

SCHOOL EDUCATION DEPARTMENT

West Bengal Central School Service Commission

2.4 IT Audit of Integrated Online Examination System of West Bengal Central School Service Commission

Executive Summary

West Bengal Central School Service Commission (WBCSSC) was constituted in November 1997 under West Bengal School Service Commission Act, 1997. It was entrusted with the recruitment process of teaching and non-teaching staff in Government aided schools in West Bengal by conducting Regional Level Selection Tests (RLSTs). From 2009, WBCSSC introduced an online system for conducting the recruitment process named as Integrated Online Examination System. A Performance Audit of WBCSSC was conducted during January and July 2017 covering seven RLSTs to obtain an assurance that adequate controls were in place to ensure confidentiality, integrity, transparency and reliability of the system. The audit revealed certain inadequacies in the implementation process, described below:

- Best practices for development of system like User Requirement Specification, System Development Life Cycle, Data dictionary and Virtual Private Network connectivity were not followed which was likely to result in non-achievement of desired objectives.
- Access controls were not properly defined and enforced resulting non-fixation of responsibility for errors of omission and commission.
- The shortcomings of the system were used to intentionally manipulate the results to illegally benefit ineligible candidates. Changing the caste category, increasing the marks of academic scores, improperly escalating written examination marks, etc. of ineligible candidates would be tantamount to cheating.
- Deficiencies in mapping the business and fundamental rules in the system deprived eligible candidates the scope to appear in the Personality test.

2.4.1 Introduction

The West Bengal Central School Service Commission (WBCSSC) was constituted (November 1997) under the West Bengal School Service Commission Act, 1997. WBCSSC was responsible for the recruitment of teaching staff (Headmasters-HMs and Assistant Teachers-ATs) in all Government aided schools of West Bengal except schools under Gorkha Territorial Administration. Through an amendment in 2008, recruitment of non-teaching (NT) staff was also brought under WBCSSC. The recruitment processes were done through Regional Level Selection Tests (RLSTs). In order to computerise the entire recruitment processes, the Commission introduced an application named Integrated Online Examination System (IOES) in 2009.

One Database Administrator (DBA) looks after the entire system and is assisted by one Programme Officer, one Information Technology Floor Supervisor and several Input-Output Handlers. These personnel were hired by WBCSSC on contractual basis and their contracts were renewed from time to time.

The application was developed using Oracle at the back end and Java/asp.net at the front end. After introduction of the IT system, the Commission had held twelve recruitment examinations (RLSTs), of which results had been published only in respect of ten, till June 2017. The IT system was used for managing (i) submission of application (from 12th RLST), (ii) generation of Admit Cards, (iii) recording the marks obtained in written examination, (iv) calculating academic scores, (v) preparation of list of candidates called for personality test and (vi) generation of the final list of recommended candidates.

2.4.2 Process Flow Diagram

The process flow diagram of the entire examination process is depicted below:

Chart 2.4.1: Process Flow Diagram of Examination System till the 11th RLST

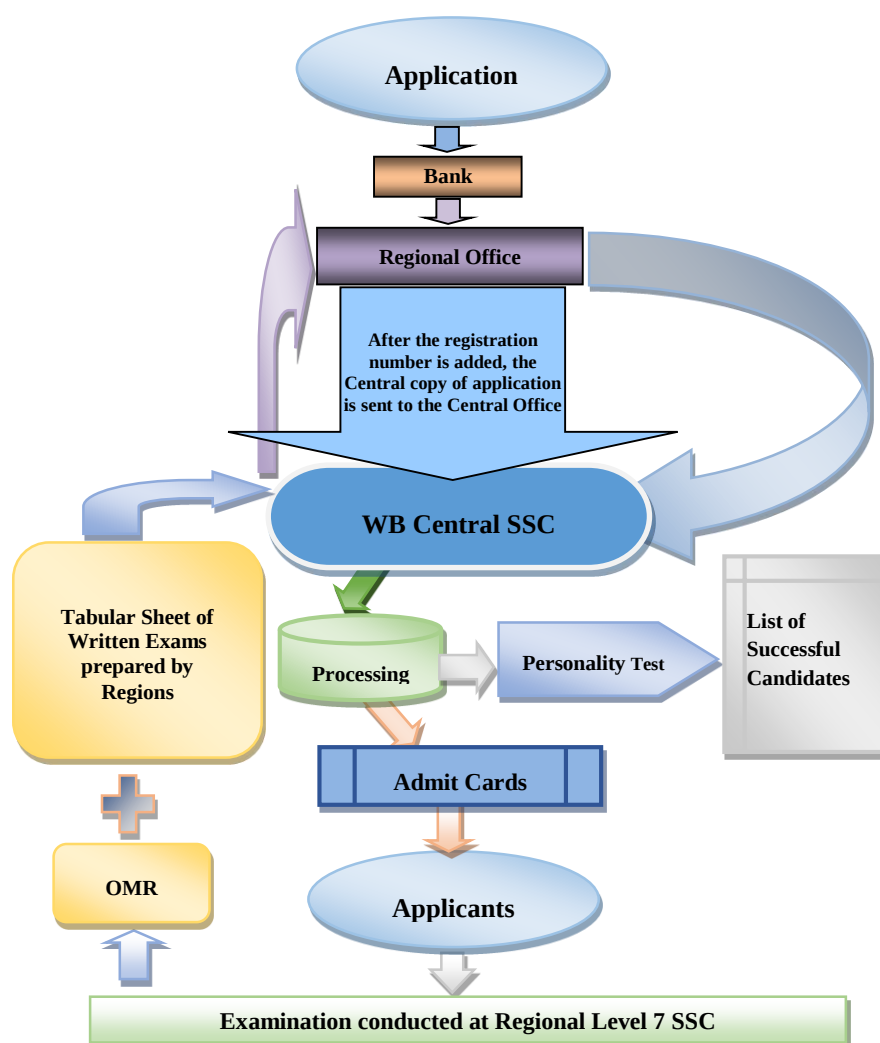
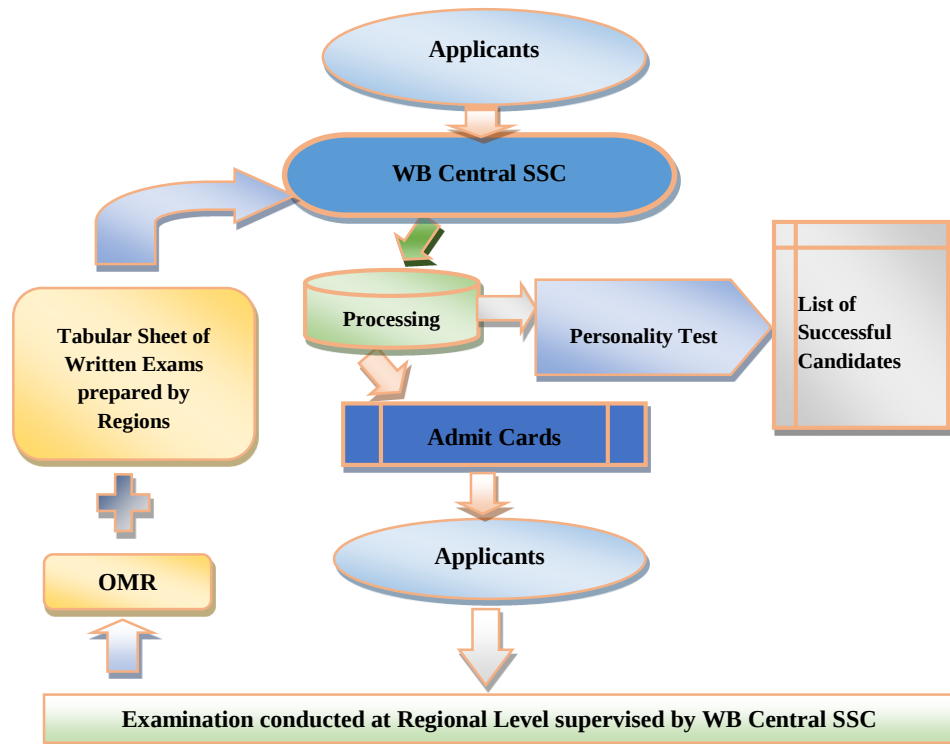


Chart 2.4.2: Process Flow Diagram of Examination System 12th RLST onwards



2.4.3 Audit objectives

The objectives of audit were to examine and assess whether:

- The IOES had been developed with in-built validation controls and proper mapping to all relevant business rules of the Commission as well as of the Government;
- Implementation of IOES had augmented the functional efficiency;
- Adequate controls were in place to ensure confidentiality, integrity and availability of data and
- Proper measures had been taken to ensure continuity of operations.

2.4.4 Audit criteria

The criteria used for Audit comments were sourced from

- Acts/ Rules governing constitution and functioning of WBCSSC and
- Notifications/ Orders/ Guidelines issued by WBCSSC and Government of West Bengal regarding recruitment process of teaching and non-teaching staff in the Government aided schools.

2.4.5 Audit coverage, scope and methodology

The present IT Audit of the IOES by the Commission was conducted between January and July 2017 through review of records and analysis of data of the Commission and two regional offices out of five selected through random sampling. The Audit covered records/ data pertaining to nine examinations (all completed examinations using IT system excepting the 12th RLST for Assistant Teachers and Headmaster/ Headmistress). The examination process has been explained in **Appendix 2.4.1**.

The data backup was handed over to Audit in different formats after authentication. Data initially supplied (in .dmp format) by WBCSSC pertaining to the 12th RLST lacked completeness as it did not contain academic and examination details. The data backup of 12th RLST as provided to Audit also did not contain (i) transaction tables, (ii) tables relating to marks of examinations and (iii) final panel list. Later, a table containing the details of the empanelled candidates was supplied in comma separated value (.csv) format. The table did not have identical structures among rows. So the later table could not be linked with the data back-up. As a result, analysis of results pertaining to the 12th RLST could not be done. Thus, lack of completeness of data backup for 12th RLST imposed a limitation in the scope of audit and necessary data analysis could not be carried out to frame audit observations.

The available data was restored in appropriate platform and analysed using Computer Assisted Audit Techniques (CAATs) viz., Interactive Data Extraction and Analysis (IDEA) and SQL Developer.

During exit conference (September 2017) the findings of audit were discussed with the Chairman of WBCSSC. While accepting the findings, WBCSSC has assured to look into the matter and comply with the recommendations.

Audit findings

2.4.6 General Controls

2.4.6.1 Absence of User Requirement Specification, System Development Life Cycle and Data Dictionary

A User Requirement Specification (URS) is the key document in the whole of the system development life cycle that is required for both business and regulatory reasons. URS is created before planning the development of an application.

The System Development Life Cycle (SDLC) is a framework, defining tasks performed at each step in the software development process. SDLC is a structure followed by a development team within the software organization. It consists of a detailed plan describing how to develop, maintain and replace specific software.

Though WBCSSC had chalked out system development requirements, it had not prepared any URS and data dictionary.

In absence of such vital documentations, WBCSSC failed to map its business rules in the system to deliver the intended output.

It was also observed that hardware was purchased before development of the software. This resulted in underutilisation or non-utilisation of the hardware in the system due to compatibility issues.

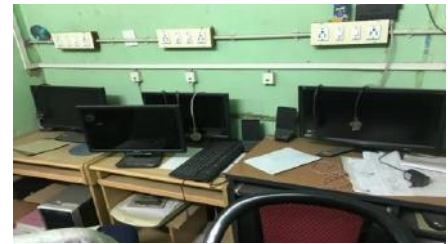
2.4.6.2 Absence of a proper Business Continuity Plan

Business Continuity Plan (BCP) represents process of creating strategy for prevention and recovery to deal with potential risks and threats to the computer system. It ensures that business processes can continue during a time of emergency or disaster.

It was observed in audit that WBCSSC had no proper Business Continuity Plan for the system.

2.4.6.3 Failure to establish the Virtual Private Network connectivity posed a serious risk to data confidentiality

As part of the recruitment process, data received at regional offices were to be sent to WBCSSC for further processing. This process of transferring data from all five regional offices to WBCSSC was done manually prior to 2012. This, however, was fraught with an inherent transit risk involving loss of data and its confidentiality.



Computers purchased for running VPN remained non-functional at Bankura (Western Region)

In order to avoid such risk, WBCSSC conceptualised (October 2008) a Virtual Private Network (VPN¹⁴⁰) among (i) the Central and Regional offices of WBCSSC, (ii) Directorate of Secondary Education, (iii) School Education Department, (iv) Offices of the Minister-in-Charge (MIC) and (v) Principal Secretary of the School Education Department.

Accordingly, a private vendor was awarded (October 2008) the work at a contracted value of ₹ 3.16 crore.



Online UPS remaining non-functional at Northern Region, Malda

The vendor was to (a) deliver all materials (hardware and software), (b) establish, install and maintain VPN connectivity at all offices initially for a period of three years, (c) place one Resident Engineer (RE) to maintain a help desk with complaint lodging facility through software to be provided free of cost & (d) engage adequate number of service personnel at all sites of the project. Up to February 2010, the vendor had supplied the hardware and software items, but installation and commissioning of the VPN connectivity was not done. WBCSSC, however, released an amount of ₹ 3.24 crore to the vendor till March 2012.

Audit scrutiny revealed that VPN connectivity did not function at neither WBCSSC's headquarters nor in any of the regional offices. It was further observed that VPN system was not even installed at two test-checked regional offices (Western Region at Bankura and Northern Region at Malda). During field visits to those two regional offices, it was seen that hardware items like online UPS, Radio Mast, Polycom, Projector, etc., were lying idle.

The reasons for the VPN project remaining non-starter, as stated by WBCSSC were incompatibility of the backup software with the operating system (Power Linux-RHEL5) of the VPN. The failure to depute any RE by the vendor

¹⁴⁰ A virtual private network (VPN) extends a private network across a public network, and enables users to send and receive data across shared or public networks as if their computing devices were directly connected to the private network. Applications running across the VPN is therefore benefitted from the functionality, security and management of the private network.

at installation sites was another reason offered by WBCSSC. However, the vendor stated that due to non-preparation of sites at three regional WBCSSC offices (Eastern, South Eastern and Western), it could not establish the VPN connectivity. Incidentally, vendor refused to extend their warranty beyond March 2012 and entire project was shelved.

WBCSSC appointed (January 2009) PricewaterhouseCoopers (PwC), for providing technology consultancy and assistance including implementation and training services in respect of aforesaid work. Accordingly, an agreement was signed between WBCSSC and PwC in January 2009. In the agreement it was decided that PwC would develop a software with backbone connectivity support of VPN. PwC was to provide technical advice and assistance to WBCSSC's technical team. This was aimed to support the existing system and to develop the project for implementation of e-Governance based on a secured VPN connectivity. It was also decided that PwC would work with WBCSSC to finalize the "To-Be-Processes"¹⁴¹ and also advise and assist WBCSSC's team to align the existing recruitment system with the e-Governance plan of School Education Department. Scrutiny of records of WBCSSC showed that an amount of ₹ 1.71 crore was paid to PwC from March 2009 to March 2012.

However, PwC could not develop the software, since WBCSSC failed to establish the requisite VPN connectivity. WBCSSC also failed to fully computerise the examination process. It was observed in audit, that the regional offices were transmitting vital information like Optical Mark Recognition (OMR) sheets and tabular copies of answer booklets manually to the central office of WBCSSC.

In response, WBCSSC admitted the audit findings. However, WBCSSC stated that VPN was no more required for the connectivity among offices and department, as it had switched over (June 2015) to the online process. The reply was not tenable as failure of WBCSSC to anticipate the rapid technological advancements showed lack of planning. Further, VPN connectivity ensured security in comparison to public network for transmitting highly confidential data pertaining to recruitment process.

Thus failure on the part of WBCSSC in planning the future requirements for ensuring a secured connectivity over the long run resulted into unjustified expenditure of ₹ 4.95 crore (₹ 3.24 crore + ₹ 1.71 crore). This assumed significance as lack of secured connectivity could compromise the confidentiality and leaves scope for loss of data.

2.4.6.4 Retention of Physical records of the examination process

Government of India, Record Retention Schedule, 2012, in respect of physical records common to all Ministries/ Departments, *inter alia*, stipulates that all such records relating to recruitment processes should be preserved for at least ten years.

¹⁴¹ A "To-Be-Process" defines the future state of a business process in an organization. Typically, the goal is putting together the future state process so as to clarify how the business process will work, at some point in the future, once changes are made. Those changes could be technology changes or business process changes.

Starting from the 12th RLST examination (i.e., 12th RLST for AT and HM and 1st and 2nd RLST for NT), WBCSSC decided not to preserve physical data which were more than six months old after publication of the merit list. The decision was taken in modification of the order of 2006 which had stipulated such retention of physical records for three years. The reasons for such decision were neither forthcoming from records nor any response was provided by WBCSSC though called for.

In a mixed environment where a computerised system needs manual intervention, comparing of manual records with system data becomes important to check the authenticity of data. Absence of manual records had resulted into the prospects of manipulations through human interferences as explained in the succeeding paragraphs.

2.4.6.5 Issues relating to Access Control

Access control is a security technique that can be used to regulate who or what can view or use resources in a computing environment.

There are two main types of access control: physical and logical. Physical access control limits access to campuses, buildings, rooms and physical IT assets. Logical access limits connections to computer networks, system files and data.

(a) Failure to ensure transparency and fair competition

Competitive examinations are held to ensure selection of the most suitable candidate, through a transparent and fairly conducted competition. WBCSSC was to prepare panels for appointment based on (i) the marks obtained in written tests with objective type multiple choice and subjective questions, (ii) marks for academic qualification and (iii) marks obtained in Personality Test (PT). However, a comparison between the marks indicated in the final panel list of selected candidates and the corresponding marks obtained by those candidates in written examination/ academic results (available from the system data) showed instances of mismatches. It was observed that in five out of 7,247 cases, marks obtained by candidates in written examination varied by 0.5 to 5.5 from those appearing in the final panel list of selected candidates (**Appendix 2.4.2**). Out of these five cases, one candidate who had failed in obtaining qualifying marks was called for PT and was subsequently empanelled in the final list.

This indicated overriding of the system while processing the marks of written examination and marks for academic qualification. It led to compromising the basic tenet of transparency and fair competition. This also resulted in selection of ineligible candidates.

The Commission did not furnished any reply though called for.

(b) Unauthorised change in caste category of candidates

Business rules ¹⁴² relating to recruitment process states that information submitted by a candidate at the time of submission of application would be essentially considered as final. Analysis of database relating to the 11th RLST (Assistant Teachers) revealed that in seven cases, the castes of candidates were changed during preparation of final panel list to the advantage of these candidates (**Appendix 2.4.3**).

¹⁴² Gazette Notification Number WB/CPS/K-41 (Part I) 2007 of September 2007

Hence, the caste status of these seven candidates was illegally manipulated for their selection. This is a rather serious matter as it deprived eligible SC/ST/OBC candidates of reservation benefits. WBCSSC, in its reply (November 2017) stated that errors detected subsequent to data entry in the system were corrected at a later stage in the system itself. As it was observed in audit that the final panel list included the names of ineligible candidates, the contention of the reply that the system was corrected subsequently does not hold good.

Thus, the business rules of the Commission and fundamental rules for filling-up reserved vacancies in the system was violated.

(c) Difference between marks to be awarded as per formula and marks calculated by the system

For selection of Assistant Teachers, WBCSSC formulated (September 2007) certain weightage (in the form of academic score) to be awarded to each candidate against his/ her past academic performance as per **Table 2.4.1:**

Table 2.4.1: Prescribed academic score based on past academic performance

Sl. No.	Name of the Examination passed	Academic score to be awarded		
		1st Division/ Class	2nd Division/ Class	Other Division/ Class
1	10th/ Madhyamik	5	4	3
2	12th/ Higher Secondary (HS)	5	4	3
3	Old HS (in lieu of School Final/ Madhyamik)	10	8	6
4	a Bachelor's degree in Honours	6	5	4
	b Bachelor's degree in Pass-Course	4 marks (fixed)		
	c Bachelor's Degree with Special Honours	5 marks (fixed)		
5	Post Graduate Degree	6	5	4
6	Degree or Diploma (B.T./ B. Ed, etc.)	3	2	1

Source: The Kolkata Gazette (Extraordinary, No. WB/CPS/K-41 (Part I) 2007 dated 26 September 2007, Schedule II, Part I)

Academic marks declared by a candidate at the time of filling-up the application form would be verified by respective regional offices. The score was to be calculated by the system based on the above mentioned formula. It was also stipulated that no change in the academic score would be allowed at any subsequent stage. Thus, the system should necessarily restrict any subsequent change in the academic score of a candidate.

Scrutiny of records, however, revealed the following:

- Data analysis pertaining to 10th RLST (Assistant Teachers) revealed that in a large number of cases, the academic scores calculated by IOES did not match with those calculated by Audit using CAAT. A synopsis of such cases is presented in **Table 2.4.2:**

Table 2.4.2: Number of cases with inaccurate score calculation for academic/ professional qualification

Regions	1 (Eastern)	2 (Northern)	3 (Southern)	4 (Western)	5 (South-Eastern)
Total number of candidates	61722	102059	60536	120420	61410
Number of candidates whose academic score did not match with that calculated by Audit. Of which –	6493	11021	8034	12553	8546
Number increased	3655	6561	4712	12553	5489
Number decreased	2838	4460	3322	0	3057
Number of empanelled candidates whose academic score did not match with that calculated by Audit.	429	479	483	641	451

Source: Analysis of data supplied by WBCSSC

It may be noted that a computer programme could not be selectively inconsistent in arithmetical computation, unless external interferences override the program algorithm and modify system calculated results. Evidently, in the above cases, the system data was manipulated. Such manipulations allowed ineligible candidates (in terms of marks declared by themselves while filling-up the forms) to be included in the final panel.

- In 11th RLST (Asst. Teachers), 43 candidates were called for PT by assigning academic weightage, though their academic marks were not recorded in the system. Out of these candidates, 28 candidates were empanelled in final merit list. Moreover, academic scores of 2264 candidates were increased by 1 to 24 in the system to allow them to be called for PT. Out of those 2264 candidates, 1596 were finally empanelled. Such manipulations allowed ineligible candidates to be included in the final panel list.

The Commission in its reply (November 2017), stated that wrong data was entered in the system initially by the data entry operators. When detected, WBCSSC had corrected only the academic scores of those erroneous entries without any change in the academic marks obtained. WBCSSC also stated that this was done in the system in view of different grading system of various Boards/ Universities/ Academic Institutions.

However, the reply was not acceptable in view of the following

- In all the above-mentioned cases, the candidates belonged to the Board/ Universities which do not follow grading system but award marks to its students. Hence, there should not have been any necessity for manual intervention for awarding weightage on those cases.
- As the system was designed to calculate the academic score automatically, utmost care should have been taken to ensure correctness of the data entered.
- The reply was also indicative of the fact that WBCSSC failed to define its policy for different grading system and subsequently mapping that rule in the system.

- Lastly, by allowing access and modification to the back-end database (i.e., changing academic scores) without modifying the basic academic marks obtained by candidates, WBCSSC rendered the system vulnerable to unauthorised manipulations. This was further compounded by inefficient audit trail.

Thus, taking advantage of limitations of the system coupled with further dilution of the controls by the WBCSSC, a number of ineligible candidates had been called for PT through manipulation of data. This had grossly undermined the basic tenet of fair selection.

(d) Unfair selection for Personality Test

Gazette notification¹⁴³ (July 2009) *inter alia*, stipulated that after successful submission of applications and written examinations, Regional offices of WBCSSC would prepare a (i) medium wise, (ii) category wise and (iii) gender wise list of candidates who would be eligible for Personality Tests (PT). The number of such qualified candidates called for PT could not exceed one and a half times of actual vacancies (in case of Headmaster and Assistant Teacher) or two times (in case of non-teaching) published at the time of declaration of the result of written examination. It was also stipulated that if the marks at the last position of the qualified list of candidates should be same for more than one candidate, all such candidates at that position would be called for the PT.

Analysis of data pertaining to 1st RLST (Clerk) revealed that in 1,110 out of 3,07,136 cases involving 16 districts, eligible candidates were not called for PT and Type test even after obtaining marks higher than the lowest scoring candidates called for PT (**Appendix 2.4.4**). On the other hand, 24 ineligible candidates were called for PT by increasing their academic marks (**Appendix 2.4.5**). Audit came across 12 instances of such ineligible candidates being finally empanelled for recruitment.

The Commission, in its reply (November 2017) stated that according to business rules of RLST, qualified candidates who cleared cut-off marks to be called for the personality test could not exceed 1.5 times of the number of actual vacancies. As such, all candidates who had obtained minimum qualifying marks were not called for PT. List of candidates called for PT depended upon the number of actual vacancies in that particular subject, medium and category.

The reply was, however, not acceptable as in the cases referred *ibid*, the candidates, even after obtaining more than minimum qualifying marks, were not called for PT. Moreover, the data analysis was conducted keeping in mind all the aforesaid factors (subject, category, medium and gender).

It is evident from the aforesaid observation that the system might have been accessed bypassing proper level of authorisation to violate Commission's own business rules. While many eligible candidates were deprived of calls for PT, many ineligible ones were unduly allowed to appear in the PT and eventually some of them were selected for recruitment.

¹⁴³ Sub rule 7 read with Sub rule 11 of Rule 13 the Gazette Notification No. WB (Part-I)/2009/SAR-251 dated 9 July 2009.

2.4.7 Application Controls

2.4.7.1 Non-synchronisation between regional data and central database leading to empanelment of ineligible candidates

The recruitment process to the posts of Gr. 'D' staff in 1st RLST involved submission of applications at regional offices of the Commission. After scrutiny of applications, Regional Offices (ROs) were to transmit physical copies to WBCSSC where the details of the candidates' data was recorded in the system. Then region-wise checklists were generated for further checking of data by the respective ROs. Those checklists were then examined by the ROs and sent back to Central office. Based on the feedback from the ROs, admit cards of eligible candidates were generated and issued to candidates. After examination, marks obtained in written examination were computed and eligible candidates were called for PT and subsequently the final panel was prepared.

Analysis of data pertaining to 1st RLST (Group D) revealed that in six out of 1,025 cases (**Appendix 2.4.6**) though the candidatures of applicants had been rejected by the regional commission offices, those candidates not only appeared in the examination but were also listed in the final panel for recruitment. This indicated that the system at the Central office of WBCSSC was unauthorisedly accessed bypassing the business rules to extend undue favour to those candidates who were eventually selected for the post. In fact, internal control mechanism was absent to check data received from the regions before processing them onwards for generation of admit cards.

The Commission, in its reply (November 2017) stated that the cases as pointed out by Audit could not be found in the system. The reply was not tenable as the analysis of data was solely done on the basis of data tables made available to audit. Further, the entire design of data analysis with all relevant tables, their correlations forming the cornerstone of the findings in audit, were handed over to WBCSSC for necessary cross-verification at their end.

Thus, scrutiny of data at WBCSSC level was inadequate which led to inclusion of candidates rejected at regional level in the final panel. The Commission had not maintained any physical records beyond a period of six months from the date of publication of final panel list. This restricted audit from checking the hard copies of the aforesaid applications at regional level and consequently reasons for rejection could not be ascertained. Non-synchronisation of regional and central database allowed ineligible candidates to be empanelled for recruitment. The reason for rejection was not made available by WBCSSC, though called for.

2.4.7.2 Absence of Audit Trail and proper log files

Audit trail is the evidence that demonstrates how a specific transaction was initiated, processed and summarised. Similarly, log files are used to record the actions of users and hence provide the system administrators and organisation management with a form of accountability. A system log can record who logged on the system and what applications, data files or utilities they used while being logged on. Thus, these facilities would aid the management to keep track of unauthorised access and amendments made in the system.

The system used by WBCSSC had no audit trail embedded in it. The log files were not designed properly to capture vital data in addition to the details of

log-in and log-out of users in the system. It was also observed in audit that though the system captured user id, it failed to capture log-in/ out time (6,294 cases each). In absence of any audit trail and proper log files, security of the system had been compromised.

2.4.7.3 Absence of proper Validation Controls

Data validation is the process of ensuring that a program operates on clean, correct and useful data. It uses routines, often referred to as validation control, that check for correctness, meaningfulness and security of data that are input to the system. The rules may be implemented through the automated facilities of a data dictionary, or by the inclusion of explicit application program validation logic. Gazette notifications and advertisements published for 1st RLST (NT), 2nd RLST (NT) as well as 10th, 11th and 12th RLSTs (AT) by WBCSSC specified that maximum admissible age of a candidate is 37 years. This may be relaxed for SC/ ST, OBC, physically handicapped by five years, three years and eight years respectively. In service person may apply till 55 years of age. The Commission prepared, region-wise (up to 11th RLST), medium-wise, subject-wise, gender-wise and category-wise list of vacancies to be filled up through the recruitment process. Thus, the system should have been designed by making all the aforesaid fields in the system as mandatory. However, instances of incorrect or inconsistent data were found in the system as enumerated below:

- Analysis of data of these examinations revealed that the system was unable to calculate the age of the applicant at the time of submission of the application. It was evident from the fact that in as many as 2,367 cases, the ages of the candidates were not only more than the maximum permissible age, but also beyond the age of retirement at the time of applying for the post. It was further observed that in 2,278 cases, the dates of birth were shown as numeral zero.
- Analysis of records pertaining to 1st RLST (NT), 11th RLST (AT) and 12th RLST (AT) revealed that in 2,967 cases, the categories of the applicants were not available in the system. The application lacked in other validations as well. Data analysis identified the following types of inconsistencies in the data, as detailed in **Table 2.4.3**:

Table 2.4.3: Types of inconsistencies in data

Sl. No.	Types of inconsistencies in data	No. of cases found
1	Examination status shown as unsuccessful but called for PT	376 (11 th RLST (AT))
2	Medium of instruction for examination left blank	4266 (11 th RLST (AT))
3	Citizenship not mentioned	698 (10 were finally selected) (10 th , 11 th , 12 th RLST (AT) & 1 st RLST (NT))
4	Gender shown as Nil	95 (11 th , 12 th RLST (AT) & 1 st RLST (NT))
5	Marks obtained shown as zero but academic score given more than zero	12721 (11 th RLST (AT))
6	System-calculated percentage of Academic marks did not match with Actual Percentage	6305 (11 th RLST (AT))

Source: Analysis of data supplied by WBCSSC

The Commission stated (November 2017) that wrong or blank data entry was made due to wrong or non-availability of the data in the application form. This indicated that entry of data in these crucial data fields were neither made mandatory nor were the business rules embedded in the system. The reply did not address such short-comings in the system development design.

2.4.8 Limitations in the database provided to audit

The audit of IOES was conducted on the basis of data made available by WBCSSC. However, the data provided by WBCSSC had major drawbacks imposing limitations on the scope of audit.

- i) Data backup provided to audit was not supported by any documentation and table structures.
- ii) Database normalisation is a process of organizing relational database to reduce data redundancy and improve data integrity. However, data backup provided to audit contained several duplicate and blank tables thus depicting lack of normalisation of the application as shown in **Table 2.4.4.**

Table 2.4.4: Inconsistency in database

RLST	Total no. of tables in the database	Duplicate tables	Blank tables
10 th RLST (AT)	462	10	128
10 th RLST (HM)	75	1	16
11 th RLST (AT) 11 th RLST (HM) 12 th RLST (AT) 1 st RLST (NT)	378	130	135

Source: Analysis of data supplied by WBCSSC

Thus, the system was not designed properly embedding proper validation controls which resulted in either inconsistency or incompleteness of vital information.

In absence of record definitions and table structures, the functionalities, constraints and inter-relationships among tables could not be ascertained. The audit analysis had to be carried out through discussions with the Data Base Administrator at each and every stage. In addition, lack of normalisation made the system cumbersome, slowed down the system and opened up the chances of unauthorised access.

2.4.9 Conclusion

Information Technology Audit of the IOES of West Bengal School Service Commission has thrown light on instances of various control failures rendering the system susceptible to manipulation as discussed below:

- The basic tenet of transparency and fair competition was jeopardised. It was observed that on a number of instances, marks of examinations and academic scores had been manipulated. Ineligible candidates had been called for PT and even got empanelled, while candidates having higher scores were excluded. This was done by overriding the system by taking advantage of its limitations in restricting any modification in the marks obtained in examination as well as academic/ professional score. This allowed the ineligible candidates to be selected through manipulation.

- WBCSSC did not have any system development documentation, data dictionary. The recruitment activity was computerised only partially allowing manual intervention at strategic control points.
- WBCSSC failed to establish secure connectivity among its offices to exchange confidential data. No proper business continuity plan was chalked out.
- WBCSSC also failed to map business rules and fundamental rules in the system. It led to instances like (i) system-calculated percentage of academic marks not matching with formula based percentage, (ii) examination status being shown as unsuccessful but the candidate getting call for PT, (iii) mandatory fields of religion/ gender/ citizenship remaining blank, marks obtained being shown as zero but academic score being awarded, etc.
- A sound system for maintenance of historical records (physical copy and soft copy) for future reference was not in place.

Thus, there were various areas of control weaknesses and business rules violations in the IT Application used by WBCSSC, which renders the results of the system unreliable.

2.4.10 Recommendations

- *WBCSSC should accurately map the business and fundamental rule which govern the recruitment process. The workflow with appropriate time-frames, role definitions at appropriate hierarchical levels should be aligned with the intended outcomes;*
- *Secure connectivity needs to be established between headquarters and field offices to ensure confidentiality and integrity of data and enforcing of accountability;*
- *Access controls need to be defined and enforced to ensure accountability;*
- *The IT application should have an appropriate control mechanism to ensure that the system captures and maintains complete and reliable data and to reduce/ eliminate the scope of unauthorised manipulations in the system. It should be embedded with proper validation controls. This in turn would ensure that unauthorised alterations do not leave any scope for selection of ineligible candidates;*
- *The Government needs to consider getting the matter investigated thoroughly and initiate appropriate action against the persons responsible and*
- *WBCSSC should formulate a proper business continuity plan and ensure its strict compliance so that it can smoothly resume its operations in the event of any interruption.*

The matter was referred to Government in September 2017; reply had not been received as of February 2018.

Appendix 2.4.1
(Refer paragraph 2.4.5, page 68)

Examination Process

The list of examinations (with published results) conducted by WBCSSC since introduction of the IT system and number of candidates is shown below:

Name of examination	Date of examination	No of applicants	Candidate called for PT	Empanelled candidate
10 th RLST AT, 2009	13.12.2009	418239	21098	13,677
10 th RLST HM, 2009	Not available	Not available	Not available	661
11 th RLST AT, 2010	10.10.2010	437001	17954	11723
11 th RLST HM, 2010	Not available	2411	1261	705
1 st RLST NT, 2010 for Clerk	22.08.2010	307136	4577	2320
1 st RLST NT, 2010 for Group D	29.08.2010	652930	12490	4927
1 st RLST NT, 2010 for Librarian	19.12.2010	5448	Not available	657
12 th RLST AT, 2011	29.07.2012, 02.09.2012	714445	Not available	28,425
12 th RLST HM, 2012	17.02.2013	Not available	Not available	985
2 nd RLST NT (Librarian), 2012	17.02.2013	Not available	Not available	129

Prior to 12th RLST, interested candidates had to apply for the examination in prescribed format available from designated banks and submit filled up forms in the same bank. On receiving the application forms from the banks, the regional offices affixed sticker mode unique registration number to each application form and transmitted the Central part of the application form to the WBCSSC HQs. Remaining part of the application was preserved in the regional offices. At WBCSSC HQs, the data entry operators entered all data in the system and generated a consolidated report of Check list from the system, which was sent back to regional offices for further scrutiny. After receiving the scrutinised data sheet from regional offices, necessary corrections were done in the system against relevant candidates. However, 12th RLST onwards, the online process of conducting examination required the candidate to register online in WBCSSC's website, against which a system generated application identification number (ID) was generated. Subsequently, the candidate needed to fill up all academic details online and pay examination fees either online or offline through bank. After submission of information and payment of fees by the applicant, admit card was generated and issued to the applicant on the basis of eligibility.

The examination consisted two papers viz., objective type multiple choice questions and subjective questions. On obtaining minimum qualifying marks in both the papers and on verification of documents, a candidate is called for Personality Test (PT) and/or Type Test (TT), in case of Non-Teaching Staff. Based on the marks obtained by the applicants after considering the academic qualification, marks of OMR and written tests, PT and TT, final panel lists were prepared. The lists were prepared zone-wise, medium-wise, category-wise, gender-wise and subject-wise till 11th RLST. Starting from 12th RLST, WBCSSC discontinued preparing the zone-wise list.

Source: Records furnished by WBCSSC

Appendix 2.4.2*(Refer paragraph 2.4.6.5 (a), page 72)***List of candidates whose total scores were increased/ decreased in Final List of Empanelled Candidates****1st RLST NT (CLERK)**

Registration Number	Roll Number	System Score				Caste	Score shown in the final panel list				Type Test	Total	RANK
		Academic	Written	Personality Test	Total		Academic	Written	PT	Total			
40105131600325	401051602284	8	15.50	3.33	26.83	SC	10.00	15.50	3.33	28.83	24.20	53.03	4

*Source: Analysis of data supplied by WBCSSC***1st RLST NT (GROUP-D)**

Registration No.	Roll No.	Caste	System Score			Score shown in the final panel list			RANK
			Written	PT	Total	Written	PT	TOT	
20106140801533	201060802773	SC	14.00	3.50	17.50	14.50	3.50	18.00	4
20106150805558	201060811419	SC	11.00	2.67	13.67	14.50	2.67	17.17	17
20109150800621	201090801663	SC	14.00	2.67	16.67	12.50	2.67	15.17	5
40107041500675	401071503395	ST	5.50	4.50	10.00	11.00	4.50	15.50	8

Source: Analysis of data supplied by WBCSSC

Appendix 2.4.3

(Refer paragraph 2.4.6.5 (b), page 72)

List of candidates whose castes were manipulated during preparation of Final Panel

Sl. No.	Region	Registration	Subject Name	Category as entered in the system	Category as per the final panel list
1	Eastern	11101252700038	Political Science (H/ PG)	GEN	SC
2	Northern	21101091600188	History (H/ PG)	OBC	ST
3	Southern	31101130800007	Computer Science (H/ PG)	GEN	SC
4	Western	41101174400285	Bengali (P)	GEN	OBC
5	Western	41101284500229	Bio. Science (P)	SC	ST
6	Western	41101160600158	Chemistry (H/ PG)	GEN	SC
7	South-Eastern	51101125400002	Physical Education (P)	GEN	SC

Source: Analysis of data supplied by WBCSSC

Appendix 2.4.4

(Refer paragraph 2.4.6.5 (d), page 75)

List of candidates not called for PT even after scoring higher marks than the lowest marking empanelled candidate

District	Reservation Category	Marks (Academic+Written) obtained by the lowest ranking candidate finally empanelled	Number of candidates not called for PT even after scoring marks higher than Col. 3
1	2	3	4
Birbhum (1)	General (Male)	30.00	1
Burdwan (2)	General (Male)	30.00	36
	SC (Male)	16.50	4
Hooghly (3)	General (Male)	31.50	3
	General (Female)	30.00	3
	SC (Female)	11.50	3
Cooch Behar (4)	General (Male)	27.00	5
	SC (Male)	23.00	4
	SC (Male)	18.50	11
	SC (Male)	19.50	2
Uttar Dinajpur (7)	General (Male)	26.00	3
	SC (Male)	17.00	2
Dakshin Dinajpur (8)	General (Male)	27.50	3
Howrah (11)	General (Male)	28.00	11
	SC (Male)	7.50	1
South 24 Parganas (13)	General (Male)	29.00	33
	General (Female)	30.00	3
	SC (Male)	7.00	562
	SC (Female)	14.50	74
Purulia (14)	General (Male)	24.50	65
Bankura (15)	General (Male)	30.00	3
	SC (Male)	9.00	43
	SC (Female)	10.00	1
	ST (Male)	24.00	1
Paschim Medinipur (16)	General (Male)	29.50	31
	General (Female)	29.00	5
Purba Medinipur (17)	General (Male)	29.00	7
	General (Female)	19.50	120
	SC (Male)		4
	SC (Male)	19.50	58
	SC (Female)	20.50	4
Total			1110

Source: Analysis of data supplied by WBCSSC

Appendix 2.4.5

(Refer paragraph 2.4.6.5 (d), page 75)

List of candidates called for PT by manipulating (increasing) academic score

Registration	System Score		Score Calculated by Audit		Score shown in the final panel		Typing score	PT score	Final Rank
	Written	Academic	Academic	Increase in academic score	Written	Academic			
40105111602983	8.00	10.00	0.00	10.00	8.00	10.00	8.90	3.33	126
40105111609350	8.00	10.00	0.00	10.00	8.00	10.00	11.40	3.50	89
30105041200196	9.00	6.00	0.00	6.00	9.00	6.00	11.20	1.67	58
40105191703506	6.00	8.00	6.00	2.00	6.00	8.00	11.70	3.83	54
10105020101046	10.00	10.00	0.00	10.00	10.00	10.00	8.28	2.50	44
40105241700330	11.00	10.00	0.00	10.00	11.00	10.00	9.80	3.66	28
20105100900366	14.00	8.00	0.00	8.00	14.00	8.00	7.47	4.17	20
20105100902947	17.00	8.00	0.00	8.00	17.00	8.00	5.65	4.00	15
50105031800533	25.50	10.00	8.00	2.00	25.50	10.00	4.50	2.66	11
40105031400624	24.50	10.00	0.00	10.00	24.50	10.00	7.80	3.66	9
30105161200083	21.00	10.00	8.00	2.00	21.00	10.00	16.37	3.67	4
40105111602906	19.00	10.00	0.00	10.00	19.00	10.00	9.70	4.16	1
10105090200580	22.00	10.00	8.00	2.00	Not included in the panel		0.00	0.00	Not Selected
40105191702893	19.00	10.00	8.00	2.00	Not included in the panel		0.00	0.00	Not Selected
20105200503769	22.00	10.00	0.00	10.00	Not included in the panel		0.00	0.00	Not Selected
50105061803127	11.50	10.00	8.00	2.00	Not included in the panel		2.66	2.66	Not Selected
40105201702634	19.00	10.00	0.00	10.00	Not included in the panel		2.66	2.66	Not Selected
50105091900891	16.00	6.00	0.00	6.00	Not included in the panel		3.16	3.16	Not Selected
10105030100162	8.00	10.00	8.00	2.00	Not included in the panel		0.00	0.00	Not Selected
30105471100240	2.50	8.00	6.00	2.00	Not included in the panel		3.50	3.50	Not Selected
30105251200119	1.00	8.00	6.00	2.00	Not included in the panel		3.83	3.83	Not Selected
20105100902380	6.50	8.00	0.00	8.00	Not included in the panel		2.67	2.67	Not Selected
20105130800277	4.00	8.00	0.00	8.00	Not included in the panel		2.00	2.00	Not Selected
40105111602972	3.00	8.00	0.00	8.00	Not included in the panel		3.66	3.66	Not Selected

Source: Analysis of data supplied by WBCSSC

Appendix 2.4.6

(Refer paragraph 2.4.7.1, page 76)

List of Candidates whose applications were rejected by Regions but selected by WBCSSC for empanelment

Sl. No.	Registration No.	Roll No.	DOB	Category Rank	Gender Rank	Final Rank
1	30106251200209	301061204209	20.02.1970	66	MF2-31	31
2	40106061500923	401061543678	08.02.1990	350	MF2-212	212
3	40106141603828	401061603796	20.09.1986	334	MF2-141	141
4	40106121603348	401061631297	05.02.1989	557	F2-23	23
5	40106121603477	401061631358	02.10.1991	183	MF2-18	18
6	40107041501809	401071504630	24.11.1984	80	MF2-11	11

Source: Analysis of data supplied by WBCSSC