

AN ASSESSMENT OF BIAS AND FAIRNESS OF THE CULTURE ASSESSMENT INSTRUMENT

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ABSTRACT

The aim of this study was to investigate the bias and fairness of the Culture Assessment Instrument (CAI), that is, to assess whether the mean culture scores of different groups (race, gender, age and language) discriminate on a total score and an item level. The sample consisted of 4066 respondents from five different companies, originating from various industries. The scores of the 56 CAI-items were factor analysed on two levels, followed by an iterative item analyses. Significant differences between race and language mean scores were identified on a total score and item level. Where differences on an item level were detected, such item-wordings were scrutinized to ensure that they were fair, non-prejudiced and not stereotyping any group. Based on these findings, it was concluded that the CAI in its current form is not biased against any particular group and is therefore fair.

OPSOMMING

Die doel van hierdie studie was om die sydigheid en billikheid van die *Culture Assessment Instrument* (CAI) te ondersoek, dit is om te bepaal of gemiddelde kultuurtellings van verskillende groepe (ras, geslag, ouderdom en taal) diskrimineer op 'n totaalstelling en itemvlak. Die steekproef het bestaan uit 4066 respondente uit vyf verskillende organisasies, afkomstig uit verskillende bedrywe. Die tellings van die 56 CAI-items is op twee vlakke gefaktoranaliseer, gevolg deur 'n iteratiewe itemontleding. Beduidende verskille tussen gemiddelde tellings van ras- en taalgroepe is identifiseer, maar slegs 'n klein proporsie van die variansie kon aan kultuurverskille toegeskryf word. In gevalle waar verskille op itemvlak geïdentifiseer is, is sulke item-bewoordings ondersoek vir billikheid, bevooroordeelning en die nie-stereotipering van enige groep. Gebaseer op hierdie bevindinge, is daar tot die gevolgtrekking gekom dat die CAI in sy huidige vorm nie sydig teenoor enige groep is nie en gevolglik billik is.

Motivation for the study

The changes in South Africa after 1994 had an impact on South African organisations in relation to the challenging economic conditions and political imperative. This led to the focus on employees as a source of competitive advantage and the emphasis on organisational culture (which has been established to be having a high impact on the bottom-line business results), as a means to mobilise employees for productivity and profit.

It is imperative for management to know the company culture and assess employees' belief system against the organisation's values. The diversity of the South African population, with its variety of cultures, led to a need for a valid, reliable, unbiased, and fair culture assessment instrument. The requirement is that such measuring instrument should respect cultural diversity and make accurate predictions of members of, amongst others, different race, gender, age and language groups.

Organisational culture

There is no single universally accepted definition of the term "Organisational culture" and this has led to a great deal of confusion and ambiguity in the literature. Organisational culture is often defined in terms of shared meanings-patterns of beliefs, rituals, symbols, and myths that evolve over time, serving to reduce human variability and control and shape employee behaviour in organisations (Peters & Waterman, 1982; Wilkins & Ouchi, 1983; Denison, 1996).

The development of culture is a natural socio-dynamic process, which occurs regardless of the intent of executive management, although it may be influenced by management (Schein, 1985). While organisation may develop a relatively homogeneous culture (Peters & Waterman, 1982), unique and divergent sub-cultures may evolve for separate departments or sub-groups within the organisation. Other theories have demonstrated an appreciation for the function of culture as social glue.

According to Smircich (1983), culture conveyed to employees a sense of identity, facilitated the generation of commitment to something larger than the self, and enhanced social system stability, as well as guiding and shaping behaviour.

Martins' (1989) Culture Assessment Instrument represented one line of inquiry in the field of organisational culture. Martins (1989, p.45) defined organisational culture as follows: "*Organisational culture is an integrated pattern of human behaviour, which is unique to a particular organisation and which originated as a result of the organisation's survival processes and interaction with its environment. Culture directs the organisation to goal attainment. Newly appointed employees must be taught what is regarded as the correct way of behaving*".

Culture provides an underlying pattern to the behaviour of organisations, just as personality provides an underlying pattern to the behaviour of the individual. A strong culture provides employees with a clear understanding of "the way things are done". It provides stability to an organisation, the community, and South Africa as a nation (Martins & Martins, 2002).

Groeschl and Doherty (2000) pointed out that culture consists of several elements of which some are implicit and others are explicit. Schein (1985) identified three levels of culture, i.e. artefacts, values and assumptions (see Figure 1). Insight into these levels is fundamental to understanding the culture of organisations.

In order to fully understand the complexity of the organisational culture literature, it is necessary to explore the various perspectives of culture that have been adopted by the organisational behaviourists and other researchers in this field (Wilson, 2001). Martin and Meyerson (1988) identified the following three major perspectives in organisational culture research.

The integration perspective portrays a strong or desirable culture as one where there is organisation-wide consensus and consistency. Espoused values are consistent with formal

practices, which are consistent with informal beliefs, norms and attitudes. Cultural members share the same values, promoting a shared sense of loyalty and commitment. Where inconsistencies, conflict or subcultural differentiation occur, this is portrayed as being a weak or negative culture (Martin, 1995).

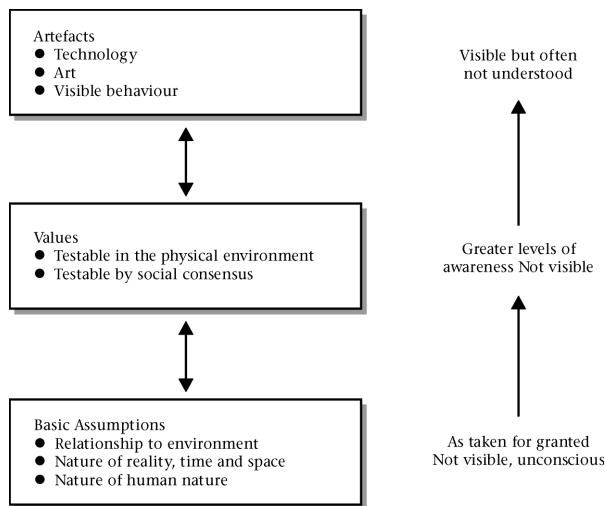


Figure 1: Schein's levels of culture
(Source: Adapted from Schein, 1985, p. 14)

The differentiation perspective emphasises that rather than consensus being organisation-wide, it only occurs within the boundaries of a subculture. At the organisational level, differentiated subcultures may co-exist in harmony, conflict or indifference to each other. Van Maanen (1991), in his study of Disneyland, found groups of employees who considered themselves as being distinct. These sub-cultures related to different jobs, different levels of organisational status gender and class. Claims of harmony from management masked a range of inconsistencies and group antagonisms. What is unique about a given organisation's culture, then, is the particular mix of subcultural differences within an organisation's boundaries.

The fragmentation perspective views ambiguity as the norm, with consensus and dissension co-existing in a constantly fluctuating pattern influenced by events and specific areas of decision making. As stated by Frost et al. (1991), consensus fails to coalesce on an organisation-wide or subcultural basis, except in transient, issue-specific ways. Rather than the clear unity of the integration perspective, or the clear conflicts of the differentiation viewpoint, fragmentation focuses on that which is unclear.

Many of the studies in organisational culture focus on only one of these perspectives, arguing whether it and it alone is evident within the organisation. As an example of this, Meyerson (1991) have made the point that much of the popular literature (Deal & Kennedy, 1982; Peters & Waterman, 1982) rested on the mistaken assumption that organisational culture consists of shared meanings and commonalities that are quite homogeneous, monolithic and organisation-wide. Little or no consideration was given to the potential existence of subcultures or dissension unless as an indication of a weak culture.

There are also major methodological differences between the three perspectives. Martin and Meyerson (1988) argued that any culture contains elements that can be understood only when all three perspectives are used. From a senior manager's/director's point of view, the integrationist perspective may be congruent with a manager's desire to see their values and policies shared and followed. Middle management may want to distance itself from senior management and therefore subcultures and a differentiation perspective may be more appropriate. Newcomers and disenchanted shop floor workers may fit in more with the fragmentation perspective.

Therefore, within a company there may be organisation-wide consensus on some issues, consensus only within certain subcultures on other issues and an ambiguous state on the remainder. Schein, in Frost et al. (1991), suggested that there may be a core set of ideological guidelines within an organisation that require a minimal consensus and consistency, otherwise organisations would not function.

Therefore consistency, consensus, harmony and integration may occur, but within the midst of inconsistencies, ambiguities, conflicts, disruption and dissolution. This complexity can cause a major headache. Following is a description of various models of organisational culture.

Measuring Organisational Culture

Although the concept of organisational culture has been prominent in organisational and management literature since the 1970s (Barley, Meyer, & Gash, 1988), scholars still disagree on the best way to measure it (see O'Reilly, Chatman, & Caldwell, 1991; Rousseau, 1990a). Some writers have suggested the use of multiple methods (e.g., Martin, 1992; Rousseau, 1990a), but these methods are often complex, expensive, and time-consuming (Ashkanasy et al., 2000a).

The literature since 1989 on the study, diagnosis and measurement of culture has not been particularly abundant. Perhaps this is because there has been so much emphasis on the characteristics of a "quality" culture that managers are no longer concerned about the kind of culture they have; but only about the kind of culture they want to have (Lewis, 1995).

Reynierse and Harker (1986) use a combination of quantitative and qualitative measures to measure culture. The qualitative methods involve interviews and group discussions, while the quantitative method, which they call organisational dynamics, is a survey questionnaire using 95 items on a five-point ordinal scale of definite agreement to definite disagreement. The method aims to provide managers with tangible feedback in managing culture, their "fundamental proposition" being "that you can't manage organisational culture unless you can measure it" (Reynierse & Harker, 1986, p. 1).

Reynolds (1986) used a questionnaire to measure culture differences between organisations to see if the measured differences relate to differences in performance.

Barnett (1988) outlined details of what he calls a "Galileo tm" or "Galileo analysis" for measuring culture accurately. Some of the methods are common to those used in qualitative approaches, but Barnett quantifies the results. It is considered that the method is too narrow, using only language, symbols and concepts as measurable elements.

Wiener (1988) measured "central value systems" and believes that by measuring the intensity and breadth of key values, one can measure culture.

Nossiter and Biberman (1990, p.13) have used a technique for studying and diagnosing culture they call "projective drawing and metaphorical analogy fantasising", where questionnaires ask participants to draw an image and name an animal representing their organisation and department. They believe that the creativity involved may motivate employees to think more about their organisations.

Tucker et al. (1990) designed a comprehensive questionnaire, developed from interviews and discussions with 50 managers of organisations. They believe results from the questionnaire, which are quantified, will help provide some preliminary information on the organisation's culture to managers attempting to deal with particular situations and problems with their cultures.

Gabriel (1991) saw stories as the basis for the myths that act as coping mechanisms for individuals in organisations. Most of these techniques are as yet too recent for much empirical testing to have been carried out on them.

A case for Quantitative Measurement

Among authors who suggested some use of quantitative measures are Amsa (1986), Barnett (1988); Bookbinder (1984); Cooke and Rousseau (1988); Desatnick (1986); Hofstede (1986); Reynierse (1986); Reynierse and Harker (1986); Reynolds (1986) and Wiener (1988). What is borne out by the literature is that questionnaires can play an important role in the quantitative analysis of organisational culture (Reichers & Schneider, 1960; Rousseau, 1990a).

Scholars such as Martin (1992) have noted that quantitative assessment of organisational culture has been criticized in the past because of a strong mono-method bias in the field. Although Martin argues for a need to include qualitative data in culture studies, the essence of her case is that there is a need for a multilevel and multimethod conceptualization. In this respect, Schein's (1985) three level typology provides a distinctive role for both quantitative and qualitative measurement.

Further, as the element of culture become more conscious and observable to participants in a study, they become more accessible to standardized assessment (Rousseau, 1990a). For example, it is generally agreed that surveys represent an efficient and standardized means of tapping the shallower levels of Schein's typology.

The deepest level of culture, on the other hand, can be investigated only through more intensive observation, focused interviews, and the involvement of organisational members in self-analysis (Ott, 1989; Rousseau, 1990a; Schein, 1990). The thrust of this argument is that there is a clear and continuing role for quantitative measures as a means of assessing the less abstract levels of organisational culture.

All quantitative measures of culture are likely to suffer from the same limitations, with the main weakness being that basic assumptions are often non-debatable and unconscious. People's written or oral answers to questions are not necessarily indicative of their basic assumptions.

The usefulness of quantitative measurement may not be restricted to the shallower levels of organisational culture only. Deal and Kennedy (1982) have argued, there may be grounds for maintaining that the three levels of culture are unified especially when a culture may have the potential to tap deeper levels of culture (Ott, 1989; Rentsch, 1990).

Ashkanasy et al. (2000a) have noted that survey methods have characteristics that render them especially useful for organisational culture research. Self-report surveys allow respondents to record their own perceptions of reality. Because behaviour and attitudes are determined not by objective reality but by actors' perceptions of reality (Rentsch, 1990), it is clearly appropriate to focus on perceptions rather than reality. Further, self-report measures offer internal credibility to organisational members, which is likely to increase the likelihood that members will accept the results of the survey.

Researchers have cited numerous other advantages of survey assessment and of quantitative techniques generally. These include allowing replication and cross-sectional comparative studies, providing an accepted frame of reference for interpreting data, helping the evaluation and initiation of culture change efforts in organisations, and providing data that can be analysed through multivariate statistical techniques (Cooke & Rousseau, 1988; Xenikou & Furnham, 1996).

In summary, what is borne out by the literature, is that questionnaires can play an important role in the quantitative analysis of organisational culture (Reichers & Schneider, 1990).

A need for assessing for bias and fairness of Culture Assessment Instrument

The purpose of the current study is to establish if the Culture Assessment Instrument of Martins (1989) has the ability to validly and reliably, measure with fairness and without bias the culture mean scores of the different race, gender, age and language groups. The assumption was made that if culture measuring instruments are biased and unfair towards any particular group, it may negatively affect the measuring outcomes.

The diversity of the South African population, with its variety of cultures, led to a need for valid, reliable, biased free and fair culture assessment instrument. The requirement is that such measuring instrument should respect cultural diversity and make accurate predictions of members of different race, gender, age and language groups. Such reliable instrument can provide valuable insight into the culture of a company represented by a heterogeneous workforce.

Obtained differences should not be attributed to subjective content of the items i.e. a response to a stereotypical statement, but on the objective assessment of 'reality' to be measured.

In the field of tests and measurements the word unfairness or inequity means anything bad, bigoted, racist or suppressive – thus, a subjective perception or opinion. Fairness is the focus on the accusation that tests or measurements are unfair, contaminated by extraneous factors, and subject to misuse and abuse.

The term bias is defined as a systematic error in the measurement process and is also referred to as differential item functioning (DIF) (Kanjee, 2002). The term is conceptually distinct and operationally different from the concept of fairness, equality, and prejudice.

Bias then is a technical term and denotes nothing more or less than the consistent distortion of a statistics (Osterlind, 1983, p.10). Bias as stated by Osterlind (1983), is also considered the presence of a systematic error in measurement. Items are judged relatively more or less difficult for a particular subgroup by comparison with the performance of another subgroup or groups drawn from the same population.

People respond to questionnaires on the basis of their response sets, in cross-cultural research, therefore, some problems arise because societal cultures often differ in their response sets on the basis of which people respond to questionnaires (Hui & Triandis, 1989; Triandis, 1994).

The transferability of the studies to other cultures was identified by Elenkov (1998) as one of the biggest obstacles in cross-cultural research. Individuals come from different cultural groups, which also affects their mindset and framework and they would therefore interpret stimuli in different ways. This variance in interpretation could have a significant influence on the results.

Berry and Triandis (1980) argued that it should be possible to compare two groups on a single dimension, where they have a common feature or equivalence. The two authors identified the following kinds of equivalence:

- *Functional equivalence*, exists when two or more behaviours related to functionally similar problems;
- *Conceptual equivalence*, lie in the common meaning of stimuli concepts or behaviours and is also a pre-condition for comparison;
- *Translation equivalence*, is of importance where the existing research instrument is translated by using a bilingual

translator, i.e. translation to a new language and then reverses the translation into the original language;

- *Semantic equivalence*, uses a bipolar adjective scale to indicate the meaning of a concept across languages; and
- *Metric equivalence*, essentially means the structuring of the measuring instrument in similar ways within one group in order to make valuable inter-group comparison.

All of the above mentioned equivalences need to be present in order for the measuring instrument to have construct validity.

The following section deals with the research design of the study

METHOD

The research participants

The sample consisted of 4066 participants from five different companies originating from various industries. Particulars of organisations that are included in the study are provided in Table 1. From Table 1 it is clear that there are significant differences in sample size (ranging from 119 to 2459) between the different organisations. Noting that sample size effects levels of significance, due consideration was given to it during the analysis phase.

TABLE 1
PARTICIPATING ORGANISATIONS

Company No.	Organisation	N
1	Bank	1056
2	Bank-Home Loans	219
3	Retail	119
4	Information Technology	213
5	Services-Parastatal	2459
Total		4066

Table 2 provides a brief overview of the biographical properties of the survey sample. From Table 2 it can be inferred that the majority of respondents are white, male, Afrikaans speaking and in the age group 24-35.

The measuring instrument

The measuring instrument (CAI) was developed by Martins (1989). The latest version of the CAI consists of 89 items, but only 56 items, that were common to all the companies in the sample, were included in the study. These 56 items are proportionally representative of the six dimensions of the questionnaire. The overall reliability (Cronbach Coefficient Alpha) of the five-point response scale version of the instrument, used in this study, is 0,945. The internal consistency of the dimensions varies between 0,655 and 0,932.

The theoretical model that underpins the Culture Assessment Instrument of Martins (1989) is provided in Figure 2. The model consists of three main elements, i.e. the organisational system, survival functions and dimensions of culture. The various subsystems together form the culture of the organisation, which influences the behaviour of employees, suppliers and customers as well as the relationship with the community.

According to Martins (1989) an organisation is a complex social system in which individual and group activities take place. In order for the organisation to adapt to the external environment its internal processes also have to change and adapt on a continuous basis.

The organisational system consists of five systems i.e., goal, technical, structural, psychosocial, and management subsystem. These five subsystems form the internal subsystem. The external subsystem consists of the environment in which the organisation operates. The way, in which all the external factors are dealt with, could have a major impact on the success and survival of the organisation.

TABLE 2
 BIOGRAPHICAL VARIABLES

Category	Count	%
Race		
White	1086	26,71
Coloured	294	7,23
Indian	125	3,07
Black	912	22,43
No response	1649	40,56
Total	4066	100
Age		
24 and younger	438	10,77
25-35	1808	44,47
36-45	1006	24,74
46 and more	638	15,69
No response	176	4,33
Total	4066	100
Gender		
Male	2034	50,02
Female	1876	46,14
No response	176	3,84
Total	4066	100
Language		
Afrikaans	1014	24,94
English	225	5,53
Other	21	0,52
No response	2806	69,01
Total	4066	100

It is therefore assumed that as a result of the interaction and reciprocal influence of the various subsystems on one another, a unique culture is created in each organisation, which makes it unique and distinguishes it from other organisations.

The research procedure

The data set was built from data gathered from the participating companies over the past few years. The information was gathered mainly with a view to improve the performance of the companies. Hence, the aim in gathering the information was the same in all the cases.

Statistical analysis

The statistical procedures applied were selected for their suitability to test the research hypothesis of the study. In the first phase of the study procedures applied include descriptive statistics, factor analyses, and iterative item analyses to establish the reliability of the construct being used.

In respect of factor analyses, a procedure developed by Schepers (1992) was followed. This procedure includes first as well as second level factor analyses. In the second phase of the data analyses, analyses of variance and a measure of association was applied to test for differences between the mentioned groups.

The statistical consultations service of the Rand Afrikaans University conducted the analyses. All calculations were done by means of SPSS-Windows program of SPSS-International.

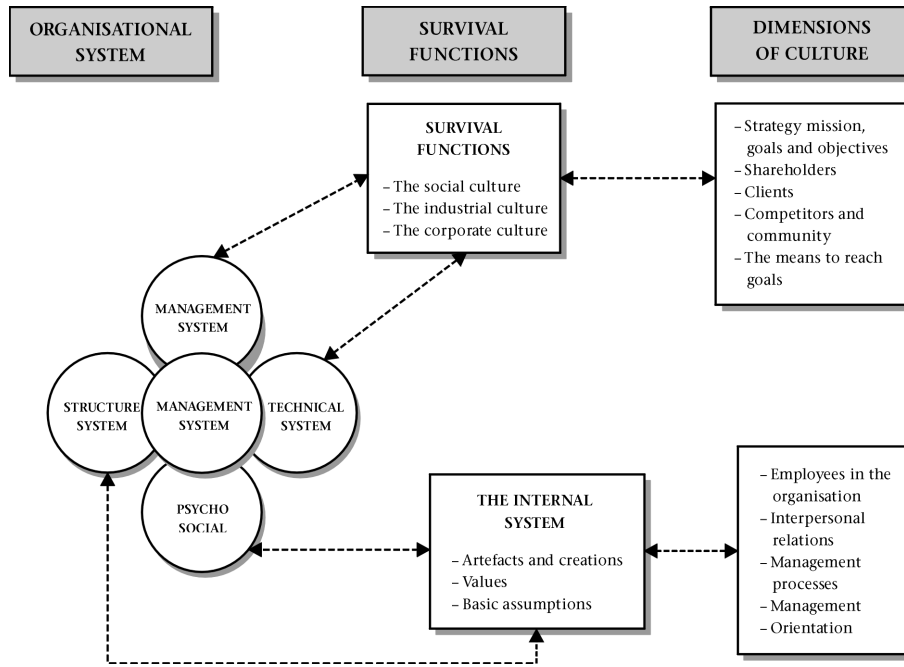


Figure 2: Martin's Model of Culture
Source (Martins, 1989, p. 92)

RESULTS

The analyses of the data proceeded in two phases.

Phase 1: Factor and reliability analyses

The item scores on the CAI were factor analysed in order to determine the underlying factor structure of the Instrument. A procedure developed by Schepers (1992) was followed in order to counter for possible effects of differential item skewness resulting in artefactors (artificial factors). Also this procedure normalises the distributions through the creation of sub-scores that are more suitable for factor analysis.

First Level Factor Analysis

In order to determine sampling adequacy and test for sphericity, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0,971) and the Bartlett's Test of Sphericity (Chi square = 73746,998, df = 1540; p = 0,000) were respectively carried out on the intercorrelation matrix of the 56 items of the instrument. The obtained results indicated that the matrix complies with the requirements for factor analysis.

The 56 items of the CAI were intercorrelated and the eigenvalues of the unreduced intercorrelation matrix were calculated. Owing to limited space, the intercorrelation matrix (56 x 56) is not reproduced here. Nine factors were postulated according to Kaiser's (1974) (eigenvalues-greater-than-one) criterion. The eigenvalues of the unreduced item intercorrelation matrix are given in Table 3.

The factor matrix was rotated to simple structure by means of Varimax rotation (see Table 4). From Table 4 it can be seen that only eight factors were extracted. No significant loadings were obtained on the ninth factor. The eight factors explain about 46% of the variance in the factor space. It can also be seen from Table 4 that factors 7 and 8 each have only two item loadings, which make them non-determined. It is pointed out that a factor should consist of at least three item loadings. These two factors were retained for the second level factor analysis.

The distribution statistics of sub-scores on the eight factors are depicted in Table 5. An inspection of Table 5 reveals that this distribution is rather symmetric and closely resembles a normal distribution, based on the close proximity of the mean, median

and mode. The distributions are thus suitable for analysis of variance, complying with a major requirement according to Hair et al. (1998).

TABLE 3
EIGENVALUES OF THE UNREDUCED ITEM INTER-CORRELATION MATRIX

Root	Eigenvalues	Cumulative Variance %	Root	Eigenvalues	Cumulative Variance %
1	14,668	26,193	29	0,642	75,607
2	2,714	31,040	30	0,623	76,720
3	1,806	34,266	31	0,616	77,821
4	1,595	37,115	32	0,598	78,889
5	1,345	39,517	33	0,594	79,950
6	1,264	41,774	34	0,590	81,003
7	1,145	43,819	35	0,580	82,039
8	1,136	45,848	36	0,568	83,054
9	1,059	47,739	37	0,561	84,055
10	0,989	49,506	38	0,556	85,049
11	0,947	51,198	39	0,545	86,022
12	0,912	52,827	40	0,543	86,991
13	0,887	54,410	41	0,533	87,942
14	0,872	55,968	42	0,517	88,865
15	0,828	57,447	43	0,511	89,778
16	0,823	58,916	44	0,503	90,677
17	0,802	60,348	45	0,501	91,571
18	0,786	61,751	46	0,485	92,437
19	0,774	63,133	47	0,477	93,289
20	0,766	64,501	48	0,470	94,129
21	0,749	65,837	49	0,452	94,936
22	0,730	67,141	50	0,439	95,719
23	0,711	68,411	51	0,436	96,498
24	0,705	69,669	52	0,412	97,235
25	0,692	70,905	53	0,410	97,967
26	0,684	72,126	54	0,402	98,685
27	0,664	73,312	55	0,382	99,367
28	0,643	74,460	56	0,354	100,000

Trace = 56

TABLE 4
ROTATED FACTOR MATRIX

Question Factor	1	2	3	4	5	6	7	8
Q57	0,769							
Q73	0,644							
Q34	0,597							
Q25	0,573							
Q55	0,573							
Q46	0,548							
Q42	0,544		0,304					
Q24	0,515							
Q23	0,481				0,320			
Q64	0,462	0,325						
Q63	0,429	0,396						
Q33	0,428							
Q67	0,399	0,345						
Q39	0,388							
Q59	0,388							
Q51	0,354							
Q43	0,349							
Q11	0,333							
Q68	0,327							
Q28	0,325							
Q66		0,515						
Q70		0,482						
Q49		0,431	0,328					
Q62	0,401	0,431						
Q45		0,430						
Q65	0,392	0,412						
Q36		0,396						
Q54		0,371					0,321	
Q60		0,366						
Q71		0,310						
Q52		0,307						
Q44		0,226						
Q31			0,533					
Q6			0,480					
Q5			0,423					

Q30								0,403
Q4								0,356
Q41								0,323
Q29								0,292
Q14								0,675
Q13				0,315				0,630
Q12								0,573
Q15								0,303
Q19								0,438
Q21								0,359
Q20								0,359
Q27								0,302
Q7								0,517
Q2								0,496
Q8								0,466
Q3								0,373
Q10								0,369
Q72								0,433
Q47								0,327
Q26								0,308
Q37								0,244

Extraction Method: Principal Axis Factoring. Rotation Method: Varimax with Kaiser Normalisation. Rotation converged in 23 iterations.

TABLE 6
MATRIX OF INTER-CORRELATIONS OF SUB-SCORES

	SS 1	SS 2	SS 3	SS 4	SS 5	SS 6	SS 7	SS 8
SS 1	1,000	0,628	0,682	0,556	0,612	0,417	0,353	0,319
SS 2	0,628	1,000	0,615	0,414	0,603	0,457	0,214	0,311
SS 3	0,682	0,615	1,000	0,433	0,555	0,517	0,246	0,255
SS 4	0,556	0,414	0,433	1,000	0,504	0,294	0,109	0,195
SS 5	0,612	0,603	0,555	0,504	1,000	0,411	0,141	0,273
SS 6	0,417	0,457	0,517	0,294	0,411	1,000	0,136	0,246
SS 7	0,353	0,214	0,246	0,109	0,141	0,136	1,000	0,145
SS 8	0,319	0,311	0,255	0,195	0,273	0,246	0,145	1,000

* All Correlations are significant at the 0,010 level (2-tailed).

N=4066

TABLE 5
DISTRIBUTION STATISTICS FOR THE 8 SUB SCORES

Sub-scores	Mean	Median	Mode	Std. Deviation	Skewness	Std. Error	Kurtosis of Skewness	Std. Error of Kurtosis
SS 1	3,172	3,238	3,52	0,765	-0,344	0,038	-0,322	0,077
SS 2	3,446	3,556	3,56	0,668	-0,317	0,038	-0,038	0,077
SS 3	3,060	3,167	3,33	0,855	-0,229	0,038	-0,516	0,077
SS 4	3,381	3,667	4,00	1,063	-0,398	0,038	-0,766	0,077
SS 5	3,369	3,333	3,33	0,770	-0,269	0,038	-0,193	0,077
SS 6	3,892	4,000	4,00	0,653	-0,768	0,038	0,863	0,077
SS 7	3,026	3,000	3,00	1,010	-0,156	0,038	-0,708	0,077
SS 8	3,592	4,000	4,00	0,876	-0,605	0,038	-0,030	0,077

N = 4066

Missing values = 0

Minimum value = 1

Maximum value = 5

TABLE 7
EIGENVALUES OF THE UNREDUCED INTER-CORRELATION
MATRIX OF SUB-SCORES

Root	Initial Eigenvalues		Extraction Sums of Squared Loadings			
	Total	% of Variance	Cumulative	Total	% of	Cumulative
1	3,827	47,841	47,841	3,361	42,018	42,018
2	0,942	11,775	59,616			
3	0,844	10,556	70,172			
4	0,703	8,790	78,962			
5	0,610	7,629	86,591			
6	0,504	6,304	92,895			
7	0,321	4,006	96,901			
8	0,248	3,099	100,000			

Trace = 8

TABLE 8
SORTED AND ROTATED FACTOR MATRIX OF SUB-SCORES

Sub-scale	Scale 1	h ² _j
SS 1	0,858	0,660
SS 2	0,823	0,591
SS 3	0,811	0,595
SS 4	0,616	0,372
SS 5	0,601	0,330
SS 6	0,564	0,316
SS 8	0,374	0,131
SS 7	0,304	0,129

Extraction Method: Principal Axis Factoring. 1 factor extracted. 5 iterations required.

The intercorrelations of the subscores are depicted in Table 6. From Table 6 it is clear that all the intercorrelations are significant at the 0,01 significance level.

Second Level Factor Analysis

Sub-scores were calculated on the eight obtained factors. The Kaiser-Meyer-Olkin Measure of sampling adequacy (0,875) and the Bartlett's Test of sphericity (Chi square = 11979,791; df = 28; p = 0,000) were conducted on the inter-correlation matrix of the eight sub-scores. It is clear that this matrix, comprising of the eight sub-scores, also complies with the requirements for factor analysis.

The eigenvalues were calculated on the unreduced intercorrelation matrix of the subscores. The eigenvalues of the unreduced inter-correlation matrix of subscores appear in Table 7. It is clear from Table 7 that one factor was postulated.

In Table 8, the respective loadings of the sub-scores on the one factor extracted are presented.

Reliability

The internal consistency of the single scale obtained from factor analyses (the degree of homogeneity among the items) was computed using Cronbach Coefficient Alpha. Table 9 provides the item reliability statistics for the scale. The closer the value of the Cronbach Coefficient Alpha to 1 the greater the reliability of the scale. Hence, the Cronbach Coefficient Alpha of 0,945 indicates that the scale is highly reliable and can consistently measure the dimensions of the magnitude of organisational culture it is designed to measure. In other words, the measuring instrument is capable of consistently reflecting the same underlying constructs. Furthermore, it indicates a high degree of homogeneity amongst the scale items.

TABLE 9
ITEM STATISTICS OF THE CAI

	Scale Mean If Item Deleted	Scale Variance If Item Deleted	Corrected Item-Total-Correlation	Alpha if Item Deleted
Q2	182,310	1120,033	0,300	0,945
Q3	182,416	1113,948	0,327	0,945
Q4	182,917	1094,479	0,526	0,944
Q5	183,421	1102,019	0,441	0,944
Q6	183,172	1093,445	0,473	0,944
Q7	182,126	1125,377	0,194	0,945
Q8	182,333	1109,236	0,396	0,944
Q10	182,539	1104,559	0,474	0,944
Q11	182,775	1100,582	0,560	0,944
Q12	182,822	1094,317	0,513	0,944
Q13	182,912	1095,447	0,460	0,944
Q14	182,835	1095,843	0,506	0,944
Q15	182,434	1106,652	0,381	0,944
Q19	183,246	1097,836	0,443	0,944
Q20	182,797	1104,650	0,366	0,945
Q21	182,518	1110,650	0,324	0,945
Q23	183,352	1083,842	0,584	0,943
Q24	183,410	1089,231	0,612	0,943
Q25	183,228	1086,502	0,560	0,943
Q26	182,655	1117,183	0,242	0,945
Q27	182,657	1112,705	0,361	0,944
Q28	183,209	1086,742	0,573	0,943
Q29	182,781	1096,212	0,520	0,944
Q30	182,934	1091,020	0,586	0,943
Q31	183,243	1091,040	0,561	0,943
Q33	183,098	1092,359	0,580	0,943
Q34	183,024	1082,393	0,667	0,943
Q36	182,333	1122,885	0,203	0,945
Q37	182,636	1116,514	0,304	0,945
Q39	183,280	1089,542	0,536	0,944
Q41	183,374	1093,897	0,529	0,944
Q42	183,493	1084,821	0,602	0,943
Q43	183,256	1093,593	0,529	0,944
Q44	182,838	1104,725	0,415	0,944
Q45	182,919	1103,466	0,453	0,944
Q46	183,076	1090,547	0,569	0,943
Q47	183,350	1103,241	0,405	0,944
Q49	182,981	1092,726	0,578	0,943
Q51	183,080	1104,398	0,427	0,944
Q52	182,617	1106,825	0,444	0,944
Q54	182,556	1116,923	0,310	0,945
Q55	182,939	1084,958	0,621	0,943
Q57	182,958	1092,115	0,470	0,944
Q59	183,427	1097,552	0,465	0,944
Q60	183,652	1097,560	0,480	0,944
Q62	182,614	1096,302	0,567	0,943
Q63	182,702	1095,184	0,577	0,943
Q64	182,889	1089,848	0,596	0,943
Q65	182,856	1093,133	0,586	0,943
Q66	182,451	1098,969	0,499	0,944
Q67	182,801	1096,741	0,547	0,944
Q68	183,284	1106,092	0,406	0,944
Q70	182,767	1098,537	0,507	0,944
Q71	182,827	1102,382	0,471	0,944
Q73	182,823	1088,629	0,603	0,943
Q72	183,072	1128,213	0,095	0,946

N of Cases = 4066

N of Items = 56 Cronbach Coefficient Alpha = 0,945

Thus far the data set has been reduced to a single scale and it has been established that the scale is highly reliable. The six theoretical dimensions of the CAI could not be replicated by factor analysis. The next phase of the statistical process comprises analysis of variance. The results thereof are reported in the next section.

Phase II: Inferential Statistical Analyses for testing differences between groups

In this section the results of the inferential statistical analyses followed by the Cramer's V tests are presented for the four different groups i.e. race, gender, age and language.

In cases where, the ANOVA (for more than two groups) or the t-test (for two groups) does not show any significant differences in culture mean scores based on race, gender, age or language group, will possibly indicate that the Culture Assessment Instrument (CAI) is not biased.

Further statistical analyses on an item level are conducted to identify those items that could effectively distinguish culture differences between the different race, gender, age and language groups in order to scrutinize those items for possible bias and unfairness in their particular wordings. The statistical procedure conducted for this purpose, is the Cramer's V test, a measure of association. The Cramer's V test will be used to test the hypothesis on bias or fairness on an item level. In respect of Cramer's V, a Chi square coefficient of $>0,2$ was set. Thus all items with chi square values equal to or larger than $0,2$ will indicate prominent differences between groups.

Hypothesis 1: There are significant differences in the culture mean scores of the different race groups

The first hypothesis tested for bias or unfairness on the race group level. Table 10 shows the culture mean scores for the different racial categories.

TABLE 10
CULTURE MEAN SCORES FOR DIFFERENT CATEGORIES OF RACE

Race	Mean	Std. Deviation	N
1 White	3,503	0,563	1073
2 Black	3,399	0,591	292
3 Coloured	3,189	0,731	125
4 Indian	3,047	0,641	908
Total	3,295	0,643	2396

It should be noted that the group means are different and that the group sizes vary, therefore the Levene's test for equality of error variances should be conducted. The Levene's test shows that the error variances of groups are significantly different. The Dunnett post hoc test should therefore be interpreted.

From Table 11 it can be inferred that there are significant culture differences between racial groups. The partial eta squared indicates that 11,2% of the variance in culture mean scores can be attributed to culture differences.

Table 12, depicts the outcome of the Dunnett post hoc test, which also shows significant differences between the different race categories (marked with an *).

The following discussion will focus on the measure of association (Cramer's V) which is a statistical tool used to identify those items that could effectively distinguish culture differences between the different race groups. A value of $>0,2$ was set, thus all items with values equal to or larger than $0,2$ will be considered to show a moderate association.

TABLE 11
ANOVA: TESTING FOR CULTURE DIFFERENCES
BETWEEN RACE GROUPS

Source	Type III sum of squares	Df	Mean square	F	P(f) Sig.	Partial eta squared
Corrected model	111,093	3	37,031	100,748	0,000	0,112
Intercept	12614,307	1	12614,3	34318,9	0,000	0,935
RACE	111,093	3	37,031	100,748	0,000	0,112
Error	879,9424	2394	0,368			
Total	7036,778	2398				
Corrected total	891,035	2397				

R Squared = 0,112 (adjusted R squared = 0,111)

Only item 25 – “Employment takes place without discrimination in terms of race, gender, age and language”, detected a significant difference between racial groups. It seems that the wording of the item is not biased or stereotyping any particular group.

Hypothesis 2: There are significant differences in the culture mean scores of the different gender groups

The second hypothesis tested for bias or unfairness on gender group level. Table 13 provides the culture mean scores of gender groups.

Table 13 shows that there are more males (52%) than females (48%) and the results of the Levene's test of equality of error variances show that the error variances are significantly different and the results of t-tests for unequal variances should therefore be interpreted.

Table 14, depicts the results of the t-test and shows Partial eta squared of 0,03% which suggests that only an insignificant small proportion of the variance can be attributed to culture difference scores.

The following discussion will focus on the results of the Cramer's V test, to identify those items under this category that could effectively distinguish culture differences between the different gender categories. A Chi square value of $>0,2$ was set, thus all items with values equal to or larger than $0,2$ will be scrutinized for possible bias or unfairness.

Only item number 72, “Managers in this division have the necessary leadership skills”, show that the Chi square value is greater than $0,2$, indicating a prominent difference of gender group response. On closer scrutiny, the item does not show any bias or unfairness to any particular gender group because the item is worded in such a way that it conveys the same meaning, i.e. conceptual and semantic equivalence, irrespective of gender. Both male and female responses are based on their perception, not influenced by their particular gender.

Hypothesis 3: There are significant differences in the culture mean scores of the different age groups

The third hypothesis tested for bias or unfairness on age group levels. Table 15 illustrates the culture mean scores for different age groups.

Table 15 depicts that the age group 24 years and less are in the majority and ages 46 years and older are in the minority. The Levene's test of equality of error variances detected significant differences in error variances. The Dunnett post hoc tests should therefore be interpreted. Table 16 will show the outcome of the analysis of variance.

TABLE 12
DUNNETT POST HOC COMPARISON TESTS FOR RACE GROUPS

	(I) Race	(J) Race	Mean difference (I-J)	Std. Error	Sig.	95% confidence interval	
						Lower bound	Upper bound
Dunnett T3	1	1					
		2+	0,1035	0,0385	0,045	0,0015	0,2054
		3+	0,4230	0,0676	0,000	0,2427	0,6034
		4+	0,4557	0,0273	0,000	0,3837	0,5277
	2	1+	0,1035	0,0385	0,045	-0,2054	-0,0015
		2					
		3+	0,3195	0,0739	0,000	0,1230	0,5161
		4+	0,3522	0,0405	0,000	0,2451	0,4593
	3	1+	0,4230	0,0676	0,000	-0,6034	-0,2427
		2+	0,3195	0,0739	0,000	-0,5161	-0,1230
		3					
		4	0,0327	0,0687	0,998	0,1506	0,2159
4	1+	0,4557	0,0273	0,000	-0,5277	-0,3837	
	2+	0,3522	0,0405	0,000	-0,4593	-0,2451	
	3	0,0327	0,0687	0,998	-0,2159	0,1506	

1 = white; 2 = black; 3 = coloured; 4 = Indian/Asian
The mean difference is significant at the 0,05 level.

TABLE 13
CULTURE MEAN SCORES FOR DIFFERENT GENDER GROUPS

Gender	Mean	Std. Deviation	N
Male	3,3611	0,60899	2022
Female	3,2933	0,57576	1869
Total	3,3286	0,59415	3891

TABLE 14
T-TEST FOR CULTURE DIFFERENCES OF GENDER GROUPS

	t	df	P (t) differ	Mean squared	SE	Partial eta
Equal Variances Assumed	3,559	3889	0,000	0,0677	0,01904	0,003
Not Assumed	3,566	3887,015	0,000	0,0677	0,01899	0,003

TABLE 15
CULTURE MEAN SCORES FOR DIFFERENT AGE GROUPS

Age	Mean	Std. Deviation	N
24 and younger	3,4291	0,53630	4352
25 – 35	3,2811	0,59105	1799
36 – 45	3,3433	0,60297	1001
46 and older	3,3771	0,61086	636
Total	3,3296	0,59360	3871

TABLE 16
ANOVA-TEST FOR AGE GROUP DIFFERENCES

Source	Type III sum of squares	Df	Mean square	F	P(f) Sig.	Partial eta squared
Corrected model	10,149	3	3,383	9,6659	0,000	0,007
Intercept	33243,60	1	33243,6	9,665	0,000	0,961
AGE	10,149	3	3,383		0,000	0,007
Error	1353,474	3867	0,350			
Total	44278,64	3871				
Corrected total	1363,623	3870				

R Squared = 0,007 (adjusted R squared = 0,007)

TABLE 17
DUNNETT POST HOC COMPARISON TEST FOR AGE GROUPS

	(I) Age	(J) Age	Mean difference (I-J)	Std. Error	Sig.	95% confidence interval	
						Lower bound	Upper bound
Dunnett T3	24 and younger	25-35	0,1479*	0,02925	0,000	0,0708	0,2251
		36-45	0,0857*	0,03201	0,044	0,0014	0,1701
		46 and more	0,0520	0,03533	0,599	-0,0411	0,1451
	25-35	24 and less	-0,1479*	0,02925	0,000	-0,2251	-0,0708
		25-35	-0,0622	0,02361	0,050	-0,1243	0,0000
		36-45	-0,0959*	0,02794	0,004	-0,1696	-0,0223
	36-45	24 and less	-0,0857*	0,03201	0,044	-0,1701	-0,0014
		25-35	0,0622	0,02361	0,050	0,0000	0,1243
		36-45	-0,0338	0,03082	0,853	-0,1150	0,0474
	46 and more	24 and less	-0,0520	0,03533	0,599	-0,1451	0,0411
		25-35	0,0959*	0,02794	0,004	0,0223	0,1696
		36-45	0,0338	0,03082	0,853	-0,0474	0,1150

Based on observed means

*The mean difference is significant at 0,05 level

Table 16 depicts the ANOVA test which shows Partial eta squared of 0,7% suggesting that an insignificant small proportion of variance could be attributed to culture differences.

Table 17 depicts the outcome of the Dunnett *post hoc* tests, where asterisks indicate all those age groups with significant differences, i.e. the age group which is 24 yrs and younger is significantly different to 25-35 yrs and 36-45 yrs age groups.

The following section deals with the results of the measure of association.

There is no item that is equal to or larger than the set criteria of 0,2. It can be inferred that there is no item significantly related to age group differences.

Hypothesis 4: There are significant differences in the culture mean scores of the different language groups

The fourth hypothesis tested for bias or unfairness on a language group level.

TABLE 18
CULTURE MEAN SCORES FOR DIFFERENT LANGUAGE GROUPS

Language	Mean	Std. Deviation	N
Afrikaans	3,4235	0,47485	1014
English + other	3,1937	0,52850	246
Total	3,3786	0,49405	1260

Table 18 depicts the results of the culture mean scores for different language categories. Afrikaans has majority (80,5%) of participants as compared to English and other language group (19,5%) and a Levene's test for equality of error variances should therefore be conducted. The Levene's test yielded significantly different error variances for language groups. The t-test for unequal variances should therefore be interpreted.

Table 19 depicts the outcome of the t-test and shows a Partial eta squared of 3,4% indicating that only a small portion of the variance can be attributed to culture differences.

The following section will focus on the results of the Cramer's V test in order to establish whether significant differences for the two language groups occur on an item level.

TABLE 19
T-TESTS FOR LANGUAGE GROUP DIFFERENCES

	t	Df	P (t)	Mean Differ	SE Differ	Partial eta squared
Equal	6,658	1258	0,000	0,2298	0,03452	0,034
Variances						
Assumed						
Equal	6,238	347,142	0,000	0,2298	0,03685	0,034
Variances not						
Assumed						

Table 20 depicts items 2, 6, 7, 8, 10, 11, 30, 33, 34, 64 & 73, as above or equal to the set Chi square value of 0,2. Each item was individually analysed and the following conclusion was reached:

- The items were worded or constructed in such a way that it does not offend or stereotype any of the language group under study.
- The items were worded in such a way that it conveys the same meaning for the different language groups, i.e. semantic equivalence.
- The criterion of conceptual and semantic equivalence is also met in the construction of these items.
- The different language groups had the same understanding in such a way that the response provided is not influenced by language affiliation but by the respondent perception.
- The items were worded in such a way that the respondents' response was based on their perception not on their language affiliation.

TABLE 20
CRAMER'S V TEST FOR LANGUAGE GROUP
DIFFERENCES ON ITEM LEVEL
(ITEMS IN BOLD SHOW PROMINENT LANGUAGE GROUP DIFFERENCES)

No.	Item	Cramer's V	Sig (p-value)
2.	I understand the overall objectives of the organisation.	0,317	0,000
3.	I am in possession of measurable standards of the results to be achieved.	0,176	0,000
4.	Subordinates are given the opportunity to make contributions with regard to goals and standards that are determined for them.	0,145	0,000
5.	Written objective contracts for at least the next 12 months are given to employees.	0,151	0,000
6.	Feedback sessions are held with employees three times a year about the manner in which outputs are obtained, in order to evaluate their performance.	0,238	0,000
7.	I know precisely who our target market and clients are.	0,203	0,000
8.	We really spare no efforts in understanding the needs of our customers.	0,230	0,000
10.	We listen actively in order to understand the current and future needs of our customers.	0,220	0,000
11.	The company continuously lives according to its core values.	0,229	0,000
12.	Our employees display a professional image in their contact with the public, their relationship with colleagues and their general behaviour at work.	0,090	0,037
13.	Employees respect the property and other possessions of the organisation. They protect it and do not take anything belonging to the organisation.	0,075	0,135
14.	Employees display an attitude of doing things right the first time.	0,039	0,753
15.	We provide our products/services totally free from any discrimination (race or gender).	0,159	0,000
19.	We are satisfied with the technological equipment (systems and computers) as resources to do our work.	0,073	0,153
20.	The physical appearance of the workplace (buildings, furniture and reception areas) supports the company's image.	0,074	0,146
21.	The way we dress supports the organisation's image.	0,106	0,007
23.	In the company employment equity has become a reality for all employees.	0,103	0,009
24.	The company knows what employees' needs are	0,147	0,000
25.	Employment takes place without discrimination in terms of gender, race or language.	0,111	0,004
26.	In order to adjust to the rapidly changing political situation in South Africa it is desirable to appoint people of colour at all levels of authority in our organisation.	0,033	0,849
27.	The company is a sought after employer in the employment market.	0,126	0,001
28.	We retain our best workers.	0,031	0,871
29.	Internal training is of high standing quality.	0,103	0,009
30.	Managers and supervisors are sufficiently prepared for their task through training.	0,203	0,000
31.	Performance evaluation is succeeded with development interviews during which training and development actions are jointly planned with employees.	0,159	0,000
33.	The company responds quickly to changes in the external environment (e.g. interests rate adjustments)	0,205	0,000
34.	The company is managed effectively on all levels.	0,238	0,000
36.	The minimum duplication of work occurs.	0,075	0,135
37.	I know exactly what my role in my work environment is.	0,130	0,000
39.	A visible trust relationship exists between employees and management.	0,093	0,027
41.	I am adequately informed about the work activities of other divisions in the company.	0,183	0,000
42.	There are sufficient personal discussions ("eyeball sessions") between managers and their employees.	0,097	0,019
43.	Higher level management takes purposeful actions to make contact with employees on lower levels.	0,126	0,001
44.	I have an open channel of communication to my immediate supervisor/manager.	0,170	0,000
45.	Purposeful action is taken to involve all employees in decision making.	0,043	0,675
46.	My work environment could be described as participative.	0,016	0,988
47.	When management make decisions that affect employees, the persons involved are consulted.	0,167	0,000
49.	Employees and immediate supervisors/managers collectively formulate objectives.	0,174	0,000
51.	My work results can be determined accurately.	0,059	0,364
52.	Control of own work is promoted.	0,129	0,000
54.	Persons in positions of power delegate sufficiently to complete work successfully.	0,060	0,336
55.	I believe that my own personal objectives can be satisfied in the company.	0,090	0,038
57.	I don't mind doing extra work if necessary ("going the extra mile").	0,035	0,822
59.	Performance is evaluated objectively according to actual results.	0,124	0,001
60.	The company's remuneration system is fair.	0,170	0,000
62.	The organisation is known for its innovative services.	0,135	0,000
63.	Employees are continuously encouraged to develop better work procedures and methods.	0,130	0,000
64.	Rules and regulations are continuously reviewed to cope with change.	0,210	0,000
65.	In our organisation employees are self-motivated and have the ability to control their own work.	0,098	0,017
66.	Management believes employees are self-motivated and have the ability to control their own work.	0,085	0,059
67.	There is good teamwork in my department.	0,070	0,188
68.	The work proceedings at the different divisions of the company are being co-ordinated.	0,170	0,000
70.	We solve our differences. We get down to the root of our differences.	0,122	0,001
71.	Conflict is resolved by confronting those involved with the problem and mutually working towards solutions.	0,039	0,759
72.	Managers in this division have the necessary leadership skills.	0,160	0,000
73.	I believe that our management has the vision and knowledge to lead the organisation successfully into the future.	0,233	0,000

DISCUSSION

Findings Regarding the Empirical Research Objectives

The primary objective of the empirical research was to determine the ability of the CAI to validly and reliably, without bias or unfairness, distinguish between the mean culture scores of the different race, gender, age and language groups, in other words to determine the bias or fairness of the CAI.

For the purpose of this study, the following four hypotheses were tested:

- H1: There are significant differences in the mean scores of the different race groups the CAI of Martins (1989).
- H2: There are significant differences in the mean scores of the different gender groups on the CAI of Martins (1989).
- H3: There are significant differences in the mean scores of the different age groups on the CAI of Martins (1989).
- H4: There are significant differences in the mean scores of the different language groups on the CAI of Martins (1989).

The empirical finding for the first hypothesis is that there are significant differences between racial groups. The partial eta squared indicated that 11,2% of the variance could be attributed to differences in culture mean scores.

Significant differences between racial groups on an item level were also detected, which could be an indication of item bias. It seemed however that the wording of the items was not stereotyping any particular group.

The empirical finding for the second and third hypotheses, i.e. gender and age, respectively, did not meet the expectation that the instrument would identify significant differences in the mean culture scores of the different gender and age groups.

The empirical finding on the fourth hypothesis showed that there were significant differences on the mean scores of the different language groups, but according to the t-test the outcome of the language group differences shows a partial eta squared of 3,4% indicating that only a small portion of the variance can be attributed to culture differences. Significant differences between racial groups on an item level were also detected, which could be an indication of item bias. It seemed however that the wording of the items was not stereotyping any particular group.

Based on the literature review, however, *a priori* differences in the cultures between different race and language groups were postulated. There were no significant differences between the different gender and age groups.

Possible limitations of the study are that only a limited number of organisations across different industries participated in the survey and that findings can not be generalised all South African companies. Also, only 56 items of the original 89-item instrument were used, limiting observations and findings only to these items.

Conclusions

The purpose of this study was to conduct an assessment of bias and fairness of Martins (1989) Culture Assessment Instrument (CAI), in the context of race, gender, age and language groups. Elenkov (1998) identified one of the biggest obstacles in cross-cultural research as the transferability of these studies to other cultures. Individuals come from different cultural groups, which also affects their mindset and framework and they would therefore interpret stimuli in different ways. A questionnaire item is said to be biased or unfair, when the response of the participant is influenced by race, gender, age and language and not by the individual perception on the raised issue.

In this article, the results of the various statistical procedures were documented and main observations were made. The results

of the descriptive statistics, factor analysis, inferential statistics and measure of association (Cramer's V) were portrayed.

The study aimed at determining whether different racial, gender, age and language groups display different response patterns with respect to test items in respect of, race, gender, age and language groups. Individual items were scrutinized for any form of bias or unfairness.

The results of item categorization exercises were reflected. Based on the Cramer's V statistics, only race and language showed significant differences on an item level. A closer scrutiny of these items revealed no bias or stereotyping in their wording.

Suggestions for further research

It is suggested that the CAI and the items it consists of, are scrutinized in terms of the generally accepted criteria for test and item construction. Several limitations in test and item construction have been identified. (See Du Toit, 2003; Petkoon, 2003; Smith, 2003 in this regard).

It is also suggested that deeper levels of culture are included in the instrument. A possible suggestion is also to focus the instrument on unique aspects of culture, such as myths, stories and rituals about heroes, founders and champions, rather than focusing on generic business processes of organisations.

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REFERENCES

- Amsa, P. (1986). Organisational culture and work group behaviour: an empirical study, *Journal of Management Studies*, 23 (3), May, 347-362.
- Ashkanasy, N.M., Broadfoot, L.E. & Falkus, S. (2000). Questionnaire Measures of Organisational Culture. In Ashkanasy, N.M., Wilderom, C.P.M. and Peterson, M.F. (Eds), *Handbook of organisational culture and climate* (31-145). Beverly Hills, CA: Sage Publications, Inc.
- Barley, S.R., Meyer, G.W., & Gash, D.C. (1988) Cultures of culture: Academics, practitioners and pragmatics of normative control. *Administrative Science Quarterly*, 33 ,24-60.
- Barnett, G.A. (1988). Communication and organisational culture, in Goldhaber, G.M. and Barnett, G.A. (Eds). *The Handbook of Organisational Communication*, Ablex, Norwood, 101-30.
- Bookbinder, S.M. (1984). Measuring and managing corporate culture, *Human Resource Planning*, 7 (1), 47-53.
- Cooke, R.A. & Rousseau, D.M. (1988). Behavioural norms and expectations: a quantitative approach to the assessment of organisational culture, *Group and Organisation Studies*, 13, 245-273.
- Deal, T.E. & Kennedy, A.A. (1982). *Corporate Culture*, Addison-Wesley, Reading, MA.
- Denison, D.R. (1996). What is the difference between organisational culture and organisational climate? A native's point of view on a decade of paradigm wars. *Academy of Management Review*, 21 ,619-654

- Desatnick, R.L. (1986). Management climate surveys: a way to uncover an organisation's culture, *Personnel*, 63 (5), 49-54.
- Du Toit, W.F. (2003). *The discriminant validity of the culture assessment instrument: a Comparison of company cultures*. Unpublished Doctoral thesis, Johannesburg Rand Afrikaans University.
- Elenkov, D.S. (1998). Can American Management concepts work in Russia? A cross-cultural comparative study. *California Management Review*, 40 (4), 133-153.
- Foxcroft, C. & Roodt, G. (eds.) *An introduction to psychological assessment in the South African context*. Cape Town: Oxford University Press.
- Frost, P.J., Moore, L., Louis, M., Lundberg, C. & Martin. (Eds.) (1991). *Reframing organisational culture*. Beverly Hills, CA: Sage Publications.
- Gabriel, Y. (1991). Turning facts into stories and stories into facts: a hermeneutic exploration of organisational folklore, *Human Relations*, 44 (8), 857-75.
- Groeschl, S. & Doherty, L. (2000). Conceptualising Culture. *Cross Cultural Management – An International Journal*, 7 (4), 12-17.
- Hofstede, G. (1986). The usefulness of the 'organisational culture' concept, *Journal of Management Studies*, 23 (3), 253-57.
- Hui, C.H., & Triandis, H.C. (1989). Effects of culture and response format on extreme response styles. *Journal of Cross-Cultural Psychology*, 20, 296-309
- Kanjee, A. (2002). Cross-cultural test adaptation and translation. In C. Foxcroft & G. Roodt (eds.) *An introduction to psychological assessment in the South African context*. Cape Town: Oxford University Press.
- Lewis, D. (1995). Researching strategic change – methodologies, methods and techniques. In Hussey, D. (Ed.), *Rethinking Strategic Management*, John Wiley and Sons, London, 269-316.
- Martin, & Meyerson, D. (1988). Organisational culture and the denial, channelling and acknowledgement of ambiguity. In Pondy, L.R., Boland, jr. R.J. & Thomas. (Eds.) *Managing ambiguity and change*. New York, NY: John Wiley & sons.
- Martin, J. (1992). *Cultures in organisations: Three Perspectives*. New York: Oxford University Press.
- Martins, N. (1989). *Organisasiekultuur in 'n finansiële instelling*. Ongepubliseerde D.Phil-proefskrif. Pretoria: University of Pretoria.
- Nossiter, V. & Biberian, G. (1990). Projective drawings and metaphor: analysis of organisational culture. *Journal of Managerial Psychology*, 5 (3) 13-6
- Osterlind, S.J. (1983). *Test Item Bias: Quantitative Applications in the Social Sciences*. Beverly Hills, CA: Sage Publications, Inc.
- O'Reilly, C.A., III, Chatman, J.A. & Caldwell, D.F. (1991). People and organisational culture: A profile comparison approach to assessing person-organisational fit. *Academy of Management Journal*, 34, 487-516.
- Ott, J.S. (1989). *The organisational culture perspective*. Pacific Grove, CA: Brooks/Cole.
- Owen, K. (1989). *Bias in test items: An exploration of item content and item format*. Pretoria: Human Science Research Council.
- Peters, T.J. & Waterman, R.H. (1982). *In Search of Excellence: Lessons from America's Best-Run Companies*, New York: Harper & Row.
- Petkoon, L.J. (2003). *The discriminant validity of the culture assessment instrument: a comparison of company sub-cultures*. Unpublished doctoral thesis, Johannesburg Rand Afrikaans University.
- Reichers, A.E. & Schneider, B. (1990). Climate and culture: An evolution of constructs. In B.Schneider (Ed), *Organisational climate and culture* (pp.5-39). San Francisco: Jossey-Bass.
- Rentsch, J.R. (1990). Climate and culture: Interaction and qualitative differences in organisational meanings. *Journal of Applied Psychology*, 75, 668-681.
- Reynierse, J.H. (1986). Measuring corporate culture, *The Business Magazine*, September-October, pp. 64-67.
- Reynierse, J.H. & Harker, J.B. (1986). Measuring and managing organisational culture, *Human Resource Planning*, 9 (1), 1-8.
- Reynolds, P.D. (1986). Organisational culture as related to industry, position and performance: a preliminary report, *Journal of Management Studies*, 23, 333-345.
- Rousseau, D.M. (1990) Assessing organisational culture: The case for multiple methods. In B. Schneider (Ed.) *Organisational climate and culture* (pp.153-192). San Francisco: Jossey-Bass.
- Schein, E.H. (1990). Organisational culture. *American Psychologist*, 45, 109-119.
- Schepers, J.M. (1992). *Toetskonstruksie: Teorie en praktyk*. Johannesburg: RAU Press.
- Smircich, L. (1983). Concepts of culture and organisational analysis, *Administrative Science Quarterly*, 28 (83), 339-59.
- Smith, S.A. (2003). *An evaluation of response scale formats of the culture assessment instrument*. Unpublished Doctoral Thesis, Johannesburg Rand Afrikaans University.
- Triandis, H.C. (1994). Cross-Cultural industrial and organisational psychology. In H.C.Triandis, M.D. Dunnette, & L. Hough (Eds.), *Handbook of industrial and organisational psychology* (2nd ed., Vol.4, pp103-172). Palo Alto, CA: Consulting Psychologists Press.
- Tucker, R.W., McCoy, W.J. & Evans, L.C. (1990), Can questionnaires objectively assess organisational culture? *Journal of Managerial Psychology*, 5 (4), 4-11.
- Van Maanen, J. (1991). *The smile factory: Work at Disneyland*. In Frost, P.J., Moore, L., Louis, M., Lundberg, C. & Martin. (Eds.) *Reframing organisational culture*. Beverly Hills, CA: Sage Publications.
- Wiener, Y. (1988). Forms of value systems: a focus on organisational effectiveness and cultural change and maintenance, *Academy of Management Review*, 13 (4), 534-545.
- Wilkins, A.L., & Ouchi, W.G. (1983). Efficient cultures: Exploring the relationship between culture and organisational performance. *Administrative Science Quarterly*, 28, 468-481.
- Wilson, A.M. (2001) Understanding organisational culture and the implications for corporate marketing. *European Journal of Marketing*, 35 (3/4): 353-367.
- Xenikou, A., & Furnham, A. (1996). A Correlational and factor analytic study of four questionnaire measures of organisational culture. *Human Relations*, 49, 349-371.