Analisis Perbaikan Antrian Untuk Pemerosesan Paspor Menggunakan Model Simulasi Di Kantor Imigrasi Klas 1 Bandung

Analysis For The Improvements to Queue For a Passport Using a Simulation Model in Class 1 immigration office in Bandung

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Abstrak-Kantor Imigrasi Kelas I Bandung merupakan salah satu lembaga penting dalam pelaksanaan pelayanan dan pengawasan Keimigrasian di wilayah Kota Bandung. Kantor imgrasi Bandung menyediakan pelayanan publik bagi WNI ataupun WNA yang mau menetap atau pergi keluar negeri, ada beberapa pelayanan yang di berikan oleh kantor imigrasi seperti: surat permohonan paspor, surat keterangan keimigrasian, paspor untuk calon jemaah haji, layanan visa, izin tinggal. Permohonan pembuatan paspor WNI di kantor imigrasi diprioritaskan karena banyaknya masyarakat yang ingin membuat paspor, hal ini keluhan bagi masyarakat ketika mereka harus berlomba-lomba sepagi mungkin untuk mengambil tiket antrian mulai jam 5 pagi, antrian pendaftaran yang panjang, waktu menunggu pelayanan yang lama dan adanya petugas yang bekerja sampai malam hari di karenakan pemohon yang masih menunggu untuk dilayani. Tujuan dilakukannya penelitian ini adalah untuk merancang suatu model simulasi yang dapat membantu proses evaluasi dan perbaikan pelayanan pembuatan paspor, meliputi analisis performansi sistem aktual, analisis jumlah loket yang maksimal dan analisis kapasitas maksimum loket pelayanan. Tahapan penelitian dimulai dengan mengumpulkan dan menganalisis data sistem meliputi data struktural, operasional dan numeris dana analisis statistik meliputi perancangan EFD, penentuan distribusi statistik dan penetapan siklus kedatangan. Kemudian dilanjutkan dengan pembangunan model simulasi menggunakan ProModel 2016, lalu dilakukan verifikasi dan validasi model. Selanjutnya dilakukan eksperimentasi terhadap model berdasarkan tujuan penelitian yang ditetapkan, hasil eksperimentasi kemudian dianalisis dan ditarik kesimpulan. Untuk permohonan pembuatan paspor kementrian membuat kebijakan pelayanan pembuatan paspor bahwa kantor imigrasi Klas 1 bandung melayani 250 orang setiap hari, tetapi dengan bertambahnya jumlah pemohon, kementrian mengubah kebijakannya dengan memulai waktu pendafratan dari pukul 7:00 sampai jam 10:00 dengan waktu pelayanan 2-3 menit perorangnya didapat sekitar 300 sampai 340 calon pembuat paspor dan disediakannya 14 loket pelayanan pembuatan paspor(namun hanya 10 loket pelayanan yang dibuka secara reguler setiap harinya), pada bulan desember 2016 kementrian mengubah lagi kebijakan dengan memulai waktu pendaftaran dari pukul 06:00 sampai pukul 10:00 pembukaan loket pelayanan pembuatan paspor dibuka dari pukul 07:00 sampai pukul 16:00 tetapi tetap saja masih ada calon pembuat paspor yang di layani sampai malam hari walaupun jam kerja di kantor sudah selesai.

Kata kunci: Promodel, model simulasi,Utilisasi, Experimentasi

Abstract- *Class I Immigration Office Bandung is one of the important institutions in the implementation of services and supervision of immigration in the city of Bandung. Bandung immigration offices providing public services for the citizen and foreigners who want to settle or go abroad, there are some services that were supplied by the immigration office such as: letter of application for a passport, certificate of immigration, passports for prospective pilgrims, service visa, residence permit. For a passport of citizens in the immigration office prioritized because of the many people who want a passport, it is becoming a problem for the people when they have to compete as early as possible to take the ticket queue starting at 5 am, the queue long registration, the wait time services long and their officers working until late at night in because applicants who are still waiting to be served. The purpose of this study was to design a simulation model that can assist in the evaluation and improvement of the passport services, including real-time system performance analysis, analysis*

of the maximum number of counters and a maximum capacity analysis service counter. Stages study began by collecting and analyzing data system includes structural data, operational and statistical analysis of numerical fund includes designing EFD, determination and the determination of the statistical distribution of arrival cycle. Then proceed with the development of simulation models using ProModel 2016, and verification and validation of the model. Further experimentation conducted on a model based on the research objectives defined, experimentation results are then analyzed and conclusions drawn. for the ministry to make policies on the passport that the immigration office of Class 1 duo serve 250 people every day, but with the increasing number of applicants, the ministry changed its policy with pendafratan start time of 7:00 am to 10:00 am with the service time 2- 3 minutes perorangnya get about 300 to 340 candidates maker passport and the availability of 14 counters passport (but only 10 counters were opened regularly every day), in December 2016 the ministry changed the policy again with a start time of registration from 06:00 until 10:00 opening of the passport service counter open from 07:00 until 16:00, but nonetheless are still no candidates maker passport on serve until the night despite hours of work in the office is finished.

Keywords: Promodel, simulation models, utilization, experimentation

I. Introduction

A. Background

Class I Immigration Office Bandung is one of the important institutions in the implementation of services and supervision of immigration in the city of Bandung. Bandung immigration offices providing public services for the citizen and foreigners who want to settle or go abroad, there are some services that were supplied by the immigration office like; letter for a passport, certificate of immigration, passports for prospective pilgrims, service visa, residence permit.

For a passport of citizens in the immigration office prioritized because of the many people who want a passport, it is becoming a problem for the people when they have to compete as early as possible to take the ticket queue starting at 5 am, the queue long registration, the wait time services long and the unsuccessful applicants on serve. Making passports starting from making the registration queue ticket and entered into the registration file in which a completeness check, diloket registration officers immediately separate the special and general categories of applicant, for specific categories include the elderly, children, pregnant women, the sick and missing passport. Special applicant category will be directly given to the service counter 1. Categories general applicants will be examined by the counter 2 to 10. After the registration booth applicants given service passports and tickets in the waiting room untunk in the call. Applicants who already completed passport to wait three days for taking passport so. For a passport for the ministry to make policies on the passport that the immigration office of Class 1 duo serve 250 people every day, but with the increasing number of applicants, the ministry changed its policy with pendafratan start time of 7:00 am to 10:00 am with the service time 2- 3 minutes perorangnya get about 300 to 340 candidates maker passport and the availability of 14 counters passport (but only 10 counters were opened regularly every day), in December 2016 the ministry changed the policy again with a start time of registration from 06:00 until 10:00 opening of the passport service counter open from 07:00 until 16:00, but nonetheless are still no candidates maker passport on serve until the night despite hours of work in the office is finished.

Therefore by their authors conducted a study of the problem by taking the title "Analysis Passport Queue System Improvement Using Simulation Model at the Immigration Office Class 1 Bandung".

Based on the background of the problems described above, can be identified several issues, namely:
1. How the distribution of arrival times and service time passport applicants?
2. How to make a simulation model that menggambaarkan services running today?
3. How the proposed improvement pelayanaan queuing system?
Adapun tujuan dari penelitian ini adalah sebagai berikut:
1.Mengidentifikasi distribusi waktu kedatangan pemohon dan waktu pelayanan paspor
2.Untuk membuat model simulasi yang menggambaarkan pelayanan yang berjalan saat ini
3.Memberikan usulan perbaikan sistem antrian pelayanaan

II. Literature review

A. Simulation

Simulation is defined by Harrell (2004) "from simulation perspective, a system said to Consist of entities, activities, resources, and controls, Reviews

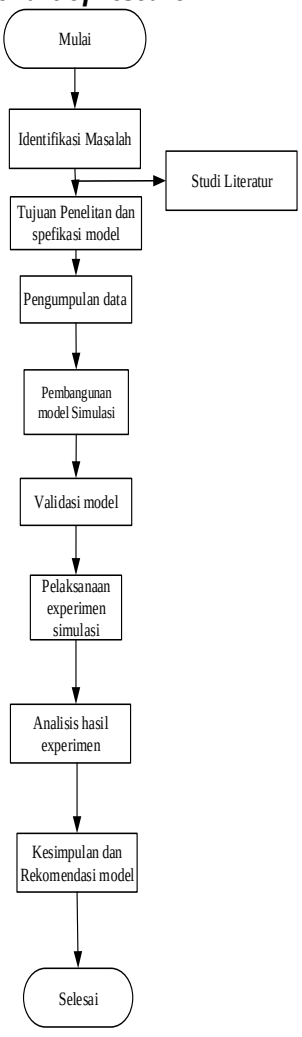
These elements define the who, what, where, when and how of entity processing", "From the perspective of the simulation, said simulation consists of entities, activities, resources and control, these elements define the who, what, where, when and how the process of the entity ". It can be said that the simulation is a repair method using a model which includes entities, activities, resources and controls. Usual program demonstrate a simulation that ProModel. The program basically has a function to model a system that is created.

Basically errors in a system or model can be fixed. Simulation is a method that has the ability to try any alternative policy solutions and the results can be seen quickly and accurately. In the book Harrell (2004) "the power of simulation lies in the fact that it provides an analytical method that is not formal and predictive but also was able to accurately predict the performance of complex systems even though"

Advantages of this simulation is an important value in taking keputasan without risk, as a result of any policy alternatives or solutions can be predicted accurately in a relatively short time. On the use of simulation models before actually implemented in the real system cause a variety of unexpected problems in planning can be identified and can directly find the solution. In terms of improvements in the system takes a long time simulation method requires only a few hours or minutes because dalama simulation runs using time at speed. In terms of cost is smaller because of the cost that is done to the tests or experiments in larger real dibandikan with experimental simulation model. But in the use of simulation must be the costs and benefits. In fact the cost of the phase errors in the field is greater than at the stage of concept and design, to simulations tersbut mistakes can be avoided.

III. research methodology

a. flow chart of research



picture 1

Step troubleshooting steps

This process is the first step of making a simulation, where the issue queue at the immigration office class 1 duo generate initial data to create a simulation that would be an improvement to the queue at the immigration office. Before entering destination Harell researchers used books to build a simulation model as a reference.

2. The purpose of the research and Specifications Model

The purpose of this simulation is plaksanaan deliver improved queuing to apply for passports and passport applicants streamline service time of 14 passport counters.

3. Data collection

The next process is collecting data that will be modeled. Data are classified into two types, namely the structural data and operational data. Structural data involves all objects in the system to be modeled, while the operational data include data on how the system operates. In this study the structural data includes the number of counters, the number of passport applicants. For data Operations include time passport applicants waiter, registration time passport applicants, passport queue time.

4. Development of a simulation model

In this process of building a simulation model is based simulation purposes, for the development of simulation models requires the basic elements of the model include the location, entities, arrival and processing. Added operational models with elements that include routings, arrival cycle, shift

scheduling and programing logic.untuk last step to test whether the model operating

5. Model Validation
This process is carried out to ascertain whether the models are right -Right in accordance with the modeled or not, the validation process conducted direct observation in the field to match the data

6. Implementation of Experiment
This process is aimed at trying to simulate whether to get optimal results from the model are made.

7. Analysis of Results of Experiment
In this stage whether the model of simulations using a computer program to obtain optimal results. These results will make her a reference for decision support to the model.

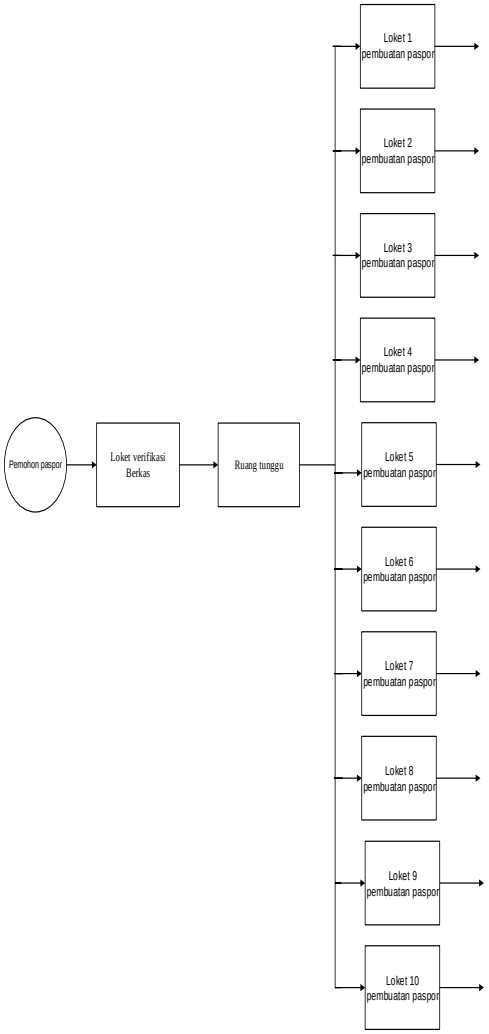
8. Conclusions and recommendations models
In this final stage is simulation that created provides the best decision of the model.

IV. Data collection and analysis system
A. Data collection
Struktursl data is the data involving the object to be modeled simulations include entities, resources and location. Entities involved in the structural data that is required in the passport queue system. Results of structural data that was obtained as follows:

IV. Data collection and analysis system
1.Lokasi
The location is the site of activity in the system, the location involved in the simulation for a passport are:
a. registration place
Place of registration is the beginning of the coming of the entity to verify whether the file is complete and given it a queue number.
b.wait palce
The place is where entities wait wait before calling in to the counter for a passport.
c. Loket passport
This place is a process of making a passport that there are several steps such as checking files, photographs, fingerprints and passport checks have been finished yet in print.
2.Entitas
Entities are objects are processed within the system. Entities in the simulation queue for a passport is a passport applicant who will make the passport.

Data Operations explained about the flow of entities, particularly the data flow queuing system entities passport. Data flow is required for input entity set in the simulation process flow.

In the numerical data that is required in this simulation include, prefikasi time data of the applicants passport file, queue time data, time data service passports which consists of checking the completeness of files, photographs, fingerprints and a final check. All numerical data is needed as input in process of time in the simulation model
EFD(*entitiy flow diagram)*



Picture 2

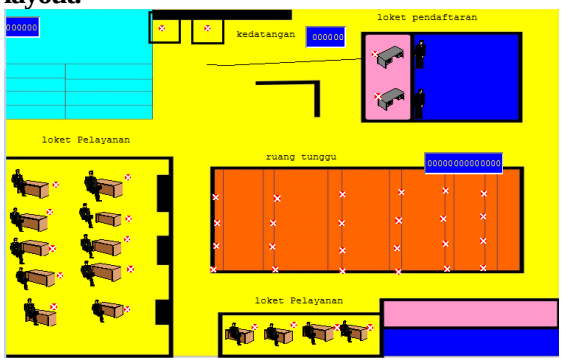
Development and Validation of the model

layout

The designer of a simplified model in reality, the state of the model is represented from the events with the actual conditions in which a process requires a conceptual model and poured into the simulation model, the first step in making the layout or background where the simulation depicts the actual conditions at the office of immigration class 1 duo, like the entrance, registration counter, waiting room

and the passport service counter, depicted on the current

layout.

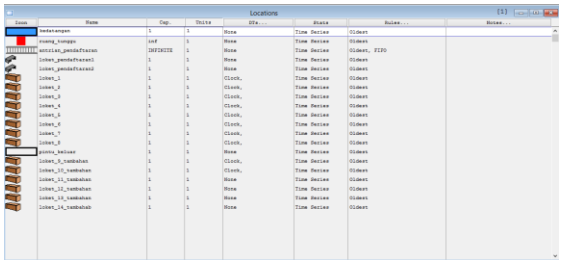


Picture 3

Locations

Locations in ProModel assigned based on data sturktural system. Location data structural system includes a place of arrival, place of registration, where queues and counters and passport. Location data is then translated to the input on the model created. Here is a picture made in ProMode

.



Picture 4

Information:

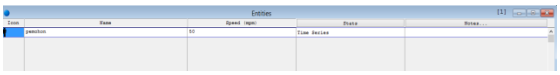
Arrival on location is the first step to determine kedatangann customers, with a capacity of 1 is because when time was taking tickets oldest individual and his rules. Rules applied to FIFO queues in because the rule "first came in and first out". Decision-ticket is the second step in the entity to complete oprasinya before going to the next step, with a capacity of 1 and the oldest rules. In the second process occurs registration booth service entity with the capacity of 1 and the oldest rules. The waiting room is a place to wait entity before entering into the room

service with infinite capacity depending on the number of entities entering the registration booth and oldest rules. Service counter service counter there are 8 active and 4 additional service counter where on a particular day in the open additional counters with a capacity of 1 and the oldest rules.

The exit door is the ultimate goal of the entity in oprasinya.

Entities

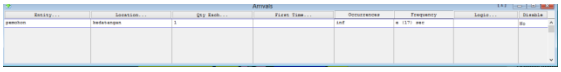
Entities that are used in the model: the applicant in which the entity is at the arrival to the exit.



Picture 5

Arrival

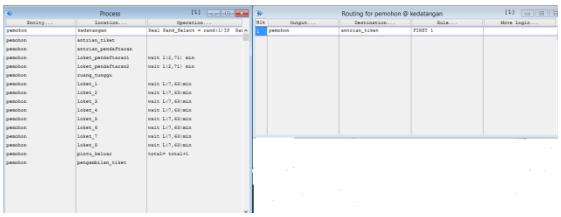
Arrivals arrivals where the applicant as an entity that is at the starting point or the entrance on arrival location.



Picture 6

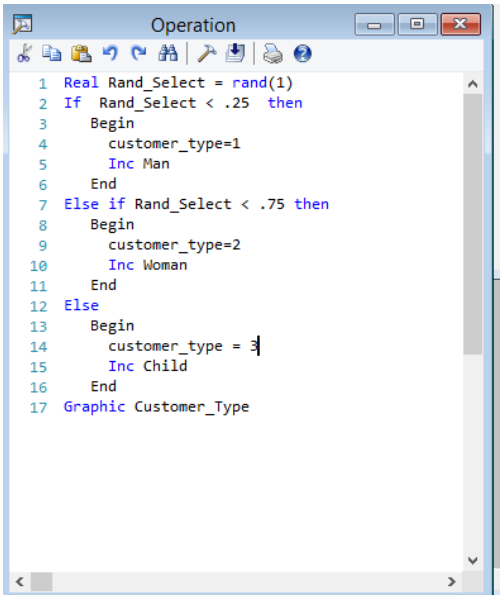
Process

The modeling process here where the operation of the process in accordance with actual conditions.



Picture 7

On arrival oprasinya process using the following logic move

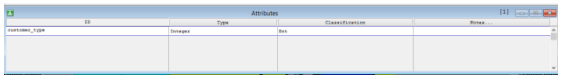


Picture 8

Move logic above aims to change the form of the entity into a number of children, men and women. In order for the simulation more evident when on the run

Atribute

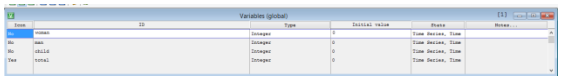
Attribute herein are useful as veriabel this attribute can be either a person or object that has a variation from one person to another or one object with another object. Attributes object that is here in the form costumer_type that helps in the process of an operation



Picture 9

Variable

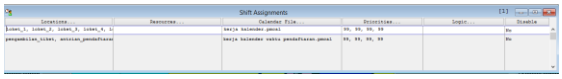
Variable here is costumer_type consisting of woman, man and child. That where at run time model of the applicant will be changed to the third variable



Picture 10

Sfit assigments

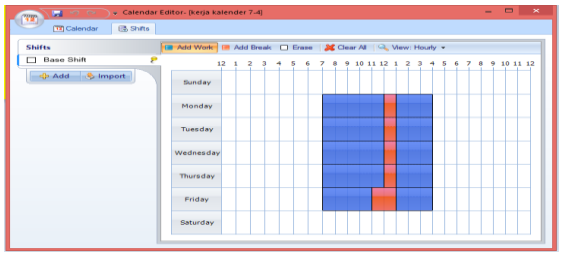
VSfit assignment function to schedule locations. In this model scheduling given to the registration booth and counters because these two locations have opened a service.



Picture 11

Calendar

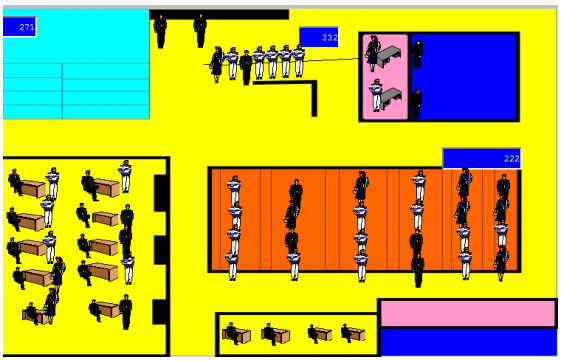
Calendar on the model is scheduling a limited time in which during the making of the calendar to fill the time oprasi these locations.



Picture 12

Running

After planning and designing a simulation model using ProModel software then the next step to try to run a model that has been made by running,



Picture 13

Validasi model

Model validation is done by comparing the output of the simulation results with a run time of 8 hours with 5 replication

Table 1

Replication	Name	Scheduled Time (Hr)	Capacity	Total Entries	Average Time Per Entry (Min)	Average Contents	Maximum Contents	Current Contents	% Utilization
Avg	kedatangan	6,48	1,00	548,00	0,38	0,46	1,00	0,50	45,75
Avg	antrian tiket	5,98	9999 99,00	547,50	0,45	0,65	4,00	0,50	0,00
Avg	pengambilan tiket	2,48	1,00	547,00	0,00	0,00	1,00	0,00	0,00
Avg	ruang tunggu	6,48	9999 99,00	410,50	80,66	88,26	219,50	219,00	0,01
Avg	antrian pendaftaran	5,48	9999 99,00	547,00	116,56	182,08	347,00	135,50	0,02
Avg	loket pendaftaran1	6,48	1,00	212,00	1,26	0,72	1,00	0,50	71,96
Avg	loket pendaftaran2	6,48	1,00	199,50	1,35	0,73	1,00	0,50	72,86
Avg	loket 1	3,50	1,00	48,50	1,29	0,30	0,50	0,00	29,90
Avg	loket 2	4,00	1,00	1,50	79,97	0,50	0,50	0,50	49,98
Avg	loket 3	3,50	1,00	38,00	1,79	0,32	0,50	0,00	32,45
Avg	loket 4	3,50	1,00	24,00	2,97	0,34	0,50	0,00	33,99
Avg	loket 5	3,50	1,00	23,50	2,71	0,30	0,50	0,00	30,32
Avg	loket 6	4,00	1,00	5,50	21,78	0,50	0,50	0,50	49,92
Avg	loket 7	4,00	1,00	25,00	4,76	0,50	0,50	0,50	49,56
Avg	loket 8	3,50	1,00	25,00	3,11	0,37	0,50	0,00	36,97
Avg	pintu keluar	6,48	1,00	189,50	0,00	0,00	0,50	0,00	0,00
Avg	loket 9 tambahan	6,48	1,00	0,00	0,00	0,00	0,00	0,00	0,00
Avg	loket 10 tambahan	6,48	1,00	0,00	0,00	0,00	0,00	0,00	0,00
Avg	loket 11 tambahan	6,48	1,00	0,00	0,00	0,00	0,00	0,00	0,00
Avg	loket 12 tambahan	6,48	1,00	0,00	0,00	0,00	0,00	0,00	0,00

The results of the overall operation shown in table 4.6 above where name indicates that the location of the system, the total entries show the value or the total vehicles that are in each location, average contents are the average yield at each location, maximum contents is the number of queues at each site, while utilization is the percentage of applicants in each location.

V. Analysis and experimentation

scenario experimentation

To identify service passport queue model scenarios, simulation models are run as much as 5 replication for after the run entity data already setabil. Scenarios that were made include the addition time of registration and opening of the 4 counters and new policies are made by the immigration office.

Making scenario

At the stage of making the simulation scenario queues passport services, there are 4 scenarios to be tested in order to choose the best scenario for the queue model.

10 counters and time registration from 6 until 10

Table 2

Replication	Name	Scheduled Time (Hr)	Capacity	Total Entries	Average Time Per Entry (Min)	Average Contents	Maximum Contents	Current Contents	% Utilization
Avg	kedatangan	17,50	1,00	846,20	0,96	0,77	1,00	1,00	77,10
Avg	ruang tunggu	17,50	9999 99,00	845,10	74,76	60,03	215,50	0,00	0,01
Avg	antrian pendaftaran	9,52	9999 99,00	845,20	153,75	220,41	459,70	0,00	0,02
Avg	loket pendaftaran1	17,50	1,00	469,40	1,51	0,56	1,00	0,10	56,29
Avg	loket pendaftaran2	17,50	1,00	375,80	1,92	0,58	1,00	0,00	58,03
Avg	loket 1	15,00	1,00	34,00	15,77	0,59	1,00	0,00	59,10
Avg	loket 2	15,00	1,00	98,50	9,19	0,63	1,00	0,00	62,51
Avg	loket 3	15,00	1,00	82,90	9,66	0,73	1,00	0,20	73,24
Avg	loket 4	15,00	1,00	84,10	10,03	0,66	1,00	0,10	65,84
Avg	loket 5	15,00	1,00	88,20	9,09	0,70	1,00	0,10	70,19
Avg	loket 6	15,00	1,00	106,40	6,21	0,64	1,00	0,00	64,34
Avg	loket 7	15,10	1,00	72,20	56,10	0,70	1,00	0,20	69,95
Avg	loket 8	15,10	1,00	87,90	9,24	0,62	1,00	0,10	62,06
Avg	pintu keluar	17,50	1,00	844,10	0,00	0,00	1,00	0,00	0,00
Avg	loket 9 tambahan	15,00	1,00	100,60	7,80	0,67	1,00	0,20	66,95
Avg	loket 10 tambahan	15,10	1,00	90,30	7,79	0,63	1,00	0,10	62,88
Avg	loket 11 tambahan	17,50	1,00	0,00	0,00	0,00	0,00	0,00	0,00
Avg	loket 12 tambahan	17,50	1,00	0,00	0,00	0,00	0,00	0,00	0,00
Avg	loket 13 tambahan	17,50	1,00	0,00	0,00	0,00	0,00	0,00	0,00
Avg	loket 14 tambahab	17,50	1,00	0,00	0,00	0,00	0,00	0,00	0,00



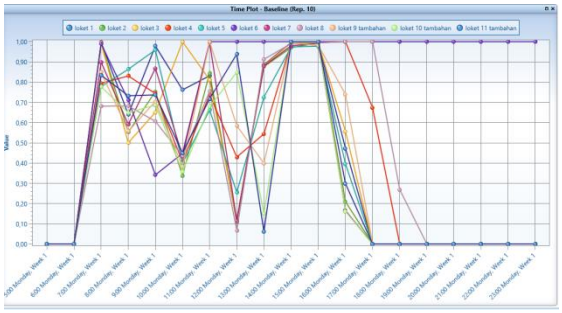
Picture 14

No counter 10 obtained a total of 853 applicants entitiy on arrival and all applicants who finished on serve at 19:00 hours. In the picture above shows that with the addition of 1 counter amount of service time who served unbelievably influential.

1. Scenario 1, 11 counters and time registration from 6 until 10

Table 3

Replication	Name	Scheduled Time (Hr)	Capacity	Total Entries	Average Time Per Entry (Min)	Average Contents	Maximum Contents	Current Contents	% Utilization
Avg	kedatangan	17,50	1,00	857,30	0,94	0,77	1,00	1,00	77,07
Avg	ruang tunggu	17,50	999999,00	853,50	38,53	31,29	162,30	0,00	0,00
Avg	antrian pendaftaran	10,91	999999,00	856,30	184,90	227,35	472,00	2,60	0,02
Avg	loket pendaftaran1	17,50	1,00	426,60	1,69	0,64	1,00	0,10	63,76
Avg	loket pendaftaran2	17,50	1,00	427,10	1,78	0,66	1,00	0,10	66,43
Avg	loket 1	15,00	1,00	27,00	16,49	0,49	1,00	0,00	49,13
Avg	loket 2	15,00	1,00	86,90	6,28	0,53	1,00	0,00	53,15
Avg	loket 3	15,00	1,00	76,60	7,64	0,49	1,00	0,00	49,43
Avg	loket 4	15,00	1,00	85,40	6,39	0,50	1,00	0,00	49,86
Avg	loket 5	15,00	1,00	87,90	5,50	0,48	1,00	0,00	48,08
Avg	loket 6	15,10	1,00	72,10	11,34	0,56	1,00	0,20	56,03
Avg	loket 7	15,00	1,00	90,90	5,78	0,51	1,00	0,00	50,96
Avg	loket 8	15,00	1,00	91,20	6,03	0,57	1,00	0,10	56,88
Avg	pintu keluar	17,50	1,00	853,20	0,00	0,00	1,00	0,00	0,00
Avg	loket 9 tambahan	15,00	1,00	81,20	6,34	0,52	1,00	0,00	52,18
Avg	loket 10 tambahan	15,00	1,00	85,10	6,51	0,52	1,00	0,00	52,44
Avg	loket 11 tambahan	15,00	1,00	69,20	7,22	0,53	1,00	0,00	52,71
Avg	loket 12 tambahan	17,50	1,00	0,00	0,00	0,00	0,00	0,00	0,00
Avg	loket 13 tambahan	17,50	1,00	0,00	0,00	0,00	0,00	0,00	0,00
Avg	loket 14 tambahab	17,50	1,00	0,00	0,00	0,00	0,00	0,00	0,00



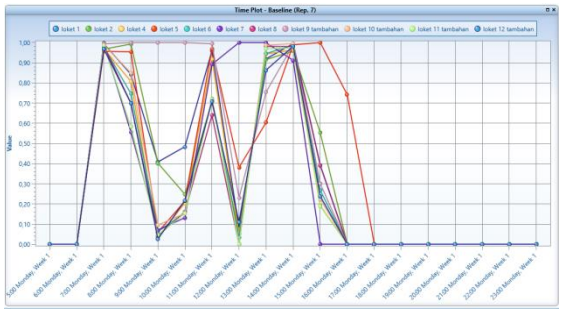
Picture 15

In scenario 1 obtained a total of 853 applicants entitiy on arrival and all applicants who had served at the finish at 19:00 hours. In the picture above shows that with the addition of 1 counter amount of service time who served unbelievably influential.

2.Skenario 2 12 counters and time registration from 6 until 10

Table 4

Replication	Name	Scheduled Time (Hr)	Capacity	Total Entries	Average Time Per Entry (Min)	Average Contents	Maximum Contents	Current Contents	% Utilization
Avg	kedatangan	17,50	1,00	854,10	0,95	0,77	1,00	1,00	77,09
Avg	ruang tunggu	17,50	9999	819,10	33,26	26,16	147,20	0,00	0,00
Avg	antrian pendaftaran	10,70	9999	853,10	184,31	226,04	474,10	33,70	0,02
Avg	loket pendaftaran1	17,50	1,00	399,50	2,07	0,61	1,00	0,10	60,90
Avg	loket pendaftaran2	17,50	1,00	419,90	1,73	0,66	1,00	0,20	65,97
Avg	loket 1	15,00	1,00	24,40	16,60	0,45	1,00	0,00	44,62
Avg	loket 2	15,00	1,00	71,30	6,49	0,42	1,00	0,00	42,00
Avg	loket 3	15,00	1,00	71,20	9,14	0,55	1,00	0,20	55,47
Avg	loket 4	15,00	1,00	65,70	10,84	0,52	1,00	0,00	52,38
Avg	loket 5	15,00	1,00	80,90	5,26	0,43	1,00	0,10	43,13
Avg	loket 6	15,00	1,00	72,70	11,70	0,43	1,00	0,00	43,06
Avg	loket 7	15,00	1,00	69,90	6,48	0,45	1,00	0,00	44,68
Avg	loket 8	15,00	1,00	75,50	5,78	0,45	1,00	0,00	45,41
Avg	pintu keluar	17,50	1,00	818,10	0,00	0,00	1,00	0,00	0,00
Avg	loket 9 tambahan	15,00	1,00	63,90	7,31	0,47	1,00	0,00	46,55
Avg	loket 10 tambahan	15,20	1,00	63,50	9,12	0,59	1,00	0,30	58,82
Avg	loket 11 tambahan	15,00	1,00	85,60	5,86	0,49	1,00	0,10	48,90
Avg	loket 12 tambahan	15,10	1,00	74,50	9,42	0,52	1,00	0,30	52,38
Avg	loket 13 tambahan	17,50	1,00	0,00	0,00	0,00	0,00	0,00	0,00
Avg	loket 14 tambahab	17,50	1,00	0,00	0,00	0,00	0,00	0,00	0,00



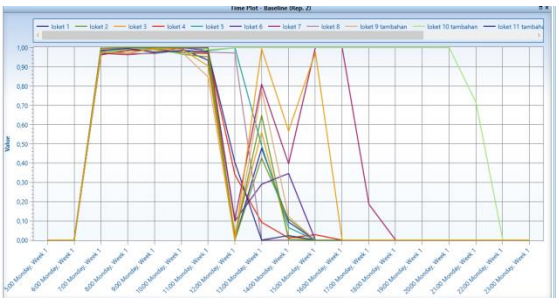
Picture 16

In scenario 2 obtained a total of 853 applicants entitiy on arrival and all applicants who had served at the finish at 19:00 hours. In the picture above shows that with the addition of 1 counter amount of service time who served unbelievably influential.

2.Skenario 2 12 counters and time registration from 6 until 10

Table 5

Replication	Name	Scheduled Time (Hr)	Capacity	Total Entries	Average Time Per Entry (Min)	Average Contents	Maximum Contents	Current Contents	% Utilization
Avg	kedatangan	17,50	1,00	853,00	0,95	0,77	1,00	1,00	77,07
Avg	ruang tunggu	17,50	999999	851,90	25,13	20,38	144,00	0,00	0,00
Avg	antrian pendaftaran	10,50	999999	852,00	179,74	232,30	474,50	0,00	0,02
Avg	loket pendaftaran1	17,50	1,00	447,90	1,53	0,63	1,00	0,10	63,37
Avg	loket pendaftaran2	17,50	1,00	404,10	1,72	0,61	1,00	0,00	61,50
Avg	loket 1	15,00	1,00	25,50	15,73	0,45	1,00	0,00	44,50
Avg	loket 2	15,00	1,00	49,60	10,52	0,53	1,00	0,10	53,08
Avg	loket 3	15,00	1,00	88,50	4,60	0,44	1,00	0,00	43,55
Avg	loket 4	15,06	1,00	57,00	13,19	0,49	1,00	0,00	48,66
Avg	loket 5	15,00	1,00	65,60	9,04	0,49	1,00	0,10	49,03
Avg	loket 6	15,00	1,00	83,90	4,98	0,44	1,00	0,00	44,19
Avg	loket 7	15,00	1,00	76,50	6,35	0,48	1,00	0,10	47,74
Avg	loket 8	15,00	1,00	80,60	5,23	0,44	1,00	0,00	44,43
Avg	pintu keluar	17,50	1,00	850,90	0,00	0,00	1,00	0,00	0,00
Avg	loket 9 tambahan	15,00	1,00	62,90	9,56	0,49	1,00	0,10	49,24
Avg	loket 10 tambahan	15,00	1,00	60,20	9,42	0,55	1,00	0,10	54,66
Avg	loket 11 tambahan	15,10	1,00	70,50	11,96	0,53	1,00	0,10	52,78
Avg	loket 12 tambahan	15,00	1,00	68,50	8,08	0,46	1,00	0,10	46,07
Avg	loket 13 tambahan	15,00	1,00	62,60	11,20	0,60	1,00	0,30	60,15
Avg	loket 14 tambahab	17,50	1,00	0,00	0,00	0,00	0,00	0,00	0,00



Picture 17

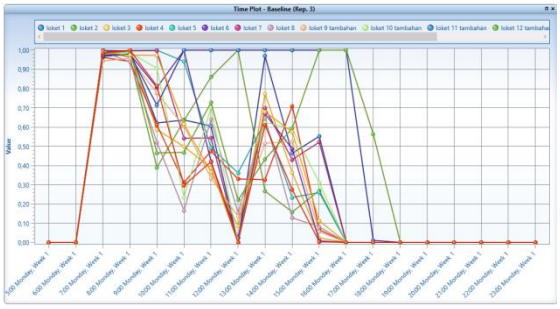
In scenario 3 obtained a total of 853 applicants entitiy on arrival and all applicants who had served at the finish at 19:00 hours. In the picture above shows that with the addition of 1 counter amount of service time who served unbelievably influential.

2.Skenario 2 12 counters and time registration from 6 until 10

Table 6

Replication	Name	Scheduled Time (Hr)	Capacit	Total Entri	Average Time Per Entry (Min)	Average Conte	Maximum Conten	Current Conte	% Utilizatio

			y	es		nts	ts	nts	n
Avg	kedata ngan	17,50	1,0 0	849, 10	0,95	0,77	1,00	1,00	77,0 9
Avg	ruang tunggu	17,50	99 99 99	809, 20	22,54	17,84	130,20	0,00	0,00
Avg	antrian pendaft aran	11,49	99 99 99	848, 10	219,23	247,95	494,40	38,40	0,02
Avg	loket pendaft aran1	17,50	1,0 0	400, 20	1,84	0,68	1,00	0,30	68,2 5
Avg	loket pendaft aran2	17,50	1,0 0	409, 50	2,14	0,69	1,00	0,20	68,6 6
Avg	loket 1	15,00	1,0 0	23,1 0	15,91	0,41	1,00	0,00	40,9 1
Avg	loket 2	15,00	1,0 0	52,8 0	8,34	0,42	1,00	0,10	41,9 2
Avg	loket 3	15,00	1,0 0	65,2 0	6,04	0,41	1,00	0,00	41,2 4
Avg	loket 4	15,00	1,0 0	65,0 0	14,77	0,41	1,00	0,20	40,8 7
Avg	loket 5	15,00	1,0 0	64,6 0	5,84	0,40	1,00	0,20	40,0 2
Avg	loket 6	15,00	1,0 0	55,4 0	10,33	0,43	1,00	0,10	42,8 5
Avg	loket 7	15,00	1,0 0	61,2 0	6,47	0,41	1,00	0,00	41,3 3
Avg	loket 8	15,00	1,0 0	71,7 0	8,06	0,46	1,00	0,00	46,1 0
Avg	pintu keluar	17,50	1,0 0	808, 40	0,00	0,00	1,00	0,00	0,00
Avg	loket 9 tambah an	15,00	1,0 0	53,5 0	9,88	0,45	1,00	0,10	44,9 1
Avg	loket 10 tambah an	15,00	1,0 0	52,5 0	6,83	0,38	1,00	0,00	37,8 4
Avg	loket 11 tambah an	15,00	1,0 0	66,2 0	7,48	0,47	1,00	0,00	46,8 2
Avg	loket 12 tambah an	15,00	1,0 0	58,7 0	7,68	0,46	1,00	0,10	45,9 0
Avg	loket 13 tambah an	15,00	1,0 0	60,7 0	20,08	0,47	1,00	0,00	47,3 0
Avg	loket 14 tambah ab	15,00	1,0 0	58,6 0	5,97	0,37	1,00	0,00	36,8 7



Picture 18

In scenario 4 obtained a total of 853 applicants entitiy on arrival and all applicants who had served at the finish at 19:00 hours. In the picture above shows that with the addition of 1 counter amount of service time who served unbelievably influential.

2.Skenario 2 12 counters and time registration from 6 until 10

Analisis

In the fourth scenario experimentation models obtained from the simulation model passport queue at the immigration office class 1 Bandung as follows:

1. Scenario 1

In scenario 1 obtained a total of 853 applicants entitiy on arrival and all applicants who had served at the finish at 19:00 hours. In the picture above shows that with the addition of 1 counter amount of service time who served unbelievably influential.

2. Scenario 2

In scenario 2 obtained a total of 853 applicants entitiy on arrival and all applicants who had served at the finish at 17:00 hours. In the picture above shows that with the addition of two counters amount of service time who served unbelievably influential.

3. Scenario 3

In scenario 3 obtained a total of 853 applicants entitiy on arrival and all applicants who had served at the finish at 18:00 hours. In the picture above shows that with the addition of three counters amount of service time who served unbelievably influential.

4. Scenario 4

In scenario 4 obtained a total of 853 applicants entitiy on arrival and the average of all applicants who had served at the finish at 16:00. In the picture above shows that with the addition of four counters amount of service time who served unbelievably influential.

VI. Conclusions and recommendations

Conclusion

In the data processing and analysis obtained scenarios can be simulated model of the proposed improvements for the future. With 10 times the replication utilization steady at 53 for registration service hours from 6 till 10. For its maximum entries obtained about 853 for registration services from 6 until 10. In making the scripts according to four scenarios and scenario chosen is the scenario 4 with the amount of time the service hours from 6 hours to 10 hours and on active 4 additional counter, but the activation of four counters at certain times. On a typical day can activate two additional counters to streamline the service time. By enabling four additional counters that the best solution to speed up the process of service at the counter passport and reduce overtime hours workers.

Suggestion

1 .To future could add a second counter at the time of registration for the registration process at the immigration office can be overcome and avoid

obstacles while checking the file back in the passport counters.

2. Replacement of shifts on the registry operator is one of the proposals in because with 2 registration with the number of customers that many took a lot higher concentrations to examine the applicant's passport files. Basically, the focus of human beings can not survive long, if at registration sessions they work more than two hours of fear for errors in the examination when a passport applicant file because the file is not eligible.

3. The addition of four counters on a typical day might be one of the best solutions to enable staff to be home on time without any overtime hours to serve the applicant's passport.

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