INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

Ronald Rezeki TARIGAN[1], Zulkifli NASUTION[2], Agus PURWOKO[3], Dwira Nirfalini AULIA[4]

[1,2,3,4]Universitas Sumatera Utara, Medan, Indonesia
[1] Corresponding Email : ronald@usu.ac.id

ABSTRACT.

The people that foremost slice of the city should be recognized that they must be dying one day. The idea of this research is constructing a public cemetery (PC) that is integrated and functioned economically, the public has not comprehended yet that PC can be used as an asset, potency and economic investment for long terms to accomplish the social life of the city. The cemetery structure that is going to build with the cost of construction work is IDR. 123.900.000.000 and it is used for rent particularly in funerals, large gatherings, exhibitions, etc. Besides, we also are going to build supporting facilities such as a parking area for cars and motorbikes, spots for praying, and green space. The initial step of cemetery structure investment is purchasing land of 65.000 m2 @IDR.500. 000 Rupiahs is IDR.32.500.000.000. Then we account for the budget needed for an investment to build the cemetery structure is IDR. 190.790.000.000. Based on NPV calculation results, the profitability of the cemetery structure obtained the value of NPV is IDR. 8.110.306.740 (NPV > 0). Consequently, the commercial of the cemetery structure is visible to be functional. It is explained that the business rent of the cemetery structure is visible to conducted because the interest of 8% of the whole investment cost would be return in the next 35 years and 3 months, and it is lighter than the period of the project investment planed of 50 years. The value of IRR is 9,73> of expected 8% yield rate, then the structure of the cemetery commercial is visible to be established. The return on investment in building construction in the cemetery building rental profitable is in the 14th year over 2 months. The value of BCR is 1,811 ≥ 1, then the project is visible and acceptable (profitable). The project construction of cemetery building needed a fund investment of IDR. 190.790.000.000, with the expected assumption of 8% per year, inflation of 6,5% per year, and investment period of 50 years, then obtained visible return time of investment for 35 years and 3 months. The value of NPV > 0 is IDR. 420.480.350.408, the value of the return on investment (IRR) of 9.52%, the BEP of the cemetery building a rental business is in the 14th year over 2 months, indeed in 2034.

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

JEL Classification Code: D92, E22

1. Introduction

The land requirements for public cemeteries in Medan City are abundant. It was because of the high population and also the mortality rate. According to the local government of Medan (Worpole, 2002), the total population of the city was 3.7 million people and the mortality rate was 4.800 people per year or 13 per day (Central Bureau of Statistics, 2013). All of the death was buried in the public cemeteries of the city. Consequently, the demand for burial grounds is quite high, and for that purpose, the local government should set up of cemetery land approximately 1 hectare per year. Currently the total wide of public cemeteries that are managed by the local government was 35.7 hectares, which is 10.7 hectares under control of the local government and 25 hectares by private foundations. The population growth in urban is due to urbanization (Harahap, 2013) and the birth-rate (Central Bureau of Statistics, 2013). It is impacted by a variety of urban socio-economic activities and the development of facilities and infrastructure including the burial area, all of which require large tracts of land. The high demand of land effected to upsurge land prices (Tarmizi et al., 2017). In fact, the sources of funding and capacity of the local government are very limited to the supply of land and urban infrastructures, especially for burial grounds. Meanwhile, human death and burial are part of human life, so that funeral management is also part of the development of human settlements (Onwuanyi et al., 2017, Huang, 2007 and Wadsworth et al., 2020). The cemetery is also a garden of relaxation and reflection and has a shady atmosphere and cultural values (Tudor et al., 2013). Then, the local government through Medan Urban Parking Division started to find the way out of how important and urgent the social infrastructure of cemeteries of the city.

The objects of the research was seven locations of Christian's public cemeteries that are organized by the Local Government of Medan/ Urban Parking Division, where six of which have completely used and the remaining one is Christian's cemetery of Simalingkar B still currently functioned as a burial place (Midan City Government, 2005). Even so, the local government still spending the costs to maintain all the seven cemeteries and it is supposedly not efficient. Conversely, if not well maintained the six burial sites seem dirty, frightening, and damaging the beauty of the city. The government is continuously paid for the maintenance of the unused burial site. The integration of the seven cemetery locations, therefore, is needed to design in such a way to become a place not exclusively for burial, but also as a recreational park, relaxation, shade, and has a high cultural value (Wardhana, 2005). Cemetery land availability of Medan City is very limited and until now, the government is continuously expending the costs to maintain six of seven unused Christian's full cemeteries. It is inefficient and cannot be sustained continuously. The integrated cemeteries concept, therefore, is one of the solutions and urgent to be completed. The results of the study perform economic analyzes of integrated cemeteries concept

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

compared to the conventional one that functions as a source of information for stakeholders to arrange cemeteries' locations purpose thus that integrated cemeteries system can be realized. It is also a reference for further research on the relevance of urban developing social infrastructure and facilities This research was conducted in seven locations of Christian's cemeteries throughout Medan city by doing the field observation, collecting and analyzing the data cost of maintaining of the cemeteries from the government office, then the problem of the research was (1) what if the management of public cemetery designed and planned to be more interested and integrated of the exiting cemeteries in Medan City then the maintaining cost is more efficient and (2) How performs of economic aspect analysis model of integrated public cemetery compared to the existing conventional public cemeteries of income and expend by the government?

2.   Literature Review

2.1. Definitions of Cemetery Building

The definition and meaning of the funeral is a place to bury or burial of the bodies. The funeral is derived from the basic word of the tomb. The funeral is a homonym because the meanings have the same spelling and pronunciation but the meaning is different. Funerals have meanings in noun classes or nouns so that the funeral can state the name of a person, place, or all objects and everything that is subjected (Worpole, 2003).

Meanwhile, in this research funeral is a place to store skeletons or bones with the use of a mixture of various using (land) or function (building). By this definition, the funeral functions as a building that serves any kinds of activities, where each of them is connected and interdependent and it has a complementary relationship with one another, as well as meets the criteria that exist in a particular context (related to the main function of the building). Planning the funeral building not only combines several flexible activities, but how to create an environment that has physical and functional integration of existing components, so that they complement and support each other, and produce a new harmonious environment. The characteristics of the Graveyard are as follows: (Republic of Indonesia, 1992)
1. Consists of three or more mutually supporting activities
2. Components that are well integrated, including pedestrians.
3. Complementary developments because they consist of different activity actors (to the market).

2.2. Investment

Many authors have quantified the definition of investment. Sadalia et.al (2020) stated that investment was using the current assets to obtain the new larger assets in the future. Muda et al (2020) defines investment was as a commitment to invest some funds in one or more assets for several periods in the future. The more complete definition one is by Reilly and Brown, the investment is the commitments to bind current assets for some time in the

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

future to obtain income that can compensate for investor invest in the form
of:
1. Adding assets at a certain time
2. Inflation rate
3. Tentative future income.

Based on the definitions of the three investment authors, we then expressed
the definition of investment is that the capital must be available to undertake
them, then it is followed by the commitments because the capital belongs to
the investment objects (single or portfolio) for some periods (for more than
one year) in the future. The assets of the investor would be reoccurrence
after reach the period (due date), and it is larger than the capital to
recompense of the capital of the investors as definite by Reilly and Brown.
However, there is no guarantee that the investors would be obtaining the
assets are bigger than the capital, it is because of something unexpected
deviate might be happening along the investment period. Besides should
have a commitment to obligate funds, therefore, the investor is also willing
to endure the risks. In other words, investment is a way for someone to
manage their money either by buying property, saving, or spending into a
business to obtaining profits after a period of time (Halim, 2002).

2.2.1. Investment Risk

The investment being able to upsurge the income, but it can also have
financial risks when it fails of investment. It happens by many things,
including security (either natural disasters or human factors), law obedience,
etc. There are three risks that occur in doing the investment (a) declined
investment value, (b) the difficulties of selling the products and (c) The
return of the investment does not balance with the upsurge price of goods
and services.

2.2.2. Investment Analysis Variables

1. The components of investment costs:
- Land costs.; - Direct costs or construction costs; - Indirect costs.
2. Capital, including:
- Owner's equity
- Loan capital
3. Operational Costs and Maintenance Costs
The methods used to estimate the costs:
a. Parametric Method. b. Using a list of Price Indexes and Previous Project
Information. c. The Method of Analyzing Every Element. d. Using Factor
Method. e. Quantity of take-off and unit price. f. Unit price. g. Using the
relevant data and information. 4. Revenue. 5. Taxes, based on law No. 17 of
2000. 6. Depreciation, using the straight-line method based on Law No. 17
of 2000. 7. Cash Flows are cash outflows or inflows in a project, all arranged
in a list systematically and chronologically.

2.3. The Investment Feasibility Study

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

The purpose of the Feasibility Study is to prevent the disadvantages of spending a lot of capital on financing unprofitable projects. The feasibility study also needs currency but it is relatively edge compared to the risks of failure of the investment (Halim, 2002). The feasibility study including (1). The scope of investment activities, (2). The investment activities are carried out. (3). The evaluation of aspects that determine the success of an investment. (4). The requirements facilities needed. (5). The profit and cost in need to obtain the profit. (6). The benefits and disadvantages of the investment. (7). The technical planning to start an investment including the schedules of the activities, until the investment is ready to taking place.

2.3.1. Calculation of Interest and Value of Currency

The investors will be willing to invest their capital when the interest rate is calculated as compensations (time value money) (Suwarno, 2000).. Interest is the cost of capital. The amount of interest is abided by the borrower (the debtor) is purely dependent on the time, the amount of the loan, and the appropriate interest rate.

2.3.2. Inflation

Inflation is defined as the time of the upsurge in prices of goods and services or overall factors of production (Dinh, 2020). The purchasing influence of money will be lower over time by inflation. The real income of someone, therefore, will not change when the absolute income grows in tune with the amount of inflation. There are three different categories of inflation (1). Inflation due to demand pressure. (2). Inflation due to cost encouragement and (3). Structural Inflation.

2.3.3. Depreciation

Hsing (2018) state that the depreciation is a reduction in the value of properties or assets due to time and usage. It is usually caused by factors (1). Physical damage due to use of the device or property. (2). The need for newer or larger production or services. (3). The reducing of production or service requirements. (4). The property or assets become worn due to technological developments and (5). The discovery of new facilities producing better products with lower costs and more adequate levels of safety. The amount of annual depreciation compulsory on a property depends on (1) the investment cost of the property, (2) the date of initial use, (3) the estimated useful life, (4) the residual value determined and (5) the depreciation method used, such as the Straight Line Method (SL), where it is based on the assumption that the reduction in value of assets takes place linearly (proportional) to the time or its age (Formulation 1).

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

$$D_t = \frac{P - S}{N}$$

Info:

D_t = The amount of depreciation in the t year

P = The initial cost of the asset concerned

S = The remaining value of the asset

B = The usage period (age) of the asset is in years

2.3.4. Project Feasibility Analysis

The feasibility analysis discussed includes investment, estimated maintenance operational costs, employed capital requirements, sources of financing, estimated income, calculation of investment criteria (Nguyen et al., 2020).

1. Net Present Value (NPV)

NPV is a standard that is used to quantity whether an investor is feasible or not by the Net Benefit that has been reduced using the Social Opportunity Cost of Capital (SOCC) as a discount factor. The Net Present Value presented in Form.2:

$$NPV = \sum_{i=1}^{n} B_1 - C_1$$

C_1 = investment cost + operational cost B_1 = discounted profits

i = discount factor   N = periodof time (year)

One of the simplest standards is the calculation of the difference between the present values of the flow of benefits and the present values of the costs of flow throughout the project, with a certain interest rate. (Setionegoro, 2008).

$$NPV = PV\ Benefit - PV\ Cost$$

The verdicts would be taken when the NPV > 0, the project is profitable and likewise, when NPV < 0, the project is not profitable.

2. Internal Rate of Return (IRR)

Internal Rate of Return or IRR is a discount rate that produces an NPV is 0. The investment project is feasible when the IRR is larger than the expected rate of return, and when the expected yield level is equal to rate of return theninvestment only returns the capital, and when it is less than SOCC, and then the project investment is not feasible (Yacob, 2003). The IRR can be formulated as Form. 3.

$$IRR = i1 + \frac{NPVI}{(NPV1 - NPV2)}(i1 - i2)$$

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

Info:
i1 = discount rate producing
NPV1
i2 = discount rate producingNPV2

The technique calculating IRR on an investment is by taking all the consequences that arise in the form of cash flow then considering for IRR (interest rate/i) which equates PV cost and PV benefit. Then it is compared to MARR (i *). When IRR (i) > MARR (i *), the conclusion then the investment is feasible.

3. Discounted Payback Period (DPP)

Discounted Payback Period is a period that shows the cumulative cash in-flow equal to the amount of investment in the present value (Viet et al, 2019). This analysis needs to be presented to find out how long the investment can be returned (Form.4)

$$DPP = T_{p-1} + \frac{\sum_{i=1}^{n} I_i - \sum_{i=1}^{n} B_{icp-1}}{B_p} (i1 - i2)$$

Info:
DPP = Discount Payback Period ; T_{p-1}= Year before PP
Ii = The amount of investment that has been discounted;
B_{icp}-1 = The amount of profit that has been discounted before PBP ; B_P = Amount of benefits to PP

In this formulation, the value of the currency is considered to be not declining in the following years. When the amount of profits is greater than the total spending, the conditions that the return period is still earlier than the length function of the project (property), then the project is considered profitable.

4. Break Even Point (BEP)

Break-even point is a condition where in a company's operations do not earn profit or loss/ break-even (income = total costs). It can be used to support set the goals of the company, and the function for management include: (Pujawan, 1995)
1. as a source or substance for planning of operational activities in efforts to accomplish certain profits.
2. as a source or substance for controlling ongoing operational activities, such as instrument for matching realizations tothe records in the Break Even calculation or in the Break Even figures.
3. As a referenceof the consideration in determining the selling price, when the calculation outcomesobtain based on the results of the Break Even analysis and the targeted profit.

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

4. As a source for consideration in making decisions that must be done by a manager of a company.

The contributing component is cost, variable costs and fixed costs. Fixed costs are costs that must be incurred for production or not, while variable costs are costs incurred to produce one unit of production, then if there is no production there is no cost.

$$BEP_{unit} = \frac{FC}{P - VC}$$

Info :

FC = fixed costs; VC= variable costs; P = selling[19]
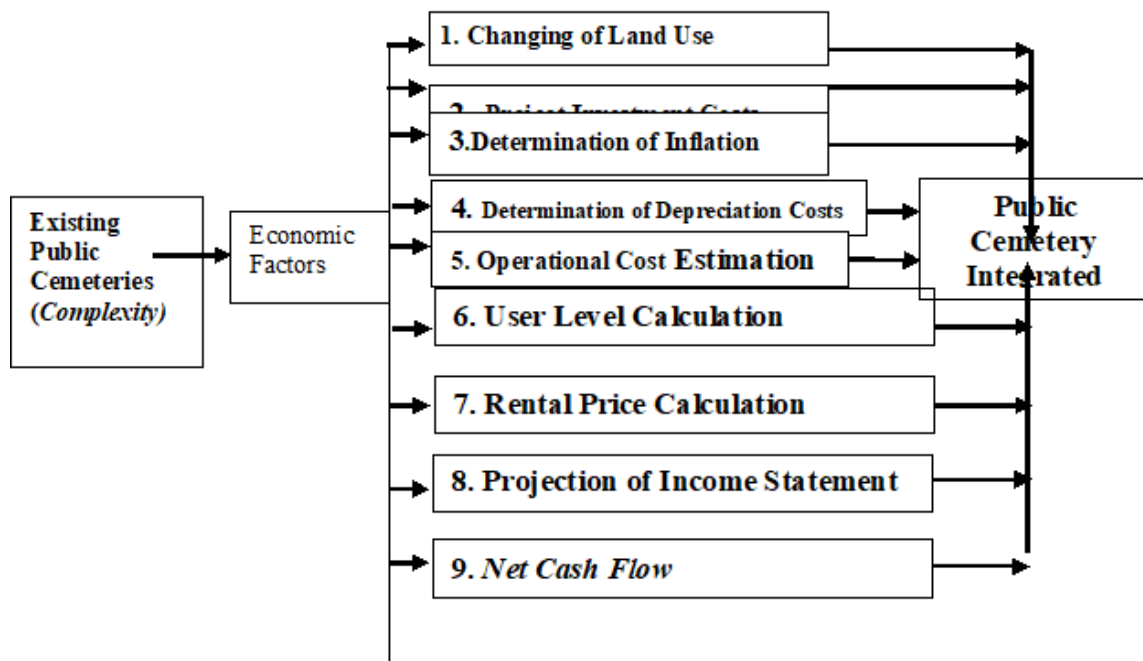
The conceptual framework formed from this study are:

Figure 1. Schema Diagram and Research Phase

3. Method

Procedures of the research were (1). Collecting Data; (2). The Investment Cost Calculation of the Project; 3. Define of Inflation Rate; 4. Determination of Depreciation Costs; 5. Estimated of Operational Costs; 6. Calculation of Usage Level; 7. Rental Charge Calculation; 8.Projection of Income Statement; 9. Net Cash Flow. This research was conducted in seven Christian cemetery locations throughout the Medan City, 1) Christian Funeral of TanjungSelamat, Flamboyan Street, TanjungSelamat Village, Subdistrict of Medan Selayang; 2) Christian Funeral of Simalingkar B, BungaRampe Street, Simalingkar B Village, Sub district of Medan Tuntungan; 3) Christian Funeral of PatumbakTuri Ujung Street, Timbang Deli Village, Subdistrict of Medan Amplas; 4) Christian Funeral of Abdullah Lubis, Abdullah Lubis Street, Babura Village, Sub district of Medan Baru; 5) Christian Funeral of Padang Bulan, LetjenJaminGinting Street, Sub district of Kecamatan Medan Baru; 6) Christian Funeral of Gajah Mada Ujung, Gajah MadaStree Crossroad of SeiWampu, Subdistrict of

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

Medan Baru; and 7) Christian Funeral of Gajah Mada Lama, Gajah Mada Street, Crossroad of IskandarMuda, Subdistrict of Medan Petisah, Medan, North Sumatera, Indonesia. We choose one of which to become an integrated burial site where the entire seven Christian burial sites are putting together, it is the Simalingkar B Christian Cemetery is designed as the integrated one. To do the feasibility analysis of grave building construction projects, it is needed to examine the research instruments particularly the financial aspects including:

1. Payback Period Method (PPM)

The PPM is a simple method and most extensively used to measure the level of reasonableness or feasibility of an investment project. It does not include the time value of money in the calculation.

2. Net Present Value (NPV)

The NPV is stressed on the effect of time on the value of the currency and it is involved in the calculation.

3. Internal Rate of Return (IRR)

The calculations of IRR on an investment are by taking all the risks that would be happened in the form of net cash flow and then find out the IRR (interest rate).

4. Benefit-Costs Ratio (BCR)

The BCR method emphasizes the value of the comparison between the benefits to be obtained and the costs and losses that will be accepted by the investment.

3.4. Procedure of Data Collection

The procedures of data collection in this research are the calculation of costs and revenues when the grave building is commercialized. The data of this feasibility analysis was secondary data of the Construction of the cemeteries building in the City of Medan; it was in the form of documents that exist in financial reports analysis of the construction of the cemeteries building of the city.

The secondary data obtained from stakeholders of the construction grave building in the City of Medan is in the financial aspects, the feasibility analysis was the following: (Bendib, 2020)

a. NPV, if NPV ≥ 0, then the project can be accepted (profitable)
b. IRR, if IRR ≥ discounted value, the project can be accepted (profitable)
c. PBP, if PBP ≤ investment period, then the project can be accepted (profitable)
d. BEP, if BEP ≤ investment period then the project can be accepted (profitable)
e. BCR, if BCR ≥ 1, the project is feasible and acceptable (profitable)

The sensitivity analysis of investment return factors is carried out by observing the number of assumptions of the percentage value of inflation and the proportion value of the expected return. The results of the analysis will figure out the most influential factor in the rate of return of investment. It is used as an indicator to determine the prime is by results the difference

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

between the IRR and the expected results. The major difference is the prime indicator to be selected. When the data processing and analyzing the findings has completed, then the conclusion was made to define whether the feasibility study of the construction of the grave building is feasible to be carried out. Based on the conclusions, recommendations will be completed around the construction of the grave building in the city.

4. RESULTS AND DISCUSSION

4.1. Result

4.1.1. Project Investment Costs

The Mausoleum building will be created at a cost of construction work of Rp 123,900,000,000. It is used to rent for funerals, large gatherings, exhibitions, etc. Besides, we also are going to build supporting facilities such as a parking area for cars and motorbikes, spots for praying, and green space. The initial step of cemetery structure investment is purchasing land of 65.000 m2 @ 500. 000 Rupiahs is 32.500.000.000 Rupiahs. Then we account for the budget needed for an investment to build the cemetery structure is 190.790.000.000 Rupiahs.

4.1.2. Investment Cost Calculation

Based on the calculation of material requirements, the investment cost budget is as follows:

Table 1. Investment Cost Budget		
No	Job description	Currency required (IDR)
	a	b
I	Cost of Prior	
	Sub Total I	12,000,000,000
II	Physical Costs (Structure + Architecture + ME +Lanscape)	
	Sub Total II	123,900,000,000
III	Non-Physical Costs	
	Activity Management Costs	4,000,000,000
	Sub Total III	8,000,000,000
	Conclusion	
	Sub Total I :	12,000,000,000
	Sub Total II :	123,900,000,000
	Sub Total III :	8,000,000,000
	Total Investment Costs Consist of:	143,900,000,000
	Tax 10%	14,390,000,000
	Purchasing of Land Simalingkar B Ex-TPU (65.000 M^2)	32,500,000,000
	Grand Total Budget Required:	190,790,000,000

4.1.3. Project Cost Calculation
4.1.3.1. Inflation Rate

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

It is estimated that the charge of operational costs is an upsurge every year;
as a result, the rental rate for each room or stand in the grave building is also
rise. It is predicted that the average inflation rate for 2020 to 2070 will be
6.5% per year. This figure is founded on the upsurge in the realization of the
Medan City Government budget of 2019 to 2020 (Medan in Figures, 2016)

4.1.3.2. Depreciation Costs

The rental business of grave building has depreciated for 50 years with a
residual value of 10% of theproject work costs. The calculation of the
depreciation is using the straight-line method:
= (IDR.123,000,000,000 - (10% x IDR. 123,000,000,000) / 50 = IDR.
2,230,000,000.00

4.1.3.3. Building Construction Costs

The total investment cost is IDR 190,790,000,000 which is the investment
cost of the developer. The currency is gotten by the developer from the bank
loan. The bank approved the loan application request for developers by
100% for IDR 190,790,000,000 with an interest of 15% per year, for IDR
28,618,500,000 and paid in installments for 50 years.

4.1.3.4. Operational Costs

The operational cost for 2020 is estimated of 5% of the investment project
work, it is 5% x IDR 190,790,000,000 = IDR 9,539,500,000. It is predicted
that each year it will average upsurgeis 12% from 2020 to 2070. The
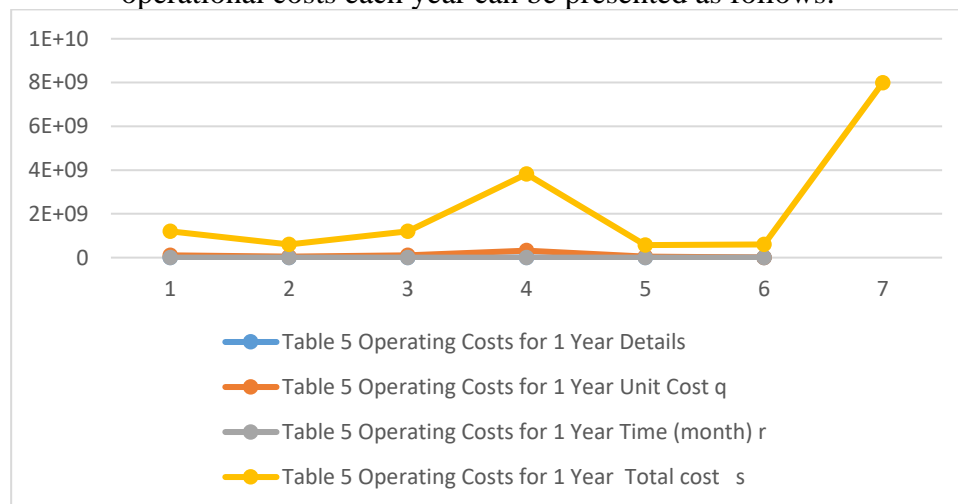operational costs each year can be presented as follows:

Figure 2. Operating Costs for 1 Year

It is predicted that each year the average of upsurge is 6.5% of 2020 to 2070. The operational
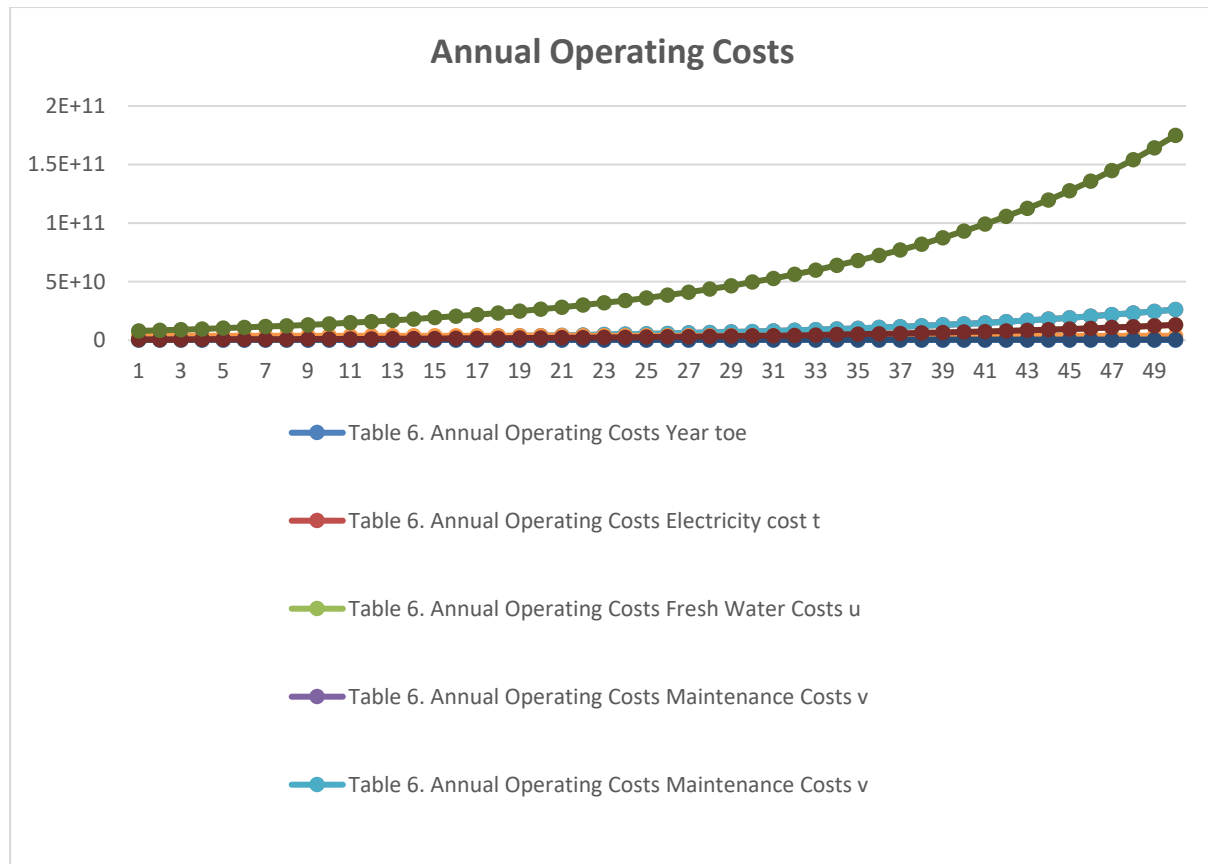costs of each year detailly as follows:

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

Figure 3. Annual Operating Costs

4.1.3.5. Usage Level

When the level of usage of the grave building met the target, the calculation resultswould be:
Land area selectedis TPU Simalingkar B = 65,000 m2, 60% of which is used for the land of grave building,
= 60% x 65,000 m2 = 39,000 m2 = 3.90 ha

The overall sandard of the funeral zone is based on the minimum service values guidelines of the Determination of Minimum Service Standards of Spatial Planning, Housing and Settlement and Public Works (the Minister of Settlement and Regional Infrastructure Decree No. 534 /KPTS/M/ 2001) for one body needs land: = 1 m x 2 m = 2 m2
Then the amount of available capacity is: = 39,000 m2 / 2 m2 = 19,500 bodies
The 1st floor is intentional for supporting facilities with the extensive of space is 800 m2 consists of:
- An office; - Hall ; - Other public facilities
The 2nd floor part to the 20th is determined @ 400 m2 with details of area are:
= 19floors x 400 m2 = 7,600 m2
A space requirement used for small crates is 70% of floor 2nd to 20th area:
= 70% x 7600.00 m2 = 5,320 m2

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

The standard size of the skeleton/ bones small box are length = 60 cm, width= 0.4 cm, and height = 40 cm, then the area for 1 box is:
= 0.6 m2 x 0.4 m2 = 0.24 m2
The 70% of area on each floor of 2nd to 20th is:
= 70% x 400 m2 = 288 m2
Then the number of skeleton/ bones boxes per floor is
= 288 m2: 0.24 m2 = 1166.67 skeleton/ bones boxes
The estimation of capacity in each floor is 8166 bodies, and then the total effective capacity of the plan 19 floors of the grave building is:
= 19 Effective floors x 8,166 bodies = 155,166 skeletons/ bones are neatly arranged.
If the burial Fee is set @ IDR. 5,000,000 per body, then the following are obtained:
= 155,166 bodies x IDR.5,000,000 = IDR 775,833,333,333 rounded up = IDR 775,833,000,000
The locally-generated revenue (LGR) gained by the Local Government of Medan is:
= 155,166 bodies x IDR.240,000 *) = IDR 37,240,000,000
The amount of 240,000 is based on the local regulations of the Mayor of Medan, Non-Physical and Physical Costs that the average budgetEach Year by Medan City Government is IDR. 5,000,000,000, then for 50 years the amount of funds would be:
= 5,000,000,000 x 50 years = IDR 250,000,000,000.

4.1.3.6. Calculation of Rental Costs

The rental price of the grave building is intended by considering the level of usage and it is including an additional profit of 5%, thus the projection of rental income in 2019 and subsequently it will be upsurge annually based on the average inflation rate of 6.5%. The only calculated is the rental charge of the rooms, and it is not including the cost of electricity and clean water usage during the rental period.

4.1.3.7. Projection of Income Statement

The projection of the income statement of the grave building in 2013 to 2032 was finalized and it was shown that based on the predicted inflation rate of 6.5%, the operational costs would be upsurge.
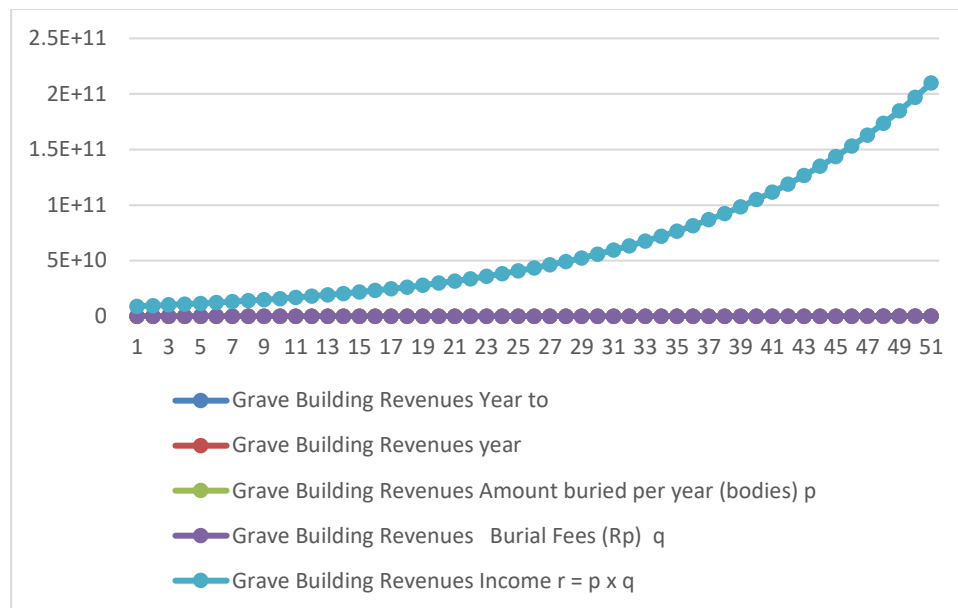
INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

Figure 4. Grave Building Revenues

Figure 4 shows the projected profit and loss obtained based on the calculation of the income minus the depreciation and operating costs.
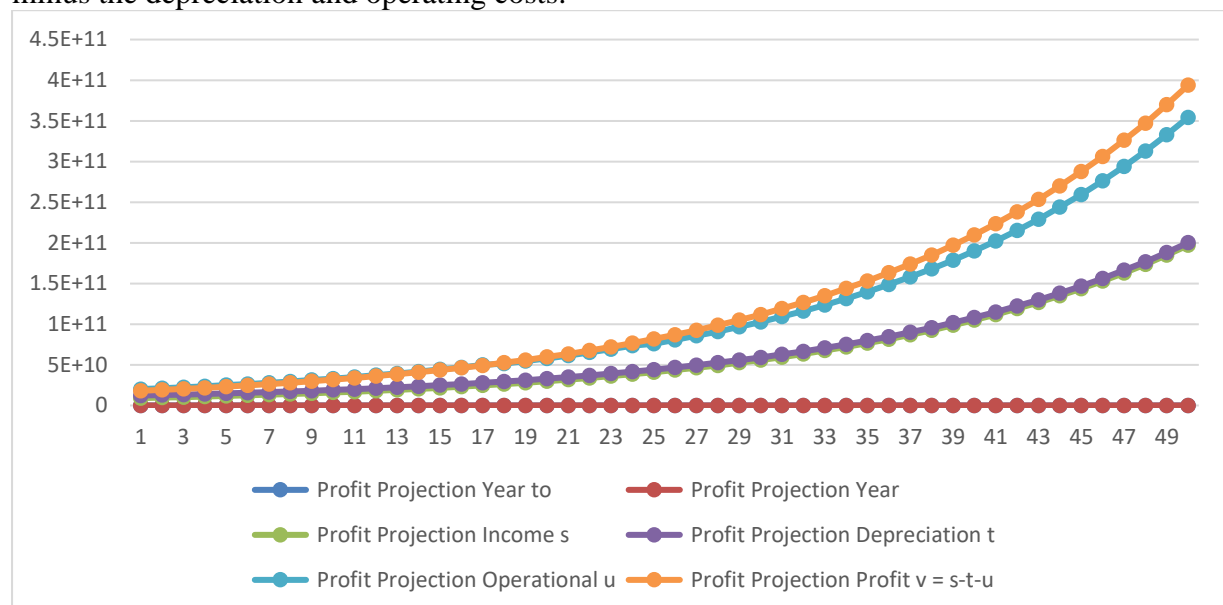

Figure 5. Profit Projection

4.1.3.8. Net Cash Flow

Net Cash Flow is obtained bythe rental income and bank loans reduced the cost of bank loan installments and the operational costs.
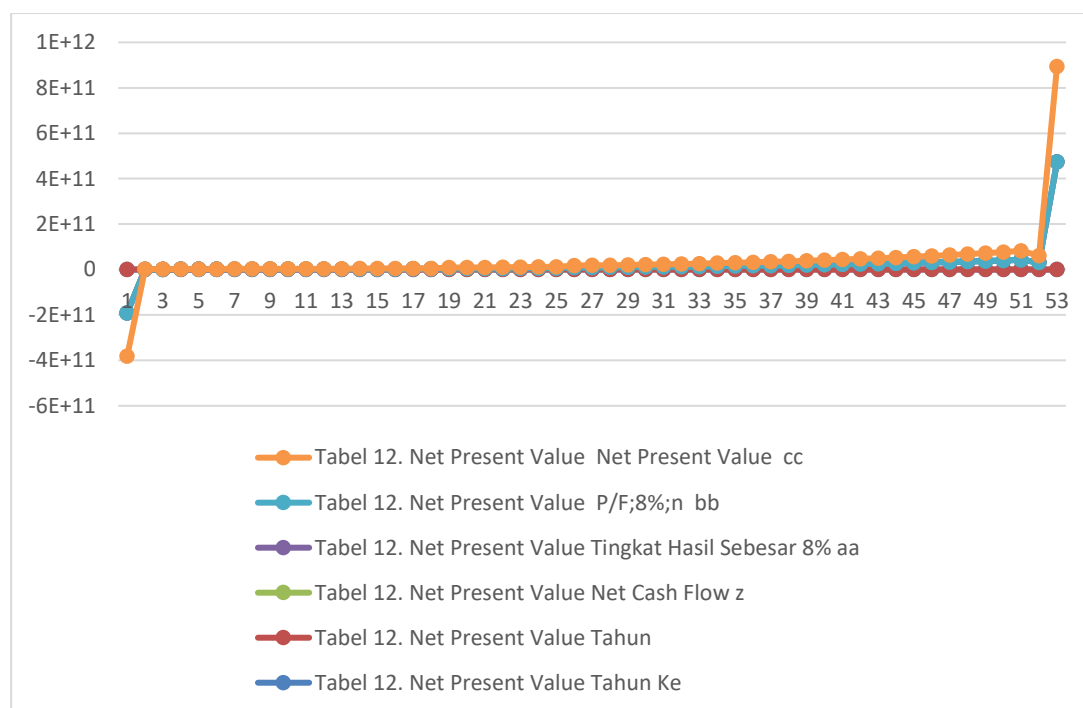
INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

Figure 6. Net Cash Flow

4.1.4. Financial Feasibility Analysis
4.1.4.1. Net Present Value(NPV)

The NPV analysis calculation is performed by using a yield rate of 8% and the calculating the residual value at the end of the twentieth year of the grave building business show in Figure 6. Based in Figure 6 shows that the calculation results of the NPV of the grave building obtained an NPV value of IDR 420,480,350,408 (NPV> 0), so this business is worth to be continued.

4.1.4.2. Paybak Period (PBP)

The period of Payback is found by using the results of NPV calculation. Using the interpolation scheme, the PBP calculations are:

$$\frac{35 - t}{35 - 36} = \frac{(3,576,045,222) - t}{(3,576,045,222 - 12,741,299,605)}$$

$$35 - t = 0{,}212 \times (35\text{-}36)$$
$$t = 35 \text{ years} + (0{,}212 \times 12 \text{ months})$$
$$t = 35 \text{ years} + (2{,}544 \text{ months})$$
$$t = 35 \text{ years} + (2{,}544 \text{ months})$$
$$\mathbf{t = 35 \text{ years and 3 months}}$$

These findings explain to us that the business of grave building rental is feasible to be operated; with an interest of 8%, the total cost of investment is returned after it runs for 35 years over 3 months, less than 50 years the project period designed.

4.1.4.3. Internal Rate of Return (IRR)

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

The IRR is calculating the amount of interest at NPV = 0. A project is feasible when the IRR value > yield level. The calculation is worked by trial and error by using the interpolation method, which is the yield rate is added to 10% to NPV <0.

Using the interpolation scheme, the IRR calculations are:

$$\frac{9-i}{9-10} = \frac{(369,989,419,464) - i}{(369,989,419,464 - 319,014,570,235)}$$

$$9 - i \quad = 0{,}7258 \times (9\text{-}10)$$
$$i \quad = 9 + 0{,}7258$$
$$i \quad = 9{,}7258$$
$$\mathbf{t \quad = 9{,}73}$$

The IRR value is 9.73> from the expected yield level of 8%, then the grave building business is feasible to be established.

4.1.4.4. Break Even Point (BEP)

To do the BEP calculation, several variables are needed, fixed costs, variable costs, and income. The fixed costs are depreciation costs, while the variable costs are operational costs:
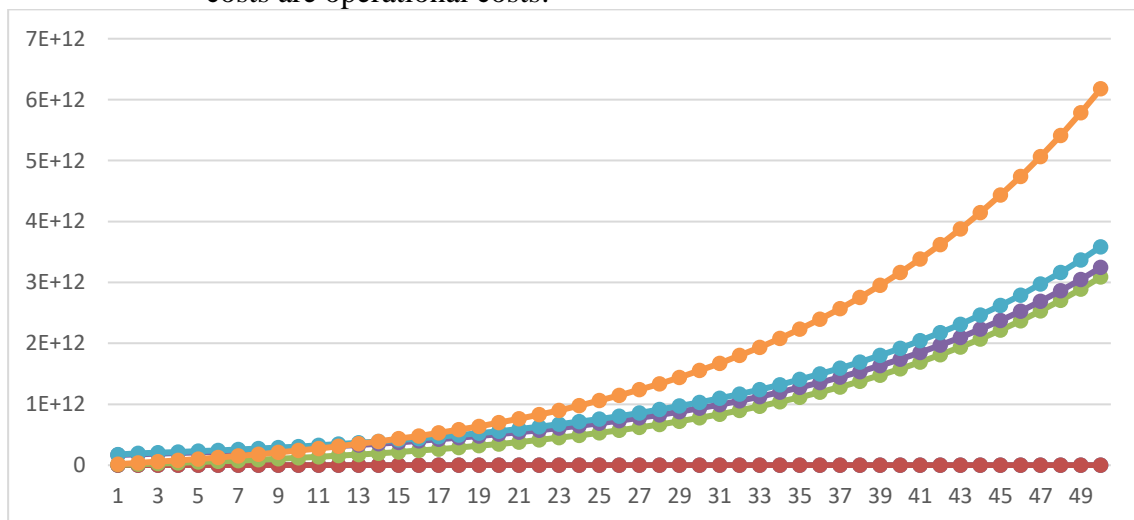

Figure 7. Break Even Point (BEP)

Using the interpolation scheme, the BEP calculations are:

$$\frac{13-t}{13-14} = \frac{(16,238,875,117) - t}{(16,238,875,117 - 2,024,998,000)}$$

$$13 - t \quad = 1{,}1425 \times (13\text{-}14)$$
$$t \quad = 13 \text{ years} + 1{,}1425 \times 12 \text{ months}$$
$$t \quad = 13 \text{ years } 13{,}71 \text{ months}$$
$$t \quad = 14 \text{ years } 1{,}71 \text{ months}$$
$$t \quad = 14 \text{ yearsand 2 months}$$

The return on investment of construction costsof the grave building rental business is in the 14th year over 2 months.

4.1.4.5. Benefit Cost Ratio (BCR)

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

The BCR is the value of the ratio between the benefits to be obtained and the costs and losses incurred by the investment. The value of benefits derived from income, the value of costs resulting from operational costs, and depreciation costs.

$$BCR = \frac{2,859,750,524,576}{2,421,212,531,834} = 1,811$$

The value of BCR is $\geq$ 1, then the project is feasible and acceptable (profitable).

4.2. Discussion

Medan city government in terms of providing city infrastructure including funeral areas. Limited land and city government budgets as well as the increasing need for infrastructure make it difficult for the city government to handle / provide burial areas in urban areas. Seeing the development of the city of Medan, it really needs the realization of reliable urban facilities and infrastructure to support the stabilization of the value of urban life, either directly or indirectly. Tarmizi et al (2016) state that the city of Medan is currently developing towards a metropolitan city where its economic activity can be used as an economic engine in the North Sumatra region, and from the above references it is natural to see an increase in development which is increasingly leading to the characteristics of sustainable and sustainable development and it can be said that the development of the city of Medan is very exhilarating.

Burial ground is a sign of warning and can also describe one of the definitions that can reflect the characteristics of a city. The grave is a symbol of a dead presence as well as an analogy of the transition between the two worlds, so it is necessary to plan as early as possible to avoid confusion over the layout. We can associate physical burial with the so-called architectural world art. In subsequent developments, that the presence of this symbolic form can be presented with a view that has a specific purpose and develops into a study in which it contains things that affect the shape of the burial architecture itself. So by itself this analysis is intended to invite a wider public perspective on death which can influence the formation and arrangement of modern burial architecture but must be based on a religious spirit. So that the understanding of death in a society that believes in the concept of burial will affect the physical formation of the cemetery and will further enrich the architecture of the cemetery itself and will further deepen human understanding of life and death. Historical value and potential of the area that will be provide double value for the development of an area economically so as to produce various activities (agglomeration) that have economic potential in an effort to increase the source of Regional Original Income (PAD) in Medan City. This study will later provide a recommendation in the form of a good solution in overcoming all problems with the cemetery architect so that it is physically organized and its management management in the existing burial area.

5. CONCLUSION AND SUGGESTION
5.1. Conclusion

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

Based on the objectives, analyses, results, and the discussion, the conclusion of the study are:

1. The grave building construction project requires the investment fund of IDR. 190,790,000,000, assuming the expected value of 8% per year, inflation of 6.5% per year, and the investment length of 50 years, then the feasibility of investment value return is 35 years and 3 months. The NPV value > 0, which is Rp 420,480,350,408, the value of the return on investment (IRR) is 9.52%, the BEP of grave building rental business is in the 14th year over 2 months, it is in 2034.

2. The system of Build Operate Transfer (BOT) is applied when the investors cooperate in constructing the grave building in Medan. Refers to the Payback Period (PBP) value of the grave building business is 35 years over 3 months, which is earlier than the investment period of 50 years. It means that the grave building business is feasible to be operating; the return on investment is identified by the PBP value earlier than the length project arranged.

3. This study found out that the management of integrated public cemetery (IPC) in the Medan City according to the perspective of Compact City Theory that the design and urban planning concept focusing on high-density development by the diversity of usages and mixed composed in the same land to be more efficient either land use or particularly the maintenance costs spent by the Medan City Government. The application of the Compact City Concept can solve the problem of high burial maintenance costs and limited grave land. The concept warrants the sustainability of the funeral currently and in the future.

5.2. Suggestion

1. It is wished that the integrated public cemetery management in a region required to filling of the fundamental needs of all people and the accessibility of equal opportunities and justice in fulfilling the needs of better social facilities.

2. The community must realize that the integrated management of public cemetery must be realized as an asset, potential, and investment of the city. It is not static harmony but rather a dynamic process of utilization economic resources, the direction of resource investment, the orientation of technological development, and changes in the institutional vision that is more consistent with present dan the future needs.

References

Bendib, A. (2020). The effects of spatial clustering of public facilities on social equity and urban congestion in the city of Batna (Algeria). *GeoJournal*, 1-14.

Central Bureau of Statistics (2013). Projection of Indonesian Population 2010-2035. Central Statistics Agency, Jakarta-Indonesia: ix + 37 p

Central Statistics Agency (2011). *Medan in Figures 2011*. Central Statistics Agency, Medan

Dinh, D.V (2020). Impulse Response of Inflation to Economic Growth Dynamics: VAR Model Analysis. *The Journal of Asian Finance,*

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

Economics and Business. 7(9). 219-228. DOI:https://doi.org/10.13106/jafeb.2020.vol7.no9.219.

Halim A (2002). *Investment Analysis*. Salemba Empat Publisher. Jakarta.

Harahap F R (2013). The Impact of Urbanization on Urban Development in Indonesia. *Journal of Society* 1 (1): 35-45.

Hsing, Yu (2018). Is Currency Appreciation or Depreciation Expansionary in Thailand? *The Journal of Asian Finance, Economics and Business*. 5(1). 5-9 http://dx.doi.org/10.13106/jafeb.2018.vol5.no1.5.

Huang, S. C. L. (2007). Intentions for the recreational use of public landscaped cemeteries in Taiwan. *Landscape Research*, *32*(2), 207-223.

Medan City Government (2005). *General Direction and Policy* Medan. Medan Regency Publication Book.

Muda, I, Dharsuky, A, Asriana, N, Ridhani, D (2020). Contribution of Real Estate Activities and Financial/Insurance Industry Activities to the Formation of Gross Domestic Product. *Research in World Economy*. 11(3). 192-199. https://doi.org/10.5430/rwe.v11n3p192.

Nguyen, Thuy To Thong Quoc Vu,Cuong Phu Pham,Thu Anh Nguyen,Phong Thanh Nguyen,Phuong Thanh Phan,Quyen Le Hoang. (2020). Factors Influencing Cost Overruns in Construction Projects of International Contractors in Vietnam. *The Journal of Asian Finance, Economics and Business*. 7(9). .389-400. DOI:https://doi.org/10.13106/jafeb.2020.vol7.no9.389.

Onwuanyi N, Ndinwa C E and P E Chima (2017) Public Cemeteries of Benin City: Examining a Neglected Dimension of Urban Nigeria. *Nigerian Journal of Environmental Sciences and Technology (NIJEST)*, 1 (2): 367-378

Pujawan, I.N (1995). *Economic Engineering*, PT Guna Widya. Jakarta

Republic of Indonesia (1992). *Jakarta Special Capital Regulation No. 2 1992 Concerning Public Cemeteries in the Special Capital Region of Jakarta*, Jakarta.

Rounaz P A 2014 Analysis of The Feasibility Of Building Building Buildings In Lamongan City – Extrapolation, Faculty of Engineering, University August 17, 1945 Surabaya - *Civil Engineering Journal*, 7(2). 189–206

Sadalia,I, Nasution, F.N. Muda, I, 2020. Logistic Regression Analysis to Know the Factors Affecting the Financial Knowledge in Decision of Investment Non Riil Assets at University Investment Gallery, *International Journal of Management (IJM)*, 11 (2), 2020, pp. 147–162.
http://www.iaeme.com/IJM/issues.asp?JType=IJM&VType=11&ITy pe=2.

Setionegoro W (2008). *Return of Investment in the Construction of the Futsal Center Building*, JTS ITS, Surabaya.

Suwarno S (2000). *Project Feasibility Study*, Fourth Edition, UPP AMP YKPN, Yogyakarta.

Tarmizi, H.B.,Daulay, M and Muda, I. 2016. The influence of population growth, economic growth and construction cost index on the local revenue of tax on acquisition of land and building after the

INTEGRATED PUBLIC CEMETERIES OF MEDAN CITY AS AN ASSET, POTENCY, AND LONG TERMS ECONOMIC
INVESTMENT OF THE CITY (UTTER REQUIREMENTS OF LIFE CYCLE IN THE CITY)

PJAEE, 17 (7) (2020)

implementation of law no. 28 of 2009. *International Journal of Economic Research.* *13*(5). 2285-2295.

Tarmizi, HB., Daulay, M., and Muda, I. 2017. Impact of The Economic Growth and Acquisition of Land to The Construction Cost Index in North Sumatera. *IOP Conference Series : Materials Science and Engineering. 180*. doi: 10.1088/1757-899X/180/1/012004.

Tudor, C.A., Iojă, I. C., Hersperger, A., & Pătru-Stupariu, I. (2013). Is the residential land use incompatible with cemeteries location? Assessing the attitudes of urban residents. *Carpathian Journal of Earth and Environmental Sciences*, *8*(2), 153-162.

Viet, Quoc Pham,Bao Khac Quoc Nguyen,Binh Van Tu,Huong Thi Thanh Pham,Thanh Quoc Le (2019). Critical Success Factors of Project Management : The Case of Construction Related Projects in Vietnam. *The Journal of Asian Finance, Economics and Business*. 6(2). 223-230. DOI:https://doi.org/10.13106/jafeb.2019.vol6.no2.223.

Wadsworth, W. T., Bank, C. G., Patton, K., & Doroszenko, D. (2020). Forgotten Souls of the Dawn Settlement: A Multicomponent Geophysical Survey of Unmarked Graves at the British American Institute Cemetery. Historical Archaeology, 1-23.

Wardhana, I.H, (2005). *Staff of the Regional Planning Agency (BAPEDA) of DKI Jakarta Province*, Managing Jakarta City Assets", Jakarta.

Worpole, K. (2002). Kensal Green Cemetery: The Origins and Development of the General Cemetery of All Souls, Kensal Green, London, 1824-2001.
https://www.rbkc.gov.uk/sites/default/files/atoms/files/Kensal%20Green%20Cemetery%20CAPS.pdf

Worpole, K. (2003). *Last landscapes: The architecture of the cemetery in the West*. Reaktion Books. https://books.google.co.id/books?hl=en&lr=&id=ozSdJr7H6sYC&oi=fnd&pg=PA7&dq=Worpole+Ken,+2001.+Cemetery+Preservation&ots=LQsnoAJwPd&sig=PORwpQ_kqXl6yqZMKS94OW_IL2I&redir_esc=y#v=onepage&q=Worpole%20Ken%2C%202001.%20Cemetery%20Preservation&f=false

Yacob I (2003). *Business Feasibility Study*. Revised Edition *Publisher RinekaCipta*, Jakarta.