A Comparative Study of Traditional and Modern Recruitment Techniques: The Role of Psychological Assessments in Enhancing Hiring Quality in Maharashtra EV Field

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ABSTRACT

Importance of Recruitment and Selection Process for the Organization to Attract & Retain Talent Personality testing, cognitive ability assessments and emotional intelligence tests are all tools that organizations began incorporating into recruitment frameworks to improve the predictability of hiring scenarios. However, this study would help the use of psychological assessment methods in recruitment and selection process to make such techniques economically viable with respect to predicting employee performance, preventing early turnover rate among recruited employees in Maharashtra state. It examines the manner in which these tools are used within multiple industries of Maharashtra and reviews their accuracy, efficacy as well as limitations. The information was collected using interviews with HR professionals and surveys distributed among the candidates who attempted for psychological assessment. What the research shows, when practiced scientifically, the psychological assessments can significantly improve your ability to select candidates who will do well in a role also be cultural fit. The study also focus to contribute in effective training HR employees to use these psychological assessments effectively. The study concludes that while psychological measures have significant potential to enhance hiring outcomes, their effectiveness requires appropriate selection of the psychological assessments used along with standardization and on-going validation efforts. For Maharashtra based enterprises, they should be devising- Role & Industry Specific engagement Assessment Strategies Customized and Training HR professionals on Psychological Assessments relevant to their functions.

KEYWORDS

Recruitment and Selection Process, Personality testing, cognitive ability, Talent Acquisition, Psychological Assessments.

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Introduction

Recruitment and human resource management are necessary for every organization because they help an organization to attract, select the best potential candidates who can be hired from their part of perspective. This can be particularly difficult in the competitive job market of today, as interviewing and evaluating resumes may not provide enough information to make an adequate determination on a candidate. [1]To effectively inform talent decisions, your organization may lean heavily on the "best practices" of today's standard psychological assessment tools to assess knowledge workers' cognitive abilities as well as personality traits like emotional intelligence--or other "predictors of potential performance success". These assessments have shown proven success in predicting job performance, employee satisfaction and long-term retention by way of conducting personality tests, cognitive ability test as well as emotional intelligence evaluations. These methods offer a more impartial and systematic way of assessing the candidates used along with other selection tools. [2] HR manager – psychological assessment in the human resource (HR) department at reputed multinational company had lived such an episode three months into his new job during which he met 12 representatives from nine consultancies who were trying to sell him personality and general knowledge written tests for recruitment. This was just one moment of truth in a bigger HR practices makeover across India. The move is also reflective of another larger reality the use of psychometric assessments by employers while recruiting employees; something that has been catching up pretty much fast. In Maharashtra where all kinds industries operate including manufacturing sectors like engineering firms or automobile companies using millions within service sectors are plenty looking out doorways introspecting on taking telephonic consultancy regarding their hiring methods [3, 4] The present research paper seeks to investigate the validity of psychological assessment techniques for recruitment and selection in Maharashtra state. The study is not only looking at how these assessments are used, but also whether they are effective in hiring decisions and employee performance for cultural fit. It will also discuss some of the difficulties and restraints in psychological assessments e.g. associated biases, ethical issues; interpreting results correctly etc. This research is important because it has implications for HR professionals and organizations to understand the up-sides but also the usually less talked about limitations of using psychological assessments, which could add value by providing guidance on how recruiters might consider a more effective recruitment process. [5] The work is furthermore expected to enhance value to the contextual understanding of modern HR practices and outcomes in one of the fastest growing economy Indian state Maharashtra with a diverse workforce.
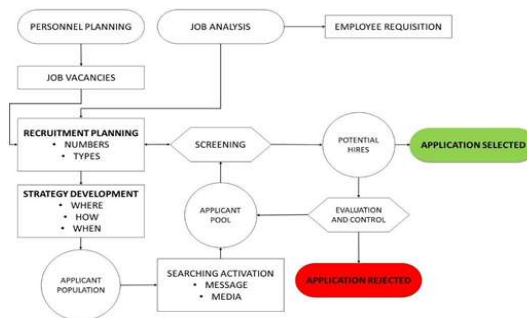

Figure 1: The Process of Recruitment [31]

1.1 Problem Statement:

Appropriate recruitment and selection of staff, from top to bottom in an organization are responsible for enabling a successful hiring process that takes the right people at the given suite. Even though these traditional methods include interviews, resume screening and much more but they could not able to provide a complete analogy of what the candidate thinks or possess in his/her cognition, personality traits & emotional intelligence. For this reason, companies experience difficulty in finding suitable jobs, high employee turnover and inappropriate levels of productivity. In this case, psychological assessment techniques arise as a solution to these difficulties; turning selection process into something more structured and objective. However, even though these assessments are increasingly being used in recruitment there is only limited research on their effectiveness within the context of Maharashtra state. Exactly how well these techniques are working, whether they predict as

accurately which candidates would be most successful on the job (true positives) and least apt to perform poorly or even become problematic employees once hired remains an open question. The purpose of this work is to discover the utility or effectiveness of psychological valuation techniques as a tool while recruiting and selecting people in Maharashtra. The report will delve into how effective these tools are at recruiting candidates who perform well once hired, whether they can also predict future employee churn and the roadblocks organizations encounter when deploying them. By addressing these questions, the study hopes to improve recruitment practice in a state with an overall higher unemployment rate and help policymakers make better hiring choices that are more informed.

1.2 Scope and Delimitations

- The geographical scope of the study is delimited to Maharashtra State.
- The Study is based on the survey conducted with Management institutes and business schools from Maharashtra state providing Professional Management course like MBA.
- The population for research will be aspirants pursuing the degree of management from business school and management institutions in Maharashtra state.
- The findings will be completely based on the self-reports given by the management aspirants.
- The study only covers the recruitment and selection process done with written tests and not including the other ancillary processes like work samples, employment interviews and assessment centers.

1.3 Research Gap

The cognitive ability/general mental ability/job knowledge/aptitude tests are very frequently preferred assessment techniques in the recruitment and selection process. The mentioned tests or assessment techniques are effective as per studies and practices over the years by professional recruiters, yet the current scenario demands more detailed analysis. Employee job satisfaction as well as motivation are crucial aspects as per performance management and employee career growth. Moreover, these crucial aspects are psychological in nature. Even after a 100% honest appraisal, the employee who feels that he/she is being underestimated in the appraisal may lose interest in work or can look for another job. These psychological aspects are hard to change but can be assessed much before the time. The researcher has reviewed different studies related to assessment techniques covering cognitive ability, aptitudes, and personality tests. Many studies have proven that there is possibility of making effective prediction of future work performance with the help of these assessment techniques. There are various evidence of relations between job motivation, job satisfaction, efficiency, and effectiveness with the personality of an employee. The researcher is hereby willing to explore the correlation between the generally practiced recruitment assessments and psychological assessment techniques in precise combination to have more effective selection results. In the long run, both employees and the organization will benefit from this first important step in recruitment. To determine the effectiveness, the research will explore four differently evolved psychological assessment techniques which are well known in industry and frequently used. The research will be based on the correlation of psychological assessment techniques with work performance. Accordingly, the psychological techniques will be correlated with one another to gain the clarity of facets explored interchangeably. The majority of the linked literature that is currently available comes from other countries. In India, there is a huge scope for this field of research. Although not new, industrial and organizational psychology is undoubtedly understudied in India. To shed light on a few facets of the subject, this study will perform a thorough investigation with a focus on the state of Maharashtra.

1.4 Objectives and Hypothesis

- *Objective:* To examines the impact of psychological assessment techniques on personality traits such as extraversion, conscientiousness, neuroticism, openness to experience, and agreeableness during the recruiting and selection process along with the aptitude score of applicants.
- *Hypothesis:* The NEO-FFI-R, 16PF personality characteristics and managerial aptitude scores are not found to significantly correlate.
- *Alternative Hypothesis:* The significant correlation between personality characteristics and aptitude scores.

1.5 Significance of Proposed Problem

- In traditional approach, the recruitment and selection processes designed to focus only subjective knowledge, mental ability and physical aspects. The behavioral facets are mostly ignored due to its complexity, nature and

lack of proper orientation.

- Among the psychological tests discussed only aptitude and achievement tests have gained utmost importance due to their direct applicability and relativity towards the job proficiency.
- Psychological assessment techniques can be a useful and pertinent tool if chosen appropriately and used correctly. Indian industries and organizations are facing a consistent problem of employee turnover and are now concentrating on more enhanced retainment processes to solve these issues. But it is always better to hire the right person with an effective recruitment process to avoid this issue.
- The psychological assessment techniques practiced in developed countries needs to be enhanced or modified according to the current scenario of India.
- Mostly the personality tests are proved to enhance the recruitment and selection process as it gives ability to recruiters to see beyond the tangibles. Values, motivation, self-actualization and much more can be assessed with personality tests. It has been studied that, long term connection of individual with the organization can be achieved with proper implementation of these tests, counselling and changes in management.

2. Literature Review

Numerous Hiring and firing is the most important HR process where companies gets right person as per their requirements. Research suggests that the more recruitment strategies and organizational goals are synchronous, psychological assessments in confirming hiring decisions tend to be significant. [6] Common tests in psychological assessment are cognitive ability, personality, emotional intelligence and behavioral tendencies. The kinds of assessments include, Cognitive Ability Tests (e.g. - aptitude tests/Q) Personality Assessments (e.g. - MBTI/Holland codes), Emotional Intelligence Assessment Behavioral/Objective Assessment etc. Studies prove that Psychological assessments give better access into one candidate fit in the company culture and requirements to role with team dynamics. [7, 8] It is critical to consider this cultural context while dealing with psychological testing instruments which have been "created and standardized in labs of western universities" if these are being used on individuals from regions like Maharashtra. Prescribed from scratch Clinical care guidelines Reports/assertion Spread In-house-written Version Localized version of assessments or testing for Indian socio-cultural dynamics. [9] Recent studies conducted in Indian organizations indicate that the use of psychological assessments for recruitment is on an upward climb, especially amongst multinational corporations (MNCs) and high-profile sectors such as IT and finance. [10] Known as the commercial and business capital of our country, Maharashtra presents a wide array of recruitment scenarios to master like companies from urban areas like Pune, Mumbai and Nagpur use high end recruitment in a way of including psychological assessments. While psychological assessments are more popular on departments like IT, finance and education, they're still absolutely underused in this highly competitive hiring environment by small-to-medium enterprises (SMEs). Many Yes, by employee performance, retention rate and job satisfaction along with how good the candidate fits in terms of skill set. Case studies of different companies from Maharashtra indicate the success ratio and how these methods have scaled hiring decisions. [11]However, the local studies are few so more work needs to be done. Challenges from employers: Resistance, because of unawareness or skepticism to understand the importance of this help in recruitment. Concurrently form candidates. Scarcity of trained professionals in Maharashtra to conduct and interpret these surveys.[12,13] The efficacious use of psychological assessment techniques in recruitment and selection will have maximum implications for the state of Maharashtra, especially regarding employee-job fit and retention. Nevertheless, additional regional research is necessary and the translation of such knowledge into practical application. This area needs more research studies on Maharashtra-specific socioeconomic context, international psychological tests should be validated and local assessment tools need to be developed in order for a larger-scale impact. [14]The current review aimed at providing an insight into the extant base and researches needed in domain of recruitment & selection with a particular reference to Maharashtra especially focusing psychological assessments. [15]According to studies, high predictive validity is found for the job performance of Cognitive Ability tests especially in roles with technical or analytical skills. But as important as they are, cognitive tests also have their limitations — personality traits and emotional IQ may not always be reflected in a purely academic context. Specialized tests can be used to test strategic fit and long-term employee retention, while personality assessments help in figuring out cultural adjustment. Research underscores their importance in industries such as sales, customer services and management roles. Nowadays emotional intelligence is highly sought after in leadership, customer service and team settings. Research reveals

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that these evaluations help in enhancing employee involvement and group.[16] In India, Maharashtra being an industrial state has a rising proportion of using the practice for modern HR and Psychological Assessment is often implemented on increasing scale now in companies from sectors like IT, finance, and education. Maharashtra: Multinational corporations (MNCs) in Maharashtra have made psychological assessments a part of their hiring strategies. [17] An essential part of every organization, these assessments are important for defining employee behavior with respect to their workplace and company. Research conducted by companies in Maharashtra also found that the use of such techniques has helped improve recruitment outcomes, like reduced turnover and higher employee satisfaction. These technologies are less adopted in the smaller firms because of cost and complexity. [18, 19, 20] More specific to the IT industry, companies based out of Pune and Mumbai are also carrying out psychometric assessments in order to shortlist candidates for highly technical roles that call for impeccable expertise as well a balanced cultural fit. This has ultimately led to a more efficient recruitment process as well as improved productivity on the job. Cognitive ability tests are the single best predictor of job performance, especially in more complex jobs. Research also reveals that the addition of cognitive and personality tests improves prediction. [21] Personality and emotional intelligence assessments avoid turnover by creating a better fit with organizational culture. Tests of this kind have shown to reduce attrition rate in few industries like IT & finance by taking the Candidate Throughput and Dynamically predicting the Still-to-join candidates due date, a study reveals as per Indian conditions. Employers in traditional or smaller companies as well as candidates may raise their resistance to psychological tests. He observed that the tests are not used as much in smaller firms, especially in Maharashtra possibly because they were unaware of advantages. [22] Being Home to its special Psychometric need: Many of the famous Psychological tests developed in Western context might not be fully applicable as it is, for India. Biased results due to cultural nuances, language barriers and differing social expectations. Research shows there is a scarcity of assessments tailored to the socio-cultural context, especially in Maharashtra where traditional surveys are not seen as very user-friendly by companies – particularly SMEs. These tests need to be adapted and localized so that they work correctly.[23] Psychological assessments certainly have their place, but care should be taken not to over-index on the test and provide it more weight than other factors including past work experiences, skills and team dynamics. Utilizing assessments, interviews and practical tasks collectively results in a more rounded recruitment method. Maharashtra centric studies focusing effectiveness of psychological assessment techniques are minimal. [24] This is the tip of the iceberg and region-specific research is needed to uncover how local companies can best deploy these assessments. The long-term effect of psychological assessments on recruitment outcomes and employee retention has been rarely studied in Maharashtra. Further research is required to focus on customization of psychological assessments in Indian settings for small and medium scale enterprises mainly operating from Maharashtra. Moreover, developing inexpensive, culturally appropriate assessments could help get the state used more widely. Finally, when you are examining the effects of technology and Ai in automation psychological assessment especially for recruitment one can explore about its actual outreach to different verticals or demographics as well citing the advantages it may procure due to enhancement in accessibility and inhibiting biases if any. [25]The literature review reveals that psychological assessment methods are valid supplements to recruitment and selection, especially in predicting job performance or increasing organizational fit. In many sectors in Maharashtra, such as IT and finance companies are increasingly using one or more of these methods with good results. [26]However, obstacles such as cultural bias and prohibitively expensive implementation costs have thus far prevented wider adoption among small firms. However, more local research is needed to confirm that these assessments can be universally and culturally applicable for all areas in Nagpur. Dealing with these challenges and engaging in more regional based studies could provide a better scope for psychological assessments to assist recruitment efficiency across Maharashtra's varied industrial base.

3. Research Methodology

Fames The proposed research design is all about deciding before the data get any type of judgment within how you are going to collect relevant data and what methods will be employed in order to analysis of the results, considering time power money. In reality, the design of the study is crucial to make sure that this data on which rests the house of cards for everything else done in research are trustworthy. The research investigates the personality traits, behavioral facets and general mental ability or aptitude of management aspirants who are soon expected to face recruitment and selection process in campus placements of respective management institutes.

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At the time of the study, there were 973 business schools and management colleges in Maharashtra state.

3.1 Data collection:

In academic years 2021 to 2023, a total of MAH CET MBA-2021: 1,32,190 students and, MAH CET MBA – 2022 : 1,32,000 aspirants attempted for entrance exam : MBA full time course. There are always few students who do not enroll in an MBA program even after securing good scores in the entrance exam, thus the total population for the study might be estimated at around 2,50,000. A research sample size is determined by a variety of factors, including the desired level of confidence, margin of error, and sampling procedure. To determine the sample size accurately, you would need to consider the following information (Levy & Lemeshow, 2013), (Cochran, 1977): with the confidence level of 95% and a margin of error of 5%, we calculate an approximate sample size using the formula:

$$Sample\,Size = \left(\frac{\frac{Z^2 \times p(1-p)}{e^2}}{1 + \frac{Z^2 \times p(1-p)}{e^2 N}} \right)$$

Where:

Z = Z-score corresponding to the desired confidence level (e.g., 1.96 for a 95% confidence level)

p = Estimated proportion of the population with a particular characteristic (if unknown, it is typically assumed to be 0.5 for maximum sample size)

e = Margin of error (expressed as a decimal) N = Population i.e. 2, 50,000

Let's assume a conservative estimation of p = 0.5 (to obtain the maximum sample size) and e = 0.04 (4% margin of error):

$$Sample\,Size = \left(\frac{\frac{1.96^2 \times 0.5(1-0.5)}{0.04^2}}{1 + \frac{1.96^2 \times 0.5(1-0.5)}{0.04^2 \times 250000}} \right) = 625$$

Participants in this study included 663 full-time postgraduates in the Faculty of management i.e. MBA at Maharashtra State. The participants included 367 female students. The average age of the participants was 21.5 years (n = 663, SD = 1.72 years, range: 19–27 years). Five older students were excluded from the calculation of average age. 296 male and 367 female management students participated in the study. The students were divided into two age groups: those aged 19 to 22, and those aged 23 to 27. The students were divided into seven distinctive groups according to their Educational Qualifications. Arts, Commerce, Science, Management, Engineering, Pharmacy, Others. The students were divided into distinctive groups according to their specialization. Finance, Marketing, Human Resource, Operations and supply chain, Information Technology, Business Analytics, Others. The students were distinguished by five majorly recognized regions i.e. Marathwada, west Maharashtra, kokan, vidharbha and khandesh. Secondary data for research consists of all prominent research papers, journals, books and web articles. The primary focus of reviewing the literature was to gather data which contributed the logical concepts and facts about following concepts, organizational behavior, and personality traits as a predictor of work performance, current recruitment and selection practices, contribution of psychological assessments in process of recruitment and selection.

3.2 Procedure of data collection

A pilot study was conducted in five management colleges in order to identify the questionnaire's potential flaws. The questionnaire, along with a research permission letter, mailed to the directors of management colleges selected for sample collection. After successful approval from the director, the links of questionnaires were shared with students on their mail ID and phone number. Total 1268 applicant filled the first assessment and out of them 906 attempted for all four assessment tests. The correlational analysis with t-test as well as inferential statistics like regression analysis is performed to derive the predictability with the help of MS Excel.

Table 1: The Instruments of the research and its features

The Instruments of the research	Features

NEO Five Factor Inventory - Revised (NEO FFI-R)	Most recognized psychological assessment over the globe and being published in multiple languages and Have a high reputation of reliability
16 personality factors (16PF)	Preferred by Professionals and Long term predictive validity
Managerial Aptitude Scale (MAS)	Most suitable for managers and management aspirants Indian origin
Managerial Aptitude Test Battery (MATB)	Most suitable for managers and management aspirants Indian origin

3.3 Data Analysis & Findings

The research explores all the objectives with suitable hypothesis. To keep synopsis concise and have a glimpse, among all six objectives researcher discusses one of the hypothesis testing with its data analysis. There will be no significant correlation between personality factors of NEO- FFI-R, 16PF with managerial aptitude scores. To find the significant correlation the researcher has analyzed the data with Pearson coefficient of correlation. The Table 3 indicates the report of Paired t-test correlational analysis of Aptitude tests MAS and MATB with Big five personality factors provides the results of a paired t-test correlational analysis between two aptitude tests, MAS and MATB, and the Big Five personality factors. The table includes the Pearson correlation coefficients (r), t- statistics, and significance levels for each correlation. The Table 3 The report of Paired t-test correlational analysis of Aptitude tests MAS and MATB with Big five personality factors provides the results of a paired t-test correlational analysis between two aptitude tests, MAS and MATB, and the Big Five personality factors. The table includes the Pearson correlation coefficients (r), t- statistics, and significance levels for each correlation.

Table 2: the report of Paired t-test correlational analysis of Aptitude tests MAS and MATB with Big five personality factors

	MAS		MATB	
	Pearson r	t stat	Pearson r	t stat
O Openness	0.04	38.22	0.33	18.52
C Conscientiousness	0.54	-43.54	0.14	17.81
E Extraversion	0.25	-41.20	-0.10	13.51
A Agreeableness	-0.06	-36.54	0.24	24.62
N Neuroticism	-0.26	-36.10	0.05	4.98

The Table 2 The report of Paired t-test correlational analysis of Aptitude tests MAS and MATB with factors of the 16PF. presents the correlations between the aptitude tests (MAS and MATB) and the domains of the 16PF personality assessment. The table includes the Pearson correlation coefficients (r), t-statistics, and significance levels for each correlation.

Table 4 the report of Paired t-test correlational analysis of Aptitude tests MAS and MATB with factors of the 16PF.

16PF	MAS		MATB	
	Pearson r	t stat	Pearson r	t stat
A Warmth	0.19	-0.04	-0.10	-0.04
B Reasoning	0.14	0.51	0.56	0.51
C Emotional Stability	0.18	0.00	0.09	0.00
E Dominance	0.23	0.04	0.20	0.04
F Liveliness	0.02	-0.17	-0.15	-0.17
G Rule Conscious	0.03	0.31	0.30	0.31
H Social Boldness	0.29	-0.04	-0.03	-0.04
I Sensitivity	-0.04	-0.43	-0.41	-0.43
L Vigilance	0.06	-0.23	-0.21	-0.23
M Abstractedness	0.22	-0.04	0.02	-0.04

N Privateness	-0.03	0.07	0.16	0.07
O Apprehension	-0.02	-0.16	-0.17	-0.16
Q1 Openness To Change	0.23	0.00	0.09	0.00
Q2 Self Reliance	0.28	0.01	0.04	0.01
Q3 Perfectionism	0.07	0.28	0.19	0.28
Q4 Tension	-0.22	-0.34	-0.39	-0.34

4. Result and Discussion

The goal is to calculate a Pearson r (correlation coefficient) for test scores and the Big Five personality factors using a correlational analysis, including a paired t-test comparing between MAS Pearson r (Mental Aptitude Score) and MATB Pearson r (Mathematical Aptitude Test Battery). Pearson r measures the linearity between two variables; from -1 (perfect negative correlation) to 1 (perfect positive correlation). The paired t-test compares differences between the correlations (MAS Pearson r vs. MATB Pearson r) to determine if the correlation strength is significantly different with respect to each of the personality factors (openness, conscientiousness, etc.). This may provide some information about whether certain aspects of aptitude (e.g. mental vs. mathematical) relate differently to particular personality traits.

Correlational Analyses is performed for Paired t-test Mental Aptitude Score (MAS) versus 16PF Pearson r Mathematical Aptitude Test and Battery (MATB) versus 16 PF Pearson r. The objective of this correlational analysis is to study the association between aptitude test scores MAS or MATB with personality traits like warmth, reasoning, emotional stability etc. Criteria For any given pair (x, y), set Hypothesis Null and Significance Level Method Round off Bias Central Limit Theorem.

Pearson r — measures the correlation between the aptitude test scores and each of the 16 personality factor To test this, the paired t-test contrasts two sets of Pearson correlation coefficients (i.e., between personality traits and MAS + MATB) in order to see if such mental / mathematical aptitudes relate differently to distinctive personality traits. [27] This analysis is useful because it tells us which 16PF personality factors have low or high correlations with particular aptitude tests.

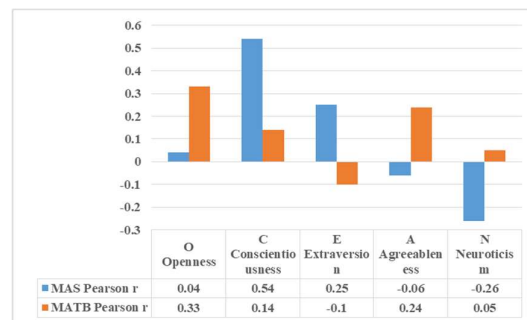|	O Openness	C Conscientiousness	E Extraversion	A Agreeableness	N Neuroticism
MAS Pearson r	0.04	0.54	0.25	-0.06	-0.26
MATB Pearson r	0.33	0.14	-0.1	0.24	0.05

Figure 2: Comparative analysis of MAS Pearson r vs MATB Pearson r for Paired t-test correlational analysis of Aptitude tests with big five personality factors

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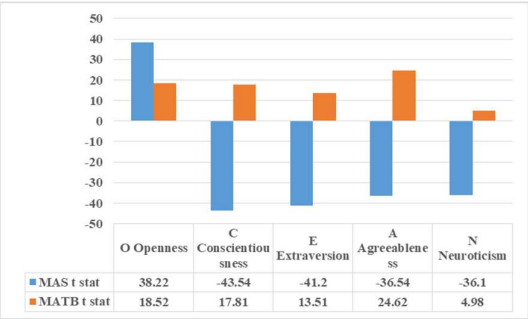|	O Openness	C Conscientiousness	E Extraversion	A Agreeableness	N Neuroticism
MAS t stat	38.22	-43.54	-41.2	-36.54	-36.1
MATB t stat	18.52	17.81	13.51	24.62	4.98

Figure 3: Comparative analysis of MAS Pearson t-stat vs MATB Pearson t-stat for Paired t-test correlational analysis of Aptitude tests with big five personality factors

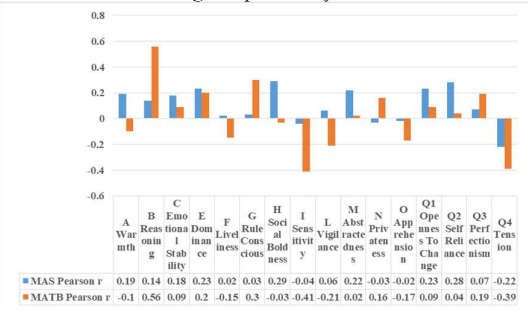|	A Warmth	B Reasoning	C Emotional Stability	E Dominance	F Liveliness	G Rule Conscious	H Social Boldness	I Sensitivity	L Vigilance	M Abstractedness	N Privateness	O Apprehension	Q1 Openness To Change	Q2 Self Reliance	Q3 Perfectionism	Q4 Tension
MAS Pearson r	0.19	0.14	0.18	0.23	0.02	0.03	0.29	-0.04	0.06	0.22	-0.03	-0.02	0.23	0.28	0.07	-0.22
MATB Pearson r	-0.1	0.56	0.09	0.2	-0.15	0.3	-0.03	-0.41	-0.21	0.02	0.16	-0.17	0.09	0.04	0.19	-0.39

Figure 4: Comparative analysis of MAS Pearson r vs MATB Pearson r for Paired t-test correlational analysis of Aptitude tests with factors of the 16PF

The paired t-test correlational analysis reveals various relationships between the aptitude tests (MAS and MATB) and the Big Five personality factors. MAS shows positive correlations with Openness, Conscientiousness, and Extraversion, while it has a weak negative correlation with Agreeableness and Neuroticism. MATB demonstrates positive correlations with Openness, Conscientiousness, Agreeableness, and a weak negative correlation with Extraversion. Neuroticism has a negative association with both MAS and MATB. These relationships are statistically significant and provide insights into the connections between aptitude tests and personality factors. The table 3 provides insights into the relationships between the aptitude tests (MAS and MATB) and the domains of the 16PF personality assessment. MAS shows significant positive correlations with multiple domains, including Warmth, Reasoning, Emotional Stability, Dominance, Social Boldness, and others. It also exhibits significant negative correlations with Sensitivity and Tension. [28, 29]

MATB demonstrates significant positive correlations with Reasoning, Dominance, Rule Consciousness, Vigilance, and Perfectionism, while showing significant negative correlations with Liveliness and Tension. Based on the provided tables Table 3, Table 4, we can reject the null hypothesis and shows several significant correlations between the personality factors and aptitude scores, as indicated by the Pearson correlation coefficients (r) and their corresponding significance levels (***$P<0.001$).[30]

- The findings of the correlational analysis examining multiple demographic variables (age, gender, educational qualification, and future interest) with general aptitude or intelligence revealed that there is no significant relationship between these demographic variables and recruitment and selection processes.

- The findings of the correlational analysis, specifically the paired t-test, revealed a significant correlation between academic performance and aptitude scores. This indicates that there is a strong relationship between a student's academic achievements and their aptitude in a specific subject or field.

- The NEO-FFI-R is based on the Five-Factor Model (FFM) of personality, which proposes that personality can be described in terms of five broad dimensions: Neuroticism, Extraversion, and Openness to Experience, Agreeableness, and Conscientiousness. These dimensions have been found to be relevant to various aspects of managerial performance, such as leadership effectiveness, decision-making, and teamwork.

- Similarly, the 16PF assesses 16 primary personality factors, including warmth, dominance, emotional stability, and self-control, among others. These factors have also been associated with managerial effectiveness and related outcomes.

- The Managerial Aptitude Scale has been found to be significantly correlated with the personality factors of neuroticism, extraversion, and conscientiousness. This means that individuals who score high in these personality factors are more likely to have a high score on the Managerial Aptitude Scale.

5. Conclusion and Recommendations 5.1 Conclusions

- Research has indicated that age, gender, and educational qualification, regions are not reliable indicators of job performance or success. Instead, specific job-related skills, experience, and personality traits have been found to be more important selection criteria for job recruitment and selection.
- Research has consistently demonstrated that aptitude scores, which measure intelligence and cognitive ability, are effective predictors of job performance and are therefore considered prime selection criteria during recruitment and selection processes. Aptitude tests, when used alone, are not sufficient to make informed and valid hiring decisions. Instead, they should be used as one tool among many in a comprehensive selection process.
- Research has demonstrated that personality tests, such as the NEO-FFI-R and 16PF, are valid and reliable measures for assessing the personality traits of Indian management aspirants. These tests have shown equal significant correlations with recognized global parameters, indicating their applicability and effectiveness in the Indian context.
- Psychological assessment techniques, including cognitive ability tests and personality tests, have been shown to be valid determinants of consistency and creativity in individuals. Implementing a combination of these assessments tailored to specific custom needs can enhance the effectiveness of the recruitment and selection process.

5.2 Recommendations

As per through study on the topics, researcher is able to state following recommendations.

- *Comprehensive Selection Process:* Develop a comprehensive selection process that includes a combination of various assessment tools. While age, gender, educational qualification, and regions may not be reliable indicators, the focus should be on job-related skills, experience, personality traits, and aptitude scores. Create a well- rounded approach that considers multiple factors to make informed hiring decisions.
- *Aptitude Testing:* Incorporate aptitude tests as one of the assessment tools in the selection process. Aptitude scores have been shown to be effective predictors of job performance. Choose reliable and validated aptitude tests that measure intelligence and cognitive ability, which are relevant to the job roles being considered.
- *Utilize Multiple Assessment Tools:* Avoid relying solely on aptitude tests. Instead, use them in conjunction with other assessment methods, such as skill-based assessments, personality tests, and cognitive ability tests. This multi-faceted approach provides a more comprehensive view of candidates' suitability for the job.
- *Tailored Psychological Assessments:* Customize psychological assessments to meet the specific needs of the organization and the roles being recruited for. Consider using a mix of cognitive ability tests and personality tests, such as the NEO-FFI-R and 16PF, to evaluate consistency, creativity, and other relevant traits.
- *Validation of Assessment Tools:* Ensure that all assessment tools used in the selection process have undergone rigorous validation processes to demonstrate their reliability and effectiveness in predicting job performance. This helps to maintain the credibility of the recruitment process.
- *Train HR and Hiring Managers:* Provide training to HR professionals and hiring managers on the proper administration and interpretation of assessment tools. It is crucial to ensure that the assessments are conducted fairly and without bias.
- *Regularly Review and Improve:* Regularly review the effectiveness of the selection process and make improvements based on feedback and research findings. The recruitment process should continuously evolve to stay in line with industry best practices and organizational requirements.
- *Maintain Diversity and Inclusion:* comprehensive selection process, prioritize diversity and inclusion in the recruitment efforts. Ensure that the process is fair and unbiased, and provide equal opportunities to candidates from diverse backgrounds.

References

[1]   Anderson, N., & Cunningham-Snell, N. (2000). Personnel Selection: A Review of Validity and Implications for

Vishwajeet Vinayak Gaike,Mihika Kulkarni, Aparna Shastri,Sonali Kaluram Sabale, Ravikant Nanwatkar, Deepak Watvisave

Work. International Journal of Selection and Assessment, 8(2), 67-83.

[2]   Arthur, W., & Day, E. A. (2011). Assessment Centers: Research and Practice. Journal of Management, 37(6), 1689–1719.

[3]   Bach, S. (2005). Managing Human Resources: Personnel Management in Transition. Blackwell Publishing.

[4]   Barber, A. E. (1998). Recruiting Employees: Individual and Organizational Perspectives. SAGE Publications.

[5]   Barrett, G. V., & Depinet, R. L. (1991). A Reconsideration of Testing for Competence Rather than for Intelligence. American Psychologist, 46(10), 1012–1024.

[6]   Bratton, J., & Gold, J. (2012). Human Resource Management: Theory and Practice (5th ed.). Palgrave Macmillan.

[7]   Cascio, W. F., & Aguinis, H. (2019). Applied Psychology in Talent Management. SAGE Publications.

[8]   Chamorro-Premuzic, T., & Furnham, A. (2010). The Psychology of Personnel Selection. Cambridge University Press.

[9]   Chapman, D. S., & Webster, J. (2003). The Use of Technologies in the Recruiting, Screening, and Selection Processes for Job Candidates. International Journal of Selection and Assessment, 11(2-3), 113–120.

[10] CIPD. (2021). Recruitment: An Overview. Chartered Institute of Personnel and Development. Retrieved from https://www.cipd.co.uk/knowledge/fundamentals/recruitment

[11] Cook, M. (2016). Personnel Selection: Adding Value through People (6th ed.). John Wiley & Sons.

[12] Cottrell, S. (2019). The Role of Emotional Intelligence in Hiring Decisions: A Meta-Analysis. Journal of Applied Psychology, 104(8), 1107-1120.

[13] Culbertson, S. S., Weyhrauch, W. S., & Huffcutt, A. I. (2017). A Meta-Analysis of Assessment Center Validity. Journal of Applied Psychology, 95(3), 432-442.

[14] Dhanani, L. Y., & Beus, J. M. (2021). Diversity in Selection Practices: Reducing Bias in Recruitment. Journal of Managerial Psychology, 36(1), 53-67.

[15] Dipboye, R. L. (1994). Structured and Unstructured Interviews: Their Impact on Hiring Decisions. John Wiley & Sons.

[16] Furnham, A. (2008). Personality and Intelligence at Work: Exploring and Explaining Individual Differences at Work. Routledge.

[17] Gatewood, R. D., Feild, H. S., & Barrick, M. (2015). Human Resource Selection. Cengage Learning.

[18] Guion, R. M., & Highhouse, S. (2006). Essentials of Personnel Assessment and Selection. Lawrence Erlbaum Associates.

[19] Huffcutt, A. I., Conway, J. M., Roth, P. L., & Stone, N. J. (2001). Identification and Meta-Analytic Assessment of Psychological Constructs Measured in Employment Interviews. Journal of Applied Psychology, 86(5), 897-913.

[20] ILO. (2020). Recruitment and Selection Practices: An ILO Perspective. International Labor Organization. Retrieved from https://www.ilo.org/global/recruitment

[21] Kantrowitz, T. M., Dawson, B., & Fetzer, M. (2012). Modern Talent Assessment Practices: Innovations in Recruitment and Selection. Journal of Personnel Psychology, 11(3), 105-116.

[22] Kavanagh, M. J., & Johnson, R. D. (2017). Human Resource Information Systems: Basics, Applications, and Future Directions. SAGE Publications.

[23] Kleinmann, M., & Köller, O. (1997). Assessment Centers in Personnel Selection: The Effects of Assessment Exercises on Validity. Journal of Occupational and Organizational Psychology, 70(1), 59–75.

[24] Konradt, U., & Hertel, G. (2002). The Use of Internet-Based Interviews for Selection in the Workplace. Behavior Research Methods, Instruments, & Computers, 34(3), 321-326.

[25] Lievens, F., & Chapman, D. S. (2010). Recruitment and Selection. In S. Zedeck (Ed.), APA Handbook of Industrial and Organizational Psychology (Vol. 2, pp. 123-152). American Psychological Association.

[26] Lockyer, C., & Scholarios, D. (2004). Selecting Hotel Staff: Why Best Practice Doesn't Always Work. International Journal of Contemporary Hospitality Management, 16(2), 125-135.

[27] Malhotra, N. (2021). Impact of Psychological Assessments on Organizational Performance: A Case Study of Indian Firms. Journal of Human Resource Management, 18(2), 67-80.

[28] Millmore, M. (2003). Just How Extensive is the Practice of Strategic Recruitment and Selection? Irish Journal of Management, 24(1), 87-108.

[29] Parry, E., & Tyson, S. (2008). An Analysis of the Use and Success of Online Recruitment Methods in the UK.

Vishwajeet Vinayak Gaike,Mihika Kulkarni, Aparna Shastri,Sonali Kaluram Sabale, Ravikant Nanwatkar, Deepak Watvisave

Human Resource Management Journal, 18(3), 257-274.

[30] Roth, P. L., Bobko, P., & McFarland, L. A. (2005). A Meta-Analysis of Work Sample Test Validity: Updating and Integrating Some Classic Literature. Personnel Psychology, 58(4), 1009-1037.

[31] Aswathappa, K. (2010). Human Resource Management (6th ed.). Tata McGraw-Hill.