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Loan Cycle Time Analysis for Industrial Project Financing of Development Bank of Ethiopia

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Abstract

The reduction of loan processing cycle time gives relief in a lot of financial and non-financial activities to customers and to companies. Thus, the purpose of this research is to minimize and analyze the loan processing cycle time of Development Bank of Ethiopia so that processing cycle time gets crushed. Project owners get frustrated when their loan application takes longer processing time. As the loan processing cycle time gets longer and longer, project owners or promoters lose enormous amount of money and energy waiting for the loan approval day. Thus, the study was conducted to improve this delay of loan processing time using data from the Bank and ARENA simulation software. In modeling this system, an ARENA software simulation model was developed, verified, and validated to determine the daily loan processing cycle time and potential problem areas for the various request levels in the case company to shorten the length of processing time. The ARENA simulation software used to improve the current delay of the loan processing as if they work in real worlds. It has helped the analysis to simulate and showed how it works in the real world. Based on the results of this study, it was found that the average loan processing cycle time is more than 45 days. After analyzing alternative scenarios using ARENA simulation software, it was obtained that the loan processing cycle time to be less than 39 days.

Keywords: Loan processing; Development Bank of Ethiopia; Project financing; Industrial project

Introduction

Loan Processing Cycle Time (LPCT) is the total sum of the durations it takes to process an application processing starting from the loan application to transfer of money. As LPCT gets longer, the banks loss its customer and risk may face. Studies ratify that the interest rate is determined by the demand for and supply of loanable funds which is a prerequisite component in the evaluation of credit requirements in the economy [1,2]. In Africa like Kenya studies show that there are numbers of failure in bank loan due to many reasons. According to the study conducted by Robert and Mary [1] the relationship between credit risk management practices and financial performance of commercial banks in Liberia and found out that market fundamentals and institutional factors such as lack of capacity for credit risk managers which results in the use of consultants by banks in formulating credit risk policies influence in financial performance. These types of challenges may arise from the loan processing cycle time length and lead in customer's frustration [3].

In the case of Development Bank of Ethiopia (DBE), it is up to the first disbursement including all the waiting and queue times in every unit of the bank namely credit, appraisal and approval working units are loan processing time. Shortening the LPCT is extremely important issue to the applicant and the bank. To the loan applicant–the shorter the LPCT time means the earlier project start-up date and quicker project implementation. This in turn means reduced expense during loan processing as well as reduced pre-production interest. On the contrary, longer LPCT means a risk to the project in many ways [4,5]. The longer LPCT leads the project into budget shortfall; and ultimately risking the realization of the project. In similar fashion, to the Bank–shorter loan processing cycle time will enable to have better performance, higher customer satisfaction, early production and export and ultimately, higher chances of avoiding non-performing loan.

In order to do the shortening of this LPCT, ARENA software simulation is used to reach on optimum solution. In modeling this system, an ARENA simulation model was developed, verified, and validated to determine loan processing time of the case company identifying different scenarios. As studies ratified that simulation software are very flexible tools except the user needs to know programming concepts and longer modeling times [6]. ARENA a famous simulation tool which provides all the opportunity to make a simulated model including input data analysis, model building, model verification, output analysis and so on [7].

Reduction of LPCT consists of speeding up a Bank's processing time in the request-to-approve stages to get first disbursement into the hands of the customer's as quickly as possible, at the lowest possible cost [8,9]. Despite the fact, there are many research works done on the topic still the issue is crucial. What makes it crucial is that on the one hand; it is highly related with pre-operating expense, continuously varying exchange rate, time and other valuable resources by the project promoter [10]. On the other hand it is highly related to the DBE's reduction of non-performing loan, loan collection cost, customer satisfaction and fulfillment of its development vision.

Since its inception, a century and a decade ago, DBE has been in a continuously increasing demand for project financing and loan application processing. By the end 2015 facial year, the Bank is expected to process loan amount of more than 14 billion birr which is twice of that of 2014 amount. Moreover, the extended development plan of the country is also puts special pressure on the Bank loan

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processing. The Bank, therefore, has many questions to address with regards to loan processing. One is longer Loan Processing Cycle Time among many issues. The LPCT study is very important for the Bank as well as for customers because time is money in project financing. The improvement of loan processing will benefit the Bank to fulfill the development burden imposed by the government and tackle the newly coming business competition.

Therefore, this study deals with LPCT at DBE. This Bank is one of the oldest Banks in Ethiopia having a century long experience in financing industrial, agricultural and service sector projects. The focus of the study is LPCT especially for industrial projects–because agricultural projects have different loan processing approaches. Clearly specking, the goal of this study is to answer questions how to shorten longer loan processing time through ARENA software simulation. The remaining sections included are literature review, problem formulation, research methodology, result, discussion and concluding remarks.

Literature Review

Unlike other commercial banks, investment banks like DBE has a special national agenda in quickly availing project finance in accordance with the national government development programs [5]. Although, there are many studies about manufacturing cycle time, there is a need for different approach to address LPCT. Unlike manufacturing, where the cycle time can influence inventory, production costs, response to customer orders, and flexibility; LPCT is less visible but critical success factor. Competition between manufacturers today is not only through cost and quality but also the cycle time [11]. It was also clearly elaborated the relationship between business cycle and credit cycle for Banks [12]. The issues of delayed loans were verified to be longer in developing countries that in developed once [13].

In manufacturing cycle time is the total time required to produce a product(s) from the beginning to the end of the process. In service industry, cycle time is a weapon to bit stiff business competitions [14]. Thus, this was the reason why the DBE has set a goal to reduce LPCT and improving customer satisfaction [15].

Cycle time improvement has been taken as quality indicator in many service organizations [16]. Now days many customers are willing to pay a premium amount to speedy service than to slow and sluggish once. Many agree that the ability to measure staff performance both as individual and as team allowed organizations to anticipate work cycle times, which helps to have more control over costs and ultimately more profitability and better positioning in the marketplace [1,17]. Understanding how long it actually takes to do a task directs to analysis about how long it should take to do work by the help of the application of scientific methods. Standard times became prescriptive rather than descriptive. Longer waiting time in loan processing is common problem of project financing in both developed and developing economies [1,18]. Asea et al. [19] has shown that the issue of shortening cycle time was observed to be relaxed during expansion project lending than first time lending.

Simulation and modeling approaches are based on the conceptualization and use of an abstraction, or model that hopefully behaves in a similar way as the real system [18]. Impacts of alternative courses of action are studied through use of the model, something that often cannot easily be done through experimentation with the real system. Models are of necessity, dependent on the value system and the purpose behind utilization of a model. We want to be able to determine the correctness of predictions based on usage of a model and thus be able to validate the model. There are three essential steps in constructing a model: determine those issue formulation elements that are most relevant to a particular problem, determine the structural relationships among these elements, and determine parametric coefficients within the structure.

As Sidnev et al. [20] shown in their paper, the main steps of the simulation study are summarized below: Problem formulation; Identifying the objectives; Conceptualizing the model; Defining the initial conditions, Data and operational parameters of the model; Translating the model; Model Verification and validation; Running the simulation and analyzing the results; and Recording and reporting [21]. Many researchers have discussed the use of simulation as a tool suitable to depict actual scenario and analyses impacts of varying parameters without actually affecting the working system. Rockwell developed ARENA software to enables users to bring the power of modeling and simulation to their business. This application is designed for examining the impact of variations involving important and complex redesigns related with manufacturing, supply chain, processes, distribution and warehousing, logistics and service systems. As stated in Rockwell, ARENA User's Guide [22], ARENA software provides the maximum agility and wider area of application coverage to model any desired level of detail and complexity.

Based on the discussion on the previous works reviewed, three points can be underlined. LPCT is one of the very important parameters to be analyzed in financing industrial projects, Simulation and modeling methods are based on the conceptualization and use of an abstraction, or model that hopefully behaves in a similar way as the real system. ARENA is one of the powerful tools of the industry and it is possible to depict and study alternative scenarios that can help predict shorter possible cycle time and optimal staff allocation.

Problem Formulation

Lean, Six Sigma and MES Dictionary[1] defines Cycle Time as "*the total time from the beginning to the end of process, as defined by owner and customer*". [1]Cycle time variation as "a metric and philosophy for continuous improvement with the aim of driving down the deviations in the time it takes to produce successive units on a production line". By considering loan processing as a multi stage business processes, it is possible to define LPCT as the total time from the beginning to the first disbursement of the cash to the borrower. LPCT is the core issues to be addressed in this case study. As discussed in the previous section (i.e. literature review), the problem related to the LPCT is very important to be studied. For DBE as well as to its customers, LPCT to process a loan requisite is very critical to be analyzed. Because of the LPCT is the measure of performance to the Bank and it is related with many critical operational and financial issues such as loan processing budget, document screen quality, due diligence assessment efficiency, agility of the draft appraisal document preparation, competition and customer satisfaction. And LPCT is crucial to the customer because it is highly related with the project's overall quality and objective fulfillment in general; and project startup time, project finance, project management complexity, project owner morale, foreign exchange variation, delay in project schedule and loss of trust by raw materials and machinery supplier in particular.

In reference to the LPCT issues at the Bank, the questions can be formulated as what is the minimum time needed to process a loan Application? is this cycle time constant for all sorts of loans that vary in sector, size and project capacity? and what can be done to shorten the LPCT?

[1]http://www.ats-lean-six.com/120_dictionary.html?letter=C&lang=en

To create clear image about the Bank loan processing, details discussion of the loan process activity carried out at the Bank's corporate credit department is presented in the next section.

Credit process flow diagram[2]

Investment banks' distinguishing feature is their "project" based lending tradition. Projects financed by such Bank are carefully selected and prepared, thoroughly appraised, closely supervised and systematically evaluated [23]. Credit granted to credit worthy borrowers and projects that have received a thorough appraisal and found to be economically viable, socially desirable in terms of environment protection, employment generating capacity and other social benefit that may be included in the framework of development regulation act of the Government.

In the case bank, the Core Credit Process (or credit department) is designed to serve that customer whose projects investment is more than 40 million Birr. Other customers who come with a project that have total investment cost of less than 40 million are served at Bank's branch level. As shown in Appendix 1 the Core Credit Process starts its function by attracting and persuading customers to apply for manufacturing, agro processing, and agriculture loans, which is the domain of the priority area and ends at loan collection. This department is responsible for the overall loan administration of the Bank for those projects with a loan of fifteen million birr and above. It is equally accountable to any failure to meet the set standards of outputs. Moreover, this process is the one that has access for customers and represent the Bank's corporate credit operation system. The process works with the Loan Appraisal and Project Rehabilitation and Loan Recovery Sub-processes and Loan Approval Team to deliver credits to its customers and collect loans.

The core credit process accepts all kind of manufacturing, agro processing and commercial agricultural projects loan applications from both walk-in and sourced customer and undertakes the necessary investigation on the required documents and borrowers within shortest possible time and cost to extend loans. The process shows all activities of the job in an organized way accordingly defined the duties and responsibilities of individual performers and creates transparency and accountability.

The Core Credit Process is important to have a clear picture of the whole credit process and creates a transparent way of doing things by properly defining tasks and assign responsibilities to all professionals so that there will be proper loan delivery and portfolio management in the Bank. The detail workflow of the Corporate Credit Process is stipulated hereunder.

Methodology

The methodology used in this study, as depicted in Figure 1, has four main steps. In the first step, the identification of process flow and activity and working unit in the Loan Processing carried out. This first step has three sub steps. These are identification of activity, identification of procedures and identification of resources that carry out the loan processing. Step two, the procedure flow is capturing the processing time of the loan processing activities. This second step in-turn has three sub-steps. Namely collection of processing time from the Bank, observation of actual loan processing and checking the gathered data by following three actual financed three industrial projects. The third step, execution of ARENA input analyzer in which two critical activities were carryout. These are identification of probabilistic distribution and checking the p-value for validity of the distribution. On the final step, there were four main activities. These were depiction of the ARENA simulation based on the activity flow diagram, second, the definition of local and global variables in ARENA was done; third, different scenario were developed to correlate the resource with loan cycle time and fourth, report from ARENA was generated and interpreted. Moreover, information on time study to identify loan processing time at each loan process stage was gathered. Next to that on second step, is to use ARENA simulation for identifying the time needed to process one step of the loan processing and also to identify the means of shortening the LPCT.

In identifying the loan process flow and workstations where activities are carried out, and resources at the workstations were identified by direct observation, referring to the banks document and application of process investigation such as interviewing and discussion to the relevant person. This relevant person could be a loan officer or it could be a project contact officer or others. The Bank's report for loan

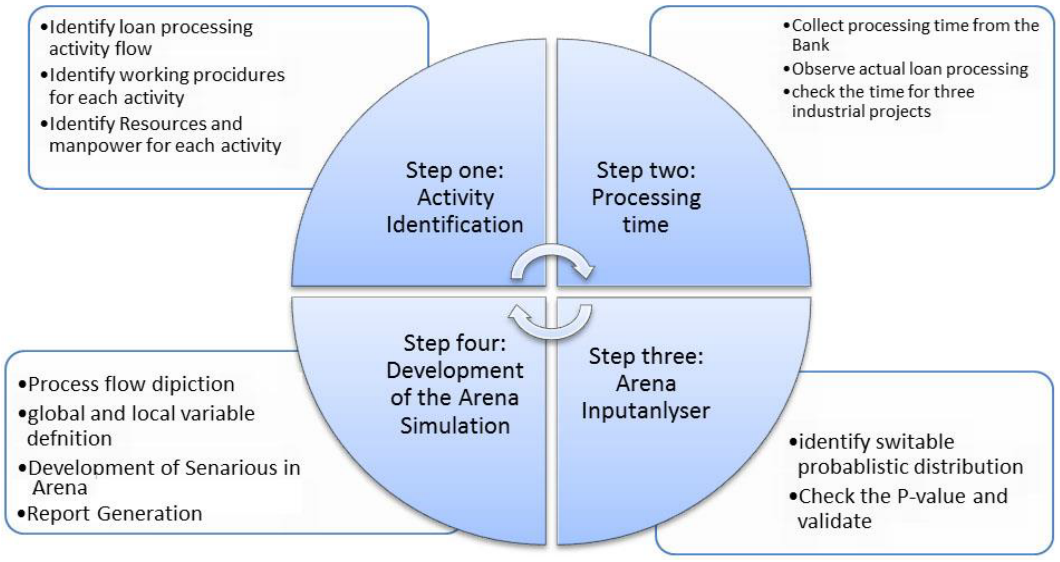

Figure 1: General framework of methodology.

[2]http://www.dbe.com.et/home/index.php/project-financing

cycle time were collected first to compare them with the actual task time data at each stage was also need to be collected randomly by using stopwatch time study [24]. After the task time data at each workstation has been known, it was used to calculate activity duration and the type of probability time distribution at each workstation. ARENA input analyzer was very helpful in determine the type of probability time distribution. As many scholars agree, Computer Simulation Models Verification and Validation is conducted during the development of the simulation model with the eventual aim of producing a precise and reliable model[3,4]. Thus, in this study, the verification of the model was done in three stages.

- The depicted ARENA model was compared with the actual work flow and working departments of the Bank
- Direct outputs of the ARENA simulation were checked against the actual data which was gathered for five years continuously.
- Observations of three actual project processing times were recorded and finally the verification of the model was concluded accordingly.

Similarly, the validation process of the model was conducted by comparing the output of the actual bank loan processing and the model output of the existing system. Finally, based on the output of ARENA simulation model, LPCT and resource utilization can be defined. The methodology of this study can be seen from prospective point of the following areas.

Time study

DBE has been recording cycle time for more than a decade. The procedure of keeping these times are similarly in all departments. Every month, all departments gather and send these time record reports to change management department. In this study, time record of 150 projects which were collected in five years' time span was gathered from the Bank and consumed as primary data input. A stop watches time study for three projects were also done to verify and validate both the data and the model.

Development of the ARENA simulation

ARENA simulation software which is the product of Rockwell is widely used in the industry globally. The software is used for simulation projects by creating simulation models of business processes, production process as well as transportation process. This software is a general purpose simulation tool with unlimited application areas [25]. In this study, ARENA software version 14.0 was used for analyzing the performance parameters of studied production line. Those performance parameters mainly were processing cycle time, document fulfillment, and loan size and resource utilization. ARENA Input Analyzer was used to identify the probability distribution at each working station. The function square error of most cases was less than 0.05. For example, the probability distributions for inter-arrival time of the document screening activity were compared for ten possible functions. As indicated in Figure 2 that the square error in six different distributions is not acceptable; thus taking normal distribution is logical for this study result.

ARENA scenario analysis

In this study, twelve scenarios were analyzed using ARENA process analyzer. Key process actors were set as scenario control parameters. Currently, the number of the loan processing officers in the credit department is twenty five. As a result of this, work load distribution of current loan processing on cycle time is higher. In the developing the twelve scenarios, the number of the loan officers were sent to vary between 18 and 27. In similar fashion the number other staffs such as civil, mechanical, electrical engineers and legal were varied in different proportion. By varying these parameters, changes in the key process responses were analyzed. As shown in Figure 3 scenario, scenario three has optimal number of appraised projects. The number of apprised projects in scenario one and two is not acceptable. Most scenarios are taken into consideration decision making except scenario one and two. However, among the 12 scenarios, the most optimal that raise and reduce the processing time is scenario three [26,27].

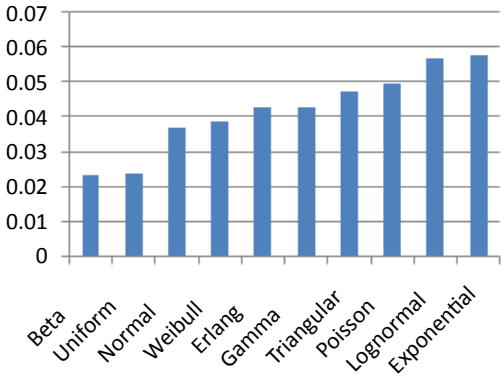

Figure 2: Probability distribution of Loan Application.

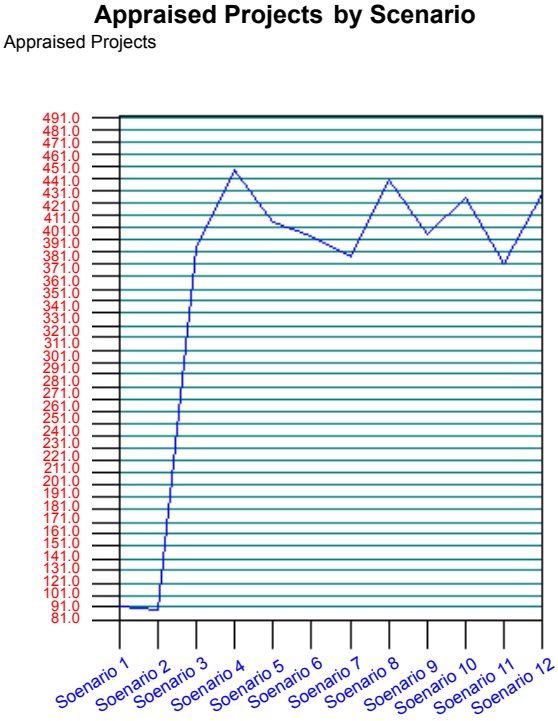

Figure 3: Impact of varying the number of Appraisal officers on Number of Apprised Projects.

[3]Verification and validation of computer simulation models, http://en.wikipedia.org/wiki/Verification_and_validation_of_computer_simulation_models#cite_note-Sargent-3

[4]Sargent et al. (2005).

Modeling assumptions

The ARENA simulation in this study was run for 10 years by considering 5 working days of a week and 8 hours a day schedule in addition to the following underlying assumption. The model assumptions were

- The loan applicants will continue to apply in similar fashion as usual
- The arrangement of core loan processing departments will continue to be same
- Loan amount are not considered in the loan processing time study.
- Eight working-hours per day and five days a week are considered in the simulation
- Staff absenteeism and worker inefficiencies are considered uniform.

Model validation

Validation steps: In constructing a logical conclusion out of the process, here are the steps followed in the processing time study:

- Gather all processing time records from the respective work station and Bank officers of 85 projects
- Organize loan processing work flow from loan requesting up to the first successful disbursement
- Filter out active industrial projects from all loan documents to exclude agricultural projects
- Gather processing time from reports, memos and letters communicated to customers.
- Experiment the actual findings for existing time records.

In order to develop the simulation model of Industrial Project, Financing Loan Process at DBE, three critical steps were followed. Frist, the loan processing work flow in three departments (namely Credit, Appraisal and Approval) was depicted, and next to that time record of every process at each stage was gathered. In the third step, the distribution function was identified by setting the t-value less than 5%. In the coming paragraphs some of the modules used in the ARENA Simulation are described.

In order to capture each loan application (entity) in the simulation model, the Create module was used to generate arrivals of each loan application. Data regarding the inter-arrival time of these loan application was gathered from the customer information desk. Then that Create module was connected with the assign and record modules to keep truck of the total projects count in ten years' time interval. As shown in Figure 4, one create, 11 assign, 11 record, 13 process, 11 decision, and 4 dispose modules were used to develop the model.

Validation results: After the model has been developed, it was checked if it could represent the actual existing situation by carefully check the input and output parameters. Actual number of staffs, projects' parameters and work flow were all supplied to ARENA. The findings have shown that the model was capable of depicting the actual working condition in the case Bank and the results of the model were consistent with the actual scenario. Verification assesses the correctness of the formal representation of the intended model, by inspecting computer code and test runs, and performing consistency checks on their statistics [6].

Results and Discussions

Historical time data and distribution functions

As already stated in above sections by taking the time record of the year 2013 and 2014 for 85 industrial projects, ARENA input analyzer is used to find the distribution function. The results of the ARENA Input Analyzer are depicted in the Table 1.

The Table 1 data shows that the process types that have much standard deviation from the normal once. The standard deviation by itself shows that bottle neck areas and tells where delay occurs. The research in recent studies indicated that bottleneck areas of existing production line were found out to pave a way to rectify the model to increase its productivity with the application of simulation [7]. For instance, disbursement request document time value is more vibrant when compared to the mean and Property Valuation with standard deviation of 7.83 which is more vibrant from the central tendency of the average time recorded. This leads to the longer period of loan processing time to the case company. In order to reduce this processing

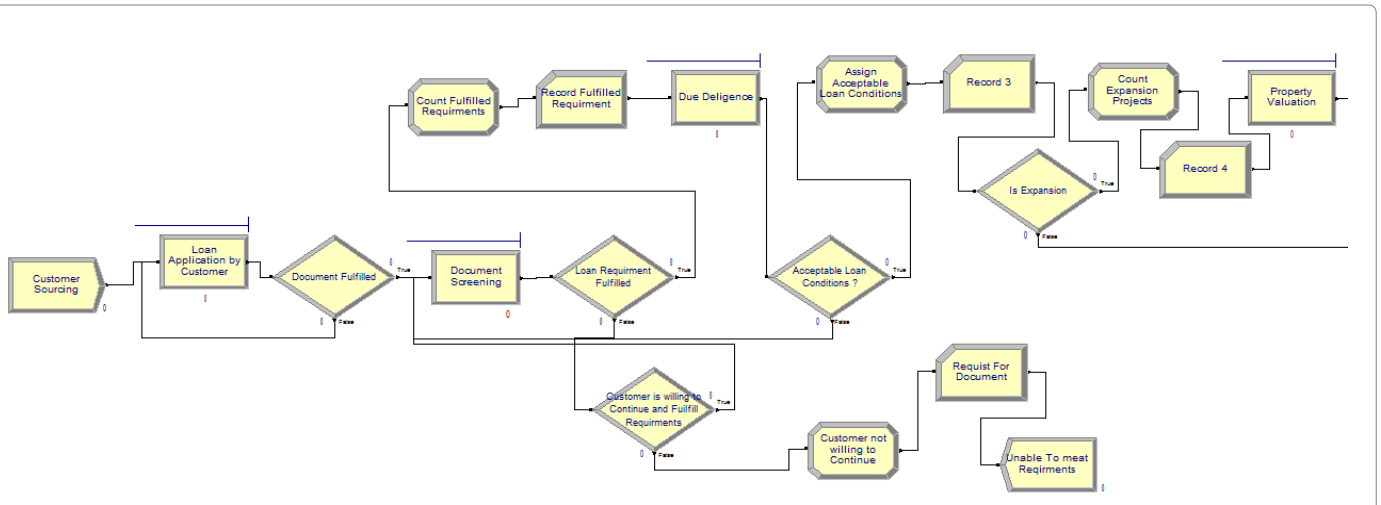

Figure 4: Arena Simulation Loan Application to Appraisal.

time delay, the ARENA software simulation was used for further improvement.

Simulation replication and replication length

Using the activity time which is shown in Table 2 and the loan processing work flow of the Bank which is attached in the Appendix 1, the ARENA simulation model was developed. Screen snap shot of the model is shown Figures 4 and 5. Some of the modules used are also shown in Figure 6. In order to get a better result, the simulation replication was set to 15 and the replication length was set to 10 years length. This is because, the longer the simulation time and more number of replications considered, the more reliable findings will be [6]. As depicted in Figure 7, the simulation findings when the model runs for 10 years duration and 15 replications, the number of disagreeing customers on the different decision of the Bank is huge. That means every day one customer disagree on any sort of request, draft amount, payment schedule and or similar decision issue. It is reasonable to look for key areas of customer compliant.

No	Process	Function	mean	STDV	t-value
1	Loan Application by Customer	Normal	16.91	4.29	0.016
2	Document Screening	Normal	20.87	7.46	0.037
3	Due Diligence	Expression	0.2	15.5 + ERLA(6.32, 2)	0.011
4	Property Valuation	Normal	29.45	7.83	0.042
5	Project Appraisal	Normal	27.45	7.13	0.009
6	Draft Appraisal Document Commenting	Normal	15.85	4.49	0.048
7	Draft Appraisal Discussion with Customer	Normal	15.85	4.99	0.021
8	Loan Approval Assessment	Expression	0.2	15.5 + ERLA (6.74, 2)	0.002
9	Loan Agreement Sign	Expression	0.2	15.5 + ERLA (6.75, 2)	0.014
10	Equity Contribution Depositing	Expression	0.2	7.5 + ERLA (6.74, 2)	0.021
11	Compliant Management Desk Processing	Normal	21.41	4.98	0.034
12	Disbursement Request Document is Presented	Normal	18.76	7.65	0.031
13	Disbursement is Effected	Normal	1.15	0.192	0.004

Table 1: Activity time results of Arena Input Analyzer.

Count	Average	Half width	Minimum Average	Maximum Average
Complaining Customers	2,643	422	1,326	4,186
Disagreed Customers	31,017	3,604	18,336	40,755
Not Fulfilled Disbursement Requests	196	59	66	435
Record Appraised Projects	113,687	9,031	80,200	135,981
Record Expansion Projects	16,122	989	12,720	18,145
Record Fulfilled Requirement	3,377	134	2,933	3,801
Record Loan Not Approved	10,475	1,109	6,903	13,695
Record Not Acceptable Loan Condition	32,727	3,692	20,301	44,850
Record Sufficient Equity	1,792	257	946	2,556
Request For Document	(1)	-	(1)	(1)
Total Loan Application Count	46,752	2,610	41,328	57,970

Table 2: Amount of equity contributions with in the deadlines.

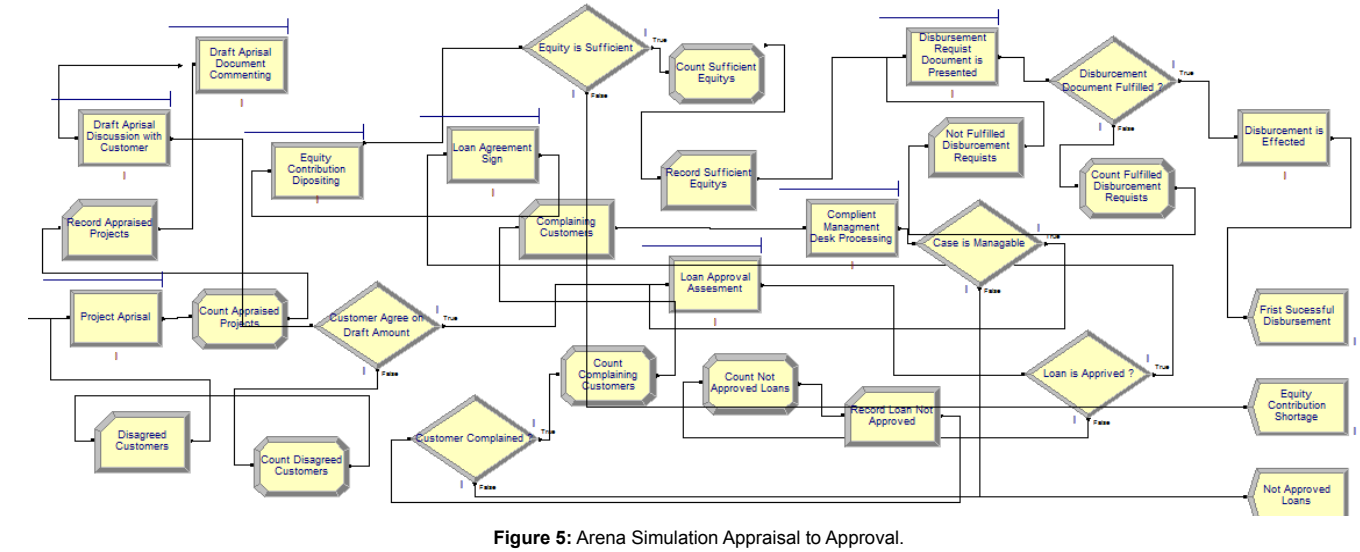

Figure 5: Arena Simulation Appraisal to Approval.

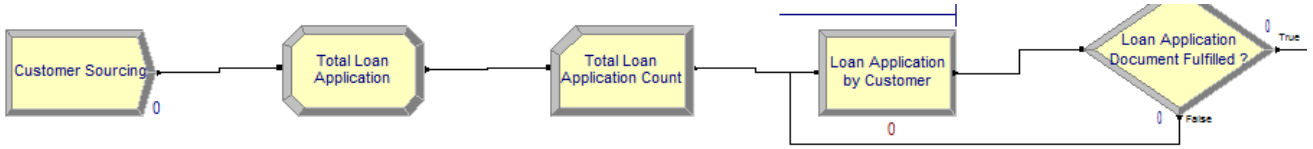

Figure 6: Some of the modules used.

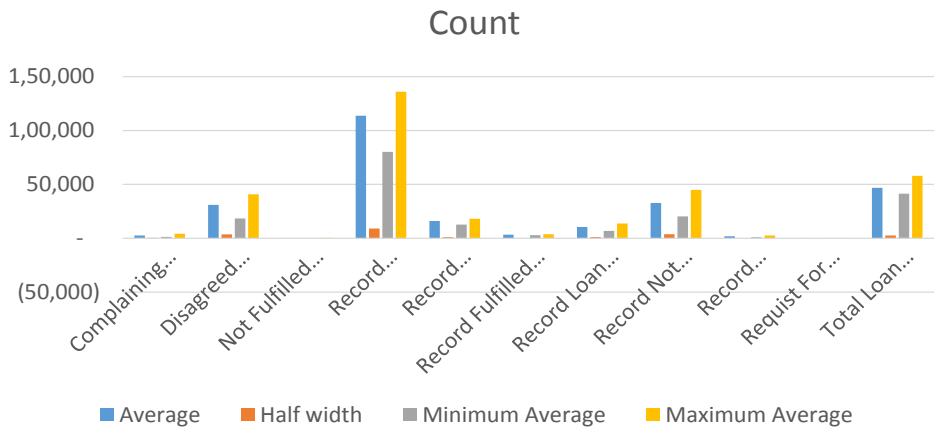

Figure 7: Key Variable Counters.

Scenario	Appraisal Officer	Civil Engineer	Customer Service Officer	Electrical Engineer	Legal Officer	Loan Officer	Mechanical Engineer	Projects In	Projects Out	Average Projects Appraising Capacity	Cycle Time (days)
Scenario 1	1	4	2	1	1	18	2	301	123	91	70
Scenario 2	2	4	2	1	1	19	2	307	130	90	71
Scenario 3	1	4	2	1	2	22	3	273	271	385	54
Scenario 4	1	4	3	2	1	22	3	277	275	448	41
Scenario 5	1	5	2	1	2	23	4	278	275	405	48
Scenario 6	1	5	4	2	1	23	4	283	283	394	52
Scenario 7	1	5	4	1	2	24	5	266	262	378	56
Scenario 8	1	6	2	1	1	24	5	268	266	439	42
Scenario 9	1	6	3	1	2	25	6	274	273	395	50
Scenario 10	1	6	3	1	1	26	6	271	266	425	46
Scenario 13	1	6	2	1	2	26	7	270	269	372	58
Scenario 14	1	6	2	1	1	27	7	261	260	428	39

Table 3: Different Simulation Senarios.

Any loan application ends its life cycle in either of four major cases. The first case is that the customer is able to reach the stage of first disbursement successfully. Out of all loan applications around 75.29% reach this stage in less than the specified time. Secondly, dissatisfaction on the amount approved makes some applicants to withdraw from the loan process. Thirdly, some investors, especially local once fail to raise the required amount of equity contributions with in the deadlines.

Loan processing cycle time

As can be seen from the Table 3, the analysis of different scenario yields different cycle time. The fourth scenario is relatively optimal in terms of the system's ability in apprising projects. In that scenario, out of the 277 industrial projects the system's capacity to appraise can reach up to 448 projects. That means the system will be capable of handling customers compliant on appraised amount, additional loan applications and revised versions of appraisal works. Currently, the Bank's LPCT is on average 45 days. By implementing recommended scenarios, it is possible to shorten this cycle time down to 39.

From the user specified part of the report of ARENA, we can see that some activities like document screening, property valuation for collateral, draft appraisal preparation and commenting draft took longer time. For example, document screening task takes more than a week whereas draft appraisal preparing officer repeats the task to carry-out his or her duty. Thus, it would be very logical if some tasks are done in parallel while others are eliminated totally.

Conclusion

As stated that considering the Cycle time improvement as action for service quality improve is important because cycle time is a critical quality indicator in many service organizations. In this regard, the current cycle time in DBE can be considered as a process parameter affecting its service quality. Moreover, the investigation showed that on proper allocation of required technical staffs such as mechanical and chemical engineers especially in credit and appraisal process; it is possible to reduce the LPCT to 39 days for industrial projects. The

analysis was conducted on industrial projects, therefore, the findings may not represent for agricultural project loan processing. The approach to analyze the system is development of simulation model by using the loan processing time record collected by the bank. Through the application of ARENA simulation, the paper has shown that by increasing the number of technical staffs it is possible to reduce the LPCT from 45 days to 39 and that is crucial.

Therefore, this paper recommends the Bank to take action in four critical areas. Firstly, the Bank must revise the arrangements of the three core loan process departments in such a way that repetitive tasks having different names can be eliminated. Secondly, through careful analysis of the workload on technical staffs such as civil, electrical and mechanical engineers; it would be appropriate if additional staffs are recruited and deployed accordingly. Thirdly, the Bank has to be able to develop and release documents that would help customers clearly understand the Bank's project financing online. Finally, it would be appropriate for the Bank to consider these local applicants and devise mechanisms by which customers can pass equity contribution stage until first disbursement. There should be a future research area and directions on area where other best tools can be used for the better improvement of the loan processing cycle time. Researchers can also conduct research on comparing and contrasting the different tools how they improve the sector processing time.

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