

## **An analysis of the Business and Clerical Aptitude Test used by human resource consultancy firms in Kenya**

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### **Abstract**

The aim of this study was to determine the relevance of the Aptitude tests used in Kenya for recruitment and placement purposes. The study sought to determine the construct validity of the tests as well as the tests' stability and internal consistency. The tests are published abroad and it is not known whether they are valid with the local population. The population comprised 57 (both male and female) Higher National Diploma students at the Kenya Institute of Management, Eldoret Branch as well as 15 human resources consultancy firms operating in Nairobi. All the firms were used in the study. A complete enumeration of the students was done. Purposive sampling was used to select the aptitude test on the basis of frequency of use by consulting firms. The test was administered to obtain scores, which were analyzed using the spearman rank coefficient of correlation and factor analysis. The test was found to have very low levels of validity though its level of reliability was satisfactory. With alterations in the content, item structure and type, the test can be improved for continued use by the public and private sector in recruitment.

### **Introduction**

Tenopyr (1981:1123) quoting from some earliest writings of civilization have documented some form of psychological assessment of individuals based on their individual differences in intellectual, personality and physical traits that was practiced in ancient Greece and China as early as 2000-2500 years ago. Francis Galton, Emil Kraepelin and Alfred Binet are the modern contributors to the current systematized and standardized practice of psychometrics (Matarazzo, 1972).

Galton was the major originator of psychometrics. He established an anthropometric laboratory in 1883 where peoples' faculties were tested and the data generated was used to develop the tools of the trade. Galton and Karl Pearson developed the twin study technique for looking at heredity. They developed the Pearson product-moment correlation coefficient for analysing these data. However, the attempt to measure intellect by these early tests failed. Galton also explored the use of the normal curve as a model for the distribution of test scores. The techniques and models developed by Galton and Pearson still form the basis of present day psychometrics. Galton's work strongly affected the course taken by test experimenters until about 1900 when Alfred Binet emerged as a psychometrician.

Catell (1890) published the first modern scientific paper on psychological assessment entitled "Mental Tests and Measurements." Emil Kraepelin published a system of classifying individuals with psychiatric and psychological disorders, on which today's revised Diagnostic and Statistical Manual of Mental disorders (DSM- III-R and DSM-IV) are based. Binet's classical work on psychological assessment culminated in the development of the prototype of all of today's tests for the measurement of intelligence, the 1905 Binet- Simon scale. Those earlier successes were extended in the 20<sup>th</sup> century to the assessment of personality and individual temperament, differences in aptitudes and achievement, individual difference in leadership and assessment of cognitive memory and neuropsychological functions. The advancement in technology for administering and interpreting computerized versions of psychometric tests has improved both theory and practice of psychometrics. Software for



interpreting the findings from the Wechsler intelligence scale for children-III (WISC-III) has already been developed. A great deal of employee selection tests are available on line.

There has been a widespread concern over the legal and ethical implications of psychometric testing. This has paused "threats to survival" on the practice of testing for employment and educational purposes. The major concern is the privacy of the candidates' responses as well as equal employment opportunities for women and minority groups. The legal concerns culminated in the civil rights Act of 1964 in America. However such legal steps are yet to be taken in Kenya. Truth-in-testing efforts are largely expected in future<sup>1</sup>.

Some new research findings have proved some old theories of employment testing right while others have been proved wrong. One old theory that holds that employee selection methods have little impact on the performance and productivity of the workforce has been found to be true. Schmidt and Hunter (1981:1129) for example, advanced an equation for determining the impact of selection on workforce productivity. The theory of test invalidity holds that cognitive employment tests are frequently invalid for majority and minority groups alike. The last old theory is that the criteria of success in training are insufficient. According to Tenopyr (1981:1124), new research findings indicate that professionally developed cognitive ability tests are valid predictors of performance on the job and on training for all jobs in all settings.

Tests have been used in making employment decisions in Kenya for over 20 years (Waweru, 1994:98). Although occasional use has been made of personality tests and content validated job-knowledge and job-sample tests have been used with some frequency, the most commonly used employment tests have been measures of cognitive skills, that is, ability or aptitude tests. Examples include test of verbal and numerical logical reasoning skills or ability, perceptual speed, inductive and deductive reasoning, and spatial and mechanical ability.

A great deal of new knowledge has accumulated over the last 10 years on the role of cognitive abilities in job performance and in employee selection process. Psychometric tests today find a great deal of application in educational institutions in the developed countries as tools of screening and placement, for example the Graduate Management Admission Tests (GMAT) is used to determine an applicant's mental ability before entry into a higher education program. Tests of personality and aptitude tests are being used in some business, industrial and consultancy firms in the selection of management personnel as well as the selection of individuals to be educated or trained. Human resource consultancy firms in Kenya have set the pace in use of psychometric tests.

Kenyan employers in the private sector use tests of intelligence, personality, motivation and other aspects of an individual's psychological make-up collectively known as 'psychometric tests' to select the best employees and to satisfy their needs. Selection tests are psychometric instruments for the selection of job applicants or for an educational/training program. Graham and Bennett (1998:351) have pointed out that the selection of employee's best fit for jobs depends critically on sound employment tests and procedures. Most employers, small or giant, individual or corporate, in public or private sector, are partially or totally oblivious of the existence and importance of such psychometric devices.

In the public sector the most common practice has been 'posting' of newly trained graduates to the field without an attempt to empirically establish whether the candidates possess the basic aptitudes for the jobs, that is, the basic mental and physical qualities that can be developed into the specific skill. In Kenya, the interview is used either as an exclusive selection tool or in addition to other devices like the CV and application forms. The result has been a high rate of labour turnover and an escalation of the associated operational costs because firms employ qualified people who sooner or later resign because the jobs they were selected for do not meet their expectations (Graham and Bennett, 1998:359).



Many employers focus their attention on the 'can do' element- assessing the knowledge and skills needed for job performance, ignoring the employee's interest in the job and the relevance of his personality to the demands of the job. Therefore, for selection to be effective, organizations need to also assess the 'will do' (motivation) component of the candidates. The common selection practices in Kenya lack the care of good selection criteria, a methodical approach to the problem of finding the best material person for the job.

A part from the high levels of labour turnover, studies have shown that two of three new employees will disappoint in the first year, ninety-five of one hundred applicants will 'exaggerate' to get a job and one of three businesses, in the Developed world will be sued every year over an employment issue (Matarazzo, 1992:1011).

Clearly, an essential ingredient for making " people decisions" has been lacking from the selection formula. The psychometric tests have the potential of addressing more adequately the problems discussed in the foregoing. But this is not until the psychometric tests have been understood, following a detailed analysis, and this constituted the bulk of the study's concern. The major research variables in this study where the specific tests to be analysed, (aptitude, personality, intelligence, and occupational interest tests), the specific jobs for which the tests are used to recruit and place (Executives or managerial personnel) and the special abilities that the tests measure, that is personality, occupational interest, intelligence and aptitudes for managerial tasks.

### **Strengths and Weaknesses of Aptitude Tests**

Aptitude tests are job-specific tests that are designed to predict the potential an individual has to perform tasks within a job (Armstrong, 2003). They can cover such areas as clerical aptitude, numerical aptitude, and dexterity among others.

Most current tests of aptitude have shown satisfactory reliability. Their validity, so far as performance on the job is concerned, has not always been adequately demonstrated, though there is appreciable variation among tests. Validity of the sounder tests is high enough in predicting aptitude to learn to warrant their use in conjunction with other criteria. The value attached to aptitude tests will depend upon the purpose for which they are being used. If an aptitude test is being used by a human resource manager whose primary concern is the filling of a job, and who is only incidentally concerned with individuals as such, although he will be interested in validity, he will evaluate a test in terms of the extent to which it enables him to select employees who have the best chances of succeeding on the job. The manager may want to identify in a large group of persons, a smaller group who, on the average, will excel in the trait being tested.

This procedure means that among those persons selected for employment, some will fail, while among those rejected, some would have succeeded. The purpose of such a procedure is to raise the percentage of successful selections (Freeman, 1962).

### **Purpose of the study**

Specifically the study aimed at investigating the range and types of aptitude tests used in recruitment and selection procedures by human resource consultancy firms in Kenya as well as the determination of the relevance of the aptitude tests used in Kenya for recruitment and placement purposes. The study sought to determine the construct validity of the tests as well as the tests' stability and internal consistency. Most of the tests are published abroad and it is not known whether they are valid with the local population.



### **Population and Sample**

The population comprised 57 (both male and female) Higher National Diploma students at The Kenya Institute of Management, Eldoret Branch as well as 15 human resources consultancy firms operating in Nairobi. All the firms were used in the study. A complete enumeration of the students was done. Purposive sampling was used to select one aptitude test on the basis of frequency of use by consulting firms. The Business and Clerical Aptitude test was selected and administered to obtain scores which were analyzed.

### **Research design**

A Quantitative Content Analysis (QCA) design in which a researcher seeks to describe in quantitative terms the content in documents or materials under study as well as the degree to which variables are related was adopted. This is a technique for examining or analyzing information or content, in written or symbolic material (Newman, 2000). In quantitative content analysis, the researcher identifies a body of material to analyze (Psychometric tests) and then creates a system of analyzing specific aspects of it. The Business and Clerical Aptitude test used in recruitment and placement was analyzed for its validity and reliability. This exposed its inherent strengths and weaknesses on the criteria of validity and reliability. The study used the spearman rank correlation coefficient as the main statistical tool in the analysis of the test alongside factor analysis.

According to Mugenda and Mugenda (1999), the use of a correlation coefficient involves collecting data in order to determine whether and to what degree a relationship exists between two or more quantifiable variables. The degree of the relationship is expressed as a correlation coefficient ( $r$ ). The correlation coefficient enabled the researcher to: establish the extent to which the tests are consistent internally (using the split-half method) and to establish the extent to which a subject's score in one test is related to his score in the same test when he is retested or an equivalent form of a test is administered.

### **Results and discussion: Aptitude tests used in the recruitment and selection of managers.**

The Human resources consulting firms were found to use the following aptitude tests; the Management aptitude test, Minnesota clerical aptitude tests, Differential aptitude batteries, Armed services Vocational Aptitude Battery (ASVAB) that is the business and clerical component, Detroit clerical aptitude test, Purdue aptitude test, Turse aptitude test, and the General Clerical aptitude test. A majority of the firms were using the ASVAB-Business and Clerical component during the recruitment of managers.

### **The validity of the Business and Clerical Aptitude Test.**

The Business and Clerical Aptitude Test was validated for predictive validity. A situational test involving a practical problem in human resources management was used as the criterion. Each testee was given a practical task or problem in human resources management and asked to solve it. A team of three (3) independent and objective judges scored the testees after which an average score was obtained. This average score was then correlated with the scores from the Business and Clerical Aptitude Test to obtain the following coefficient of correlation. The analysis showed that the correlation yielded a coefficient of .391 which was significant at the .05 level indicating that the Business and Clerical Aptitude Test has predictive validity of only 15.3%.



### Factor analysis for the Business and Clerical Aptitude Test,

The Business and Clerical Aptitude Test has three (3) subtests namely; the reasoning ability, English and data interpretation subtests. The scores from the subtests were inter-correlated and are presented in table 1.

Table 1. Subtest inter-correlations for the Business and Clerical Aptitude Tests.

Factor/subtest	Reasoning ability	English	Data interpretation
Reasoning ability	-	.570*	.048*
English	.570*	-	.142*
Data interpretation	.048*	.142*	-

NB:- \*Correlation significant at the .05 level (2-tailed).

Table 1 shows that there is a significant and strong positive correlation (.570) between scores obtained from the reasoning ability and the English subtests. Both contain related specific factors. There is a significant correlation of .048 between the reasoning ability and data interpretation subtests while the correlation coefficient computed using scores from the English and data interpretation subtests was .142. The general factor *g* (Tenopyr, 1981:1124) that determines management aptitude is represented in the Business and Clerical Aptitude Test.

### Test retest reliability for the business and clerical aptitude test.

The armed services vocational aptitude test was administered on two different occasions and the two sets of scores obtained correlated to establish the stability of the psychometric test. A coefficient of correlation of .551 was obtained which was positive and significant at the .05 level the business and clerical aptitude was thus stable. In a large population, only 30.4% will obtain similar results from the first administration and the retest.

### Split-half reliability for the aptitude test.

The coefficient of correlation between the odd numbered and the even numbered subtest scores was .129 and on applying the Spearman-Brown prophesy formula to the coefficient of correlation on table 4, the reliability of the business and clerical aptitude test obtained was .23 Since this value is statistically insignificant, the internal consistency of the aptitude test was low with the local population.

### The way forward:

On the validity of the Business and Clerical Aptitude Test it was concluded that the test might not be very valid in predicting the testee's success in a management position. The test scores correlated positively but poorly with those obtained from the situational test (in-basket management test). After subjecting it to subtest inter-correlations, it was found out that the general factor that determines management aptitude was averagely represented in the Business and Clerical Aptitude Test. The test retest procedure for estimating the stability of the Business and Clerical Aptitude indicated that if the psychometric test is re-administered to the same candidate, one is likely to obtain nearly similar scores 30 times out of 100. This test can therefore be said to be slightly stable over the specified intervening period. The internal consistency estimate was a coefficient of .23 implying a low level of internal consistency of the



aptitude test. In conclusion, this test is slightly stable over time but the test items do not adequately contribute uniformly to the final score. It is possible that some items have more weight than others.

Employers experiencing high labor turnover due to the effects of ineffective recruitment procedures and techniques show adopt the practice of psychometric testing with evidenced validity and reliability to ensure objectivity in selection. The management of the human resources consultancy firms which were involved in the study should use the study findings to determine priorities of policy formulation with regard to the enhanced utilization of the psychometric tests in recruitment and selection practices after modifying them appropriately to suit the local conditions and population.

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