JKAP (Jurnal Kebijakan dan Administrasi Publik)
Vol.23 (2), November 2019, 109-122
ISSN 0852-9213 (Print), ISSN 2477-4693 (Online)
Available Online at https://journal.ugm.ac.id/jkap

Determining Public Value of Infrastructure Projects: Case Studies in Yogyakarta Province, Indonesia

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Abstract

Public infrastructure is very important for tourism and cultural activities in Yogyakarta as one of the largest tourist cities in Indonesia. The purpose of this study is to determine the public value of three public investment projects in Yogyakarta, including, Flyover, Jalan 0 Km, and Grahatama Library. Flyover represents infrastructure projects in the form of roads, zero KM represents one of Yogyakarta's biggest tourist destination icons, and Grahatama Library represents a difficult development project. This study uses the cost-effectiveness analysis of each project using qualitative methods through interviews and secondary data analysis of three research sites. This method is used to be able to analyse the publicity value of various types of infrastructure projects in Yogyakarta and how their implications are for the economy. The results show that the construction of the three projects has the potential to produce results that will improve community welfare and increase income distribution, implying that the project values investment costs. Thus, despite the fact that in connection with the cost of the Grahatama library project, far exceeds the short economic value it generates, in the long run, the existence of libraries by increasing public access to knowledge will contribute to regional development.

Keywords: *construction project, cost efficiency, public value management*

INTRODUCTION

The concept of public value is multidimensional in nature, relating not only to the output and outcome of the project but also the implementation process. To that end, public value is not limited to the output of a public project, but also, the trust building process among stakeholders, that characterizes the endeavor (Flynn, 2007). Enhancing public value is a challenge that public administration and other stakeholders face, which arises from the forge collaboration among stakeholders who may have different, even divergent interests. Public value serves as guidance for policymakers and implementing agencies in determining whether or not the project is effective as gauged by the extent to which it aligns with public needs and interests (Yang, 2016).

Public value has a strong association with what people belief in and value or consider valuable. To that end, determining public value is necessary for a public project, as prior to generating the service, there is need for public resources to be allocated and spent on planning and implementation (Moore, 1995). There is a lot of public attention toward public infrastructure investments because of the huge amount of public finance that is expended, high opportunity cost in terms of other public investments that are forgone, high susceptibility to corruption that is often associated with public infrastructure investments, and debate over the social benefit and cost. This research used the concept of public value as the measure of project worthiness. Specifically, the construction of the three large infrastructure projects registered varying outcomes. During the construction of Jombor Flyover, one of the project parts had to be demolished as the construction materials were deemed not in compliance with standards had to be demolished because one of its supporting sides was deemed not in accordance to acceptable standard, with attendant increase in construction cost ; in the after math of the redevelopment of zero km, the use of slippery materials has led to surge in accidents involving four non-motorized carriages (andong in local parlance), which is the favorite mode of transport for tourists; the construction of Grahatama Library faced project design problems that eventually led to the change of project developer, development of a new design, all of which translated in project expenditure exceeding projects costs. To that end, evaluating the project management process of the three projects shed light into project preparations, planning, budgeting, and project implementation selection process.

This study used cost-benefit analysis to determine the public value that is attributable to the construction of three infrastructure projects in DIY. Cost and benefit analysis evaluates impact of using certain project approach on project outcomes gauged from benefits generated and costs incurred. That way, the approach is used to determine the best project implementation strategy for the project, based on the largest benefit-cost ratio (Christian et. al 2013). The relevancy and novelty of this research lies in the fact that it is the first of its kind in Yogyakarta that assessed three large public projects Yogyakarta special administrative region during 2010-2015 period that were implemented using e-procurement processes. Besides, assessing the performance of the three infrastructure projects Yogyakarta special administrative region government affords an interesting insight into the quality of government project planning and implementation processes, and considering the importance that the development of the three projects is integral to Yogyakarta regional development plan for 2020, results of the study offered an opportunity to gauge the progress made toward achieving that goal. In other words. This research assessed the level of efficiency of the construction of the three projects, and the impact the construction has had on public value in Yogyakarta special administrative region. The

paradigm of public value relates to the collaboration between the government and various stakeholders (Flynn, 2007). Based on public value model, politics has influence on the choice of paradigm that is used in project management The traditional paradigm is used in situations where politics is predominant, while in a situation where politics faces limitations for instance legal framework, new public management paradigm is used (Stroker et. al, 2006). Five prerequisites are imperative for adopting the new public management paradigm (NPM), inter alia, acquiring necessary skills, accountability mechanisms, commitment, and tailoring service delivery toward contributing to improvement in public welfare (Aldridge & Stoker, 2002).

Benington & Moore (2011) underscores the notion that public value inheres in society values hence has strong association with a). conceptual framework on improving and fostering change in society. Public values are reflected in the quality of life of the public with respect to the way they exercise their rights and public obligations in accordance with the principles of common good (Yang, 2016). Besides, according to (Moore & Harrison, 1995) cited by (Yang, 2016), public values refer to the desired outcomes relating to the quality of life of individuals and groups of citizens. Meanwhile, Bozeman et. al (2010) cited by Yang (2016) underscores the importance of normative values in society, which entail right to benefits and privileges citizens should (should not) have; b). Obligations of citizens to communicate with one another, and c). principles that must underpin public policy making process.

Generally, infrastructure development and maintenance policies, constitute government responsibility geared toward achieving public welfare. Thus, the main purpose of infrastructure development is to create social and economic development without compromising public welfare. To meet public expectations, the construction of infrastructure should be in line with accountability principles. Accountability is an embodiment of the extent to which agencies or entities that are charged with carrying out certain tasks and responsibilities are answerable to parties that entrust them with such tasks. Meanwhile, public accountability is the ability to be answerable to someone or to a group in relation to the expected performance by paying attention to certain principles and liable to consequences in the form of sanctions and rewards depending on the performance achieved. Consequences include administrative actions, compensation, sanctions or awards (Handoko, 2003).

Construction and development of public infrastructure creates opportunities for income generation, hence is important in mitigating and reducing poverty. Considering the interdependency of activities of infrastructure projects, achieving success is influenced by the extent to which there is continuity and coordination between planning, implementation, and supervision. This is because lack of coordination leads to project failure, or delay in project completion (Sudarwanto et. al, 2007), both of which reduce the contribution of the project to public welfare, Indicators of project success include completion of the project prior to planned time, operational cost that is lower than planned cost, quality of completed project that is greater than that planned (Setiawan & Ariadi, 2012).

Indicators of infrastructure success are rarely achieved on projects in Yogyakarta. This is contrary to public expectations that are based on rising traffic congestion that has become a common feature of Yogyakarta streets. To that end, one of the challenges Yogyakarta as an educational and tourism city faces is rising density of vehicles on Yogyakarta streets, the solution to which remains elusive because of the poor performance of existing and newly developed road

infrastructure. One of the congestion locations is in Jombor area. To solve the traffic congestion problem, the government of Yogyakarta constructed the Jombor Flyover. In 2013, the provincial office charged with Public Works, Energy and Human Resources awarded the Jombor flyover construction project to Adhi Karya Company. However, during the construction phase, the right side of the flyover had to be demolished when it was discovered that the structure was weak due to the poor materials that had been used during project implementation. Such demolition at an early stage attests to the poor project planning which in turn influence the efficiency and cost of the completed project.

The redevelopment of 0 km area is another key public infrastructure project in Yogyakarta special administrative region. The area is vital for tourism which is a key sector of the Yogyakarta economy. To that end, the reconstruction of zero (0) Km area is one of the development priorities due to its importance in the economic development of the region. However, the need for redevelopment of the area was also attributable to rising frequency of traffic accidents that had become cause for concern. The project entailed redevelopment of the street that passes through zero (0) km area. Nonetheless, in aftermath of project completion, many complaints begun to emerge including, inability of four-wheel horse cart (Andong) which is a key means of transportation for tourists to use the street due to the slippery of the stones that were used in its construction, public criticism about the use of andesite stones which were deemed not pertinent, and non-participation of the public policy making process, specifically project planning, design and implementation (Khoiruddin, 2015).

Meanwhile, Grahatama Library project was aimed at advancing public access to education. The project begun in 2010 and was supposed to have been completed by 2012. However, the developer failed to complete the project according to schedule in part due to the project design that was questionable. Subsequently, the provincial government handed over project design and construction to another developer, who came up with a new design. In 2015, project construction was completed. To that end, the construction of the project which was characterized by changing developers and the project design, is a reflection of poor management that led to inefficiency. Consequently, high project inefficiency translated into delay in project competition and cost overruns of Grahatama Library.

Poor performance of infrastructure projects as gauged from performance indicators, contribution to public benefits, justice, and welfare is attributable to the poor procurement process. Determining public value involves using cost-benefit analysis of the impact that project development has on economy and society (Dewi, 2014; Aryansyah & Indrayani, 2012; Purwaningsih, 2012). Aryansyah and Indrayani (2012) and Dewi (2014) in a Cost-benefit Analyis of a Traditional Apartment Project Rusunawa Jemundo, and Provincial Road Improvement in Gunung Kidul Regency, found the two projects cost efficient and enhanced public value. Meanwhile, a research by Purwaningsih (2012) on waste management facility in Gedebage, Bandung reached the conclusion that the project was not cost efficient, hence detrimental to public value due to adverse impact on the environment.

According to Izzetin Kenis in Octariani et al. (2017), budget clarity and target accuracy are key determinants of budget quality According to Schniederjans et al in Christian et al. (2013), construction cost can be classified into four main indicators, including Cost of preparation, Investment Cost or Capital, Operating costs, and Renewal or Reimbursement costs. Some of the above indicators are used in analyzing cost efficiency in construction work because in gen-

eral such indicators meet the government criteria and standards set for calculating construction spending.

Efficiency is a condition where policies and programs that are implemented use human resources, financial and time in an optimal manner (Ubaidillah, 2017). Meanwhile, financial efficiency, with respect to project cost control reflects a condition where cost incurred or the target cost that includes procurement and preparation costs for the project development as well as operating costs is lower than profits that such assets generate (Handoko, 2003). Meanwhile (Blocher et. al, 2010), considers efficiency as the company's ability not to dispose of financing sources that exceed the required amount. The implication is that cost efficiency is an indicator, which an investor can use to measure the potential of the target investment or program. The efficiency of a project in part depends on 'investment' in effort, cost, and time during the preparations and planning phase. The preparation and planning cost is one of the most important aspects of construction. Project preparation aims at estimating project implementation cost given the resources and methods used (Kurniawan, 2008). Making good cost estimates of project implementation prior to execution, enhances project efficiency and effectiveness. In other words, determining project efficiency essentially involves comparing project results r with resources used and time spent (Kurniawan, 2008). Meanwhile, cost efficiency of construction projects in a function of 4 indicators, inter alia, Preparation Costs, Investment or Capital Costs, Operational Costs, Renewal Costs.

METHODS

This research used a qualitative research design (Arikunto, 2002; Moleong, 2006) that is based on a case study approach (Sugiyono, 2008). The project assessment used both primary and secondary data. Primary data collection was based on interviews conducted with officials of Yogyakarta special administrative region departments of public works services, library agencies and regional archives, and public transportation. Meanwhile secondary data, which included reports on electronic procurement services, project implementation budgets and project outcomes, regulations on infrastructure construction, news about construction in DIY, and performance accountability reports of government agencies. Secondary data were obtained from relevant DIY government offices, Central Bureau of Statistics, and literature review.

Data analysis was based on Miles & Huberman (2007) Interactive Model Analysis. Nonetheless, prior to analysis, collected data were subjected to validity and reliability tests, which ensured that that data obtained were in line with expectations of the instruments.

Traffic data were obtained using various instruments that included stopwatch, meter and Tally Counter, and survey instruments, while total cost of traffic density is analysed based on vehicle type and number that pass through the area multiplied by the data on traffic density cost per km per hour. Data on cost at for four road sections beneath Jombor Flyover were obtained from the Transportation agency. Analysis of total cost of air pollution was based on the transportation type cost and number multiplied by the air pollution cost in IDR per km. Meanwhile, the total cost of density traffic is analysed by counting the total number of vehicle by type multiplied traffic transportation cost per km per hour. The data source is from Square Street on 0 Km by the Department of Transportation as presented in table 4 about Four-Point Traffic Congestion Costs at 0 km in 2014 and 2016.

FINDINGS AND DISCUSSION

Outcome of Construction

Based on Mardiasmo (2009) outcome is the impact of a particular activity. Thus,

Table 1. The Outcome of Construction Projects in Yogyakarta

	Jombor Flyover	0 Km Street	Grahatama Library
Public Benefits	Reduced traffic Congestion	reduced congestion	Increased archive repertoire
	Reduced pollution and cost associated with air pollution	Reduce Accident Level	Increased public access and use of archives as a source of information
	Increased effectiveness of mileage?	Increased sanitation and feasibility	Increased the number of visitors to the library
Disadvantages to the Public	Decreased interaction among communities Increased noise Pollution Environmental degradation around the flyover	The neighborhood around the 0 km point became dirty	Reduced green space
Welfare	Increased public income	Increased public income	Increased public income
Justice	Increased road accessibility	All vehicles can use the street	Improvement in the people's character and culture
Stakeholders	Adhi Karya Company Special Region of Yogyakarta as the commitment institution	Soyuren Company Filed by Bina Marga Special Region of Yogyakarta	Ampuh Sejahtera Company Titimatra Tujutama Company Library Agencies and Regional Archives Special Region of Yogyakarta

Source: Primary Data

an outcome is compared with the objectives or targets of the activity or project to determine whether or not it has been a success or a failure. Public value served as the outcome of the projects, which is accordance with Bozeman et. Al (2010) cited by Yang (2016) and Al-Mawardi (2014).

Jombor Flyover Construction

Flyover is built over a road or highway. DIY government built a flyover in Jombor area to reduce congestion at the Jombor intersection, which has high traffic density , especially during peak hours, which inconveniences both road users and residents of areas that are in the vicinity of the intersection (Margareth, Franklin & Warouw, 2015).

Analysis of the construction of Jombor Flyover focused on public interest, thus, focused on the impact that the construction of the flyover has had on traffic congestion, and congestion cost. Table 2 shows the cost of Congestion Cost of the four sections of Jombor Flyover intersection:Based on the research results, construction of Jombor Flyover has reduced the level of congestion in the area. Based on study finding, traffic density in the aftermath of the construction of the flyover in the area has decreased, which by implication, has also reduced congestion cost. Based on 2015 figures, the cost of congestion has decreased from IDR 2,752,800 to IDR 1,792,000 (Department of Transportation of Special Region of Yogyakarta, 2016).

To that end, the construction of the Jombor flyover has made positive contribution to improvement in congestion in the area, which in turn implies better air quality, lower expenditure on fuel for vehicles passing through the intersection, and better well-being for residents of the areas in the vicinity. Data on pollution cost by mode of transportation were obtained from the central bureau for statistics (BPS). Based on data obtained from BPS, pollution cost in the Jombor intersection area has decreased significantly from IDR 207,200 in 2010 to IDR 42.600 in 2015 (BPS, 2016). To that end, the construction of Jombor Flyover has not only led to a decrease in the density of traffic in the area but has also contributed to a de-

Table 3. Air Pollution Jombor Flyover year 2010 and 2015

No	Type of Transport	Amount of Transport	Air pollution Charge (km/hours) IDR		Total Cost of Air Pollution	
			2010	2015	2010	2015
1	Car	200	210	58	112,000	13,000
2	Bus/Truck	200	560	65	43,200	11,600
3	Motorcycle	400	130	45	52,000	18,000
Total Cost of Air Pollution					207,200	42,600

Source: BPS "Jogja Dalam Angka" Annual Report 2016

Besides, the construction of Jombor Flyover is beneficial to the public because it reduces the distance (mileage) that travelers have to take toward and from Yogyakarta city. Based on information traffic data and information obtained from the Head of Operations Coordinator in the project commitment institution showed that the average vehicle volume from 06.30-12.30 WIB was 2767.56 C. The result attests to the fact that Jombor Flyover has the capacity to smoothen traffic volume flow volume.

Moreover, the construction of the flyover has contributed positively to public economic and social welfare. Based on secondary data obtained from the central bureau of statistics, the average income of people in the area increased from IDR 2,388,999 in 2010 to be IDR 3,255,739 in 2015, which represents an increase of IDR 866,740 (more than 36 percent) in just five years.

Besides, the construction of the flyover has enhanced public access and use of road infrastructure which in turn has contributed to improvement in economic and social activities on the community. Flyover use unlike a tool road is non-discriminatory and non-excludable, which implies that its existence has benefited not only both short distance and long distance be travelers The construction of the flyover has increases road accessibility, which is reflected in the accessibility index 1.00 (ranked high), based on transportation institution data. This is supported by data obtained from the, Department of Public Works, Housing, and Energy Resources Mineral, that showed that the construction of the flyover has contributed much to the road accessibility to such an extent that Performance Accountability Report indicated very high utilization rate of 106.84%.

Nonetheless, the construction of Jombor flyover has some disadvantages. In a study by Muhammad et. al. (2015), it was revealed that the completion of the construction of Jombor flyover has had negative impact on the public, including, contributed to disconnecting and separating the western area and eastern side from Jombor Lor's village. Residents who live on the Eastern side of the flyover complaint about their inability to say prayers in a mosque) that is located on the Western side, reaching which necessitates crossing the flyover. Thus, the construction of the flyover has reduced interaction among members of the community, which prior to the development of the project, were close and often used to interact intensively on regular basis, such as in village development meetings, and other occasions. Such meetings are no longer possible for elderly population, because of the difficulty for residents to travel between the eastern and western sections of the flyover; increase in noise pollution(residents in the vicinity of the flyover complain about an increase in noise pollution in the aftermath of the completion of the flyover, which is attributable to the fact that smooth flow of traffic indices drivers to drive at high speed; environmental degradation around Flyover

Table 4. Four-Point Traffic Congestion Costs at 0 km in 2014 and 2016

No	Type of Transport	Amount of Transport	Congestion Charges (km/ jam) (IDR)		Total Congestion Charge (IDR)	
			2014	2016	2014	2016
1	Car	200	4,400	3,900	880,000	780,000
2	Bus/Truck	200	8,764	8,164	1,752,800	1,632,800
3	Motorcycle	400	3,300	2,700	1,320,000	1,080,000
Total Congestion Charge					3,952,000	3,492,800

Source: Department of Transportation DIY, 2016

(since the completion of the construction of the flyover, the volume of dust and other aerosol particles has increased, which is affecting the health of residents); loss of parking lot for public transportation, and narrowing of village roads, all of which have had adverse effects on economic and social life of the community.

Zero (0) km Street Construction

Yogyakarta Special administrative region (DIY) is a tourist destination for both local and foreign tourists. Malioboro is one of the favourite places for tourists, which generates a lot of congestion especially in the area around zero (0) km, which is considered the centre of Yogyakarta. The location is a famous tourist spot, and has several historical buildings that are well preserved and still functional to this day. Zero(0) Km Street is the center of Yogyakarta city economic, trade, tourism, and education activities. To that end, the government of Yogyakarta embarked on a project to revitalize and redevelop zero (0) km Street.

However, not many people are aware of the purpose and advantages of revitalizing the area. The use of andesite stones in the area is aimed at slowing but not halting vehicle speed, which should allow easy and quick crisscrossing of pedestrians who frequent the area.

Based on the Performance accountability report issued by the s Department of Public Works, Housing and Energy and Mineral Resources, since the revitalization of the area, its function has achieved a 77.77 % success rate. Based on traffic density data cost for 2014, traffic cost has decreased from IDR 3,952,000 in 2014 to IDR 3,492,800 in 2016, which represents a 12 percent decrease (Table 4).

Traffic congestion especially along very busy streets, increases the likelihood of traffic accidents. Results from an excerpt of an interview with the Head of Bina Marga sub division, which who is charged with the management of zero (0) km Street area, revealed that the reconstruction of the area resulted into a decrease in the traffic accidents across all vehicle types.

Statistics on the number of traffic accidents that occurred in zero (0) Km area and attendant material cost obtained from the central bureau of statistics (BPS, 2016), corroborated information that Bina Marga official provided. The number of traffic accidents and attendant cost that occurred in the zero (0) Km area for 2014 and 2016 decreased from 673 and IDR 672,766 to 491 and IDR 582,200 in 2014 and 2016, respectively (Table 5).

Besides the reconstruction of zero (0) km Street area had led to an improvement in

Table 5. The Accident Rate in Malioboro Zone Before and After Revitalization Point at 0 km Years 2014 and 2016

Type of Accident	Year	
	2014	2016
Number of Accidents	678	491
Material Losses (IDR)	672,.766	582,.200

Source: BPS "Jogja dalam Angka" Annual Report 2015

sanitation. Based on an interview with the Head of Bina Marga, redevelopment of the area led to improvement in drainage and waste disposal.

> *"After the reconstruction of the zero (0) Km area, there was drastic improvement in sanitation as the area no longer suffers from trash caused by irresponsible travelers and poor drainage. The area no longer suffers from flooding which used to occur whenever it rained. Based on reports from officials on the ground, rain runoff flows smoothly in drainage pumps without inundating the streets."*

Improvement in sanitation has led to an increase in the cost waste management in the area. Based on data on liquid waste management(2016), sanitation cost in 2014 was IDR 38,000,000, but increased significantly in 2016 to IDR 1,000,000.000, while the cost of waste disposal channels increased from IDR 312,000,000 in 2014 to IDR 352,000,000 in 2016. The large increase in the sanitation cost is largely as a result of the construction of water and sewage drainage channels that drains away all the water as soon as it rains, reducing the possibility of spilling over onto the streets (Table 6).

The revitalization of zero (0) Km Street has contributed significantly to economic activities in the area, which in turn translated into higher income. Based on central bureau of statistics data, the income earned by people in the area rose from IDR 1,674,189 in 2014 to IDR 1,783,819, which represented an increase of 6.5 percent. To that end, the reconstruction of the area had significant impact of the economic wellbeing of the local community.Improvement in traffic flow is also considered an important contribution to the economy not only of Yogyakarta city but also other regions of Yogyakarta special administrative region. This is because the area is the starting point of road transportation to other areas of the city and beyond, which include Andong, buses, motorcycles, rickshaws and other vehicles which support the transportation of pople and merchandize that support the regional economy.

Nonetheless, the reconstruction of zero (0) Km area has had negative effects on the residents who live in the vicinity of the area. Pertana (2017) for instance cites public complaints about an increase in littering and garbage which is attributable to an increase in the number of visitors to the location, low public awareness about the danger that is associated with careless littering (food wrappers for instance), absence of sufficient waste disposal bins, and nonexistence of sanctions for reckless littering.

Grahatama Library Construction

A library is a place for learning and enriching general and local knowledge in the community. Based on Article 1, Law No 43 / 2007, the library is an institution that manages the collection of written and printed works, and/or professional records on standards of tackling problems in education, research, conservation, and information, as well as a recreational service for librarians. Grhatama Pustaka Regional Library and DIY Archives, which is

Table 6. Sanitation Feasibility Cost of Yogyakarta City in 2014 and 2016

No	Category	Waste Management Costs	
		2014	2016
1	Waste Disposal Network	312,000,000	352,000,000
2	Government Subsidies	38,000,000	1,000,000,000

Source: USAID Final Report, 2016

located on Jl. Raya Janti, Banguntapan Bantul, is one of the public libraries in the Yogyakarta Special administrative Region.

Grahatama Pustaka, which sits on an 2.4 hectare, was inaugurated by Yogyakarta Governor, Sri Sultan Hamengkubuwono X, on December 21, 2015. One of the objectives of the establishment of Grahatama Pustaka is to provide an alternative public area that prioritizes the functions of science, education, and recreation. The design of Grhatama Pustaka is rich in Javanese culture nuances, with the philosophy of Javanese life perfection being reflected in the architectural design of four minarets, inter alia, Prakoso, Wulung, Wangi, and Agung. The supreme Drajat life perfection in Javanese culture can be achieved through the collection of various kinds of knowledge in the library.

The archive contains collective memory records of the nation and institutions which is vital for current and future generations. Moreover, data and records in the archives serve as authentic proof of the performance and history of the administration of the government and institutions as part of national life. Thus, collections stored in archives, located in central and local government institutions must be managed and preserved properly.

The construction of Grahratama Library has developed the archives' section. Based on the government performance accountability report for 2016 on archives on libraries, in construction of Grahratama Library has led to an increase in the number of archives from 32,635 in 2016 to 35, 751 in 2017, which represents an increase of 9.5 percent (Figure 1).

Besides, the existence of Grahatama library has become an important source of information for the public. This is reflected in government performance accountability report on regional library and archives for 2016, that recovered from a decline in the number of from 623 in 2010 to 205 in 2016, to 6,233 in 2017. Thus, assuming the increase in the number of archives is put to use by the public, the construction of the Library should become an important source of information and knowledge for society. Indeed the increase in the number of visitors to the library from 93,447 in 2010 to 1,481,879 in 2017, attests to the fact that the completion of the construction of the library has created an important source of information and knowledge on various issues in Yogyakarta special administrative region in general and Yogyakarta city in particular.

Furthermore, the development of Grahatama Library has contributed to improvement in public welfare. Based on results of interviews with individuals in the culinary business sector obtained from central bureau of statistics showed their income increased from IDR 1,169,988 in 2010 to IDR 1,943,455 in 2015, which represents an increase of 66 percent.

It is also worth noting that the construction of the library, plays the role of being the center of information and knowledge on character building and culture, information technology and various documents and reports, making a vital component in character building,

Table 7. Efficiency of Cost in Construction Project

	Fly Over Jombor	Jalan Titik 0 Km	Grahatama Library
Construction Efficiency	Total Expenditure on Construction is the same as Planed Cost	Total Construction Expenditure lower than planned Cost	Total Expenditure on Construction Implementation is higher than planned cost
Stakeholders	Adhi Karya Company Special Region of Yogyakarta as the commitment institution	Soyuren Company Bina Marga Special Region of Yogyakarta as field institution	Ampuh Sejahtera Company Titimatra Tujutama Company Yogyakarta spcial administrative region Library Agencies and Regional Archives division

Source: Processed

technological advancement, cultural preservation, economic and social development.

Nonetheless, the construction of Grahatama library has generated some negative impact on society, including decrease in green space which in turn has adversely affected microclimate in the area (increase in air temperatures in the area), higher vulnerability to flooding and landslide during the rain season.

Cost Efficiency Analysis

There are four determinants of cost efficiency of construction projects, inter alia, preparation costs, Investment or Capital Costs, operational costs, and renewal costs.

Results of cost efficney analysis of the construction on Jombor Flyover, Zero (0) km Street, and Grahatama Library projects are presented in table 7.

a. Jombor Flyover

Jombor Flyover construction cost efficiency is analyzed by recapitulating the preparation and construction cost of drainage, foundation, flyover structure, daily work and renewal cost. Based on data obtained from Adhi Karya Company which carried out the construction of the project, preparation and construction cost of the flyover is IDR 118,423,234,000. Thus the preparation and construction cost was lower than estimated cost, which implies that the project construction was cost efficient.

b. 0 km Street

Analysis of cost of efficiency of the construction of zero (0) km Street is a based on the recapitulation data on preparation and construction cost of the project which were obtained from Bina Marga Agency. Cost data of such items as drainage, foundation, structure, daily work and the extreme disaster contingency cost. Based on Bina Marga data, the cost of preparation, construction, and extreme disaster contingency for the project was

IDR 4,909,797,543, which was IDR 9,063,835,860 lower that the planned cost of the project. The project was completed in time, at a cost that was lower than projected or planned. This implies that project was cost efficient.

c. Grahatama Library

Analysis of the cost efficiency of Grahatama Library construction was based on preparation and construction cost of drainage, foundation, structure, daily work, valued added tax (PPN) and extreme hardship contingency extremity obtained from regional revenue and budget agency (BPAD). Based on

Yogyakarta special administrative region budget, the cost of all relevant items mentioned above was from was IDR 56,522,730,161. Based on results of an investigation conducted by the regional public finance agency, which was confirmed by an interview with the Head of Data and Information Technology, it was revealed that Ampuh Sejahtera Company perpetrated corruption of IDR 2.3 Billion in project funds. The disclosure triggered a criminal case that was filed by Yogyakarta provincial government in Bantul district court. Project construction has to be halted as the cas progressed in the courts, which increased the total cost of the project. Corruption was manifested in marking up of various aspects of the project construction especially expenditure on materials that included land clearance, sand IDR 113,451,464; wall plastering IDR 1,982,257,773 ; structure and daily work IDR 300,000,000 ; preparation cost of the structure IDR 25,381,949,009. Moreover, this was during early phase of the project. In other words, project preparation was characterized by poor project design, and corruption which forced the provincial government to not only file a corruption case against the developer but also had to cancel the tender, leading to opening the tender bidding process again, adding to project cost.

After retendering the project bidding process and giving the bid to another developer, the cost of the preparation, construction, and value added tax IDR93,609,750,000, which comprised IDR 37,500,000 in preparation cost incurred was ; IDR 89,953,175,000 in construction cost ; and IDR 500,000,000 in reconstruction cost. The planned cost of the project was IDR 56,522,730,161, while the actual cost of the project was IDR 93,609,750,000, which implied that the government spent an additional IDR 37,087,019,839 above planned project cost. Thus, the project was cost inefficient, and took three years longer than planned.

An important takeaway from the project preparation and implementation, is the impact that the process affects the output and subsequently outcome and impact of the project on society (O'Flynn, 2007). Project preparation requires a lot of trust building, which is achieved by involving all key stakeholders in all phases of the project, hence crucial for project performance.

CONCLUSION

This research analysed cost-efficiency and impact, of the construction of Jombor Flyover, the Zero (0) km Street, and the Grahatama library in DIY. The construction of the three projects is ample evidence of the commitment of DIY to invest in physical infrastructure projects that enhance the quality of public services available for society. The construction of the three projects enhanced public access to economic activities, created economic opportunities that generated incomes, and by increasing the quality and variety of public services, contributed to social justice enhancement. One lesson learned from the project preparation and construction process is that using an online procurement process may not be enough to prevent corruption, as long as project implementation is not subject to regular and independent cost evaluation and review by independent agencies. That said, despite the cost overrun of the one of the projects, in general the construction of the three projects contributed to an increase in public value. Poor project preparation and construction of Grahatama Library underscores the need for reviewing and overhauling public physical infrastructure project tender bidding and selection process, including strengthening human resource capacity of officials involved in project procurement process, reducing the potential for collusion between public officials and project implementers by

limiting direct involvement of government agencies in project implementation and putting in place mechanisms to monitor project implementation progress, especially costing of various items of the project.

Nevertheless, this study focused on assessing cost efficiency and medium term impact of the projects. To that end, a research on the determinants of the process, and how that impact on cost efficiency of physical infrastructure projects should shed more light on drivers of project performance which is crucial to increasing value for money of such projects.

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