Chapter 4

Feasibility Study

4.1 Introduction

A feasibility study is used to determine the viability of an idea, such as ensuring a project is legally and technically feasible as well as economically justifiable. It tells us whether a project is worth the investment-in some cases, a project may not be doable. There can be many reasons for this, including requiring too many resources, which not only prevents those resources from performing other tasks but also may cost more than an organization would earn back by taking on a project that isn't profitable or simply the required budget for the project exceeds the available budget of the organization.

In our analysis on education board Rajshahi, previously we have identified some problems we found and also we have done our initial feasibility study on those problems. Now we are going to analyze that whether those problems are really feasible to solve or not.

4.2 Feasibility analysis

In this section the solutions which are feasible to solve are identified. We have considered some criteria based on the problem and given them weighting factor from 1 to 5. Then we have given rating from 1 to 5 on different criteria of the existing system and proposed system. 5, 4, 3, 2, 1 are for excellent, very good, fair, poor and very poor respectively.

4.2.1 Lack of manpower

Previously it was observed that there is a lack of man power in the organization. Since the board is a very important institution so lack of man power makes the working process slower.

In initial feasibility analysis, we gave solution like increasing online system, increasing number of analysts, increasing sections and increasing man power. Well, among the solutions increasing man power is more feasible. If the online systems are increased then the present employees need to be trained and it will increase the cost. Because the expert trained employees deserve more salary than a fresher. If the present employees are expertized by training the efficiency may increase but not as the fresher who already know about the computerized system. If we think about the alternatives then obviously increasing man power is better. If there is not enough employee and some employee fails to do a job then the system will face crisis. But if the man power is increased then if some employee fail to do a job there will be many alternative employees. Then the speed of processing any job will enhanced if the man power is increased. Regarding cost if the number of employee is not increased rather they are trained then the cost for both training and salary will be increased.

We have made a weighted candidate evaluation matrix to show the effects if the number of employee is increased versus if the present employees are trained.

In this matrix, we have considered efficiency, alternatives and speed of processing in performance section and in the cost section we have considered salary and training. We have given 5, 3, 4, 4 and 3 to efficiency, alternatives, speed of processing, salary and training as weighting factor respectively. We also rated the criteria and then we multiplied the rating and weighting factor to give them scores. In total we can see that the score of increased man power is more than training present man power. So it is better to increase man power of education board.

Table 4.1 Weighted candidate evaluation matrix for training present manpower versus increase man power

Evaluation Criteria	Weighting Factor	Present manpower		Increased manpower	
		Rating	Score	Rating	Score
Performance					
Efficiency	5	4	20	5	25
Alternatives	3	2	6	3	9
Speed of processing	4	3	12	4	16
Cost					
Salary	4	3	12	4	16
Training	3	3	9	4	12
Total score			59		78

4.2.2 Lack of digitalization of documents

We found that various records and documents of education board are not digitalized. Hence there is often difficulties to check a record and to find a document.

In our initial feasibility analysis we suggested to solve this problem by increasing man power, hiring IT specialist and buying modern machineries.

Already we have suggested that man power can be increased and that's the best idea. Now about the other solutions like hiring IT specialist from outside, buying modern machineries which will increase the cost. As we have proposed to increase the man power so that will serve for this purpose also. So hiring IT specialist from outside, buying modern machineries etc. will increase the cost only. We can say that this solutions are not economically feasible. Since we can solve this issue by increasing man power then obviously other solutions are not needed.

4.2.3 Not having own server

We know that online result publication requires technical support. But the board doesn't have its own server. Hence for result publication board fully depends on third party. We thought that this is a confidential issue so board should be independent in this matter.

So we have made a weighted candidate evaluation matrix where we have shown comparison on different criteria between having own server and dependency on third party. We have considered

performance and cost for this two. Weighting factor is included also. We have considered security, independency and reliability in the performance criteria and 3 for security, 5 for independency and 4 for reliability are given as weighting factor. In cost criteria, we have considered short term effect, long term effect and maintenance and 3, 4 and 2 are given as weighting factor respectively.

Then in performance section, for security we gave 4 to third party organization and 5 to own server. Because obviously the result publication process will be more secure when board will have their own server. In independency, we gave board 5 and third party 2. Because having own server will make them independent. In case of reliability, we gave more point to board. In cost section, in short effect the cost for own server will be more but in long term effect the cost for own server will be less and it will be more beneficial than depending on third party. The maintenance cost is needed if the board has their own server. After multiplying the rating with the weighting factor we found that the score of having own server is more than depending on third party. So it is feasible to have own server of their own and it is better than using server from third party.

Table 4.2 Weighted candidate evaluation matrix for having own server versus third party server

Evaluation Criteria	Weighting Factor	Third party server		Own server	
		Rating	Score	Rating	Score
Performance					
Security	3	4	12	5	15
Independency	5	2	10	5	25
Reliability	4	3	12	4	16
Cost					
Short term effect	3	4	12	2	6
Long term effect	4	2	8	4	16
maintenance	2	4	8	2	4
Total score			62		82

4.2.4 Dependency on third party organizations

The board depends on 3rd party organizations for different reasons. For example: to prepare OMR sheets of examinations, to prepare identification forms for students during examinations as well as to evaluate OMR scripts.

In the initial feasibility analysis, it was proposed that the board should have their own technical support system and proper machinery to do these tasks. Different technical universities may help them to build a reliable digital system like a customized encryption system.

But later, it was found that implementing those ideas may not be efficient enough. Because, the encryption system used in the scripts are very complicated and very hard to decode for any unauthorized person. Moreover, the time given to these parties to perform these tasks are very limited. So it is very hard to find any particular answer script. In addition, maintaining such

technical facility will need skilled technical experts as well as modern machineries. So, it is not recommended to change this system very soon.

4.2.5 Lack of time for proper evaluation of scripts

The problem of limited time is related with some important issues. The board can't publish result later because admission to the next stage for a student is related with this.

From the initial feasibility study, it was assumed that alternate solution to maintain quality of scripts' judgment is increasing the number of examiners. The ministry of education will arrange the training programs for the teachers. To increase the participation of the teachers in the training programs, the board can increase the money for evaluating each script.

Later, it was found that it may not be a good solution. The teachers are not very much interested to take load of evaluating extra scripts. So, the solution of the problem currently seems infeasible.

4.2.6 User harassment to retake transcript

The process of retaking transcript from the board has no proper distribution planning to make it user friendly. Hence the user often need to get irritated with the process.

At first during our initial feasibility study, it was proposed to design a system to ease this task. Documents like transcript can be distributed from schools and colleges by means of internet.

But after detailed analysis, it was found that this method is not suitable enough. The officials currently working in the educational institutions are not technically sound. It is not possible to recruit expert technical expert to every institution. Moreover, the verification process is a very important stage and the rate retaking transcripts is very low, so to create another section for it will increase redundancy and cost. That's why it is better with the present system.

4.2.7 Not having own exam center

This education board is not having own exam center for public examinations. As public exams are very important and sensitive so if board has not any exam center of their own then in many cases the fairness of public exam may be questioned.

In initial feasibility analysis, we have suggested that if board has more control over the exam centers then the exam can be fair. Sometimes the invigilators help the students to do unfair means in the exam. So we suggested to increase the number of invigilators or the board can set up cc cameras to the exam halls and supervise from outside.

Now if the number of invigilators are increased then the board can't ensure the fairness because in many cases the invigilators they themselves are associated with the unfair means. The invigilators are to be paid so the cost for the payment will increase. If the center is under close surveillance then the fairness of exam will not be questioned. Board can monitor everything from outside. May be the short term effect of setting up CC camera is more but the long term cost is not that much and more beneficial. There will be a cost for maintain the cameras but that cost is not applicable for increasing invigilators. By setting up CC camera the security, fairness and efficiency can be ensured excellent but this is not possible in case of increasing invigilators.

We have a weighted candidate evaluation matrix to show the effect of setting up CC cameras and increasing number of invigilators.

In this matrix, we have considered security, fairness and efficiency in the performance section and short term effect, long term effect and maintenance in the cost section. We have given 5, 5, 4, 3, 4 and 2 for security, fairness, efficiency, short term effect, long term effect and maintenance as weighting factor. Then we have rated them out of 5. Then multiplying the rating with the weighting factor we got their score. In total it is observed that the score of setting up CC camera is more than increasing invigilators. So between this two proposed systems setting up CC camera is better for security, fairness, efficiency and so on.

Table 4.3 weighted candidate evaluation matrix for increasing number of invigilators versus setting up CC cameras in the exam hall

Evaluation Criteria	Weighting Factor	By increasing invigilators		By CC camera	
		Rating	Score	Rating	Score
Performance					
Security	5	3	15	5	25
Fairness	5	3	15	5	25
Efficiency	4	4	16	3	12
Cost					
Short term effect	3	4	12	2	6
Long term effect	4	2	8	4	16
Maintenance	2	5	10	2	4
Total Score			76		88

4.2.8 Having few OMR machine

We found that result processing system is a little bit slow for evaluating the OMR scripts by limited number of OMR machine.

In our initial feasibility analysis, we suggested to solve this problem by increasing the number of OMR machine.

But the board takes the fee from the students is limited. Most of the students in this country are poor. Hence increase in the examination fee is not appropriate for our socio-economic condition. Hence the board can't manage enough budget for this issue, as the evaluation cost of scripts are taken from the students.

4.2.9 Offline payment system and low allowance

We found that the payment system of script evaluation is offline and the allowance for each script is low. For this reason the teachers often loss interest to become an examiner.

In our initial feasibility analysis, we suggested to solve this problem by increasing the allowance and making payment system online.

But, again the script evaluation costs are part of the exam fee which are taken from students. Hence it is not that much feasible. But the online system can be introduced later. But for not having that much technical support in the current situation, the board can't introduce the online payment system currently. The budget and manpower also are big limitations to solve this problem.

4.2.10 Question out

We found question out makes negative impact on the board though the Education board is not directly involved with question distribution process.

In our initial feasibility analysis, we suggested to solve this problem by concerning with the ministry of education and co-operatively working about the issue.

But, due to some structural issue the ministry may not share their work with the board. Hence the board can't do that much with the issue. It only can suggest the ministry to do their work in a transparent manner.

4.3 Overview of the proposed examination control system of Rajshahi education board

Previously we have shown the overview of the existing examination control system of Rajshahi education board by a data flow diagram. The Data flow diagram (DFD), also known as a "bubble chart", has the purpose of clarifying system requirements and identifying major transformations that will become programs in system design. So it is the starting point of the design phase that functionally decomposes the requirements specifications down to lowest level of detail. A DFD consists of a series of bubbles joined by lines. The bubble represent data transformations and the line represents data flows in the system.

In this chapter, as we analyzed the identified problems and found that some of the problems are feasible to solve. So we have proposed a modified system with those changes. We have made changes in the previous data flow diagram.

The proposed DFD of Rajshahi education board is shown in figure 4.3.

Overview of proposed examination control system

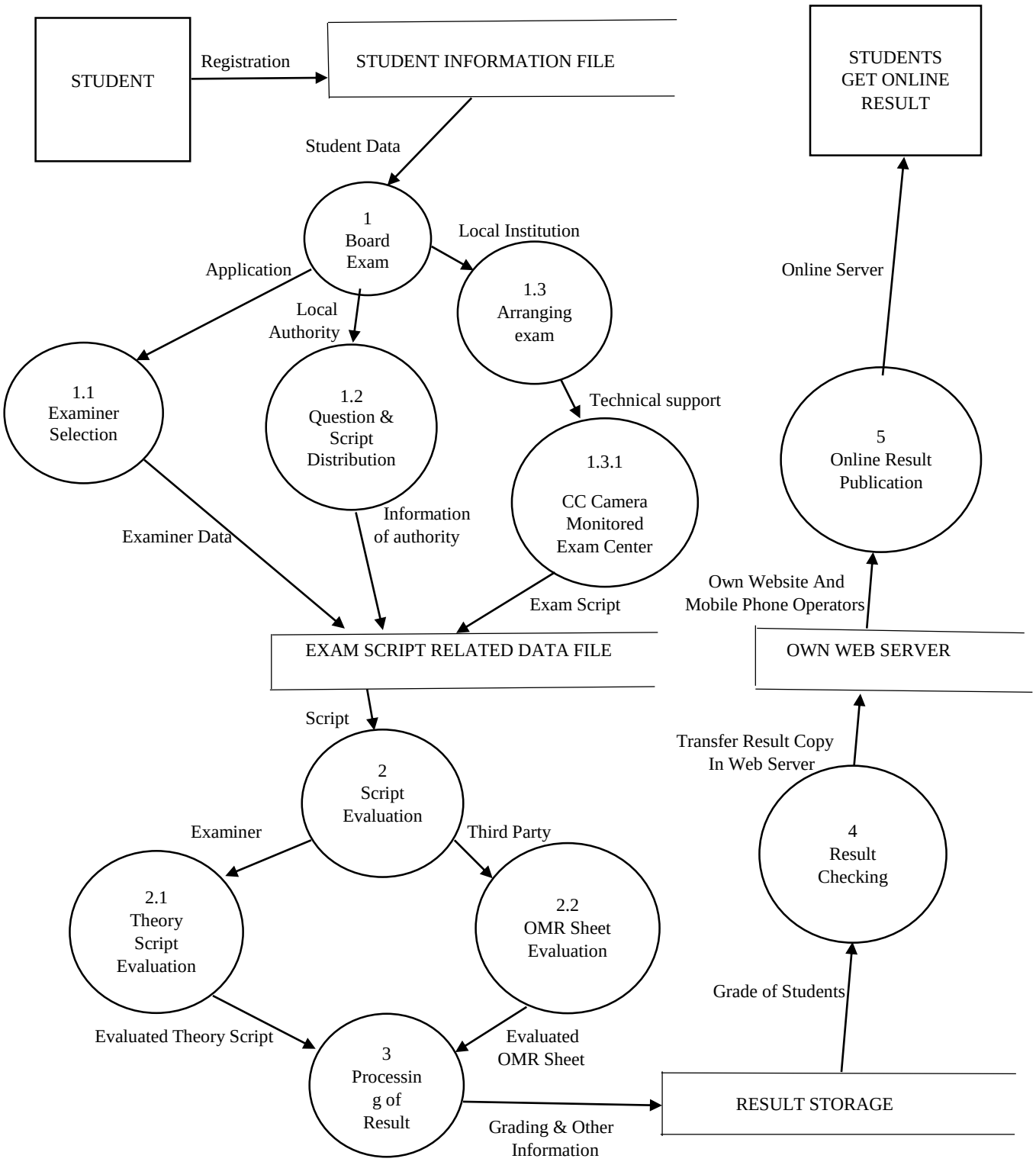

Figure 4.3 Data flow diagram showing proposed examination process of Board of Intermediate and Secondary Education, Rajshahi.

4.3.1 A brief description of proposed examination control system

We have shown the examination control system of the education board. The process starts with the students. Students are the source of the system. They complete the registration process through their institution. The institution send the respective information of their students to the board. These information are very important and confidential. Education board stores these information in their database with care. They also check and double check the stored information. If any information is missing then corresponding school or college is informed to resend the information about the particular student.

Then the first process of examination starts through the transmission of the student data.

Then this process of board exam completes through three sub processes which are examiner selection, question and exam script distribution and arranging examination. The first sub process is examiner selection which starts through application. Board issues a notice about selection of examiners and there they ask the interested teachers to apply to board. The interested teachers apply to the board to be examiner. Then board select eligible examiner from the applicants. Then the next sub process is question and exam script distribution which works through local authority. Board sends the question and exam script to the district commissioner's office. From there the questions and the exam scripts are distributed to different exam centers. Finally the arranging examination process completes with the help of local institutions. The institutions selected as exam centers selects invigilators, prepare seat plan, collects seat benches if they have shortage of seat benches. The arranging exam process is branched in another sub process which passes through the technical support. This sub process is CC camera monitored exam center. This process is included so that the exam can be held fairly and the security is maintained properly.

The documents of examiner selection process and arranging examination process are stored in data file.

The next process is to evaluate the answer scripts. This process is divided into two sub processes. They are theory script evaluation and multiple choice OMR sheet evaluation. The theory scripts are distributed to the selected examiners. The examiners are given deadline within that deadline they have to complete their evaluation. After evaluation of the exam scripts they submit the mark sheet and the exam scripts to the head examiner and then the head examiner submit the final mark sheet to the board. The OMR sheet checking process is done by the third party organization. Board selects these third party organization.

After getting the evaluated theory script marks and multiple choice answer marks the third process of creating final result starts. This process ends with storing the result and grade the result.

Next process is to check the stored result. The result is stored in data file after getting the marks from the examiners and the OMR sheet evaluators. Then corresponding graded result is checked in this process that whether there is any mistake or not.

Then the copy of the result is stored in their own web server. In the present system they have no server of their own. In this data flow diagram we have proposed to have their own server. From their own server result is published through their website and mobile phone operators.

Lastly the students get their result through the website and the mobile phone operators published by the server of the education board.

4.4 Conclusion

The problems we have identified before we have given final solutions in this chapter. We have considered many criteria to solve those issues. We have done the feasibility study by which we can understand whether we can make a change in the system or not. We have found that some problems are feasible to solve like lack of man power, not having own exam center and not having own server. We gave the solution by increasing man power, setting up CC cameras and having own server. Other problems are not feasible to solve. Then we have proposed a new modified system. This new modified system is shown by the data flow diagram. By that data flow diagram one can easily understand what we wanted to do, what changes we made in the system.