

## PAYBACK PERIOD ANALYSIS OF DISTANCE MASTER EDUCATION IN INDONESIA

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### **Abstract**

*Research on the rate of return on the learning process in distance higher education aims to measure the level of learning investment in post graduate program distance education. The method used in this research is descriptive research with a quantitative approach. The research instruments distributed were to alumni of the Terbuka University Postgraduate Program spread across various cities, including the cities of Bandar Lampung, Bandung, Batam, Bogor, Jakarta, Jember, Malang, Medan, Padang, Palembang, Samarinda, Semarang, Serang, Sorong, Surabaya, and Surakarta. As many as 116 respondents from the total population of 395 alumni (using stratified random sampling technique) made up the study sample of 116 respondents. The results of the study show that investment in education using the payback period method is feasible.*

**Keywords:** *distance master education; educational investment plans; payback period analysis*

### **INTRODUCTION**

Education has an important and dynamic role in bringing crucial benefits to the state in its role in increasing human resources. Education is a long-term and sustainable investment with investment in education, it is hoped that there will be gains with the presence quality human resources needed for the development of a nation or state. In addition, education can also increase the workforce, which will increase productivity so that economic growth also increases (Benos & Zotou, 2014; Mariana, 2015).

Education as an investment because humans are creatures that must develop and acquire knowledge, skills, and other competencies that have economic value, especially currently in technically advanced countries, people invest in education, where the state can enlarge the various choices available to its people so that it can expand the economy and national welfare. Additionally, research mentions that investment in human resources has useful implications for management because it shows the positive role of investment in personnel (Choi et al., 2021; Jalil & Idrees, 2013; Owings & Kaplan, 2019).

This is in line with research that has been done, which shows that education makes a major contribution to economic growth, there is a positive correlation between educational investment and economic growth, and there is a positive relationship between education costs and economic growth. Education investment allocation can make the economy more dynamic (Mercan & Sezer, 2014).

Higher education has an important role in improving the quality of human resources. Higher education makes human resources more capable and helps them understand and be ready to face changes in life. This is in line with Dung (2021), which states that today's higher education is developing in the context of many changes and challenges. Changes in the labor market and economic structure require workers to have a lot of knowledge and skills to keep up with of practical issues caused by social changes. In a narrower context, other research states that attention to human resources must be properly focus such as quantity, knowledge, skills, attitudes,

and development programs. Proper attention to human resources can produce various other organizational development programs that will improve organizational performance and reputation (Irawan et al., 2021).

In general, education, including higher education, is recognized as an investment in human resources. Investment in education serves to prevent social problems and develop the various resources they have. The rate of return is an educational planning tool. The rate of return approach is an integral part of theories discussing education from an economic perspective. The value of the rate of return will increase along with the value of individual improvement. Research states that the rate of return rule is mainly used to measure the investment costs that have been incurred to obtain the expected results of concern in the payback period method (Dai et al., 2022; Patrinos, 2016; Psacharopoulos & Patrinos, 2018).

Talking about the rate of return on education, Purnastuti et al. (2013) used two data sets from the Indonesia Family Life Survey (IFLS), which was conducted in 1993 (IFLS-1) and 2007–2008 (IFLS-4), to examine the declining rate of return to education. The results showed that the return to schooling slightly decreases across all levels of education except for higher education. The return to tertiary education for females rose from around 5.1% in 1993 to 8.7% in 2007-2008; while for males, it slightly increased from 6 to 6.8%. Using the same IFLS-4 data, Dumauli (2015) found that the return on education in Indonesia was between 10 and 12% using Ordinary Least Square (OLS). When she implemented the Household Fixed Effects method using sibling data, the return on education dropped significantly to only 5%.

Meanwhile, research on the payback period has been carried out, where research examines the relationship between strategic variables and the use of the payback period in evaluating capital budgeting, and the results show that there is no statistical difference between managers and investors in using the payback period to buy one of the variables (Al-Ani, 2015). Meanwhile, other studies on the payback period examine the development of general equations for estimating the return period of rainwater tanks based on roof area, initial cost and rate of return. The results show that the developed equation can estimate the payback period with very good accuracy; for all selected internal levels of returns correlation values ranging from 0.99 to 1.0 are reached (Imteaz et al., 2021).

Thus, even though there is research on the payback period, research on the payback period in the field of education is still rarely conducted; therefore, this research will discuss the analysis of payback period, especially for graduate of distance education master's programs.

Improving the quality of learning is a way for a person's income level. The improved quality of learning will provide individuals with high bargaining power to be able to compete and have a greater chance of getting a job. The research states that the quality of learning can be improved by developing innovative learning models; in other words, teachers are able to improve their performance related to class management and learning processes by attending training on various learning innovations so that the quality of education and the quality of graduates will be able to compete in the global era (Susiani et al., 2022).

Several previous studies related to the rate of return in education were conducted by Patrinos (2016), Psacharopoulos & Patrinos (2018), as well as research related to educational investment conducted by Choi et al. (2021), Jalil & Idrees (2013), and Owings & Kaplan (2019). However, research on the payback period, especially in distance higher education, is still rarely carried out. Therefore this research will examine the payback period analysis of distance education master's graduates which is in the learning process using a distance learning approach.

Research related to distance education is generally related to the use of learning technology. Research states that educational technology can save a lot of time and energy by automating daily operations (Haleem et al., 2022). Apart from that, other studies state that with the existence of technology in education today, such as the existence of social media or mobile phones that can be used as learning media, and the ability to communicate information anywhere and anytime (Büyükbaykal, 2015; Domingo & Garganté, 2016). Forms of distance learning can vary, from delivering simple lectures for enrichment online to using sophisticated technology that enables real-time interaction via the internet and is applied in various fields of study. However, research related to the economic benefits associated with distance education is still rarely studied.

Referring to the description above, further investigated is still needed to review how the rate of return of graduates from the distance master's program is based on the payback period.

## METHODS

This research is descriptive with a qualitative approach. The research population consisted of 395 respondents as alumni of master basic education program Terbuka University. Terbuka University as a pioneer of distance university in Indonesia. Further the sampling technique in this study used a stratified random sampling method to obtain a sample of 116 respondents.

Based on Processed Primary Data, 2021 Source there are sixteen Regency/City such as Bandar Lampung (9), Bandung (32), Batam (22), Bogor (98), Jakarta (1), Jember (24), Malang (48), Medan (32), Padang (9),

Palembang (27), Samarinda (15), Semarang (16), Serang (18), Sorong (12), Surabaya (12), and Surakarta (20) used by researcher. From each Regency the researcher took the sample by using this formula  $n_i = N_i \cdot n/N$ . The sample are Bandar Lampung (3), Bandung (9), Batam (6), Bogor (29), Jakarta (0), Jember (7), Malang (14), Medan (9), Padang (3), Palembang (8), Samarinda (4), Semarang (5), Serang (5), Sorong (4), Surabaya (4), and Surakarta (6) with the total 116 sample.

Technically, respondents with the criteria of alumni of master basic education program Terbuka University who are already working are traced by utilizing existing social media such as Facebook, Instagram, and WhatsApp. Furthermore, data collection uses an online questionnaire (Table 1).

Table 1. Research Instruments Grid

No	Variable	Indicator
1	Respondent Identity	Name; Gender; Domicile; Position; Length of work; Marital Status; Length of study
2	Direct cost	Transportation to come to campus; Purchase reference books; Photocopying, binding, printing, and other tasks need; SPP; Mid-Semester Exam Fee; Final Semester Examination Fee; Purchase Modules; Final Assignment Guidance; Final Assignment Registration; Purchase of Internet Quotas or Internet Provider Subscriptions; Field Visit Expenses (Tourism Work); Purchase of stationery (paper, stationery); Purchase Printers; Purchase of computers and laptops; Purchasing Consumption/Food
3	Indirect Costs	Transport to find data during research; Purchase reference books for research; Transportation for guidance with lecturers; Communication costs (purchasing internet or telephone credit) for guidance with lecture
4	Income	Annual income from salary

Source: Processed Primary Data, 2021

Meanwhile, the data analysis in this study uses the human resource analysis method, namely the payback period. The following is a data analysis using the payback period method with the formula:

$$PP = \frac{\text{Initial Investment Or Original Cost Of The Asset}}{\text{Cash Inflows}} \dots\dots\dots(1)$$

The assessment criteria for the payback period are if PP is the maximum time, then the investment is declared feasible. If  $PP > \text{maximum time}$ , then the investment is declared not feasible. Payback period is an investment feasibility analysis method to assess the feasibility of an investment. It is calculated based on the period of time the investment is selected and is usually expressed in units of years for the investment return (Dai et al., 2022).

## RESULTS

Based on: Processed Primary Data, 2021 Gender Source, it is known that 67% of the respondents were women and 33% were men. The number of female respondents is higher than the number of male respondents. Respondent data based on domicile is known that the respondents are scattered in various cities in Indonesia, while the majority of respondents are from Bogor, namely 11.2%. As it is known, research respondents are very important to note because respondents are the source of data in research. Meanwhile, data collection was carried out by filling out online questionnaires. Meanwhile, research states that online data collection opens new channels for researchers to collect research data. With online data collection, there are various advantages such as reduced research costs, shorter time, ease of analysis, and fewer errors in transcription (Daikeler et al., 2020; Saleh & Bista, 2017; Wu et al., 2022).

Based on the Processed Primary Data 2021 Job Position Source, it is known that the majority of research respondents are teachers, and some are also school administration staff. As for teacher positions, namely 71%, teachers concurrently with school operators by 1%, teachers concurrently with school administration staff by 1%, principals by 22%, principals who concurrently serve as teachers by 2%, principals who concurrently serve as teachers and school administration staff by 1%, and supervisors by 2%. This is relevant to the program that the alumni participated in, namely master program of Basic Education.

The most work experience or length of work of the respondents is between 11 and 20 years, which is equal to 58%. As it is known, work experience will affect work professionalism and work attitude, where attitude towards work is the feeling that workers have towards various aspects of the work environment. With work experience (long working time), it affects job satisfaction, which has an impact on organizational success (Abdalkrim, 2016; Arch. DennisL. Estacio, 2018; Bayasgalan & Nomin, 2022). As much as 4% of the respondents' marital status is unmarried, 94% are married, and 2% fill in others. The length of study of the majority of respondents

was 4 semesters, which was 54%. Talking about the length of time a person has been in educational studies, of course, there is hope that is obtained, especially in the rate of return on the investment in education itself. Research suggests that college graduates earn about 60% more than high school graduates. Meanwhile, after 4 years of completing a bachelor's degree, the implicit return to higher education is around 15% (Yubilianto, 2020).

Table 2. Direct cost

No	Expenditure	Amount (IDR)	%
1	Transport to come to campus	1.268.182	5,19
2	Buy Reference Books	400.000	1,64
3	Photocopying, binding, printing and other task needs	590.000	2,41
4	SPP	7.783.333	31,83
5	Midterm Exam Money	0	0,00
6	Final Semester Examination Fee	0	0,00
7	Buying Modules	0	0,00
8	Final Project Guidance	1.000.000	4,09
9	Final Project Registration	6.000.000	24,54
10	Purchase of an Internet quota or Internet provider subscription	502.857	2,06
11	Field Visit Expenses (Tourism Work)	1.250.000	5,11
12	Purchase of stationery (paper, stationery)	408.333	1,67
13	Printer Purchase	1.000.000	4,09
14	Computer Purchase	4.250.000	17,38
15	Purchasing Consumption / Food	0	0,00
Total		24.452.705	100,00

Source: Processed by Researchers, 2021

Based on Table 2, it is known that the average direct expenditure per semester incurred by master of basic education Universitas Terbuka graduates is at most the SPP of IDR 7,783,333/semester (31.83%), and the second is final assignment registration, which is IDR 6,000,000/semester (24.53%). Meanwhile, there were no expenditures for midterm exams, end of semester exams, modules or purchasing consumption or food.

Table 3. Indirect Costs

No	Expenditure	Amount (IDR)	%
1	Transport to find data during research	750.000	31,36
2	Purchase reference books for research	408.333	17,07
3	Transportation for guidance with lecturers	1.000.000	41,81
4	Communication costs (purchasing internet or telephone credit) for guidance with lecture	233.333	9,76
Total		2.391.666	100,00

Source: Processed by Researchers, 2021

Based on Table 3, it can be seen that the indirect costs incurred are as follows: Transportation for searching data during the study is IDR 750,000.00 (31%), buying reference books for research is IDR 408,333.00 (17.07%), transportation for guidance with lecturers is IDR 1,000,000.00 (41.81%), and communication costs (purchasing internet or telephone credit) for guidance with lecture are IDR 233,333.00 (9.76%). Thus the largest percentage is spent on transportation needs when tutoring with lecturers. Furthermore, this indicates that in the master program at long-distance tertiary institutions the biggest indirect costs are related to transportation in the research process. In this regard, the costs of transport for data collection and for guidance with lecturers.

The payback period (PP) method is a period of time indicating the return period for an educational investment. From the existing data in the description of the research variables, the payback time for the investment in the education of master graduates can then be calculated.

In calculating this PP, income is needed, while the research data does not include graduate income. So, looking at the income of Class III d Civil Servant Teachers, it is IDR 2,920,800.00 to IDR 4,797,000.00 per month; the middle value is IDR 3,800,000.00 per month. So the annual income is getting an average value of IDR 45,600,000.00. Meanwhile, direct expenditure costs of IDR 24,452,709.00 and an indirect cost of IDR 2,391,666.00 So that the total expenditure of IDR 26,844,375.00 x 2 years (4 semesters) = IDR 53,688,750.00.

Table 4. Average Annual Income and Earnings

Expenditure (IDR)	Income (IDR)
53.688.750,00	45.600.000,00

So that after knowing the expenses and income, the accumulated value of the payback period can be determined, as shown in the calculation Table 5.

Table 5. The accumulated value of Cash Flow (in rupiah) of Graduates

Years	Cash Flow/Revenue (IDR)	Accumulation(IDR)
0	- 53.688.750	45.600.000
1	-	-8.088.750
2	45.600.000	37.511.250

From the Table 5, it can be seen that the accumulated net cash flow is equal to zero between the 1st and 2nd years. This means that capital has been able to be closed between the 1st and 2nd years. So the payback period is more than one year.

The amount of the payback period can be expressed by using the equation:

$$PP = \frac{53.668.750}{45.600.000} \times 12 \dots\dots\dots(2)$$

$$= 1,412$$

Then the obtained numbers are converted to months and days in the following manner:  $0,12 \times 365 = 43,44$  days;  $43,44: 30 = 1,45$  month;  $0,45 \times 30 = 14$  days. Based on Table 5 and also calculations using the formula, it can be explained that the investment for graduates is IDR. 53,688,750.00 and the annual income of IDR. 45,600,000.00 can be returned within 1 year, 1 month, and 14 days. With an estimated economic life of an average investment of 5 years and a payback period of 1 year, 1 month, and 14 days, investment in human resources for master graduates program in distance university is said to be feasible.

## DISCUSSIONS

The payback period (PP) method is a period indicating the return period of an educational investment. From the existing data in the description of the variables, the payback period for educational investment can then be calculated. Even though the payback period method ignores the time value of money and also does not measure the amount of investment profits made, knowing the investment return period can help asses whether investing in a master's program in distance education is a worthwhile option. Human capital investment is limited by the concept of cost and benefit. Poteliene & Tamasauskiene (2013), argues that the cost of investing in human capital consists of direct costs and indirect costs (opportunity costs). Costs for education such as fees, books, and public services are considered direct costs. While indirect costs are referred to as forgone earnings or lost income due to choosing to continue studying in college rather than working. According to Poteliene & Tamasauskiene (2013), the benefits of education are reflected in the income generated by individuals, which is calculated as the difference between the salaries of individuals with higher education and individuals with secondary education.

Individual income is closely related to the economy. While the economy is a complex system and consists of many segments where various economic entities operate, education, as an investment generates jobs, work is the central human field and the source of the development for every society, and in work there is an employment policy, which is influence by countries and other social and economic entities. The objective of employment policy is to seek methods and means that enable the optimal management of human factors under certain conditions (Kryńska & Kwiatkowski, 2013; Miciuła, 2016).

Based on the expert opinion and the results of this study, it is very important to measure the rate of return on educational investment and the feasibility of education using a cost-benefit analysis. The benefits of this analysis can be seen from the perspectives of education implementers, education service users, and job service providers. Therefore, researchers feel the need to discuss this analysis in more detail.

In the world of education, cost-benefit analysis can be used as a tool to determine the feasibility of an educational project when viewed from the perspective of the costs incurred and the benefits that can be generated. This analysis is actually one of those in economic management, so all costs and benefits, which are usually in the form of non-material things in the world of education, must first be converted into the value of the rupiah (nominal money).

Cost-benefit analysis (CBA) is a methodology used to carry out educational investment analysis in order to assist decision-makers in making choices among existing alternatives. This analytical method is economic in nature and stems from the concept of "investment in human capital" or investment in human resources (HR). Basically, the theory of human capital, which is a school that considers that humans are a form of capital like other forms of capital, such as machines, technology, land, money, and materials that determine productivity growth through self-investment. A person can choose a profession or job that will increase their welfare. In this view, every investment must bring benefits that can be measured by the value of money.

Research states that cost-benefit analysis helps the private sector decide on additional investments in education. Analysis in education also provides valuable guidance for education planners about the actual cost. In general, the cost-benefit approach sees education as an investment for the whole society as measured by the average social return; besides that, education is an investment for individuals using personal gain. By choosing to go to school, individuals bear certain direct and indirect costs such as tuition, school supplies, lost income, and others (Adu & Ajayi, 2021; Khandagale & Pandya, 2014; Paudel, 2022).

The feasibility of education is measured by comparing the educational costs incurred with the benefits or advantages that will be obtained. In this study, an educational investment analysis was carried out using the payback period method. This analysis has two different functions: predictive analysis and evaluative analysis. As a predictive analysis, this analysis can predict the feasibility of an educational program that will be implemented. As for evaluative analysis, this analysis can be used as an evaluation method for educational programs that have been implemented.

Based on the research results, it is known that the level of educational feasibility for graduates of master program distance learning program has the meaning of feasible, which means it is viable option for educational investment. Because the educational program is able to provide benefits to its graduates. In addition, quality improvement must be carried out to provide individuals with high bargaining power so that they are able to compete for jobs.

Apart from providing benefits to the economy as a whole, education also provides many benefits for its workforce, one of which is an increase in income and welfare when entering the world of work, which is referred to as the rate of return on educational investment. Research states that education in Indonesia shows consistent and increasing numbers. increases occur for higher levels of education (Hendajany et al., 2016; Psacharopoulos & Patrinos, 2018; Purnastuti et al., 2015).

The role of investment in human resources can be analyzed from two perspectives, namely micro and macro. The micro point of view sees human capital as part of the production function in individuals, which is further related to the quality of human resources. Knowledge can have an impact on the mastery of technology and the existence of innovation in terms of the production process. The result of this knowledge is efficiency in the production process, which has the potential to increase productivity. On the other hand, the existence of expertise will make individuals more competent in the production process, thus encouraging productivity.

From a macro perspective, the role of investment in human resources can be analyzed from the micro contribution that is collected as part of national economic development. This development has an impact on increasing in welfare, as indicated by an increase in the level of GDP (gross domestic product). Investment in human resource does not only come from individual productivity but is also part of the productivity of other workers at a certain level of expertise. Increased welfare has implications that will further reduce the level of poverty and unemployment that may result from the growing investment in human resources. In a developing country like Indonesia, the government plays a crucial role is needed in developing quality human resource conditions. This will have implications for an increase in the level of social welfare, which will then be followed by an increase in economic growth at the macro level.

This is in line with research that states that there is a positive and significant relationship between investment in human resources and growth in a country (Mba et al., 2013; Omitogun et al., 2016). Other research states that investment in human resources in relation to the global world is aim at achieving optimal returns on future work and is also expected to improve living standards (Solarin & Eric, 2015).

Meanwhile, the research results show that the rate of return on investment is feasible if it is associated with the payback period theory, which is one of the most popular methods used in evaluating capital budgeting decisions. This technique is defined as the number of years needed to recover investment costs; however, one of the problems with the payback period technique is that it ignores cash flows that are outside the payback period and the time value of money (Al-Ani, 2015).

In the field of education, the payback period technique can be used to measure the rate of return on educational investment. To succeed in a competitive environment, companies must have a forward-looking capital investment strategy that allows them to invest (Munyao et al., 2014; Nyarombe et al., 2015). In addition, research on the payback period was carried out in companies, where one study stated that there was an effect of the payback period technique on maximizing shareholder wealth among companies listed on the Nairobi Securities Exchange. The results of the study concluded that the payback period had a positive and significant effect on maximizing shareholder wealth between agricultural companies and registered partners (Ombui, 2020). Another study reviewed studies on growth constraints associated with tilapia aquaculture in Ghana with the help of payback periods, data analysis involving payback analysis to evaluate the profitability of tilapia farming, and risk of return analysis. The shorter the payback period, the smaller the risk associated with investing in fish farming (Kwami & Mawufemor, 2017). Lonnie & Roshan (2015) conducted research on drugs for the Everton-based company out of the Northwest region of Italy using the payback period used to evaluate the project. Everton Company requires that all investment projects have returns and discounted returns of less than 3 years and 3.5 years, respectively.

## CONCLUSIONS

Investment in education using the payback period rate of return method of distance higher education learning processes for alumni of the postgraduate basic education master program shows a value of 14.2, which is feasible because the revenue obtained is greater than the costs incurred, so it is feasible to invest. The results of the analysis of human resource investment in distance master basic education program have the meaning of feasible, which means it is feasible to be an option for educational investment because the education program is able to provide benefits or advantages to its graduates. This illustrates that the investment efforts made by students in distance master education are the right educational investment decisions. In this regard, this study also shows that distance master education has almost no costs for daily transportation and most of the transportation costs are incurred during the research. Furthermore, the results of this study can become the basis for planning those who will invest in education for future economic benefits.

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