LAs. The roles of these authorities include the delivery of basic public services and infrastructure, particularly for individuals who gain insufficient or no access to these services (Osman, Bachok, Bakri & Harun, 2014). The range of authorities and duties of LAs in Malaysia has been expanded within the Local Government Act 1976 (Act 171) for Peninsular Malaysia and the Local Authorities Ordinance 1996 and Local Government Ordinance 1961 for Sabah and Sarawak, respectively. Apart from the aforementioned acts, LAs are also subject to the Town and Country Planning Act 1976 for urban management planning purposes (Osman et al., 2014).

LAs are under the purview of the respective state governments. They work under the Ministry of Housing and Local Government (KPKT), which has been responsible for formulating, executing, and monitoring all laws related to the local government (Ngah, Zakaria, Noordin, Yaacob, Mustaffa & Sawal, 2011). These authorities are classified into three groups, namely city, municipal, and district councils, each carrying different roles and responsibilities. Although deemed equal in terms of size and capacity, the groups share the same objective, which is to provide basic infrastructure and public utilities. Currently, the total number of LAs amounts to 149, which comprises 12 city councils, 39 municipal councils, and 98 district councils. District and municipal councils are responsible for urban planning, public health, and waste management, while city councils provide revenue collection activity and law enforcement. Furthermore, city councils are led by the mayors, while municipalities and districts are led by presidents. The number of municipalities and districts is subject to changes in the future. To illustrate, municipalities can be upgraded to the city after they fulfil specific requirements, such as the requirements in terms of population numbers and revenue generated. It could also be seen that LAs in Malaysia gain revenues from three sources, namely taxes, non-tax revenue, and allocations from federal and state governments. Specifically, government grants and assistance reflect the higher revenues accumulated by the LAs (Martinez-Vasquez, Kebede & Weliwita, 2015), while a lesser contribution originates from the collection of property taxes and services charges (Atan et al., 2010; Mohd, Ayub, & Anuar, 2018; Ismail, Said & Amin, 2020).

In today's environment where rapid urbanisation, climate changes, and global financial and economic crises have been dominated, most LAs in developing countries including Malaysia face more significant challenges, especially in managing the cities. The challenges are present in closing the gap between the availability of financial resources and municipal spending needs (Martinez-Vasquez, Kebede & Weliwita, 2015), supplying high-quality services, and maintaining public infrastructure due to the high maintenance cost and limited financial resources (Mohd, Ayub & Anuar, 2018). This condition justifies the necessity of the adoption of management accounting practices such as CBA in managing LAs' financial affairs, especially in considering projects that involve a long duration, require regular maintenance, and incur a high budget.

2.2. Cost-Benefit Analysis and Factors Influencing the Application

Cost-benefit analysis (CBA) documents a long history of project evaluation. It also involves assessing and summing up the outcomes of projects in terms of costs and benefits (Drèze & Stern, 1987; Atkins, Davies & Bishop, 2017). A few governments in Western countries employ CBA as one of the instruments to determine the competition of public projects. In the case of publicly funded projects, such as transport and infrastructure projects, CBA was employed in the 1930s (Drèze & Stern, 1987). Notably, CBA allows its users to address all relevant impacts of the projects by quantifying the societal impacts of the projects in monetary terms (Koopmans & Mouter, 2020; Dehnhardt, Grothmann & Wagner, 2021).

Governments often use CBA in the assessment and evaluation of the appeal of public projects by examining the net present value of the investment (Atkins, Davies & Bishop, *Journal of Entrepreneurship and Business*

2017). In the business environment, CBA is viewed as an economic case that revolves around the strategic, commercial, financial, and management aspects. The CBA aims to evaluate and determine whether the project or investment is sound or feasible to be implemented by comparing the cost and benefits of each option and observing society's perspective. Drèze and Stern (1987) proposed two rules of CBA: 1) with no constraint on inputs, all projects that have positive net benefits (NPV) should be adopted, and; 2) if any constraints limiting the choice of the project are present, the combination of the projects that maximise NPV should be selected. The first rule suggested that positive NPV implies that the project is economically viable and expected to generate more benefits than costs over its lifespan (Mishan & Quah, 2020). From the second rule perspective, where resource allocation is addressed, prioritization should be given to the projects that offer the highest rate of return until the budget or resource limit is reached (Al-Obaidi & Salman, 2019).

As a toolkit for project selection, CBA applied two approaches (Drèze & Stern, 1987). The first approach involves forecasting the consequences, while the second approach is evaluation worth indicating the willingness to pay or accept the benefits through the project implementation (European Commission, 2104; De Rus, 2021). Furthermore, the first approach involves assumptions from two different perspectives; with the project or without the project (Department of Public Expenditure and Reform, 2012; De Rus, 2021). In employing this approach, careful assessment should be conducted by removing the irrelevant counterfactual factors as they can influence the accuracy of the decision being made especially in the case where the exercise period is longer than 20 years (Office of Impact Analysis, Australian Government, Department of the Prime Minister and Cabinet, 2023). Additionally, De Rus (2021) emphasised the importance of focusing on a situation known as the base case (e.g., do nothing and do minimum).

Based on the perspective of evaluation worthiness, project benefits can be measured through the willingness to pay or to accept (Department of Public Expenditure and Reform, 2012). To be specific, the economic point of view requires its users to address the methods of valuing the cost and benefits that are not represented by the monetary measurement. In determining the willingness to pay or opportunity cost, shadow pricing is the common approach being used (Drèze & Stern, 1987). This approach employs a method of approximating the social opportunity costs of the inputs, which do not involve monetary pricing (De Rus, 2021). "A dollar is a dollar" assumption is one of the methods that can be used to assign the value for impacts that cannot be monetised in dollar terms Office of Impact Analysis, Australian Government, Department of the Prime Minister and Cabinet, 2023). It can be done by observing the behaviour of the things involved. On the other hand, a few techniques can be used in benefits valuation, namely hedonic pricing, travel cost analysis, stated preference, and contingent valuation (Department of Public Expenditure and Reform, 2012). Each technique involves a different basis in placing the monetary value on the benefits. To illustrate, in stated preference, the value assigned to the benefit is presented by enquiring people regarding their willingness to pay in exchange for their well-being following the project implementation (O'Brien, 2005; Hwang, 2016; De Rus, 2021).

Works on CBA presented two types of analyses (e.g., financial and economic analyses) that could be conducted using this appraisal technique (Drazen & Stern, 1987; Asian Development Bank, 2013; HM Treasury, 2014). Each type of analysis serves different purposes; businesses are more focused on financial analyses, while the public entity focuses on the positive and negative effects of the implemented project. Therefore, it would incorporate economic analysis when any decision is made, such as investment decisions (Koopmans & Mouter, 2020). In line with the purpose of establishment, public entities including LAs are where most of the services cannot be sold to the market not rely solely on financial appraisal. This condition would reduce the impacts of social welfare improvements in the projects (Asian Development Bank, 2013), which is in line with Clark's (2013) opinion that the assessment of the public project impact from the financial perspective is significant due to its inability to capture the entire benefits despite the accurate calculation process. To ensure the efficient allocation of public resources and the benefit equally distributed to society, the use of CBA by public entities has been proposed and also encouraged in Western countries including the UK and Australia.

Besides the positive effects of CBA implementation, it is still considered to hold less significance in decision-making. Past studies (Atkins, Davies & Bishop, 2017; Vigren & Ljunberg, 2018; Koopmans & Mouter, 2020) highlighted a few factors that could the decision on the adoption of CBA, which included the inadequate understanding of the CBA concept and framework. Vigren and Ljunberg (2018) agreed that the produced results were unable to provide the stakeholders with their required information. This situation could disrupt the decision-making process while increasing the percentage of the wrongly selected investment. Another factor is the firm's ability to monetise all inputs and outputs (Hwang, 2016), which becomes more crucial in the public organisation, considering that most of their output is non-marketed and commonly valued based on society's willingness to pay for the service or goods offered by the public entities. Overall, these situations may lead to inaccurate and unreliable information that can reduce the decision-making effectiveness. A detailed qualitative analysis which had been supported by evidence and accurate data is needed to ensure the credibility of the monetisation information. Thus increasing the significance of inputs at their social opportunity costs.

O'Mahony (2021) suggested time horizon as one of the factors influencing the use of CBA in project evaluation. Time horizon plays a significant role in assessing and valuing the environmental costs and benefits, which commonly accrue in the long term (Bowman, 2022). It also limits the forecasting demand that is necessary for analysing the long-term cost and flow of benefits. European Commission (2014) highlighted that three time horizons could be identified for CBA (e.g., financial analysis period, technical usefulness or physical lifetime, and welfare impact horizon) when the horizons consider the different timespan as these different timespans fulfill different objectives. The welfare impact horizon commonly offers the longest lifespan compared to the financial analysis period and technical analysis as the impacts are considered infinite. Nevertheless, several earlier practices indicate the unavailability of definite rules or guidelines for setting the time horizon. However, a longer time horizon application is recommended in the case of welfare

consideration to ensure that no bias is present in the present generations and their consumer preferences (HM Treasury, 2014).

According to Jenkins et al. (2011), the time dimension of the project influences the investment decision. Essentially, the time dimension is strongly associated with discounting. The discount rate determines whether the value of a dollar currently spent or received holds a higher worth compared to a dollar spent or received in a later period (Hwang, 2016). Through the use of time dimension in the project, net economic benefits and net cash flows can be captured by expressing the values in terms of current and future values (Guerriero & Pacelli, 2020). Analysts are required to compound the interest rates, compute future values, and allow for the compounding of interest rates. When future values are brought to the present for comparison purposes, the discount of the values would be crucial. However, placing values on a dollar currently spent or received would become a challenge to analysts and practitioners when they need to apply it to the monetary value of human life or environmental value (Hwang, 2016). Besides that, the emergence of inflation due to an unstable market also made it difficult to determine whether the dollar in the future is worth more or less than a dollar now (Office of Impact Analysis, Australian Government, Department of the Prime Minister and Cabinet, 2023).

3. Underlying Theory

The stakeholder perspectives have applications in disciplines including law, accounting, public administration, ethics, and marketing (Freeman et al., 2010). The Stakeholder Theory (ST) aims to solve the issue regarding the notion solely for stockholders who fall under the only group to whom the management should respond besides the three listed problems (Freeman et al., 2010). Freeman and McVea (2005) highlighted three interconnected issues associated with the stakeholders and business. First, the issue of value creation and trade, second the issue of the ethics of capitalism, and third, the issue of managerial mindset.

ST posit that there is a high opportunity to address the aforementioned interconnected problems if the relationships between a business and the groups and individuals who can affect or are affected by these problems are adopted as a unit of analysis. In this study, ST has the capability of providing insights into identifying factors that could influence the application of CBA in assisting public investment decisions. The ST provides an appropriate lens to determine whether the organisations diligently seek ways of ensuring that the interests of a broad group of stakeholders would contribute to higher value over time (Harrison & Wicks, 2013). It also offers two perspectives, which are stakeholders-based perspective and stakeholders-based performance. The former is more focused on the factors that can boost performance based on what is measured, while the latter is considered more suitable for supporting this study framework. Furthermore, stakeholder-based performance measures the challenges managers encounter to further examine the value created by the firms from the perspectives of stakeholders who are involved in creating it. The core of this value lies in the importance of enhancing the well-being of the stakeholders involved in the systems of value creation led by the firm. Accordingly, Freeman et al. (2010) found that opinion has a stronger influence on managers' attitudes towards environmental social

contracts compared to regulatory costs. Chadburn et al. (2013) demonstrated the role of CBA in presenting the “value for money” for community-based disaster risk reduction, adaptability to climate change, and the more recent early response activities.

4. Evidence of the Use of CBA in Public Entities in Malaysia

In Malaysia, the most prominent efforts in the use of CBA could be seen in the Ministry of International Trade and Industry through the Ratification of the Comprehensive and Progressive Agreement for the Trans-Pacific Partnership (Malaysia ratifies CPTPP, 2022). It is noteworthy that CBA is fully utilised in indicating the costs and benefits of Malaysia’s entry into the partnership. This situation indicates that the government values the benefits that do not hold a monetary value. Another earlier effort on the application of CBA was demonstrated by the Malaysian Communications and Multimedia Commission when the Minister under this department requested the study of CBA to determine the effectiveness of providing internet facilities to communities in Sarawak (Minister: MCMC to study the provision of wider internet, 2021).

Despite the unavailability of the document produced by the Malaysian government on the guidelines of CBA in project evaluation, any projects that use the government budget are required to undergo a few evaluations prior to implementation. In 2011, the Malaysia Economic Planning Unit produced guidelines titled “Panduan Pelaksanaan Pengurusan Nilai Dalam Program/ Projek Kerajaan”. These guidelines serve as the base for determining the project to be implemented. Currently, the agencies under the government have been provided with additional guidelines known as “Garis Panduan Penyediaan Kajian Separuh Penggal Rancangan Malaysia Kedua Belas (KSP RMKe-12) dan Permohonan Projek Pembangunan Tahun 2024-2025”. It could be seen from these guidelines that a few appraisal tools have been suggested by the government and would serve as the key items in facilitating their decision-making and selecting the project that offers monetary and social benefits.

5. Conclusions and Recommendations for Future Work

This article contributes to the ongoing public interest in poor resource management in government organisations from the financial management perspective. The use of CBA as the investment assessment tool in improving the efficiency of public performance has been widely recognised by the European and Australian nations. However, several studies demonstrated that the application of CBA is inadequate for overcoming any challenges associated with the investment decision. The issue in this situation is whether the implementation of CBA can facilitate the selection of the most beneficial public investment, particularly in proving their dedication to enhancing and gaining public trust on the issue related to social development. In this case, one key question to be addressed is whether the use of CBA can increase the effectiveness of public sector investment decisions. Accordingly, this article presents a discussion on the CBA and the factors associated with their usage in investment. Stakeholder theory was selected and discussed. Based on the review, a study was conducted to examine the extent of assistance that CBA could provide

to the public sector, especially in the use of LAs. Ultimately, this study would contribute to the expansion of the existing literature and the development of new insights to strengthen the public sector investment decision.

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