



Post Occupancy Evaluation of School Assets For Effective Schooling

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This study was conducted to identify and measure the occupancy level of school facilities in three categories, namely, building/rooms, electronic facilities and books in the library. The methodology that was used in this research was quantitative with a descriptive analysis technique. The results of the research show that the utilisation of school assets in the three schools is not optimal. The utilisation of school buildings is not optimal because the learning schedule is only from 07.00 a.m. to 01.00 p.m. The schools could use the buildings for more than 6 hours. The asset utilisation is not optimal because the teachers rarely use the electronic facilities available. This indicates that the teachers in the school use conventional teaching processes. The lack of book borrowing in the library indicates that students' literacy levels are still low.

KEYWORDS: *school assets, occupancy, post occupancy evaluation (POE), building, electronic, library.*



INTRODUCTION

Organisational assets are used as capital in carrying out organisational programs. This is done in order to achieve organisational goals (Sunandar, 2017). Every organisation (either a business/business oriented organisation or an educational/non-profit organisation), needs assets. The definition of assets is stated in several ways depending on the point of view of the characters defining the assets. According to several sources (Sunandar, Benti, & Sumarsono, 2016; Hertina, Haizam, & Saudi, 2019), the assets of an organisation or individual (M Yusuf, 2013) are defined as components related to the balance sheet. They include fixed assets, current assets and inventory. In other words (Martanti, Lestari, Zarkasyi, & Mulyadi, 2019), assets are akin to being part of an ecosystem in an environment. In educational organisations, assets are viewed as supporting facilities for education processes. One source describes (Oliver, Vincent, & Ann, 2007) assets as student possessions obtained from experiences in life and the transfer of knowledge from the others. Furthermore, assets also have relationships with health scope. Another source (Sáenz, Gabari, García, & García, 2014) states that assets, from a multidimensional perspective, effect intelligence, the ability to build relationships and bring self-perception and understanding to of life.

Assets are basically something dynamic. They can be increased and reduced. In economic terms, there are three kind of assets. They are fixed assets, tangible assets and intangible assets. The ups and downs of the value of an asset depends on the type of asset and economic value-added to goods. The process of developing the value of assets is known as the theory of asset building (Grinstein-weiss, Curley, & Charles, 2007). Park, Park and Lee (Park, Park, & Lee, 2016) described asset management as an effort to maintain asset value. Asset maintenance is an effort to maintain the value of assets and even increase the value of assets. To find out whether the assets owned have significant, beneficial values, it is necessary to calculate the benefit of the assets. The term commonly used is post occupancy evaluation (POE).

Occupancy is a theory that explains the utility of goods or buildings. Occupancy is also known as terminology used to explain availability and utility. The theory of occupancy is used in scientific engineering of a building. This evaluation model is used to calculate the effectiveness of building utilisation through a systematic evaluation process of a building after it is used (Göçer, Hua and Göçer, 2015). POE is known as a method to measure the sustainability and utility of a building (Alborz and Berardi, 2015). In the use of POE, Husein (2012) gives a limit to POE measurement in terms of accessibility, aesthetics, cost-effectiveness, functionality, productivity, safety, security and sustainability. The three statements above show that POE is a measuring tool for identifying the utilisation of a building. It involves the following aspects: the determination of the development plan, the effectiveness of expenses in the development process and the utilisation of the building in the process of realising the organisation's goal.

Some previous studies indicate that research about occupancy and satisfaction has been the main focus within the parameters of building utilisation (Li, Froese and Brager, 2018).



Research involving occupancy is not only about the use of a building but also the user satisfaction of the building itself. This is supported by research conducted by Bonde and Ramirez (2015), which is about the use of a building and its environment.

POE research about educational facilities is not too familiar. However, it has benefits for creating efforts to realise the goals of education. If a school has a high level of occupancy, it cannot be denied that the school will be optimal in using the facilities that it has. The research process of occupancy can be classified into three stages: indicative (determining the asset's criteria by using application), investigative (explaining the classification approach of the asset) and diagnostic (making detailed explanations and focusing on the research) (Adewunmi *et al.*, 2009).

This study focuses on the use of buildings, the convenience of building users and some factors that can affect the usefulness of a building. This study discusses the usefulness buildings in terms of how they support the teaching and learning process in school. A school building, as a means of education, must contribute to the achievement of educational goals.

Research about occupancy implementation in the education field is required. In the quantification of the number of educational facilities, occupancy becomes very important in realising high quality education. Meanwhile, the funding of school facilities that comes from the government cannot cover a school's necessities. The implementation of the occupancy concept can help schools to organise themselves in fulfilling necessities, especially regarding the management of the school when it decides to procure facilities.

The implementation of occupancy theory, in the educational world, is still rarely used as an example of laboratory optimisation. Laboratory management is only done to cover the schedule of laboratory use, the person in charge of activities in the laboratory and also the rules that must be noticed by students in a school. Basically, if a school has applied occupancy theory, the school will have good management regarding laboratory and asset use. If a school does not apply occupancy theory, damage of it facilities may occur because of misuse.

METHOD

The research was conducted by using a quantitative approach. The data that was collected is descriptive and statistical regarding numbers that show quantities. Descriptive techniques were chosen because this research aims to portray the recent conditions of school facilities and their occupancy. The data collection was conducted using document analysis, interviews and an approach that uses instruments that were planned by the researchers. The research processes was done in three schools in Batu City, Indonesia. They include SDN Ngaglik 1 Kota Batu, SMPN 1 Kota Batu and SMA N 1 Batu. These three schools were chosen because they could give a data regarding school facilities that are complete. This data supported the process of the research.

In this research, the researchers determined the following steps:

1. Collect and scrutinise the documents related to the history of the buildings and also the planning of their establishment.
2. Collect data about the use of the buildings/rooms/facilities by using interviews and instruments.
3. Analyse quantitative data by using descriptive statistics.
4. Conduct Focus Group Discussions (FGD) to confirm the findings from the schools.
5. Arrange the final report and determine some research results, which is recommended (Klooster, 2008).

The data regarding the use of assets was compared with the planning of asset utilisation and the period of asset use. The use of assets has been determined by the researchers with following formula:

$$(KA) = \frac{(RKA - RPA)}{MKA}$$

KA = *Kegunaan Aset* (The use of the asset)

RKA = *Rencana Penggunaan Aset* (The planning of asset utilisation)

RPA = *Realisasi Penggunaan Aset* (The realisation of asset utilisation)

MKA = *Massa Kegunaan Aset* (The period of the asset's use)

Modified from two sources (Parsana & Patel, 2014; Kumar, 2011).

RESULTS

The results of the use of the assets were related to the criteria of their use. If the number of assets was found to be diminishing, the use of assets was called very optimal (the occupancy of the assets was very high). Conversely, if the number of asset was found to rise, the asset occupancy was determined to be low. The criteria that the researchers applied for asset utilisation are depicted in Table 1.

Occupancy of rooms

Table 2 shows that the head of the school must make an effort to make a program for the school's room utilisation. Schools must utilise rooms for at least 9 hours per day, but the schools utilised them for no more than 7 hours. The teaching and learning process in the schools, in general, takes place from 07.00 in the morning until 01.30 in the afternoon. This is not enough to optimising the use of schools' rooms.

Electronic facility occupancy

The electronic facilities occupancy in SDN Ngaglik 1 Batu is as follows:

The calculated results from Table 3 show that the use of electronic facility occupancy in SDN Ngaglik 1 Batu is not optimal. The example regards the use of LCD screens. This school has



three LCD units. The price of each item is Rp 3,000,000, and the LCDs are only used for 2 hours per week or 96 per year. Therefore, LCD use costs Rp 288 per hour and Rp 21,888 per year. The school loses around Rp 578,112 per LCD.

The results of electronic facility occupancy in SMPN 1 Batu are depicted in Table 4. The researchers use the same example for this school (LCDs). The results shows that SMPN 1 Batu has 17 LCDs. The price of each item is Rp 5,500,000. The utilisation capacity is 8.760 hours, and the nominal value of each LCD is 628 per hour. The use of LCD in a week is 24 hours and in a year is 1,152 hours. Therefore, in a year, the value of an LCD in SMPN 1 Batu is about Rp 723,288. The LCDs' asset reduction value per year is 1,650,000. The school LCD asset value loss is about Rp 926,712 per year. The loss of asset value is affected by the school. It did not use the LCDs optimally every week.

The results of the electronic facility occupancy in SMAN 1 Batu is as follows:

Findings from SMAN 1 Batu show that the school has 45 LCD units priced at Rp 5,500,000 each. In a year, the LCDs were used for around 1.152 hours. The value of asset utilisation of LCDs is 216,986. Meanwhile, the lost asset value of LCDs in a year is 1,650,000, and the utilisation value of the LCDs (which were not used optimally) is around Rp 1,433,014. These findings show that the school has not used its electronic assets optimally.

Electronic asset occupancy research concerns not only the use of LCDs but also the use of computers, laptops, loudspeakers, electric lamps, printers, televisions and AC. Generally, the findings of the research indicate that the use of electronic assets in the schools are not optimal. Research regarding the value of electronic asset occupancy shows that the schools have not been optimal in organising the electronic facilities available.

The occupancy of books in the library

The result of the research in the three schools show that the frequency of borrowing books in the library in each school is still low. The data in SDN 1 Ngaglik indicates that the most borrowed book has a rate of 11,11% or 5 times per year. Each book can be borrowed 45 times. The rate of borrowing for other books is around 2-4 times per year. In certain respects, the utility of the library is still not optimal.

The findings in SMPN 1 Batu also show the same conditions as SDN 1 Ngaglik, but SMPN 1 Batu has a higher percentage than SDN 1 Ngaglik. The highest frequency of book borrowing in SMPN 1 Batu is 33,33% or 15 times per year. The lowest frequency of book borrowing in this school is 4,4% or 2 times a year.

The results of the research conducted in SMAN 1 Batu show a good percentage. The highest percentage of occupancy of books in the library is 66.67%. The distribution of book borrowing is also better at 33%, and the lowest lending rate is 4.44%. The results of this study show that



the occupancy of SMAN 1 Batu is better than SDN 1 Ngaglik and SMPN 1 Batu, but the occupancy of books in SMAN 1 Batu should be improved to achieve optimal occupancy. An improvement process needs to be undertaken regarding book lending quantity and the distribution of book lending. Management of books in the library should be done to make the library in the school more interesting and comfortable for the students as the readers.

The findings of interview results

The data of the documentation and instruments is supported by the results of interviews: According to the results of the interviews, the utilisation of schools' assets is conducted by managing the way and schedule of school asset use. The necessities in the three schools have been not fulfilled because the schools have no funds to cover all the facilities that they need. There are some users of school facilities feel who satisfied. Others do not feel satisfied because the school facilities are not complete. The school assets, which are usually used in teaching and learning processes, include the buildings, tables, chairs, LCDs, computers and laboratories.

DISCUSSION

Occupancy is a theory that explains the utility of goods or rooms. In a simple way, Abdullah and Hamdan (2012) explain that investigating occupancy in a hotel involves for identifying the number of rooms in the hotel, the visitors that use the hotel's facilities and the visitors' satisfaction in using the hotel's facilities. Occupancy affects profit through the use of goods or rooms that become business commodities. The results of the research, which involve the occupancy in the three schools, are divided into three categories. They are rooms, electronic facilities and books in the library. These three things are the facilities that are available in the three schools. Li and others (2018) explain that POE in an educational institution will basically point out the learning activity frequency, students' behaviour and some components in the teaching and learning process. This explanation can support the statement that the calculation of occupancy in a school is focused on the facilities that the students use in the learning process directly.

The research findings in SDN 1 Ngaglik show that the use of assets is in the less favourable category because the conversion value is only 70.1-74.9. Meanwhile, the electronic facility assets are still low. The results of the books' utility in the library show that SDN 1 Ngaglik's book borrowing rate is still low. At least one book is borrowed by students 5 times in a year (11%).

The use of the schools' assets is not the optimal. This is evident according to the process of goods allocation. Asset allocation determines the maximum value of assets according to the risk involved (Ziemba, 1995). This confirms that the reversal of assets is influenced by the asset allocation process itself. Efficient assets allocation reduces the use of labour (Loistl and Petrag, 2002). If the allocation of assets is done effectively human labour can be reduced. For



the example, in terms of the arrangement of books in the library, the organiser will be energy efficient if the arrangement is planned well.

In addition, if the process of asset allocation is less precise, low occupancy of buildings and library books may result from the unfavourable conditions. As described by Khalil (2009), post occupancy's main goal is to explain the indicators of how a good building provides comfort facilities to achieve the organisational goals, and it is able to fulfil the needs of each individual in the organisation. Furthermore, Khalid and Husin (2009) explain that occupancy of a building will also determine the indicator level of satisfaction of the user. The study in the three schools shows an overview of the facilities in those schools; they do not fulfil the satisfaction and the user needs. These research results can provide feedback to schools. School managers need to do better planning and take action, so that the benefits of school buildings become greater. In line with this opinion, the calculated results of the of the three schools become feedback (Blyth, Gilby and Barlex, 2006). The feedback is then used as input to improve the buildings that are to be built next. The statement is a reminder that in building new buildings, organisers needs to pay attention to the level of utilisation of existing buildings. The feedback values that have been obtained are the data that need to be considered for new buildings to be utilised optimally. Some weaknesses that usually occur in Indonesia include the construction of office or school buildings that have taken level of utilisation into consideration. As a result, the optimisation of the buildings are low. The determination of a priority scale helps bring attention to the buildings that are available, so the school can decide which buildings it needs.

The utilisation of electronic occupancy in the three schools indicates a low economic value in each school. The results of the research of item occupancy give an illustration of the utilisation of the items themselves and whether capital expenditure to buy goods will give profits. In this context, Blyth and friends (2006) refer to this as functional performance evaluation. The low value of LCD use causes the function of the LCDs to be suboptimal. According to Park and others (2016), the calculation of an items use will inform those involved to do something more efficient in the future. The research findings and some of the above quotations confirm that POE is an activity needed to know the level of usefulness of goods, both functionally and economically.

Occupancy calculations are very urgent in the effort to optimise existing goods and plan the development of buildings and other school facilities. The results of occupancy evaluation will also provide benefits in the effort to establish school activities. In addition to optimising the value of assets, schools can also design activities that can improve the quality of the learning and teaching process. The utilisation of good learning facilities is assumed to be able to boost student learning outcomes and school effectiveness.

The maximum utilisation of school facilities will affect the achievements of effective school criteria. All facilities that are utilised to the fullest indicate the achievement of effective



indicators. (Jaap Scheerens, 1997) Scheerens explained that effective schools reflected the criteria of productivity, adaptability, involvement, continuity and responsiveness to external stakeholders. (DÖŞ, 2014) The effectiveness of a school can be seen in the optimal use of the learning environment. In other research done by Bozaslan & Kaya (Bozaslan & Kaya, 2012), school effectiveness is determined by school culture, school programs, the environment, the educational process and the role of parents. In addition to physical facilities in learning, the effectiveness of a school cannot be separated from the teacher's role (Asykin, Rasul, & Othman, 2019).

In line with this research, the effectiveness of a school is represented by adaptability to and producibility of criteria. Low of utilisation space, electronic goods and reference books shows that the effectiveness of school management is also quite low. Schools need to make some improvements so that there is an increase in the effectiveness of school management in terms of utilising various facilities. A way to increase school effectiveness is through integration of technology in learning. (Summak, Samancio, & Ba, 2010) Widespread use of technology is not only a tool but can also be a supporter of educational success.

CONCLUSIONS

The measurement of school occupancy of facilities provides an overview of the effectiveness of using the school facilities in supporting teaching and learning processes. The level of school assets' occupancy in the three schools that are the object of this research shows that the level of occupancy in those three schools is still low. The occupancy of buildings and rooms in the three schools are still in the less favourable category. The occupancy of electronic facilities is also in the category of loss. This happens because the value of depreciation of electronic assets is higher than the value of merchandise. The collections of new books in the three schools' libraries are still not enough to support the level of occupancy. This is because the students have not been given a chance and time to read in the library. According to the research findings from the three schools, the organisers of school management should point out three important things: The facilities that are available in the school must be accompanied by a good plan involving their utility, the teachers in the school must be given training to maximise the use of school facilities and the students must be given a chance and enough time to borrow and read books from the library. By implementing these three things, the schools will increase the value of their facilities' occupancy.

School effectiveness can be achieved by optimising the use of educational facilities, utilising learning resources around the school and implementing technology-based learning.

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Table 1

The criteria of the schools' asset utilisation

Orientation	Conversion	Criteria
0,02-0,1	>85	Very optimal
0,10-0,2	80.1-84.9	Optimal
0,20-0,3	75.1-78.9	Good benefit/profit
0,30-0,4	70.1-74.9	Less benefit/profit
0,40-0,5	65.1-69.9	Loss
0,50-0,6	60.1-64.9	Significant loss

Modified from two sources (M. Dudek-Burlikowska, 2011; Kania, Roszak, & Spilka, 2014).

Table 2

Asset occupancy of rooms

Criteria	SDN Ngaglik 1		SMPN 1 Batu		SMAN 1 Batu	
	F	%	F	%	F	%
Very optimal	2	5.26	0	0.00	6	15.00
Optimal	4	10.53	4	8.16	2	5.00
Good benefit/profit	3	7.89	3	6.12	1	2.50
Less benefit/profit	20	52.63	1	2.04	23	57.50
Loss	2	5.26	1	2.04	0	0.00
Significant loss	1	2.63	37	75.51	5	12.50
False	6	15.79	3	6.12	3	7.50
Total	38	100.00	49	100.00	40	100.00

F: Frequency

#: Percentage

Table 3

The results of electronic facilities occupancy in SDN Ngadlik 1 Batu

No	Items/Name of Goods	The Number of Items	Price (Rupiah)	Capacities (Hour)	Goods Value/ Hour/ Rp	Goods/Items Utilisation in 2016			The Utilisation (Rp)	Assets Reduction /Year 30%	The loss of Assets
						The Schedule of the utilisation /week	The utilisation/ Week/ Hour	The utilisation/ Year/ Hour			
1	2	3	4	5	6	7	8	9	10	11	
1	LCD	3 Units	2.000.000	8.760	228	180	2	98	21,888	600.000	578.112
2	Computer	10 Units	7.000.000	26.280	266.36	120	1.5	72	19,178	2.100.000	2.080.822
3	Lights in the class	108	56.000	365	153.42	Conditional (Rain)	12	576	88,373	16.800	(71.573)
4	lights in the building	92	56.000	365	153.42	Conditional (Rain)	36	1728	265,118	16.800	(248.318)
5	Load speaker	5 Units	2.000.000	43.800	68.49	45 minutes/day	4.5	216	9,863	600.000	590.137
6	Printer	4 Units	1.200.000	17.520	68.49	8 hours/day	30	1440	98,630	360.000	261.370
7	Television	-	-	-	-	-	-	-	-	-	-
8	AC	1 Unit	3.000.000	26.280	114.16	120 minutes/day	9	432	49.315	900.000	850.685
9	Software	-	-	-	-	-	-	-	-	-	-

Table 4

The results of electronic facilities occupancy in SMPN 1 Batu

No	Items/Name of Goods	Price (Rupiah)	Capacities (Hour)	Goods Value/ Hour/ Rp	Goods/Items Utilisation in 2016		The Utilisation (Rp)	Assets Reduction	The loss of Assets
					The utilisation / Week/ Hour	The utilisation / Year/ Hour			
	1	6	7		10	11			
1	LCD	5.500.000	8,76	628	24	1,152	723,288	1.650.000	926,712
2	Computer	7.000.000	26,28	266	30	1,44	383,562	2.100.000	1.716.438
3	Lights in the class	12.000	365	33	12	576	18.937	3,6	15,337
4	lights in the building	12.000	365	33	36	1,728	56.811	3,6	53,211
5	Load speaker	1.500.000	43800	34	4,5	216	7.397	450.000	442,603
6	Printer	1.500.000	17520	86	3 hours/day	3 hours/day	-	450.000	-
7	Television	3.500.000	8	437,5	30	3 hours/day	-	1.050.000	-

Table 5
Interview Data

FOCUS	SDN 1 NGAGLIK	SMPN 1 BATU	SMAN 1 BATU
Asset utilisation	All assets given to the school have been considered for their usage. We must maximise the use of assets, because if we do not use the assets optimally, the assets will be redundant. The students' satisfaction is relative based on facilities that have been provided by the school.	The utilisation of assets is conducted by scheduling the assets usage. The assets, as the facilities in the classroom or outside classroom, are not enough to support the teaching and learning process. Fixed assets and movable assets that the school has are not adequate yet.	The utilisation of assets is done according to their function, and the assets can support the activity in the school based on curriculum that the school has applied. The assets of the school that are usually used are like electronic assets.
User satisfaction	Many parents are interested in sending their children to study in this school because this school has many facilities that can support the teaching learning process. Some facilities that are available in the class are like LCDs, laptops, computers, AC and many others. Most of the parents are satisfied because their children can feel comfort in studying in the school.	Most of students feel satisfied in using facilities in the school. The school assets that are usually used in the teaching and learning process are like LCD projectors, tables and chairs in the class etc. There are some supporting facilities available in this school, such as a computer laboratory and library etc.	Teachers and students in the school are not satisfied with the facilities that school has. It happens because the school does not have enough money for fulfilling the school needs. Some facilities in this school that are usually used in the teaching and learning process are tables and chairs in the class, LCD projectors and speakers.



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