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Determining Service Needs for xxx Students in Batam Using Work Sampling

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Abstract

The goal from this research is knowing number of needs worker in the service for student. There is three objective in this research. The research use work sampling with time study. Research input is all of service activites for student. With observe and make pie chart diagram we make a conclusion. The conclusion is service for student has a good job, they have 74% productive activities. The most activites is servicing the student and we don't need additional worker. But we need to know standart time for the service next time and may be this research can be use for another case in the university.

Keywords— work sampling, service, students, university

INTRODUCTION

Sampling work or work sampling is a statistical sampling technique based on sampling theory. In this way we can estimate a certain quantity, for example the proportion of productive activities through sampling. So that the conclusions obtained can be justified, it is necessary to remember the requirements for taking a good sample. Work sampling, which in a foreign language is often referred to as work sampling ratio delay study, random observation method, is a technique for conducting a large number of observations on the work activities of machines, processes, and workers or operators.

So to determine the level of performance and determine the standard time for a process or operation, work as can be done by other work measurements. Observations were carried out not as a whole (population) but enough to be done with samples taken at random (random). The job sampling technique is a fairly reliable technique for measuring the workload of the workforce. In this study, the measurement is devoted to administrative workers who have variable types of work. Productivity can be increased by increasing sales (output) or reducing income (input). Before deciding how to increase labor productivity, it is necessary to first know how much workload the workforce has. After that, it can be determined how many ideal workers are needed.

Thus the productivity of the existing workforce can be increased. With the increase in the number of students who are in a college, the duties of the student service department are also increasing. For this reason, it is necessary to carry out a work measurement with the aim of knowing the needs of student administration service employees. In addition, the writing of this work sampling paper can also be a lesson for calculating work sampling on the workforce. This measurement is only carried out at xxx colleges in the city of Batam. The research was conducted during the working hours of the xxx college.

RESEARCH METHODS

Work Sampling is a technique for conducting a large number of observations on the performance activities of machines, processes or workers/operators (Sritomo Wignjosoebroto, 2003). The difference between the downtime method and work sampling is the way it is measured. The downtime method of an observer must be continuously at the location where the work is taking place, while work sampling is the opposite. The object that can be observed with the downtime method is only 1 operator, but with the work sampling method, several operators can be observed.

Preliminary Research

Previous research serves to study working conditions and working methods so that they can find out the working system of the object under study, and if it is found that the work system is not good, it must be repaired first.

Sampling Introduction

Here a number of visits are made, the number of which is determined by the gauge, usually not less than 30. Job sampling data to calculate the standard time for completing a job can be seen in table 1. All activities carried out by workers to complete work are referred to as productive activities, others are non-productive. Furthermore, momentary observations were made at random times 250 times and the results were as follows:

Table 1. Results of preliminary research observations

Kegiatan	Observation day					Amount
	1	2	3	4	5	
Produktif	35	39	29	37	25	165
Not Productive	15	11	21	13	25	85
Amount	50	50	50	50	50	250
% Produktif	70%	78%	58%	74%	50%	66%

Data uniformity test

For this we need to determine the control limits first, namely the Upper Control Limit (BKA) and Lower Control Limit (BKB) as follows

$$BKA = (p_r + 3\sqrt{(\frac{p_r \times (1 - p_r)}{n_r})})$$

$$BKB = (p_r - 3\sqrt{(\frac{p_r \times (1 - p_r)}{n_r})})$$

Where :
p_r = the number of p_i/k, where pi is the percentage of productive on the i-th day, k is the number of days of observation
n_r = number of n_i/k, where ni is the number of observations on day i

Calculating the number of observations required

The number of observations required for an accuracy level of 5% and a confidence level of 95% is known through the formula:

$$n' = \frac{1600(1 - p_r)}{p_r}$$

Random Sampling (Random Observation Time)

In conducting work sampling, the visits must be done at random times. There are several ways for this random observation time, the first by dividing one working day into units of time whose amount is determined by the researcher and then multiplied by a random number that will show the time of observation; Besides that, random numbers can also be adjusted according to working hours directly.

RESULTS AND DISCUSSION

From the results of the preliminary research, BKA = 0.8610 and BKB = 0.4590 with the above formula. With these BKA and BKB, there is no productive percentage that is out of the existing range (figure 1). That way all productive percentages can be used for calculating the number of observations that must be carried out. Of all the productive percentages from the preliminary research, the required number of observations is (N') 824 observations. Therefore, the research was conducted by making 840 observations.
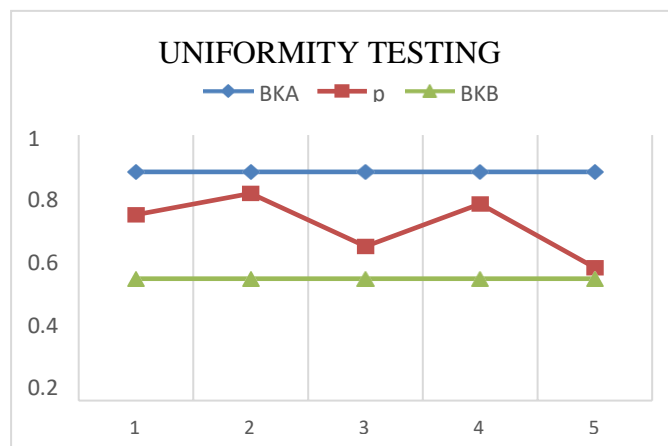

Figure 1. Results of Preliminary Research Uniformity Testing

From 100 random numbers in the first stage (table 2), 30 observations were taken for the first day, so the observation time was obtained on the first day as shown in table 3. Where the working time from 14:00 to 21:00 is divided by 5 minutes to obtain 84 parts. which will be adjusted to the random numbers obtained.

Table 2. First random number

63	67	60	12	98	49	20	28	93	54
72	95	23	97	92	15	15	33	60	28
4	56	30	73	17	32	8	86	43	9
97	89	46	56	48	44	47	98	32	37
22	38	76	94	74	78	52	50	78	7
75	20	48	22	82	82	12	65	52	48
68	59	80	27	23	52	54	8	40	6
4	99	61	34	69	81	5	24	54	47
7	99	13	50	34	39	11	80	21	90
82	36	22	16	66	10	54	94	84	11

Table 3. Observation Time Day I

1	14:00	13	15:00	25	16:00	37	17:00
2	14:05	14	15:05	26	16:05	38	17:05
3	14:10	15	15:10	27	16:10	39	17:10
4	14:15	16	15:15	28	16:15	40	17:15
5	14:20	17	15:20	29	16:20	41	17:20
6	14:25	18	15:25	30	16:25	42	17:25
7	14:30	19	15:30	31	16:30	43	17:30
8	14:35	20	15:35	32	16:35	44	17:35
9	14:40	21	15:40	33	16:40	45	17:40
10	14:45	22	15:45	34	16:45	46	17:45
11	14:50	23	15:50	35	16:50	47	17:50
12	14:55	24	15:55	36	16:55	48	17:55

49	18:00	61	19:00	73	20:00
50	18:05	62	19:05	74	20:05
51	18:10	63	19:10	75	20:10
52	18:15	64	19:15	76	20:15
53	18:20	65	19:20	77	20:20
54	18:25	66	19:25	78	20:25
55	18:30	67	19:30	79	20:30
56	18:35	68	19:35	80	20:35
57	18:40	69	19:40	81	20:40
58	18:45	70	19:45	82	20:45
59	18:50	71	19:50	83	20:50
60	18:55	72	19:55	84	20:55

With a total number of observations to be made as many as 840 observations, this research can be completed in 28 working days. Where every day 30 observations are made randomly according to the random numbers obtained. From these observations, the data obtained as shown in table 4.

Table 4. Frequency of observed activities

Activity	Frequency	Percentage
Type	97	12%
Print	89	11%
Chat with coworkers	65	8%
Sholat	94	11%
Rest	16	2%
Browsing	42	5%
Chat with students	129	15%
Documentation	71	8%

Legalization	53	6%
Meeting	73	9%
Watch	84	10%
Social media	27	3%
Total	840	

From Table 4, a pie chart diagram can be made as shown in Figure 2 below. So that it can be seen that the most activities do serve students as seen from the percentage of talking with the highest students, which is 15%. Furthermore, all activities will be classified into 2 types of activities, namely productive and non-productive, where prayer, rest, watching and social media are classified as non-productive activities. The rest will be classified as productive activities, so the data is obtained as shown in table 5. And from table 5, a pie chart diagram is obtained as shown in Figure 3.
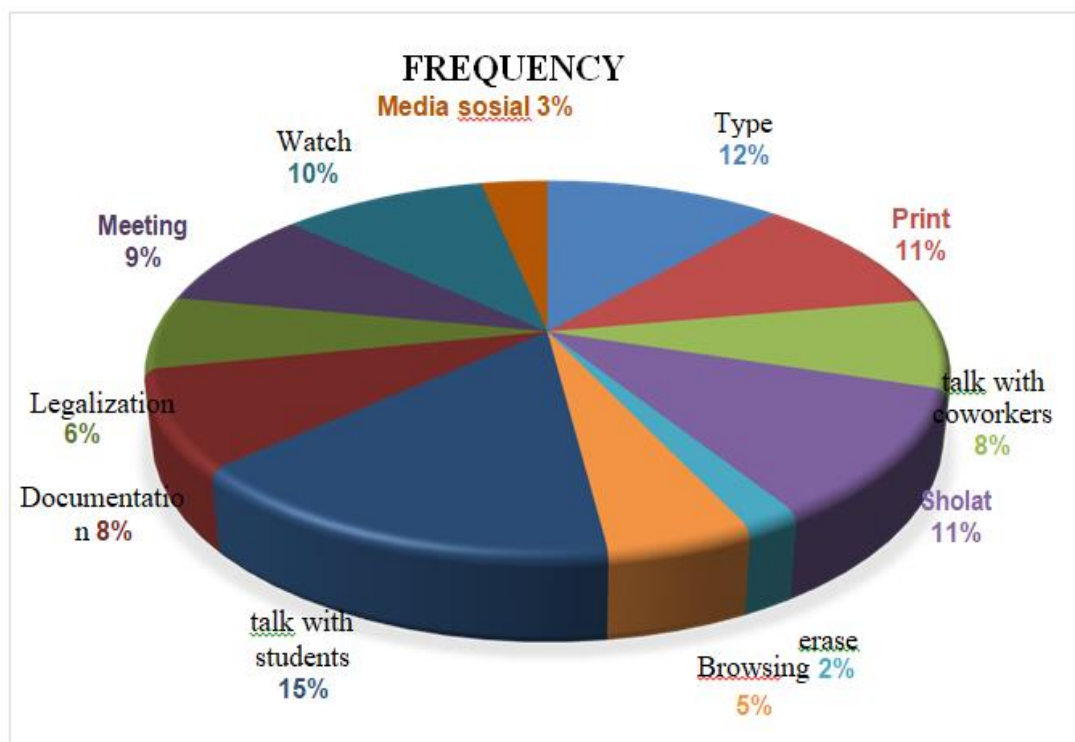

Figure 2. Percentage of all activities

Table 5. Productive Activities

Activity	**Frequency**	**Percentage**
Produktif	619	74%
Non Produktif	221	26%
Total	840	

Figure 3. Percentage of Productive Activities

CONCLUSION

The conclusion that can be drawn from the results of this study is that the biggest job in student administration services is communicating with students, xxx college student services are already quite productive, seen from the large percentage of productive activities of 74%, the needs of student service employees do not require additional labor.

SUGGESTION

Suggestions that can be given in this research is that this administrative service research has not examined the standard time and standard time of service needed, so in the future it can be a follow-up research. This research can also be used for other service activities, both on a university scale and outside universities.

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