Original Research Article

Title of the paper: A Multi Dimensional Approach to analyse the Core Dimensions of Organizational Culture in a Research and Development Organization in Tamil Nadu, India

Abstract

The research paper aims to analyse the core dimensions of Organizational Culture in a R&D institution that is completely dedicated to research in Basic and Allied Sciences. The remarkable innovations in this sector have been guided throughout by its rich pedigree and culture. Although a qualitative appreciation is there for its feats, a methodical quantitative study on various contributing factors for its current state is a forlorn need. The success of any R&D endeavour lies in the cultural aspects of the organization and hence endowing an appropriate culture conducive to R&D activities in technology sector, acts as a key driver to spur higher R&D productivity among the researchers. The sole purpose of this research is to capture those dimensions amenable to R&D activities in this organization that will lead to higher R&D performance. The research examines factors like Strategy, Structure, Resources, Risk taking, Job & Role Characteristics, Team Dynamics, Collaboration & Networking,Leadership, Reward System, Safety & Health and Customer Satisfaction in the context of the organization. Research data was collected using questionnaires from a sample of (n = 100) respondents within the institute. All the variable items for Organisational Culture were measured using a five-point Likert scale. Parametric and Non-Parametric tests were used to analyze the dimensions of culture, relationship between organizational culture and job satisfaction of employees and also the influence of demographic factors on organizational culture.The paper also includes recommendations to guide the management of the organization to identify and inculcate cultural values that will enhance R&D activities and to gradually abandon those practices that hinder creativity and innovativeness.

Key Words: R&D Productivity, Creativity, Innovation, Parametric, Culture, Job Satisfaction

Background & Introduction

Organizational culture is a set of values, understandings, beliefs, and norms that are shared among people within an organization. According to Handy (1999), different organizations have differing cultures that are reflected in different structures and systems. Organizational culture is manifested in the typical characteristics of the organization. The components of routine behaviour, norms, values, philosophy, rules of the game and feelings all form part of organizational culture (Hellriegel et al, 1998; Smit and Cronje, 1992). The examination of culture is broadly identified as (a) a set of cognitions (i.e.) values and beliefs, and (b) the outcome of these values and beliefs in the form of observable behavioural components. It is the latter aspect and perspective of culture that is of possible interest to the current study. The examination of behavioural norms across various dimensions of the organization relate directly to what can also be viewed as the human characteristics of the research organization. Such dimensions of organizational functioning can include factors such as Strategy, Structure, Resources, Risk taking, Job & Role Characteristics, Team Dynamics, Collaboration & Networking, Creative Leadership, Reward System, Safety & Health and Customer Satisfaction of the research organization identified in this literature review. Quantitative approach is one of the methods employed to study organizational culture. There are a number of studies that have adopted the quantitative approach to measure organizational

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culture. The attributes can be extracted from the three of the most frequently used and tested organizational culture assessing methods- Organizational Culture Survey by Denison and Neale (1996), Organizational Culture Inventory by Cooke and Rousseau (1988) and Organizational Culture Profile (OCP) by O' Reilly. These extracted attributes can be grouped in to eleven dimensions and these dimensions together constitute the R&D culture. The eleven dimensions and the attributes under each category are as follows: Strategy: Organizations whose strategic goals are clear, and whose cultures strongly support those goals, is fundamental in achieving excellent R&D productivity. This dimension provides the appropriate direction that keeps the organization right on track by determining personnel's understanding of the vision, mission and values of the organization and how these can be transformed into measurable individual & team goals and objectives. Highly aligned innovation strategies with business strategies of the organization pays off in overall R&D performance. Structure: The structure category is about the explicitly established systems and processes of an organization that influences the R&D output of the organization. This dimension indicates how an organization can be designed in order to facilitate better research productivity. Such an organization that wishes to be research oriented should avoid vested interests, bureaucracy and routine control. Some of the attributes in this category can actually be regarded as the implementation side of the attributes in other ten categories. The major attributes are methods and mechanisms that provide enough flexibility, freedom, autonomy and empowerment in carrying out research process. Resources: Resource allocation is an important factor in an R&D organization. This includes time, financial and human resources. For instance, proper financial resource allocation is a source of support for creativity seeking activities. Resource allocation is part of senior managers' responsibilities but the focus of this category is not the allocation of resources, but the resources themselves. Thus the attributes relating to this category are enough time allocation and allocation of money and material resources. Risk taking: The risks should be taken as long as they do not harm the organization as it is essential to encourage researchers to be creative and experimenting with new ideas. To stimulate creativity in R&D, organizations must encourage their people to embark on research efforts that involve a certain level of risks, and at the same time, the organization must be prepared to accept failures. Thus the attributes relating to this category are challenging the status quo and tolerance for mistakes. Job & Role Characteristics: Job & Role characteristics refer to the properties of each employee's work that increase the likelihood of their R&D contribution to the organization. The work should be challenging; intellectually stimulating; utilize varied skills; contain responsibilities; directed by goals and best fits with interest and ambitions of the employee. Thus the attributes relating to work characteristics are challenge, role clarity, responsibility and goals. Team Dynamics: Team working is a prerequisite to promote group synergies. Teamwork is enhanced when members respect and understand each other, allow for diversity, share common goals, resolves conflicts effectively and support each other by listening, discussing and openly questioning new ideas. Such effective team work is partly based on team members' skills and abilities and partly on the shared values within the group. Collaboration & Networking: Collaboration & Networking is socializing with peers of other organizations so as to exchange knowledge and experience and also develop potential future work collaboration by participating in conferences and professional societies; conducting mutual exchange programmes. Networking is critical to productive R&D activities. Creative Leadership: Creative leadership influences the employee creativity in the R&D context by deploying divergent and convergent thinking for generation of novel ideas, fostering an environment of innovation, employing open communication, providing constructive feedback and serving as a role model of inspiration. Reward System: Management should be sensitive to methods of reward and recognition that will inspire personnel to be creative and increase R&D outputs in the organization. If creative behavior is

rewarded, it becomes the dominant way of behaving and behavior that is rewarded reflects the value of the organization. Personnel should be rewarded for risk taking, experimenting and generating ideas. Apart from extrinsic rewards, rewarding intrinsically encourages R&D behavior. It is also equally important to reward teams to inspire team performance. Safety & Health: Safety & Health in the workplace is embraced in a holistic way from the interactions between the working environment, equipment, systems, procedures and the people in the organisation. A prerequisite for a positive safety culture is good information flow, giving staff more training, using protective gears during work and adequately compensating in case of accidents. Customer Satisfaction: In essence, an organizational culture with customer orientation will most effectively and efficiently create the necessary behaviours for the creation of superior values for buyers. An overall orientation towards the customer experience is achieved by identifying a defined need, providing tech support, obtaining customer feedback, maintaining utmost confidentiality and delivering high quality of work in R&D work process. Strong identification with the customer thus increases satisfaction of the customers and enhances profound relationship with the customers. Organizational Culture and Job Satisfaction: Locke (1976,p.1300) defines Job satisfaction as a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences. Research studies (Kerego & Mthupha, 1997; Robbins, 1993;) supported the five main job satisfaction dimensions as pay, nature of work, supervision, promotional prospects and relations with co-workers. There has been a long debate amongst researchers regarding the relationship between organisational culture and job satisfaction. Many researchers have found supporting evidence about the relationship between these two concepts (Schneider & Snyder,1975; Field & Abelson, 1982; Hellriegel & Slocum, 1974).

Organizational culture is postulated to be one of the greatest theoretical levers required for understanding organizations. Verifying and using those theories minimally requires comparisons between the cultures of different firms, which in turn implies the identification of common dimensions for assessing organizational culture. Qualitative approaches used in initial research on organizational culture assess culture along unique dimensions, reflecting the inner view of organization's members. Although rich in detail, this process has two inherent weaknesses: (a) the dimensions of culture identified in one milieu through this approach are idiosyncratic and not necessarily relevant in another context, (b) this approach is unable to produce culture information coherently linkable to major outcomes such as organizational performance (e.g., Cameron & Freeman, 1991) and individual behaviors (e.g., Koberg & Chusmir, 1987). To allow comparisons across organizations and to study relationships between organizational culture and other constructs, several quantitative measurement instruments have been designed. These capture culture through a priori dimensions which is helpful only to the degree that these dimensions are sufficiently relevant and generic. Chatman and Jehn (1994) put this nomothetic challenge in these terms: "Demonstrating that a set of replicable dimensions exists is a prerequisite to making meaningful comparisons across organizations and industries" (p.525). Regrettably, to date, there is no consensus on a finite set of key dimensions able to describe and to compare organizational culture across a large range of organizations (Gordon & Di Tomaso, 1992). This paper attempts to fill that void by identifying core culture dimensions in current questionnaires and by synthesizing these into a new instrument.

Arnifa Asmawi and Avvari V Mohan. (2011). indicated that research and development (R&D) activities are influenced, to a large extent, by the culture of the organization. The author reveals that organizational culture construct in R&D organizations may best be represented through a structure of eight factors. The eight factors are teamwork and knowledge sharing, empowerment and recognition, conformity and impediments to R&D, risk-taking, customer orientation, autonomy, social networking, and organizational design.

149 They concluded by suggesting that R&D managers can deploy this model to establish the
150 baseline level of research culture in their respective units and thus provide the foundation for
151 management initiatives to drive R&D activities. Newman, J.L. (2009). states that a highly
152 effective CREATIVE R&D culture combines Customer-focused,Risk-tolerant,
153 Entrepreneurial, Alignment with strategy, Technology and scientific excellence, Innovative,
154 Virtual organization (Collaboration), and Execution elements to consistently drive true
155 innovation. The author also highly emphasizes that this CREATIVE framework provides
156 guidance for building and maintaining a R&D culture of innovation excellence. The author
157 also discusses about the number of potential steps required to build such a culture. O'Reilly,
158 C.A., Chatman, J., and Caldwell, D.F. (1991). suggests that the dimensionality of individual
159 preferences for organizational culture and the existence of these cultures are interpretable.
160 Understanding the fit between individuals' preferences and organization cultures is vital as
161 person – organization fit predicts job satisfaction. The instrument called Organizational
162 culture profile (OCP) was developed for this purpose that consists of 54 value statements that
163 captures individual and organizational values. Ryan, J.C. and Hurley,J. (2007) examines the
164 relationship between organizational characteristics and scientific research effectiveness by
165 measuring six organizational characteristics of the research environment. The Organizational
166 Culture Survey (OCS) measures six dimensions like teamwork, morale, information flow,
167 involvement, supervision and meetings of organizational functioning. Specific characteristics
168 of the organizational environment are related to research performance. The study emphasises
169 the fact that component characteristics of an organizations' culture is related to the
170 performance of scientists within that organization. Sempane, M.E., Rieger H.S. and Roodt,
171 G. (2002) established a significant relationship between organizational culture and job
172 satisfaction. The article describes about the two questionnaire used for the study, one which
173 measures organizational culture and the other that measures job satisfaction. Some
174 biographical variables and its responses on the culture and job satisfaction variables have also
175 been described. The job satisfaction has been considered as a single factor while organization
176 culture included dimensions like customer orientation; organisational integration;
177 performance orientation; reward orientation; conflict resolution; disposition towards change;
178 locus of authority; task structure; management style; goal clarity and human resources
179 orientation. The R&D organization dedicated to achieve excellence in research and
180 innovation , it is imperative to nurture an organizational culture that is conducive to both
181 creativity and innovation, which will lead to its organizational goals and mandate. Therefore,
182 a research study to explore the dimensions of organizational culture in the current scenario of
183 the organization and to plan appropriate interventions for the same has been undertaken. The
184 stated institution has been engrossed in broad based multidisciplinary programme of
185 scientific research and advanced Engineering since its inception in 1971. The remarkable
186 innovations have been guided throughout by its rich pedigree and culture. Although a
187 qualitative appreciation is there for its feats, a methodical quantitative study on various
188 dimensions of culture for its current state is a forlorn need. .
189
190 **Research Methodology**
191 The research paper aims to analyse the core dimensions of Organizational Culture in an R&D
192 institution that is completely dedicated to research in indigenous science and technology. The
193 research focuses on exploring the dimensions of organizational culture in the current scenario
194 of the organization and to plan appropriate interventions for the same. The scope of this study
195 is restricted to the Group I (Scientists D & E) and Group II (Technical officers) employees of
196 the specific organization. This is because of their higher level of participation in all of the
197 organization's innovation pursuits as part of various R&D activities. The main objective is to
198 analyse the core dimensions of organizational culture conducive to R&D activities and

199 suggest suitable interventions for enriching the same. The research also aims to determine the
200 influence of demographic factors on Organizational Culture & to ascertain the impact of
201 Organizational Culture and its components on Job Satisfaction. The research is limited by the
202 fact that the survey covered only 110 employees among the total 152 employees in Group I
203 and Group II categories. This can be attributed to causes such as unwillingness of the
204 respondents, transfer on deputation of employees, employees under long leave, and women
205 employees in Child Care Leave (CCL) and few employees on the verge of retirement. The
206 scale that has been used for the study does not measure in detail about the impact of
207 Recruitment and Performance Appraisal process on the Culture of the Organization. The
208 research design employed in the current study is descriptive research .In this study, the
209 current state of R&D culture in the organization is analyzed in eleven dimensions.
210 The population of interest for the study refers to all the employees of the organization
211 involved in innovation pursuits. The total number of employees, that is, the population size is
212 152 (Group I (D & E: Scientists- 110,) Group II: (Technical Officers - 42). The sample size is
213 110 arrived through Stratified Random sampling. The primary data for the study was
214 collected through questionnaire. A structured questionnaire - 5-point Likert scale   was
215 circulated to the Group I and Group II employees working in various departments through
216 which the data was collected. Secondary data was collected from various references including
217 books, journals, Company website and online research papers (as cited in the references
218 section). The questionnaire was structured based on the eleven core dimensions measuring
219 the R&D culture in the organization. The items measuring each dimension were framed based
220 on the attributes pertaining to that dimension which were extracted from secondary sources.
221 Based on the literature and pertinent issues from the case studies earlier the dimensions were
222 identified .The questionnaire was divided into eleven sections based on the eleven dimensions
223 and consisted of 59 items totally. Also to determine the impact of Organizational culture on
224 Job satisfaction, a separate questionnaire to measure the job satisfaction of the employees was
225 developed consisting of 20 items. The statistical tools used to analyse the data were
226 Percentage Analysis, Friedman test, Chi-square test, Correlation & Regression.
227
228 **Data Analysis and Interpretation**
229 Pilot study was done on a sample of 22 Respondents to check the Reliability of the Scale. The
230 Cronbach's Alpha value which is an indicator of Reliability of the scale was determined
231 using Statistical Package for Social Sciences (SPSS) software.
232
233 **Table 1 Reliability Statistics for scale measuring Organizational Culture**

Cronbach's Alpha	N of Items
0.961	59

234
235 From Table 1, The Cronbach's Alpha Value for the scale measuring Organizational Culture is
236 found to be 0.961 (>0.7) which shows that the scale has high reliability.
237
238 **Table.2 Reliability Statistics for scale measuring Job Satisfaction**

Cronbach's Alpha	N of Items
0.913	20

239

5

240 From Table 2, The Cronbach's Alpha Value for the scale measuring Job Satisfaction is found
241 to be 0.913 (>0.7) which shows that the scale has high reliability.
242 **Demographic Profile - Descriptive Statistics**
243   Out of 100 respondents, 9% belong to below 35 age group, 34% belong to 35-45 age group,
244 42% belong to 46-55 age group and 15% belong to above 55 category.73% are male and 27%
245 are female.56% of them have obtained Doctorate, 44% have obtained other degrees like
246 ME/MTech, BE/BTech, MSc and many more. 65% belong to Group IV (Scientists) and 30%
247 belong Group III (Technical Officers).21% have below 10 years of experience, 29% have 10-
248 20 years of experience and 50% have above 20 years of experience.
249 **Overall Rating of Organizational Culture by Respondents**
250 **Table 3 Rating of Organizational R&D Culture by Respondents**

Organizational Culture	Frequency	Percent
Poor Culture	0	0
Moderate Culture	6	6.0
Good Culture	64	64.0
Excellent Culture	30	30.0
Total	100	100.0

251
252 Overall Score
253 237-295: Excellent Culture
254 178-236: Good Culture
255 119-177: Moderate Culture
256 59-118: Poor Culture
257
258 It is inferred that 5.9% of the respondents have rated the organization as having a Moderate
259 R&D Culture, 63.7% have rated the Organization as having a Good R&D Culture and the
260 other 30.4% perceive that the organization is endowed with an Excellent Culture. None of
261 them have rated the organization as having a poor culture. Hence we infer that the overall
262 organizational culture is Good and there is a lot of scope for the organization to become an
263 Excellent culture.
264 **Overall Job Satisfaction level of Respondents**
265 **Table 4 Overall Job Satisfaction Scores of Respondents**

Job Satisfaction Level	Frequency	Percent
Dissatisfied	0	0
Neutral	9	8.8
Satisfied	49	48.1
Highly Satisfied	44	43.1
Total	102	100.0

266 **Overall Score**
267 81-100:Highly Satisfied
268   61-80: Satisfied
269 41-60: Neutral
270 20-40: Dissatisfied
271

It is inferred that 8.8% of the respondents remain Neutral i.e. they aren't satisfied or dissatisfied with their job, 48.1% are satisfied with their job and the other 43.1% are Highly Satisfied with their job. None of them are dissatisfied with their job. Hence we infer that the overall job satisfaction level of the respondents is satisfied

DESCRIPTIVE STATISTICS- MEAN SCORES
Mean scores for different attributes of Strategy
Table 5 Strategy–Mean Scores

Items	Mean
Strategic intent	4.48
Strategic reinforcement	3.86
Strategic linkage	3.84
Unit participation	3.94
Alignment with business	3.87

It is inferred that the items strategic intent 'Awareness of the vision, mission and goals' with the mean of 4.48 contributes the most to the dimension of Strategy. The next contributor is unit participation 'Respective division comes out with plans for future projects which are aligned with strategic direction'. All the other items also contribute equally well to this dimension.

Mean scores for different attributes of Structure
Table 6 Structure–Mean Scores

Items	Mean
Structural type	3.85
Delegation of Authority	3.90
Flexibility	3.58
Freedom	4.15
Autonomy	3.96
Openness	3.67
Empowerment	3.80

It is inferred that the item freedom 'Enough freedom to plan and act in own sphere has the highest mean score of 4.15 thus contributing the most to the dimension of structure followed by 'Individual and role autonomy is encouraged' with a mean of 3.96. The item Flexibility of administrative procedures and other adhoc committees with regard to the management of R&D activities needs to improve.

Mean scores for different attributes of Resources
Table 7 Resources–Mean Scores

Items	Mean
Human resource	4.18
Information resource	4.15
Material resource	3.83
Time resource	3.98
Resource funding	3.39
Resource training	3.62

7

298   It is inferred that the items 'Availability of scientific & technical manpower with necessary
299   skills and abilities in adequate strength to carry out R&D work' and 'Free access to
300   information resources' have the highest and second highest mean scores of 4.18 and 4.15
301   respectively thus contributing the most to the dimension of resources.

302   **Mean scores for different attributes of Risk taking**

303   **Table 8 Risk taking–Mean Scores**

Items	Mean
Challenge the status quo	3.85
Technology risk	3.54
Failing with grace	3.72

304

305   It is inferred that the item challenge the status quo 'Experiment with new ideas that are
306   outside the scope of research projects' has the highest mean scores of 3.85 ,thus contributing
307   the most to the dimension of risk taking. This is followed by 'Failing with grace' with a mean
308   of 3.72.

309   **Mean scores for different attributes of Job & Role characteristics**

310   **Table 9 Job & Role Characteristics–Mean Scores**

Items	Mean
Self-set goals	3.95
Role clarity	4.27
Skill variety	4.28
Task significance	3.98
Task challenge	4.16
Job fit	4.15

311

312   It is inferred that the almost all the items contribute to the dimension of Job & Role
313   characteristics with high mean scores, Skill variety and Role clarity topping the other items
314   with a mean of 4.28 and 4.27 respectively.

315   **Mean scores for different attributes of Team Dynamics**

316   **Table 10 Team dynamics–Mean Scores**

Items	Mean
Team work	3.74
Cross functional interaction	3.77
Team composition	3.93
Team diversity	3.81
Co-worker support	3.81
Team conflict resolution	3.54

317

318   It is inferred that the item 'Individual skill, abilities, personalities and interest are the major
319   variables for team formation' has the highest mean scores of 3.93 thus contributing the most
320   to the dimension of team dynamics. This is followed by team diversity and co-worker support
321   with a mean of 3.81.

322

323

324

325

326

327

328 **Mean scores for different attributes of Collaboration & Networking**

329 **Table 11Collaboration & Networking –Mean Scores**

Items	Mean
Networking with external organization	3.98
Participation in Industrial meets & conferences	3.87
Exchange programmes	3.51
Benchmark in research	4.04

330

331 **INFERENCE:**

332 it is inferred that the item 'Benchmark in Research' has raised the standards of research. It

333 has the highest mean scores of 4.04 thus contributing the most to the dimension of

334 Collaboration & Networking. Also the second highest contributor to this dimension is

335 'Networking with external organization' with a mean of 3.98.

336

337 **Mean scores for different attributes of Creative leadership**

338 **Table 12 Creative Leadership–Mean Scores**

Items	Mean
Balancing divergence & convergence of ideas	3.84
Fostering innovation	3.77
Problem solving	3.79
Capability building	3.63
Open communication	3.50
Inspirational leading	3.77

339

340 It is inferred that the item 'Balancing divergence & convergence of ideas' has the highest

341 mean scores of 3.84thus contributing the most to the dimension of Creative leadership. This

342 is followed by problem solving 'Innate ability to overcome challenges with breakthrough

343 solutions to the problems' with a mean of 3.79.

344 **Mean scores for different attributes of Reward system**

345 **Table 13 Reward Systems–Mean Scores**

Items	Mean
Fairness in system	3.30
Formal Recognition	3.72
R&D behavior	3.46
Intrinsic rewards	3.56
Group based rewards	3.44

346

347 It is inferred that the item formal recognition 'Formally acknowledged for success and

348 achievements in research work' has the highest mean scores of 3.72thus contributing the most

349 to the dimension of Reward system. The second highest contributor is intrinsic reward

350 'Rewards include freedom, opportunities for advancement that are intrinsic' with a mean of

351 3.56.

352

353

354

355

9

356   **Mean scores for different attributes of Safety & Health**
357   **Table 14 Safety & Health–Mean Scores**

Items	Mean
Work environment	3.64
Protective equipment	3.29
Information availability	3.29
Compensation for injuries/accident	3.31
Training for safety	2.82

358

359 It is inferred that the items work environment 'A safe and healthy environment is provided
360 and maintained' and 'Compensation for injuries/accidents' has the highest mean scores of
361 3.64 and 3.31 respectively thus contributing the most to the dimension ofSafety & Health.

362

363 **Mean scores for different attributes of Customer satisfaction**
364 **Table 15 Customer Satisfaction–Mean Scores**

Items	Mean
Insights	3.75
Interaction with project team	3.83
Value system	3.96
Deliverables	3.98
Support	4.06
Feedback	3.84

365

366 It is inferred that the items support 'Techsupport during and after the technology transfer is
367 taken care' and value system 'Content of innovation, Quality of work, Time frame
368 observance are adhered to meet customer's satisfaction'have the highest and second highest
369 mean scores of 4.06 and 3.96 respectively thus contributing the most to the dimension of
370 Customer satisfaction.

371   **CORRELATION**
372 **Correlation between Organizational Culture and Core Dimensions**
373 **Table 16 Correlations between Culture and Core Dimensions**

Correlations													
		Organizational Culture	Strategy	Structure	Resources	Risk taking	Job & Role characteristics	Team dynamics	Collaboration & Networking	Creative leadership	Reward system	Safety & Health	Customer satisfaction
Organizational Culture	Pearson Correlation	1	.736**	. 865**	.811**	.449**	.696**	.845**	.744**	.807**	.768**	.586**	.669**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

10

N	102	102	102	102	102	102	102	102	102	102	102	102

**. Correlation is significant at the 0.01 level (2-tailed).

374

375 It is inferred that there is a strong positive correlation between Organizational Cultureand all
376 the eleven dimensions of Organizational Culture -Strategy
377 (.736), Structure(.865), Resources(.811), Risk taking(.449),Job & Role
378 characteristics(.696),Team dynamics(.845), Collaboration & Networking(.744), Creative
379 leadership(.807), Reward system(.768), Safety & Health(.586),and Customer
380 satisfaction(.669). Thus the increase in degree of each of these dimensions can enrich the
381 Culture of the organization and can transform the organization from a mere Good Culture to
382 Excellent Culture.

383

384 **Correlation between Organizational Culture and Job Satisfaction**

385

386 **Table 17 Correlations between Organizational culture and Job satisfaction**

387

		Organizational Culture	Job satisfaction
Organizational Culture	Pearson Correlation	1	.762**
	Sig. (2-tailed)		.000
	N	102	102
**. Correlation is significant at the 0.01 level (2-tailed).			

388

389 It is inferred that there is a strong positive correlation between Organizational Culture and
390 Job Satisfaction. The results show that the Pearson correlation coefficient is r = .762and
391 hence the relationship is strong and these variables are significantly correlated.

392

393 **FRIEDMAN TEST**
394 **AIM:** To test the significant difference between mean ranks of different dimensions
395 contributing to organizational culture.
396 **Ho:**There is no significant difference in mean ranks of different dimensions contributing to
397 organizational culture.
398 **H1:** There is significant difference in mean ranks of different dimensions contributing to
399 organizational culture.

400

401 **Table 18 Friedman Test-Significance**

N	102
Chi-Square	213.608
Df	10
Asymp. Sig.	.000

402

403 **Table 19 Friedman Test-Ranks**

	Mean Rank
Strategy	7.55
Structure	6.65
Resources	6.70

11

Risk taking	5.40
Job & Role characteristics	8.50
Team dynamics	5.69
Collaboration & Networking	6.30
Creative leadership	5.34
Reward system	4.19
Safety & Health	3.24
Customer satisfaction	6.43

404
405 Table 19 shows that the significance level (0.000) is lesser than 0.05. Hence the null
406 hypothesis is rejected and the alternate hypothesis is accepted at 95% confidence level.
407 Therefore there is significant difference in mean ranks of different dimensions contributing to
408 organizational culture. From table 19, it is inferred that Job & Role characteristics, Strategy,
409 Resources andStructureoccupy the first four ranks (8.50, 7.55, 6.70 and 6.65) respectively
410 and these dimensions are the significant contributors to the organizational culture. It is also
411 inferred that the dimensions Safety & Health and Reward system occupy the last two ranks
412 (3.24 and 4.19) respectively.
413 **REGRESSION**
414 **Table 20 Regression-Model Summary**
415

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.998	0.997	0.996	0.2613

416 Predictors: (Constant),Structure, Team dynamics, Resources, Customer satisfaction, Creative
417 leadership, Collaboration & Networking, Job & Role characteristics, Safety & Health,
418 Reward system, Strategy
419
420 **Table 21 Regression-Coefficients**

	Unstandardized Coefficients		Standardized Coefficients	
Model	B	Std.Error	Beta	Sig.
1 (Constant)	.063	.028		.026
Structure	.117	.008	.162	.000
Team dynamics	.114	.008	.162	.000
Resources	.101	.007	.147	.000
Customer satisfaction	.116	.008	.117	.000
Creative leadership	.085	.008	.102	.000
Collaboration & Networking	.068	.008	.084	.000
Job & Role characteristics	.124	.007	.149	.000
Safety & Health	.083	.005	.139	.000
Reward system	.093	.006	.155	.000
Strategy	.078	.007	.099	.000

12

421   Multiple Regression: $Y = b1X1 + b_2X_2 + B_3X_3 + ... + B_tX_t + u$

422

423   Organization Culture = .117(Structure) +.114(Team dynamics) +.101(Resources)
424   +.116(Customer satisfaction) +.085(Creative leadership) +.068(Collaboration & Networking)
425   +.124(Job & Role characteristics) +.083(Safety & Health) +.093(Reward system)
426   +.078(Strategy) +.063**(4.1)**
427   The table 21 shows that the significance level of all the core dimensions of organizational
428   culture except for risk taking (0.000) is lesser than 0.05. Hence there is a strong relationship
429   between these dimensions and organizational culture. The equation 4.1, thus represents the
430   regression equation of organizational culture.
431   **CHI-SQUARE TEST**

432

433   **Chi-square Test between Designation and Organizational Culture**
434   **AIM:** To test if there is significant association between designation and Organizational
435   culture.
436   **Ho:** There is no significant association between designation andOrganizational culture.
437   **H1:** There is significant association between designation and Organizational culture.

438

439   **Table 22 Chi-square Test for association between Designation and Culture**

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.883[a]	2	.143
Likelihood Ratio	3.794	2	.150
N of Valid Cases	102		

440

441   The table 22 shows that the significance level (.143) is greater than 0.05. Hence the null
442   hypothesis is accepted and the alternate hypothesis is rejected at 95% confidence level.
443   Therefore there is no significant association between designation and Organizational culture.
444   **Chi-square test between Gender and Organizational Culture**
445   **AIM:** To test if there is significant association between gender of respondents and culture.
446   **Ho:** There is no significant association between gender and Organizational culture.
447   **H1:** There is significant association between genders and Organizational culture.
448   **Table 23 Chi-square Test for association between Gender and Culture.**

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.483[a]	2	.289
Likelihood Ratio	2.448	2	.294
N of Valid Cases	102		

449

450   The table 23 shows that the significance level (.289) is greater than 0.05. Hence the null
451   hypothesis is accepted and the alternate hypothesis is rejected at 95% confidence level.
452   Therefore there is no significant association between gender and Organizational culture.

453

454   **Chi-square test between Educational qualifications and Organizational Culture**
455   **AIM:** To test if there is significant association between educational qualifications of
456   respondents and Organizational culture.
457   **Ho:** There is no significant association between educational qualifications and culture.
458   **H1:** There is significant association between educational qualifications and culture.

459

460

13

461 **Table 24 Chi-square Test for association between Qualifications and Culture.**

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.203[a]	2	.122
Likelihood Ratio	4.404	2	.111
N of Valid Cases	102		

462

463 The table 24 shows that the significance level (.122) is greater than 0.05. Hence the null
464 hypothesis is accepted and the alternate hypothesis is rejected at 95% confidence level.
465 Therefore there is no significant association betweeneducational qualificationsand
466 Organizational culture.

467 **Chi-square test between Organizational culture and Job satisfaction**
468 **AIM:** To test if there is significant association between Organizational culture and Job
469 satisfaction
470 **Ho:** There is no significant association between Organizational culture and Job satisfaction
471 **H1:** There is significant association between Organizational culture and Job satisfaction

472

473 **Table 25 Crosstab- Organizational Culture and Job Satisfaction**

		Job Satisfaction			
		Neutral	Satisfied	Highly Satisfied	Total
Organizational Culture	Moderate	4	2	0	6
	Good	5	44	16	65
	Excellent	0	3	28	31
Total		9	49	44	102

474

475

476 **Table 26 Chi-square Test for association between Culture and Job Satisfaction**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	64.332[a]	4	.000
Likelihood Ratio	57.343	4	.000
N of Valid Cases	102		

477

478 The table 26 shows that the significance level (.000) is lesser than 0.05. Hence the null
479 hypothesis is rejected and the alternate hypothesis is accepted at 95% confidence level.
480 Therefore there is significant association betweenOrganizational culture and Job satisfaction.

481

482 **CONCLUSION**
483 The project was mainly undertaken to analyse the core dimensions of R&D culture in the
484 organization that is completely dedicated to research in Basic and allied sciences. The R&D
485 Culture in the organization is found to be 'Good' with Job & Role characteristics, Strategy,
486 Structure and Resources being the significant contributors to it. This is closely followed by
487 Customer satisfaction and Collaboration and Networking. It is found that improving the
488 safety culture, reward system and increase in the degree of risk-taking attitude among
489 employees can transform the organization from 'Good Culture' to 'Excellent culture'. The
490 findings suggest that the dimensions considered have strong relationship with the culture and
491 increase in the degree of each of these dimensions can enrich the Culture of the organization.

14

Clearly communicated mandates, encouraging bold talents, access to diverse technologies, robust networks will help in tunnelling conventional barriers to cope up with the changing scenario. The recommendations suggested provides a direction for the management of the organization to identify and inculcate cultural values that will enhance R&D activities and to gradually abandon those practices that hinder creativity and innovativeness.

SUGGESTIONS&RECOMMENDATIONS

1) Setting both short term and long term goals for the organization, its different divisions and sub- divisions and making sure that they align with the CSIR goals is required to avoid the constant conflict between what is the mandate of CSIR, mandate of CLRI and what is exactly expected of the scientists. The targets and goals of the sub-division/the organization and how they contribute to the attainment of CSIR goals should be communicated to the employees in clear terms to increase workforce alignment.

2) Flexibility of administrative procedures and other adhoc committees with regard to the management of R&D activities with lesser hierarchy in decision making and set rules even for third party financed SOI projects will set the tone for Excellent R&D culture.

3) The Organization Should develop an active and well-equipped central instrumentation and chemical facility which is accessible to all. Also Up gradation of facilities and modernization of labs along with periodic monitoring is required regarding the working of facilities.

4) Disciplinary boundaries need to be bridged in terms of projects rather than departments or divisions. Integration of skills and expertise in multidisciplinary area available at the organization should be taken seriously. Interdepartmental meetings and presentations should be held on a regular basis so that each and every employee comes to know of other's work in the organization.

5) Leadership to provide a work environment of openness built on trust and making the communication process transparent by holding open-ended meetings that give each team member the opportunity to share concerns, accomplishments and ideas without fear of ridicule or reprisal.

6) Department Heads should take the responsibility of inculcating the preparedness to address challenging R&D issues in a given domain among all the employees in a particular division irrespective of their age group, experience or designation. This can be done through periodic meetings thus enabling all the members to recognize the challenging side of their job, encouraging the members to set specific and difficult goals and giving them timely feedback. Such meetings will enable the organization to sustain the dimension of Job & Role characteristics which is currently the most significant contributor to the Organizational culture.

7) Rewarding R&D behavior that promotes creativity and risk taking via more engaging work, autonomy, opportunities of advancement and giving individual incentives with respect to innovation would help in sustaining the interest among employees to constantly involve them in bringing out innovative output. This will also improve the culture of experimenting, generating innovative ideas and risk taking. Reward System should emphasizes collective attainment of objectives and recognize team performance that aids in promoting intra and inter-laboratory group harmony among working groups.

8) Applicative R&D and industrial oriented research problems should be taken up such that R&D outputs reach the society.

DIRECTIONS FOR FUTURE RESEARCH

Future research should consider expanding the dimensions specified to provide a more comprehensive explanation on R&D culture. For instance, the study can measure in detail about the impact of Recruitment Practices and Performance Appraisal process on the Culture of the Organization. In addition, there should be a further discussion concerning the reasons

for wider applicability (or not) of the findings across the other Regional Centers . Also it is required to improve the sample size to include employees in other Group categories to better understand the demographic influence on organizational culture. It will in terms of future research be handy to expand this study to a larger sample where the relationship between the organisational culture and job satisfaction can be generalized. These specific observations necessitate that future research move to broader generalizations and theories on R&D culture.

References

1. Arnifa Asmawi and Avvari V. Mohan. (2011). Unveiling dimensions of organizational culture: an exploratory study in Malaysian R&D organizations. R&D Management, 41, 5, 509-523.
2. Denison, D.R. & Neale, W.S. (1996). Denison organizational culture survey. Ann Arbor, MI: Aviat.
3. Field, R.H.G.& Abelson, M.A. (1982). A reconceptualization andproposed model. Human Relations, 35(3), 181-201.
4. Handy, C. (1999) Understanding Organizations. London:Penguin Books.
5. Hellriegel, D.,Slocum, J.W. and Woodman, R.W. (1998), Organizational Behaviour, 8th ed., South Western College, Cincinnati, OH.
6. Kerego, K. &Mthupha, D.M. (1997). Job satisfaction asperceived by agricultural extension workers in Swaziland.South African Journal of Agricultural Extension, 23(2), 19-24.
7. Martins, E.C. and Terblanche, F. (2003). Building organisational culture that stimulates creativity and innovation. European Journal of Innovation Management, 6, 1, 64–74.
8. Newman, J.L. (2009). Building a creative high-performance R&D culture: customer insight, risk tolerance, entrepreneurship, alignment, technology excellence, innovation, creative collaboration, and execution are the building blocks.Research-Technology Management, 52(5), 21-32.
9. O'Reilly, C.A., Chatman, J., and Caldwell, D.F. (1991). People and Organizational Culture: A Profile Comparison Approach to Assessing Person-Organization Fit.Academy of ManagementJournal, 34(3), 487-516.
10. Robbins, S.P. (1993). Organizational behaviour, concepts, controversies and applications. (6th Ed.). Englewood Cliffs. New Jersey: Prentice- Hall.
11. Ryan, J.C. and Hurley, J. (2007). An empirical examination of the relationship between scientists' work environment and research performance.R&D Management, 37, 4, 345–354.
12. Schneider, B & Snyder, R.A. (1975). Some relationship betweenjob satisfaction and organizational climate. Journal of AppliedPsychology, 60(3), 318-328.
13. Sempane, M.E., Rieger H.S. and Roodt, G. (2002). Job satisfaction in relation to organizational culture. SA Journal of Industrial Psychology, 28(2), 23-30.