

Analysis of a Multiple-Shift Computer-Based Examination Evaluation System

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ABSTRACT

Conducting the exam in different shifts means the variation in the difficulty level of the different shifts of the exam. Various recruitment bodies adopt normalization process to solve this issue. This paper contains a detailed study of the normalization process carried out by the recruitment bodies. The study also includes the effect of normalization in the candidate's score, and it depends on the difficulty level of the shift in which the candidate appears in the exam. This work can be further enhanced by comparing the different methods adopted by similar recruitment/selection organization and adopting the best, most appropriate approach to improve the system. This analysis will help in improving the evaluation system and make the system more robust and accurate. So that a more accurate merit list can be prepared and all the stakeholders can be reassured. It is very important to make the system transparent, so that the stakeholders have a clear understanding of the system and at the same time they should be aware of the advantages and disadvantages of the system.

KEYWORDS

Mean, Normalization, Prefinal Score, Question Recommendation, Shift Score, Svm, Std_Dev, Z-Score

INTRODUCTION

The conduction of competitive exams in real world is becoming challenging task and more challenging is to generate the qualified candidate list fairly with transparency. The recruitment bodies know the challenges and conduct the exam in fair way. The more difficult task is making the system transparent and convincing to the stakeholders. A lot of competitive exams are being conducted in different slots. Conducting exams in different slots may lead to variation in difficulty level of the exams. Exam conducting authorities undertake a normalization process to resolve this issue. Normalization method is applied by recruitment body to cater the issue of difficulty level variations in the question papers across different sessions.

Normalization process (Jonathan Mamou et al, 2013) has an impact on the candidate score. If the candidates have appeared in the easier session then the normalized marks will be less than the actual marks of the candidate. If the candidate has appeared in the tough session then the normalized marks will be more than the marks actually secured by the candidate. The difficulty level of the exam

may vary to some extent. The allotment of date and shift to the candidate is done by random process. Candidate's fate decides whether the shift in which he appears is easy, moderate or difficult. Although the exam conduction body keep the level of difficulty same in all shifts. The various examination (PEB, 2018). authorities in India are conducting exams in multiple shifts for SBI Clerk, SSC CGL, RRB NTPC, ESIC Exam for UDC, MTS and Stenographer etc.

An offline exam of multiple choice questions is conducted using OMR sheet. The offline exam can be conducted for more than lakhs of candidates in a single shift. The confidentiality of the question paper should be ensured. The issue of security of question paper in offline mode is of utmost concern and difficult task. Tracking is another major issue to ensure security and privacy. Ensuring the security of answer sheets is a daunting task and tracking down any tampering with answer sheets after the exam is a tough task. Evaluation of lakhs of answer sheets in offline examination is done manually and it is time consuming.

Computer and other hardware resources are required to conduct online examination of lakhs of candidates. Due to non-availability of computers and other resources in the recognized institutes, the online examination is to be conducted in multiple shifts. Since a log audit trail of each activity is maintained, the confidentiality of the question paper can be ensured. Any security breach in the confidentiality of the question paper can be easily tracked from the audit log. Similarly, the security of the answer sheet can be ensured. Evaluation of answer sheet is also faster as compared to offline exam. The score of the candidate can be displayed immediately after the exam without any delay.

MOTIVATION

The recruitment exam is conducted in multiple shifts to accommodate lakhs of applied candidates. Specific question paper is used in each shift. Candidates appearing in different shifts claim that there is variation in the difficulty level of the question paper. There is a possibility that a large number of candidates may have been selected from the particular shift and very few candidates may have got selected from the other shifts. To solve this problem, the normalization process, percentile method is adopted. These methods are used to equalize the difficulty level of all the innings. The effect of these method is that the marks of the candidates vary, it may increase or decrease depending on the difficulty level of the shift. The objective of this paper is to analyze the effect of these method on the score and merit list of the candidates. This analysis can contribute to the preparation of merit list with greater accuracy and improve the examination system to employ deserving candidates.

Related Works

Normalization process adopted in exam conducted in multiple shifts is to adjust the scores obtained in different shifts to a notionally single shift exam. The need for normalization in exam conducted to recruit candidate for a particular post/course could be spread across multiple shifts having different question paper for each shift. The normalization process is to be adopted by considering the difficulty level of each shift, the questions may be different in different shifts and difficulty level of a particular shift may be different from other shifts. The exam conducted in multiple shifts needs normalization of scores of all candidates appeared in different shifts.

The author (Gopal Krishna Patro & Kishore Kumar Sahu, 2015) shows that there are so many normalization techniques namely Min-Max normalization, Z-score normalization and Decimal scaling normalization. The new normalization technique namely, Integer Scaling Normalization works well in each and every field of research work like soft computing, image processing, and cloud computing, etc. The author proposed other types of normalization technique and also used this technique into the fast going research area namely time series financial forecasting as well wherever the data set concept will be arise.

The author (Neeraj Misra & Amit Mitra, 2012) include the process of grading in different boards, which differ from each other due to subjective nature of evaluation, different syllabi and other local

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