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DETERMINATION OF THE EFFECTIVENESS OF APTITUDE TEST TO IMPROVE SINCERITY IN THE RECRUITMENT PROCESS

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ABSTRACT

The use of an aptitude test is as a strong factor in organizing, selecting and deciding the work force to achieve success in hiring right applicant. The purpose of this study was therefore to find out how effective is the aptitude test evaluation in the employment of graduates. The study is scrutinized the analysis on aptitude test in quantitative, verbal and reasoning among the job seekers so as to ascertain whether the conventional methodology is still appropriate in comparison to a new proposed methodology names as 'Orthogonal Aptitude Assessment'. The study evaluated the scores gathered during a campus hiring of 193 engineering students. The new methodology was discussed inline with employability skills such as honesty and integrity, as these could be indicators for further assessment. Implications of these results were discussed and the recommendation made.

Keywords: Aptitude test, Engineering graduates, Applicants, Analysis, Orthogonal aptitude assessment

I. INTRODUCTION

Job is perhaps an ultimate and last dream for anyone because it represents sense of gratification, security, social symbol, freedom of expression, life style and others. Last decade has seen an interesting phenomenon of campus hiring and Indian IT and ITES industryis one of the greatest contributors to it. According [1] the IT and ITES sector was expected to add 183,000 jobs in 2011.

A general format followed to assess the Knowledge, Skills and Abilities of the potential applicant are through a test (aptitude), technical and non-technical (HR) interview. We would like to emphasis the challenges that conventional method of evaluation for the first round of screening such as aptitude test in this paper

Aptitude tests are routinely used as a reliable indicator than academic examination results. Some of these tests are abstract and some are practical. Some, such as verbal concepts test, visual

logic test or the form recognition test and others look for flexibility, perceptiveness or insight in one's reasoning. According to [2] research the aptitude is the natural ability at doing something. It measures learning under relatively uncontrolled, unrecognized or unknown conditions. According to [3] Aptitude tests are used as the measure to check the ability or skills of individual to perform the job and other reason to check the motivation to use this ability or skill in the real or actual performance of the job.

II. PROBLEM

Having mentioned that aptitude used as a reliable indicator, the conventional method of test consists of 'n' number of questions with four or five choices given. Few companies adopt a negative marking system for arriving the not correct choice. The final listing of shortlisted applicants is perhaps is a simple conventional step – the highest scored to the desired cut-off (if any). Lets examine the table 1 below mentioned below-

Table 1: Conventional Scoring

	Number of Correct Choice	Percentage
Applicant 1	10/20	50
Applicant 2	12/20	60

The table 1 shows that applicant 2 has got more correct answer than applicant 1. This is acceptable for the conventional process of hiring. This is how most of educational (examination) evaluation does happen.

Table 2: Correct and Wrong Choice Scoring

	Number of Correct Choice Ticked	Number of Wrong Choice Ticked	Percentage
Applicant 1	10	-	50
Applicant 2	12	8	60

The table 2 shows the possibility that the applicant 1 has got 10 correct, this also can means that the 'Applicant 1' was honest in answering most right answer. Whereas 'Applicant 2' took risk of attempting eight more questions wrongly, this has two possibilities in broader sense that the 'Applicant 2' could be manipulative or bound with calculation errors. The argument of attempt or tried would be an interesting point to look into, this argument may be appreciated in attempting in known rather than unknown. It could be also be highly possible a the 'Applicant 2' didn't know the theory or application to the given problem. This is another area of research to be explored. To continue to argue with this evaluation process, the 'Applicant 1' has attempted 10 right choices a degree of honesty is shown rather than attempting the wrong one hence the 'Applicant 1' need to be bracketed 100%; whereas the 'Applicant 2' shows a lesser degree of honesty and manipulative or opportunistic or risk taker hence the 'Applicant 2' need to be bracketed 60% as shown in the table 3. According to [4] opportunists may be provided with incentive to behave honestly to maintain good reputation. While [5] hypothesis on the evolution of honesty says that if an honest applicant or worker gets larger expected (or more) income than the less honest or opportunists, the share of honest persons in the society is likely to increase. Authors of this paper observe that many product companies during campus hiring at top institution's use stimulating strategy suggested by [6] i.e., increase wages to stimulate honest behavior and it is seen rational. Another possibility of 'Johari Window' analogy, the applicant might feel that the answer arrived is correct one among the choices provided during the aptitude test but the answer arrived is actual not the correct one. This means to

say, the applicant is unknown about known answer. Whenever an applicant sees that answer arrived matches with one of the choices, the euphoria of arriving answer is commonly seen. Hence it was made sure that choices provided couldn't be arrived at another option by solving the problem in different ways assuming possible error(s) an applicant might make during solving the problem in the test. The choices 'a', 'b', 'c' and 'd' were given such a way that person can't arrive at any other wrong choice.

Table 3 – Transition to Conventional Evaluation

	Number of Correct Choice Ticked	Number of Wrong Choice Ticked	Percentage (Conventional Method)	Percentage (Honesty)
Applicant 1	10	-	50	100
Applicant 2	12	8	60	60

The argument posed also has a strong lacuna; 'What if the Applicant 1 has attempted only one question?' Does the 'Applicant 1' still carry the honesty component? The argument to this one is 'definitely yes' the honesty component is still true. Now the challenge is to screen the applicant from the level 1 to level 2 (next round of screening).

III. NEW METHODOLOGY

To normalize this issue, few companies evaluation system consists of a factor of penalty to the wrong attempt of '0.25' or '0.5' mostly and '1.0' rarely. Does it stop 'Applicant 2' taking risk or being less honest on the knowledge needed to attempt the unknown question? Perhaps the answer is 'Yes' to few and 'No' to others. The process is actually trying to createa fear factor or making an applicant less risk taker; but this doesn't guarantee from taking risk. Looking into various such issues we developed a system named as 'Orthogonal Aptitude Assessment'. It is named as 'Orthogonal Aptitude Assessment' because among many vertical assessment (rounds of hiring) for various horizontal parameters to be assessed during hiring. The system took into consideration of unattempt (Blank), attempt (right) and attempt (wrong) with a penalty factor.

Table 4 – Orthogonal Aptitude Assessment System

	Number of attempt(Right)	Number of attempt (Wrong)	Number of unattempt (Blank)	Percentage
Applicant 1	10	-	10	50
Applicant 2	12	8	-	60

The decision to arrive to the penalty factor was the criteria to provide the honesty more weightage than the dishonesty or manipulative or risk components. To arrive on value to normalize the scores 120 possible cases were looked in and final a weightage of attempt (correct) to be multiplied by +3; attempt (blank) to be multiplied by -1; and attempt (wrong) to be multiplied by -3. An assessment test was conducted as a part of hiring process for a software company 'Kishkinda Software Labs, Bengaluru' at a campus hiring to 193 students.

A sample report of scoring of various applicants' is shown in the table 5. To enhance the normalization the likely component of less honesty or opportunists or risk or manipulation; we took the average of column 1 that is attempt (correct) and average of the final column that is overall (correct, wrong and blank). This further normalization helped us to decide a positive and negative minimum cut-off score to screen the applicants from the round one.

It is likely that a question would that needed to be addressed here is, why is that equal and opposite sign for wrong answer, Does is it mean that an applicant (Candidate) is equally penalized for a wrong answer in comparison with the right answer?

Definitely yes! Off course it is hard from an applicant perspective, meanwhile the system has to have a stringent process in evaluation process to minimize the maximum errors. Many a times applicant's take a chances of attempting the question, where it is likely to have a chances of getting it right or has an equal chances of getting the right or wrong answer to the given problem in a test. Where the probability equal for both right or wrong (ie., 0.5(right)+0.5(wrong)=1) is 50-50 chances. Just like tossing the coin, which has only 2 outcomes. Hence a penalty of -3 for would be valid when they get a bonus of +3 for right answers to the problem given in a test.

Mean while, one need to value the applicant's honesty for a simple reason is that every company's chief or hiring manager preference would be HONESTY component in the recruitment process. It is generally emphasized on this right from the start of our recruitment drive. The methodology forces an individual to be honest rather than attempting which is unsure. Even if any applicant would like to take an advantage if the honesty has a positive weight, so a weightage as -1 is assigned. Choosing blank doesn't only mean that the applicant is honest but also indicates the individual doesn't know the answer. Obviously each applicant would think of losing minimum marks, which means to say that weight for blank (-1) lesser than that of wrong (-3). This is with analogy to the theory developed by [4], he observes that less honesty behavior at work place is to decrease the income by offering less efficient task which is less sensitivity to cheating. This can also be seen one of the hiring strategy.

Scores are derived from the formula: -

$$(C *3) + (B *-1) + (W*-3) \qquad (a)$$

C = Number of correct answer
B = Number of Blanks
W = Number of wrong answer

Derived scores are sorted for the further correction and for the refinement of hiring process.

Table 5- Sample candidate scores (Blue 94-96 Candidate and Grey 81, 83-85 Candidate)

Sl no	Candidate	Correct	Blank	Wrong	Scores using formula
81	Candidate 81	3	7	7	-19
82	Candidate 82	4	4	9	-19
83	Candidate 83	3	7	7	-19
84	Candidate 84	3	7	7	-19
85	Candidate 85	3	7	7	-19
86	Candidate 86	4	3	10	-21
87	Candidate 87	4	3	10	-21
88	Candidate 88	1	12	4	-21
89	Candidate 89	4	3	10	-21
90	Candidate 90	5	0	12	-21
91	Candidate 91	5	0	12	-21
92	Candidate 92	5	0	12	-21
93	Candidate 93	4	3	10	-21
94	Candidate 94	4	2	11	-23
95	Candidate 95	3	5	9	-23
96	Candidate 96	4	2	11	-23

IV. ANALYSIS

Sorting is done on the basis of the formula (a) as explained above and the overall average is taken for the filtration or screening process of hiring. Average is found to be -20.565 rounded off to -21 for the convenience. This indicates that from 94th candidate, the remaining candidates are eliminated and first 93 candidates are selected (Table: 4, Color indication: Blue).Hence the cut off arrived through the formula is -21, where students must have equal or greater to the cut off value.

Table 6 –Statistics of scores of aptitude test

N	Valid	186
	Missing	0
Mean		-20.56
Skewness		.408
Std. Error of Skewness		.178
Kurtosis		-.068
Std. Error of Kurtosis		.355
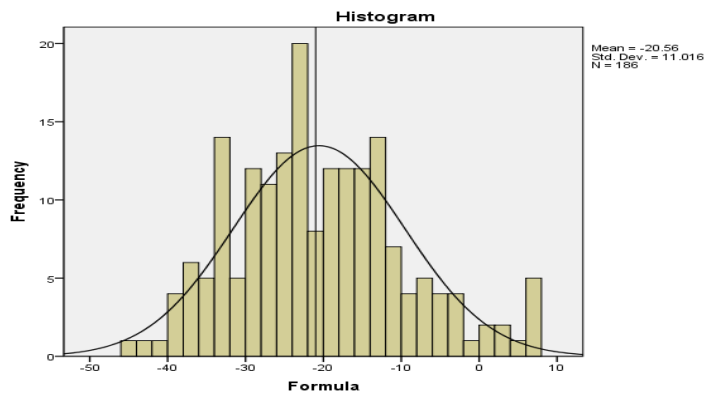
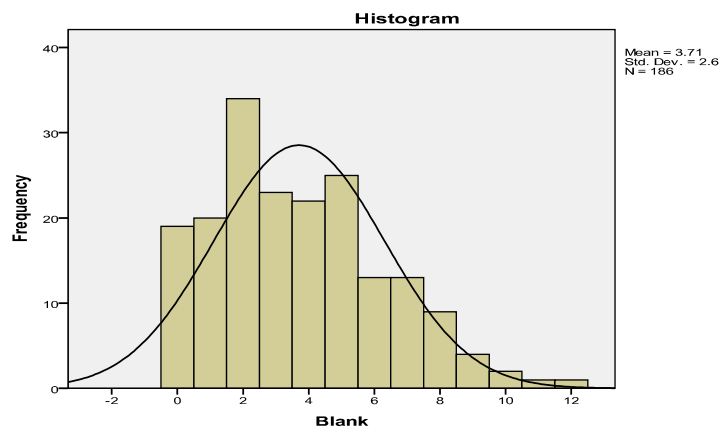**Figure 1** – Normilzation of scores by using forumla (a)

Figure 2 – Frequencies for Blank Scores

If we observe the above Fig. 1 and Fig. 2it is found that, the frequencies are high with 4 to 7 blanks to be very crucial. These would always increase the error in the selected region using the

formula. Candidates would take an advantage in leaving answers blank and still be in a safer zone and companies doesn't mind to loose good applicant but never prefer to hire bad applicant for the role.

In spite of the scores arrived is convincing, we could find some ambiguity or different combinations which would lead to inaccuracy. Consider Table 5 (Color indicator: Grey) few combinations are highlighted, where the correct answers is very less and still be considered to be selected. The reason for this is because of the weights given to blank is comparatively high with wrong answer. Thus the result inflates and over shadowed the candidate who has got more correct answer but still being rejected. Hence, the error would definitely appear whileusing this formula for evaluation. This can be overcome by another simple way – raise the bar of cut off for the number of correct answer. This can be done again by averaging out the correct component. The average correct score of the sample is 4. This means to say the candidate must have score more than or equal to the average correct score (4). This ensures that no applicant can qualify for the next unless a minimum correct answer.

Thus, candidate has to satisfy two conditions wherein needs to get have more than or equal to the cut off which is arrived using averaging of the formula and correct component.

Table 7 – Overview of Statistics

Number of students taken test	193
Number of students gets selected with formula score cutoff	94
Total number of candidates shortlisted after satisfying cut off of both	81
Percentage of error found using only the cutoff score arrived using formula	6.45%

V. CONCLUSION

In spite of the error found using formula, this would not call it a major error component in the study. This can be looked in a positive sense were the process has much validity in the refinement in reducing or eliminating 13 candidates (6.45%), which has a parallel reflections in terms of time, resources, money and others.

Company during campus hiring normally has cut off scores on the basis of difficulty of the questions, duration of the test, expectation for the role and others. We prefer averaging mechanism to ensure the competitiveness among the bunch of students who takes the test. It can be believed that aptitude is one of tool to find the threshold analytical competence of an individual.

VI. ACKNOWLEDGEMENT

VII. REFERENCES

[1] Ma Foi Randstad, "Employment Trends Survey", Wave 1 – 2011

[2] Bandele S. O. (2004),"Educational Research in Perspective Niyi Commerical and Printing Venture", Ibadan

[3] Akinsorotan A. O. (2002),"Analysis of motivational factors on job performance of Vollage extension Agens in Oyo State Agricultural Project", Journals of Advance Studies in Educational Management (JOASEM), 1(1).

[4] Tirole, J. A. (1993),"Theory of collective Reputations with Applications to the Persistence of Corruptions and to Firm Quality", Paris: Institut d Economie Industrielle, Toulouse, MIT and Ceras.

[5] Somanathan E. and P. Rubin (2004),"The evolution of honesty", Journal of Economic Behavior and Organisation, 2004, vol 54, issue 1, pp 1-17.

[6] Victor P and Alexander T (2005), "Hiring strategies and the evolution of honesty", New Economic School, Moscow, Working Paper Service No. 2006/058.

[7] Aiswarya M, "A Study on Effectiveness of Recruitment Process in Hcl Technologies-Bpo Chennai", International Journal of Management (IJM), Volume 4, Issue 3, 2013, pp. 14 - 18, ISSN Print: 0976-6502, ISSN Online: 0976-6510.

[8] Vijaya Mani, "Recruitment Trends in the Indian HRO Sector", International Journal of Management (IJM), Volume 3, Issue 2, 2012, pp. 98 - 107, ISSN Print: 0976-6502, ISSN Online: 0976-6510.

[9] J. Neelakanta Gugesh and Dr. S. SheelaRani, "Effectiveness of Recruitment Process in Multicultural Organization", International Journal of Management (IJM), Volume 3, Issue 1, 2012, pp. 70 - 76, ISSN Print: 0976-6502, ISSN Online: 0976-6510.