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ANALYSIS OF SERVICE STANDARDS AND WORKERS PRODUCTIVITY USING WORK SAMPLING METHOD AT XYZ STORE

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Abstract

The industrial era is now getting stricter in terms of job search criteria, so employees must improve consistency and ability to understand the work system well. Population Service is one of the public service organizations that serves the community in managing Identity Cards (KTP), Family Cards (KK). Work performance is one of the key elements in determining the success of the implementation of a service process. One method that can be used in employee performance analysis is the job sampling method. From the research sampling conducted for 5 days, 158 files were received, and the target set was 150. Based on the background above, it is not known whether the employee is productive or not, and how long the employee took to collect data. . To find out the performance of civil service employees at the Batam City Population Service. Based on the calculation of the standard time using the work sampling method with the Westinghouse adjustment factor, the standard time needed to serve the making of a KTP or KK is 3.79 minutes and the total productive is 401 or 93% and the non-productive is 31 or 7%. So that it can be said that the performance of public service employees at the Batam City Population Service Office is included in the productive group.

Keywords— *Standart Times, Work Sampling, and Productivity*

PRELIMINARY

The era of rapid globalization affects various industrial fields, both for products and services. The recruitment process will also experience an increase in employee criteria. Employees are one of the most important resources because they act as travel organizers of the work system. The work system is a combination of several work elements interact with each other and have a function to achieve the desired goal or output. The work system consists of elements of humans, materials, machines, work methods, and the environment.

Productivity is one of the key elements in determining the successful implementation of a service process. In determining productivity, it is necessary to have standard working hours. Working time is one of the important factors and requires attention in the production system. Working time plays a role in determining work productivity and can be a benchmark for determining the best work method in completing a job. To be able to compare the best working time from the existing work methods, standard time or standard time is needed as a reference to determine the best working method. Standard time is obtained from the measurement of working time. One method that can be used in the analysis of standard time and employee productivity is direct time measurement using the job sampling method. Population Service is one of the public service organizations that serves the community in managing Identity Cards (KTP), Family Cards (KK). The observations made by the researcher for 5 days at the service counter for the KTP or KK management from December 5 to December 9 2016 are as follows.

Table 1. Research sample data

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Number of files	100	168	170	175	145

From the data above, it is known that the average number of files received is 158 files, and the target set is 150 files. Based on the above background, it is still unknown whether the performance of the employees in the KTP registration and KK Managers is productive or unproductive. , and how long it takes employees to record in making ID cards and family cards. So that the issue of standard time and employee productivity becomes important, to improve the quality of service in the agency.

RESEARCH METHODS

This study is a quantitative study that describes the results of the standard time for receiving KTP or KK documents at the Batam City Population Service Office with the working sampling method. Data was collected by direct observation in the field. The population in this study were those who came to the registration service counter to take care of their ID cards or family cards. with a 12-day study sample. The method of data collection is to observe and record the observed employee activities, both productive and unproductive.

Job sampling is a technique for making large numbers of observations on the performance of machines, processes or workers/operators. The work sampling method is very suitable for observing jobs that are not repetitive and have a relatively long cycle time. The procedure for its use is quite simple, namely observing work activities for randomly selected time intervals on one or more machines or operators who are working or idle. The time measurement starts from the initial observation and then a random number is determined for the time of the visit by taking random sample data using Microsoft Excel with the rand formula. After obtaining productive or unproductive activities, the next employee performs data processing, including:

Data Uniformity Test

To find out whether the data obtained are uniform or not, which is indicated by the absence of uncontrolled data. In the data uniformity test there are several variables in data processing including:

RESULTS AND DISCUSSION

Before calculating or determining employee activities, first determine a random number that serves to determine the time interval of the visit. Random number data in this study was taken from Microsoft Excel. Random number data can be seen in the following table.

Table 2 Random Numbers

23	8	40	19	49	42	1	82	51	20	19	65
67	84	37	4	15	22	46	15	2	69	18	77
64	64	58	50	7	0	17	38	13	69	1	23
55	84	81	18	38	69	6	82	18	42	50	46
36	61	77	46	1	44	19	31	23	77	43	65

After getting random numbers using Microsoft Excel, then the numbers are sorted from the smallest to the largest. The sorted random numbers can be seen in the following table:

Table 3 Random Numbers That Have Been Compiled

1	2	5	6	7	8	13	15	17
18	19	20	22	23	30	31	36	37
38	42	43	46	50	51	55	58	61
62	64	65	67	69	77	81	82	84

Data processing

1. Preliminary Sample and Data Uniformity Test

After collecting data for 12 days, the data is processed as follows:

Table 4 Frequency of Productive and Non-Productive Activities

Kegiatan	Frequency observed on day												Amount
	1	2	3	4	5	6	7	8	9	10	11	12	
Productive	33	34	34	35	33	31	35	33	35	35	30	33	401
Non Productive	3	2	2	1	3	5	1	3	1	1	6	3	31
Amount	36	36	36	36	36	36	36	36	36	36	36	36	432
% Productive	92	95	95	97	92	86	97	92	97	97	83	92	93%
% Non Productive	8	5	5	3	8	14	3	8	3	3	17	8	7%

2. Control Limit

To calculate the control limit equation use the following equation:

$$BKA = 0{,}93 + 2\sqrt{\frac{0{,}93(1-0{,}93)}{36}}$$

$$= 0{,}93 + 0{,}085$$

$$= 1{,}015 \text{ or } 101{,}5\%$$

$$BKB = 0{,}93 - 2\sqrt{\frac{0{,}93(1-0{,}93)}{36}}$$

$$= 0{,}93 - 0{,}085$$

$$= 0{,}845 \text{ or } 84{,}5\%$$

If it is made in graphic form, then the control limits for the percentage of employee productivity that the researcher does based on table 4 are as follows:

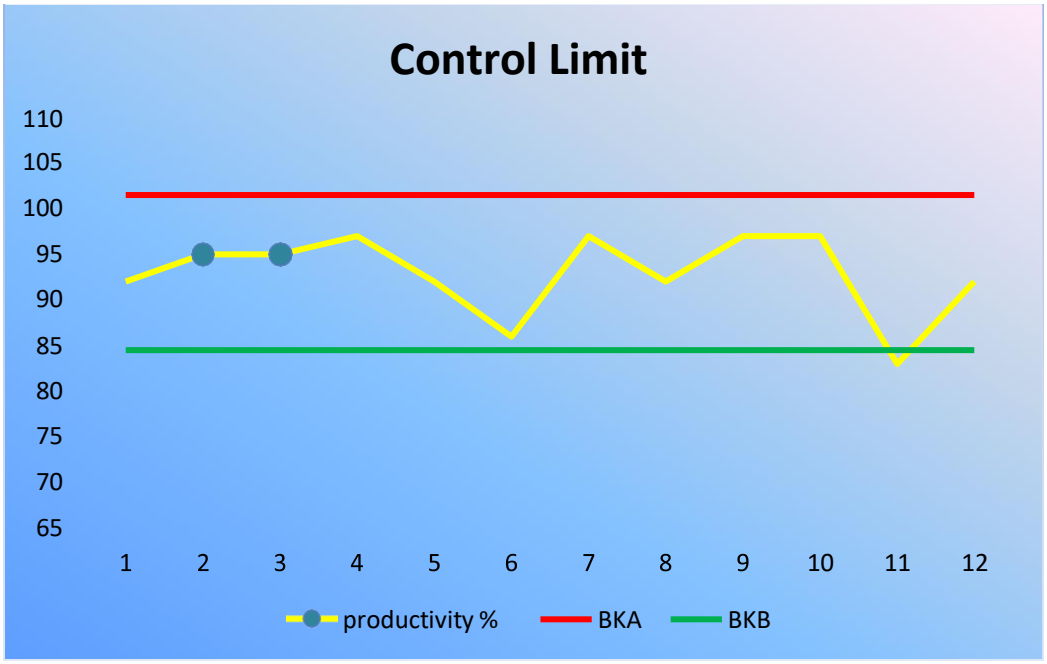


Figure 1 Boundary Graph of Employee Productivity Control

3. Data Sufficiency Test
After conducting a data uniformity test, the next step is to test the adequacy of the data obtained by using the following equation:

K = 95% or 2
S = 5% or 0,05

$$N' = \frac{2^2(1-0{,}93)}{(0{,}05)^2(0{,}93)}$$

$$N' = \frac{0{,}28}{0{,}0023}$$

$$N' = 121{,}74$$

So from the data obtained by the researcher, it states that the data is sufficient, namely 121.74 < 432 or symbolized N' < N.

4. Calculate Standard Time A Allowance
The allowance factor is basically a correction factor that must be given to the operator's working time. The following are the flexibility factors given in this study.

Table 5 Allowance

No	Factor	leeway
A-1	Can be ignored	3,5
B-1	Sit down	0,5
C-1	Normal	0
D-2	Almost continuous view	6,5
E-4	Normal	4,5
F-1	good	0

G-1	Clean, Healthy, bright with low noise level	0
ℓ =		**15**

B. Adjustment Factors Using the Westinghouse Method
Westinghouse's way of directing the assessment on 4 factors that are considered to determine fairness or unfairness in work. The following is the Westinghouse factor assessment table in this study.

Table 6 Westinghouse Adjustments

Factor	Class	Symbol	Adjustment
Skills	Excellent	B1	+0,11
Effort	Excellent	B1	+0,10
Working Condition	Excelenty	B	+0,04
Concentration	Excellent	B	+0,03
		P =	+0,28

Based on the Class Selection used in this study, the total adjustment factor obtained is 1 + 0.28 = 1.28

5 Data Output
The number of files obtained during the research, which was carried out for 12 days starting from December 5 to December 21, can be seen in the following table:

Table 7 Number of Files

No	Date	Number of Files
1	5 Dec	100 file
2	6 Dec	168 file
3	7 Dec	170 file
4	8 Dec	165 file
5	9 Dec	147 file
6	13 Dec	134 file
7	14 Dec	158 file
8	15 Dec	142 file
9	16 Dec	154 file
10	19 Dec	155 file
11	20 Dec	169 file
12	21 Dec	147 file
Total		**1809 file**

Based on the results of observations made 5 of them did not meet the target. Meanwhile, the number of targets that must be met is 150 files/day.

5 Standard Time

a. - Number of Observations 432
- Earning Amount 401
- Earning Percentage : 401/ 432 x 100% = 92,8%

b. - Number of Minutes Observation : 5.040 minute
- Number of Earning Minutes : 92,8/100 x 5.040 = 4.677 minute

c. - Number of Items produced During Observation : 1.809 file
- Time Required/fruit : 4.677 / 1.809 = 2,58 minute

d. - Adjustment Factor : 1,28
- Normal Time : 2,58 x 1,28= 3,30

e. - leeway : 15% or 0,15
- Standard Time : 3,30 + (0,15x 3,30) = 3,79 minute

So the standard time obtained to serve the processing of ID cards is 3.79 minutes/service.

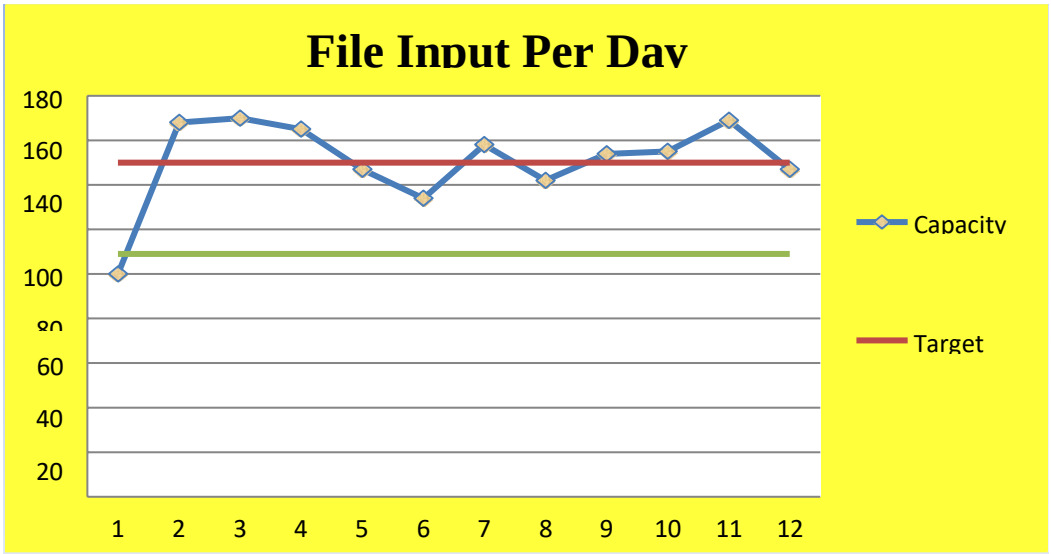
6. Analysis of Daily File Targets

Based on the calculation of the standard time obtained, the author will analyze for the target file obtained in one day on the condition that all the completeness of the file is in accordance with the procedure.

In one service, it takes 3.79 minutes to receive files. So:

1file / 3,79 minute = 0,26 minute
: 60 second x 0,26 minute = 15,6 second
: 0,26 minute x 420 minute = 109 file/day

Based on the above calculation, the files that can be received per day are 109 files/per day. Meanwhile, the files obtained from the results of research conducted for 12 days which exceeded the target of 150 files were 7 days and the rest did not reach the target. Here is a line graph display for the daily file target.



CONCLUSION

Based on the standard time calculation using the work sampling method with the westing house adjustment factor that the researchers used, the standard time needed to serve the making of an ID card was 3.79 minutes. Next, the observations that the researchers made for 12 days obtained a total of 432 observations with a total productive amount of 401 or 93% and a non-productive amount of 31 or 7%. So, it can be said that the performance of public service employees at the XYZ City Population Service Office is included in the productive group.

SUGGESTION

1. Re-increase worker productivity, especially in the public service sector
2. The author suggests that overall, XYZ City Resident Services should maintain and improve the quality of its services.
3. The service officer must remind and convey information about the completeness of the file to the public who will make the Identity Card.

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