



COMPETENCY MAPPING AND ASSESSMENT OF BEHAVIOURAL ATTRIBUTES OF DEPUTY EXECUTIVE ENGINEERS - 360 DEGREE APPROACH (A STUDY ON THE GOVERNMENT ORGANISATIONS IN INDIA)

Dr. D.John Paul

Assistant Professor, Social Work Department, Loyola College, Chennai, Tamil Nadu.

Abstract

In recent times, 'Competency Mapping' has become a catch phrase. A lot of work is being done on how it helps individuals as well as organization in the process and development. The present paper throws light on one such exploration in order to demonstrate its utility in the various bodies of State Government. At a more specific level, it discusses the process of mapping, assessment and development of the competencies in the Designs organisation, a body in the State of Andhra Pradesh. This study uses Multi-rater Assessment and Feedback System (360 degree appraisal and feedback) to achieve its purpose.

Keywords: *Behavioural Competencies, Mapping & Assessment, 360 Degree Appraisal and Feedback, Government Organisation.*

Theoretical Frame Work

The concept of Competency has made the art of Human Resource Management (HRM) to shift its focus from performance appraisal to performance management. The change in focus has taken place owing to the pioneering work of MC Cleland (1973) on competencies. Since then competency has turned from a phrase to a movement across the globe in diverse sectors. More than a few scholars have attempted to define the term "competency". (MC Cleland, 1973; Boyatzis, 1973; Lyle.S.M and Spencer, M.S ,1993; Ulrich, D. 1997; Hay Group,2003; Sharma, R.R. 2002; Rao, 2003 & 2007; Naik, P. & Rahman, 2005; Sanghi, S. 2007; Premanrajan, 2008).

However, for the purpose of this paper, the authors accept the following definition, which is widely accepted in industry and academia. Accordingly, 'Competencies are underlying characteristics of a person that enable him/her to deliver superior performance in a given job, role or situation. They include knowledge, skills, attitudes, behaviours and motives'. Similarly, the term 'Competency mapping' also needs to be understood. Competency Mapping or Competency Profiling refers to studying the job behavior of people to identify their knowledge, skill, self concept, attitude, trait and motive which results either in success or failure on the job (anonymous scholar). In this regard, Steve Garrett (2002) defines Competency Mapping as a 'process, an individual uses to identify and describe competencies that are the most critical to success in a work situation or work role'.

Another crisp definition was given by Rao (2003), who defined Competency Mapping, as 'a process of identification of competencies, required in people to perform a given job successfully or a role or a set of tasks at a given point of time'. The definitions, thus given a meaning that the Competency mapping is a process of identification of the competencies required to perform successfully a given job or role or a set of tasks at a given point of time. It consists of breaking a given role or job into its constituent tasks or activities and identifying the competencies needed to perform the same successfully.

Studies on the competency mapping reveal that the people in an organization with superior competencies play a predominant role in determining the success of organizations (Shailendra et al, 2008; Rao et al, 2003; Sahu, 2007; Sanghi, S. 2007; Sharma, R.R. 2002; Rankin, 2004). Therefore, the role played by competency in the success of an organization is vital to its long term survival. The studies have proved how the competency based approach to human resources can make the organizations to have a right approach towards selection, training and development, performance appraisal, and succession planning systems. In consequence, certain new approaches such as competency-based selection, competency-based training and development, competency-based performance appraisal, and competency-based succession planning have emerged in the field of study. (Rao, 2002, 2003 & 2004; Sharma, R.R. 2002; Sanghi, S. 2007; Soundari, 2003; Whiddett et al, 2003; William et al, 1999; Sundararajan, 2008; Wadman et al, 1998; Nair, G. 2005; Chaterjee, U, 2005; Danny G.L et al, 2002). The studies also strongly endorse a view that, if the competency based human resource is applied in any organization, the human capital of that organization would be relieved from the pitfalls of HRM such as human resource underutilization, mismanagement and misunderstandings. Needless to mention that unlike other capitals in an organization that might possibly depreciate, the human capital appreciates more and more as you develop and use it. Therefore, the HR needs to be managed properly in an organization wherein competency mapping is the best possible approach available today in human resource management (Shailendra et al, 2008; Rao et al, 2003; Sahu, 2007; Sanghi, S. 2007; Sharma, R.R. 2002; Rankin, 2004)..



Classification of Competencies

Personnel in any organization are involved in performing a variety of activities that require a variety of capabilities or competencies (Rao, 1984). A review of literature on competencies reveals various ways of grouping of competencies. Katz (1970) categorized skills into three broad areas- Technical, Human and Conceptual. Rao (2003) classified competencies into four groups: Technical (dealing with the technology or Know-how associated with the function, role and task), Managerial or Organisational (dealing with managerial aspects, organizing, planning, mobilizing resources, monitoring, and systems use), Human or Behavioural (competencies that are personal, impersonal and team related) and Conceptual or Theoretical (competencies like Visualization and model building) (cited in Pandu et al, 2005,). Similarly the Indian IT giants like Tata Consultancy Service (TCS) and iGate have grouped the critical competencies of their employees into three broad categories; Behavioural, Managerial and Technical (vide the pre-placement talk by a senior executive of TCS company in Hyderabad in 2008 and from www.igate.com).

Need for the Present Study

The Central Designs Organisation (CDO), which is being studied, is one of the key technical wings in the department of Irrigation and Development of the Government of Andhra Pradesh (India). The organization is manned by 173 qualified engineers in different capacities (in the order of their hierarchy-Assistant Executive Engineers (AEEs) Deputy Executive Engineers (DEEs) Executive Engineers (EEs), Superintending Engineers (SEs) and a Chief Engineer (CE) who actively involved in the process of designs of irrigation projects.

As such, having observed the trends happening in human resource management function, the CDO wished to come out of its bureaucracy system of handling of HR function to experiment with a new tool such as competency mapping process. Nevertheless, a survey of literature reveals that only a few research studies (James Lindner, 2001; Arun Prasad & Kamalanadhan, 2004; Hamlin & Susan, 2008) are available in the public domain that reveal the attempt of few government organizations in India and abroad to apply the competency mapping in their organizations. Nevertheless, none of the scholars did focus on Competency based HRM in Irrigation departments. Therefore the present study: Competency Mapping and Assessment in Government Organization would fill such knowledge gap.

Objectives

The specific objectives set for this study are to:

1. Map the behavioural competencies for the select Job (DEE)
2. Assess the level of competencies of job performers (DEEs) through 360 degree (self, peers, superiors and subordinates) evaluation
3. Measure the difference in the assessments of Multi-rater groups (self, peers, superiors and subordinates)
4. Identify the underlying dimensions in the behavioural competencies
5. Discuss the implications of this study

Hypotheses

Keeping the above objectives in view, the following Hypotheses have been formulated.

1. There is no significant difference in the assessment rates (self, peers, superiors and subordinates) on behavioural competencies
2. There is no significant difference in the assessment of the self and others (peers, superiors and subordinates) on behavioural competencies

Methodology

In the light of above objectives & Hypotheses, the methodology for study is designed. The discussion followed dwells on the rationale in selection of 360 degree appraisal tool for competency assessment, procedure followed in designing of questionnaire, rationale in selection of sample method and the tools used for data analysis.

Why 360 degree appraisal?

The various tools and methods used for assessing the success competencies are job task analysis, psychometric tests, individual interviews, performance appraisal reports, performance based reference checking, critical incident techniques, repertory grid, behavioural event interview, Delphi technique, questionnaire, multi-rater assessment and feedback system (MAFS/360 degree appraisal and feedback), and assessment centers. The two methods which are widely in use in many leading corporate in India and abroad for assessing competencies are 360 degree feedback and assessment centers (Sanghi, S. 2007). Of the two, the 360 degree feedback method is widely used in research (Bernardin, H.J., 1986; Brett & Atwater, 2001; Edward et al, 1986). Almost every Fortune 500 company uses the 360 degree appraisal in one form or another



(www.talentsmart.com and Rao, 2004). In India, many leading companies in software industry (TCS, Infosys, Wipro, Sathyam, iGate, Honeywell, Aztec, Mindtree, WNS), financial services (National Stock Exchange, State Bank of India, Union Bank of India, Bank of Baroda), manufacturing (Raychem RPG, Tisco, BHEL, ONGC, Titan, Dr. Reddy), Logistics (Gati), Health service (Wockhardt) use the 360 degree feedback tool in their performance management/ competency mapping process (Sharma, R.R. 2002; Naik, P. & Rahman, 2005; Sanghi, S. 2007; Rao, 2002, 2003 & 2004; Nair, G. 2005; Prasad, T.C.C., 2005; Chaterjee, U, 2005; Brett & Atwater, 2001).

The popularity of this method may be because of it being user friendly inn administration and a belief that developmental feedback can improve performance. As a tool it is a structured process of feedback from key stakeholders and aims at strengthening one's competencies by identifying and working on areas of improvement. As a tool it enhances the ability to observe and measure various job facets (Borman, 1974; Henderson, 1984). It can be used as a tool for self-reflection and correction. It also facilitates performance by increasing an individual's level of self awareness, measures the degree to which we see ourselves as others see us and act as greater reliability, fairness and rate acceptance. Commenting on its use in terms of performance feedback, a scholar opines: "the slave knows the master better than the master knows the slave" (Guinn U.L, in Sahu 2007) and "the peer appraisals are seen as better than self-appraisals given the chance of self-serving bias" (Sahu, 2007).

Thus, in view of its wider usage and benefits, the present study also adopts the '360 degree appraisal and feed back for data collection'.

Data Source

The study uses both primary and secondary data. The primary data has been obtained from Assistant Executive Engineers, Deputy Executive Engineers and Executive Engineers through a structured questionnaire. The secondary data has been obtained from Central Designs organization (CDO) and from published literature such as books, journals and business dailies.

Construction of Questionnaire: a Likert type questionnaire has been developed for eliciting opinions from the respondents on specific behavioural competencies. The questionnaire is constructed and subjected to validity and reliability tests. The test procedure adopted for assessing validity and reliability is in the lines of similar competency mapping studies. The test procedure adopted for the pilot study includes the process of identification of competencies of DEEs that have undergone a series of filters with the help of 25 knowledgeable officers (one chief engineer, four SEs, 10 DEEs and 10 AEEs) of the CDO and under the supervision of a psychometrician. Who verified the content and construct validities of questionnaire. The validity of scale is established through content validation based on the judgment of the experts.

The reliability of scale has been found using Cronbach's α and is 0.966 which is reasonably found good from a study of Harris & Schaubroeck (1988) who did a meta analysis of self-superior, self-pee and peer superior rating, covering 42 studies sourced from an internationally acclaimed journals over a period also found that the average reliabilities of those studies are substantially higher than the 0.60 figure. Therefore the alpha value (0.966) obtained in this study speaks the rationale in relying on the scale used for the study.

The factor analyses run on the data also reveal two underlying dimensions in the behavioural competencies.

Selection of Sample

The employee strength of CDO is 223. Of them, 173 are technical; staff (100 AEEs, 52 DEEs, 16 EEs, 4 SEs, and 1 Chief Engineer) and 50 are non- technical staff. For the purpose of study, the competencies of DEEs are assessed by multi raters – self (DEEs), peers (DEEs), superiors (EEs) and subordinated (AEEs) who from a sample frame for this study. Of 52 DEEs, those who involved in the design work (36 DEEs) were only studies and the rest (16) were omitted from the study, to have homogeneity in the assessee group. SEs are not involved in the study as they are not direct superiors to the DEEs. Considering the norms followed in multi rater feedback mechanism, it is decided to involve minimally one superior, one/two peer/s and one/two subordinate/s for evaluating a DEE. Therefore, 36 DEEs are assessed by 70 subordinates (AEEs), 45 peers (DEEs), 11 superiors (EEs) and 36 self (DEEs).

Judgment and purposeful sampling method is followed while selecting the assesses and assessors. The reason is the study happened in one organization (CDO) and for the sample frame of 233. Of them, the assesses (36DEEs) who involved in the designs only are chosen (purposefully). However, a choice of selection happened only in case of assessors. For the purpose, a panel of experts (consisting CE, SE and EE) was constituted for choosing the assessors form peers (DEEs) superiors (EE)



subordinates (AEEs). As the panel knew the reporting relationships in the CDO, the objectives set for this study (from the researchers) and need of objective discussions, the selection of sample was not become difficult.

Demographic Details of sample

The demographic details of sample are as follows: 53% of respondents are with below 5 years of experience in CDO followed by the experience group of 11-15 years (18%) and 16-20 years (16%). Regarding the educational background 52% posses B.Tech and 48% have M.Tech qualifications. With reference to their age group of 20-30 years, followed by the age group of 41-50 years (32%) and 31-40 years (19%). The sample consists of 61% male 39% female.

Statistical Tools

Data has been analysed using a few statistical tools like Mean, T-test, ANOVA and Factor analysis. The data analysis is done with the help of SPSS 14.0 version.

- i. Mean score is used to assess the competencies of DEEs.
- ii. ANOVA technique is used to know the significant difference in the assessments of rater groups. (self, peers, superiors and subordinates)
- iii. Student t-test is used to find the significant difference in the rating of self and others (peers, superiors and subordinates) on each competency variable.
- iv. Factor analysis is used to reconfirm the dimensions observed in during the pilot study.

The subsequent analysis discusses the objectives set for this study.

Mapping Behavioural Competencies

The procedure followed in mapping behavioural competencies of DEEs areas follows. Initially, a list of 10 behavioural competencies was identified as critical for DEEs. The same were circulated among 25 experts drawn from various categories of Engineers, Assistant Executive Engineers (AEEs) Deputy Executive Engineers (DEEs) Executive Engineers (EEs), Superintending Engineers (SEs) of Central Designs Organisation (CDO) for addition or deletion in the first list of competencies. Following their feedback the list of behavioural competencies increased to 33. Another few rounds of discussions (DELPHI technique) were held among the members of an expert panel till they reach a consensus on dimensions. Finally, 13 behavioural competencies were identified as critical competencies for DEE job, therefore incorporated in the questionnaire.

The behavioural competencies identified are (i) Commitment to job (ii) Decision making skills (iii) Result oriented (iv)Willing to take responsibility (v) hard working (vi) time management (vii) Positive attitude (viii) Belief in team work (ix) Supportive (x) Lead by example (xi) Communication skills (xii) Open to ideas and (xiii) Flexibility in approach.

Assessment of Behavioural Competencies

In order to assess the behavioural competencies of DEEs, mean scores are obtained and to find the significant difference among the rater group ANOVA values are obtained. The discussion on the result s (see table 1 & 2) on each dimension follows.

Table 1,Assessment of Behavioural Competencies: Mean and SD Values

Sl. No	Name of the Competency	Superior(EE) (N=36)		Subordinate(AEE) (N=70)		Self (DEE) (N=36)		Peers (DEE) (N=36)	
		Mean (M)	S.D	Mean (M)	S.D	Mean M)	S.D	Mean (M)	S.D
1	Commitment to Job	3.78	0.989	4.20	0.942	4.23	0.717	4.29	0.695
2	Decision making skills	3.53	0.910	3.77	0.995	3.77	0.845	3.98	0.866
3	Result oriented	3.75	0.967	3.94	0.832	3.71	0.643	3.82	0.747
4	Willing to take responsibilities	3.69	1.037	4.00	0.993	3.87	0.718	3.78	0.704
5	Hard Working	3.69	1.091	4.17	0.992	3.94	0.814	4.02	0.753
6	Time Management	3.67	1.014	3.86	1.053	3.90	0.831	3.93	0.720
7	Positive Attitude	3.69	0.889	4.01	0.860	4.23	0.560	3.82	0.777
8	Belief in Team Work	3.58	1.02	3.80	0.957	4.06	0.629	3.82	0.806
9	Supportive	3.61	0.964	4.23	0.887	4.06	0.680	3.78	0.902
10	Lead by Example	3.44	0.969	3.57	1.001	3.61	0.844	3.62	0.860
11	Communication skills	3.67	1.095	3.69	0.971	3.52	0.677	3.60	0.809
12	Open minded	3.64	0.899	3.64	1.05	4.10	0.746	3.73	0.837
13	Flexibility in approach	3.42	0.996	3.73	1.04	4.06	0.680	3.80	0.757



Table 2, Agreement among the rater groups on Assessment of Behavioural Competencies: Anova Values

Sl. No	Name of the Competency		Sum of Squares	Df	Mean Square	F	Sig
1	Commitment to Job	Between groups	6.20	3	2.067	2.785	0.042
		Within groups	132.086	178	0.742		
2	Decision making skills	Between groups	4.052	3	1.351	1.585	0.195
		Within groups	151.712	178	0.852		
3	Result oriented	Between groups	1.569	3	0.523	0.792	0.50
		Within groups	117.486	178	0.660		
4	Willing to take responsibilities	Between groups	2.665	3	0.888	1.107	0.348
		Within groups	142.901	178	0.803		
5	Hard Working	Between groups	5.570	3	1.857	2.140	0.097
		Within groups	154.430	178	0.868		
6	Time Management	Between groups	1.611	3	0.537	0.612	0.608
		Within groups	156.081	178	0.877		
7	Positive Attitude	Between groups	5.713	3	1.904	2.958	0.034
		Within groups	114.622	178	0.644		
8	Belief in Team Work	Between groups	3.87	3	1.290	1.636	0.183
		Within groups	140.099	178	0.789		
9	Supportive	Between groups	11.255	3	3.752	4.891	0.03
		Within groups	136.255	178	0.767		
10	Lead by Example	Between groups	0.744	3	0.248	0.283	0.837
		Within groups	155.964	178	0.876		
11	Communication skills	Between groups	0.708	3	0.236	0.281	0.839
		Within groups	149.628	178	0.841		
12	Open minded	Between groups	4.976	3	1.659	1.944	0.124
		Within groups	151.887	178	0.853		
13	Flexibility in approach	Between groups	70199	3	2.40	2.854	0.039
		Within groups	149.664	178	0.841		

1. Commitment to Job

“Working with dedication and loyalty to the organization in the assigned work”

Job performance (DEEs) commitment to the job is rated ‘high’ (M=3.78) by Superiors. While assessing the ‘Commitment to job’, the rates (self, peers, superiors and subordinates) differ significantly as $F(3,178) = 2.785$ and $P < 0.05$.

2. Decision making skills

“Ability to assess the options and implications, in order to identify a solution and firmly taking decision”

Job performance (DEEs) ‘Decision making skills’ is rated ‘low’ (M=3.53) by Superiors and rated ‘high’ (M=3.98) by their Peers. However, the assessment of raters does not differ significantly as $F = 1.585$ and $P > 0.05$.

3. Result oriented

“Does the work to achieve result utilizing optimal resources”

Job performance (DEEs) ‘Result oriented’ is rated ‘high’ (M=3.94) by Subordinates and rated ‘low’ (M=3.71) by themselves (Self). However, the difference in raters assessment is not significant as $F = 0.792$ and $P > 0.05$.

4. Willing to take responsibilities

“Takes initiatives to do the assigned job by taking full responsibility”

Job performance (DEEs) ‘Willing to take responsibilities’ is rated ‘high’ (M=4.00) by Subordinates and rated ‘low’ (M=3.69) by Superiors. Willing to take responsibilities’ of Job performance (DEEs) have been rated commonly by all the raters as $F = 1.107$ and $P > 0.05$.

5. Hard Working

“Working hard with dedication and devotion to achieve the end results”



'Hard working nature' of Job performance is rated 'high' (M=4.17) by Subordinates and rated 'low' (M=3.69) by Superiors. There is no significant difference among rater groups on the Hard working nature of Job performance as $F = 2.140$ and $P > 0.05$.

6. Time Management

"Able to plan and organize things in time-frame and achieve goals within stipulated time"

Peers have rated 'high' (M=4.17) and Superiors have rated 'low' on the 'Time Management' of Job performance. Rater groups do not differ significantly while rating the 'Time Management' of Job performance (DEEs) as $F = 0.612$ and $P > 0.05$.

7. Positive Attitude

"Constructive way of thinking in solving a problem"

Job performance (DEEs) have rated themselves 'high' (M=4.23) whereas their Superiors rated 'low' (M=3.69) on 'Positive Attitude' competency. Rater groups differ significantly while assessing the 'Positive Attitude' of Job performance (DEEs) as $F(3,178) = 2.785$ and $P < 0.05$.

8. Belief in Team Work

"Works to promote a positive climate, good morale and cooperation between team members, builds team spirit, respecting sentiments of team members and their perceptive owns responsibilities for success and failures"

'Belief in Team work' of Job performance was rated 'high' (M=4.06) by Self and 'low' (M=3.58) by Superiors. However rater groups do not differ significantly while assessing the 'Belief in Team work' of Job performance (DEEs) as $F(3,178) = 1.636$ and $P > 0.05$.

9. Supportive

"Developing and maintaining win relationship with subordinates, peers and superiors possessing supportive attitude"

Subordinates rate Supportive competency of Job performers 'high' (M=4.23) whereas Superiors rate 'low' (M=3.61). A significant difference is found among rater groups while assessing 'supportiveness' of job performers as $F(3,178) = 4.891$ and $P < 0.05$.

10. Lead by Example

"Influence the team members and events by exhibiting leadership qualities, high character and integrity. Be a role model to others" Peers have rated 'high' (M=3.62) and Superiors have rated 'low' (M=3.44) on 'lead by Example' of Job Performers. However, rated groups do not differ significantly in the assessment at $F(3,178)=0.283$ and $P > 0.05$.

11. Communication skills

"Speaks in concise, organized, effective and culturally appropriate manner tailored to the situation, and raise succinctly in a clear convincing and organized manner. There will be clarity in expression, and writing in a convincing manner" Subordinates rating is 'high' (M=3.69) whereas self rating is 'low' (M=3.52) on 'Communication skills Job Performers. However, the raters do not differ significantly in the assessment at $F(3,178) = 0.281$ and $P > 0.05$.

12. Open minded/ Open to Idea/ Change

"Personal willingness and ability to affectively work in and adopt to change" Self rates 'high' (M=4.10) where as Superior as well as Subordinate rate 'low' (M=3.64) on the 'Open mindedness' of Job performers. However, the rate group do not differ significantly in their assessment at $F(3,178) = 1.944$ and $P > 0.05$.

13. Flexibility in approach

"Open to chance, new information and alternative approaches- accepts change and new situation as opportunities for learning and growth" Self rating is 'high' (M=4.06) where as Superior rating is 'low' (M=3.42) on 'Flexibility in approach' of Job performers. There is a significant difference among raters in accessing the flexibility approach of Job performers as $F(3,178) = 2.854$ and $P < 0.05$.

Self – Other Agreement

With the help of t- test results, it is found that there is a significant difference in the assessments of self and others on four behavioural competencies viz., Positive attitude, Belief in team work, Communication skills and Open to ideas. On the other hand, there is no significant difference in the assessment of the self and others in respect of the remaining nine behavioural competencies: Commitment to job, Decision making skills, Result oriented, Willing to take responsibility, Hard working, Time management, Supportive, Lead by example and Flexibility in approach (refer table-3).



Table 3, Managerial Behavioural Competencies of Deputy Executive Engineers by Students' T-Distribution

Behavioural Competencies	Self	Peers (a)	Superior (b)	Subordinate (c)	Average (a),(b),(c)	Standard Deviation	Value from t-distribution	Hypothesis (Ho)
Commitment to Job	4.27	4.29	3.914	4.200	4.134	0.196	1.200	Accepted
Decision making skills	3.77	3.98	3.500	3.800	3.760	0.243	0.070	Accepted
Result oriented	3.73	3.82	3.800	4.000	3.873	0.110	2.251	Accepted
Willing to take responsibilities	3.87	3.78	3.700	4.000	3.826	0.155	0.491	Accepted
Hard Working	3.94	4.02	3.700	4.200	3.973	0.253	0.225	Accepted
Time Management	3.93	3.93	3.700	3.900	3.843	0.125	1.206	Accepted
Positive Attitude	4.23	3.82	3.700	4.000	3.840	0.151	4.478	Rejected
Belief in Team Work	4.10	3.82	3.600	3.800	3.740	0.122	5.128	Rejected
Supportive	4.06	3.78	3.600	4.200	3.860	0.308	1.125	Accepted
Lead by Example	3.63	3.64	3.600	3.600	3.580	0.072	1.201	Accepted
Communication skills	3.52	3.60	3.500	3.680	3.646	0.040	5.478	Rejected
Open minded	4.10	3.73	3.667	3.830	3.733	0.095	6.697	Rejected
Flexibility in approach	4.06	3.80	3.6400	3.7400	3.6530	0.2042	3.4520	Accepted
	3.94	3.85	3.62	3.92	3.804	0.140	1.6740	Accepted

Key Behavioural Dimensions

In order to fine the underlying dimensions in behavioural competencies, the output on factor analysis to obtain by requesting Principal Component analysis and Specifying a rotation.

Table 4,Results of Factor Analysis

Factor	Eigen Value	% of Variance	Cumulative %
I	7.02	54.026	
II	1.347	10.360	64.387

Table -4 discloses the output of factor analysis comprising the communality for all 13 behavioural competencies and their Eigen values. The competencies having Eigen values of 1 or more than 1 are extracted. It is noticed from the cumulative percentage column that, the 2 factors extracted together account for 64.38 percent of the total variance. This is a pretty good bargain, as we lost only 35.62 % of the information content. We also notice from table-5 that the competencies Q7, Q8, Q9, Q11, Q12 and Q13 have loading of 0.725, 0.778, 0.691, 0.626, 0.816, 0.799 on factor 1 which is a combination of six original variables viz., 'Positive Attitude', 'Belief in Team Work', 'Supportive', 'Communication skills', 'Open minded/ Open to ideas' and 'Flexibility in approach'. Thus the factor 1 could be named as 'Team Orientation'.

Table 5,Results of Rotated Factor Matrix

No.	Name of the Competency	Factor 1	Factor 2
Q1	Commitment to Job	0.119	0.824
Q2	Decision making skills	0.481	0.599
Q3	Result oriented	0.469	0.628
Q4	Willing to take responsibilities	0.360	0.753
Q5	Hard Working	0.205	0.818
Q6	Time Management	0.286	0.751
Q7	Positive Attitude	0.725	0.271
Q8	Belief in Team Work	0.778	0.174
Q9	Supportive	0.691	0.388
Q10	Lead by Example	0.471	0.639
Q11	Communication skills	0.626	0.338
Q12	Open minded/ Open to ideas	0.816	0.240
Q13	Flexibility in approach	0.799	0.246



As such in table-5, down the column for factor 2, it can be found that the competency variables: Q1, Q2, Q3, Q4, Q5, Q6 and Q10 have high loading of 0.824, 0.599, 0.628, 0.753, 0.818, 0.751 and 0.639. This indicates that the factors2 is a combination of these seven variables. The related statements are: ‘Commitment to Job’, ‘Decision making skills’, ‘Result oriented’, ‘Willing to take responsibilities’, ‘Hard Working’, ‘Time Management’ and ‘Lead by Example’. We may combine these variables into a factor called ‘Performing Leadership’.

Findings and Conclusions

From the foregone discussions, the following findings and conclusions could be drawn:

- Superior have rated ‘low’ on most of (11out of 13 competencies except two) competencies of Job performers, compared to other group.
- Variance in the assessment of supervisor and others on many is due to the comprehensive understanding gained by supervisor over the years by observing the performance of their subordinates that could have reflected in their conservative and realistic rating.
- Subordinates of job holders rated the later ‘high’ on most of the competencies. This high rating of the subordinates of their supervisor may be either due to admiration on the competencies of their bosses or to appease their bosses with high rating thereby averting any comfortable relations with former in future. On researchers enquiry with the concerned officials one of them observe: ‘due to lake of enough experience in the department, the subordinates who joined CDO recently might not be able to judge their supervisor realistically like superiors. Therefore the new recruits might have taken a safe route of rating their superiors high”. This view was observed by the researchers during the interactions with the officials, in considerable number of cases.
- Generally peers are perceived to be ‘jealous of their colleagues’ growth. But the result of the study reveals otherwise. The peers gave a liberal rating on certain competencies: (i) commitment of job, (ii) Decision making skills, (iii) Time Management and (iv)Lead by Example, which is a good sign for the organization. The reason for the high rating might be to avoid any inter personal conflict with their colleagues if they give low rating the later.

Table 6, Competency Vs High and Low raters

SI No.	Name of the Competency	High rater	Low rater
1	Commitment to Job	Peers	Superior
2	Decision making skills	Peers	Superior
3	Result oriented	Subordinate	Self
4	Willing to take responsibilities	Subordinate	Superior
5	Hard Working	Self	Superior
6	Time Management	Peers	Superior
7	Positive Attitude	Self	Superior
8	Belief in Team Work	Self	Superior
9	Supportive	Subordinate	Superior
10	Lead by Example	Peers	Superior
11	Communication skills	Subordinate	Self
12	Open minded	Self	Superior & Subordinate
13	Flexibility in approach	Self	Superior

- Self have rated themselves high on (i) Hard Working, (ii) Positive Attitude, (iii) Belief in Team Work and (iv) Open minded. This may be due to their perception that they are better team players and hard workers, but the truth is otherwise. For instance, the supervisors rated low on these four behavioural competencies.
- ANOVA results reveal that there is a significant difference among the perception of groups while assessing some behavioural competencies of job performers, (i) Commitment to Job, (ii) Supportive, (iii) Positive Attitude and (iv) Flexibility in approach. The factors like assessor’s status, experience, and maturity levels could have caused the significance difference in the ratings. The analysis shows that the null hypothesis – that there is no significant difference in the assessment of rater groups- is rejected only in the assessments of above four behavioral competencies only. On other nine behavioral competencies by rater groups did find no significant difference in their ratings.
- The ‘t’ test results found that there is a significant difference in the assessments of self and others on only four out of thirteen behavioural competencies, Positive Attitude, Belief in Team Work, Communication skills and Open minded. The reason is due to high assessment by self on those competencies. Further, the analysis supports us to



reject the Null hypothesis stated – that there is no significant difference in the assessments of self and others – in those cases.

- Factor analysis notices two important dimensions from the 13 behavioural competencies: they are identified as: 'Team orientation' and 'performing leadership' which are required in DEEs for giving better performance at CDO.

Implications of this study

Against the backdrop of above finding and conclusions, let us discuss how this study would add to the existing body of knowledge and on the CDO.

Contribution to the Existing Body of Knowledge

The study finds: (i) there are 13 behavioural competencies identified critical for Deputy Executive Engineer Job in the design wing of irrigation Department. (ii) Supervisors assessment would be low compared to the rating of self which is in line with the findings of studies by Frank Shipper & Jeenett (2002). (iii) Subordinates rate their supervisors high. (iv) There is no significant difference among the assessment of rater groups. (v) there is no significant difference between the assessment of self and others who in this summary of self ratings concluded that "individuals have a significant different view of their job performance than held by other people and those of Harris & Schaubroeck (1988) but completely in line with that of Hamlin (2002), whose study found that the self- perceptions of managers and the perception of supervisor and subordinates very similar and only differ on a limited number of criteria and which indicates that a complex set of relations exists among self and others evaluation. (iv) Finally but very important finding of the present study is also that there are two key behavioural dimensions: 'team Orientation' and 'Performing Leadership', which are required in DEEs for giving better performance at CDO.

For Central Designs Organisation (CDO): From the finding and conclusions the following suggestion has been made to CDO. Developing Employee Competency Profiles: the CDO could develop a data bank of competencies of its employees to be used for various purposes such as training promotions and placement. The CDO can initiate a special counseling and feedback session for each employee, if possible with counseling expert, for disclosing his/her strengths and weakness and motivate him/her towards the area of development. Planning HRD Activities: Referring the status of Human Resource Development process, a senior executive made a critical observation: "Human Resource Development" initiatives at CDO are held as a routine affair like any other government body. In a year, only 10% of technocrats are being provided training. In the light of study's findings, the CDO can also plan HRD initiatives. It can a series of need Based training programmes both In-house and outside covering every individuals for imparting training for a duration of at least 10 days in a year.

The CDO needs focus on trainings of employees in the management and behavioural areas. The management and behavioural training, in particular should stress on two aspects: 'Art of working in Teams' and 'Performing Leadership'. A Programme on Art of working in Teams has become essential because the present study found a significant difference in the rating of self and others on teamwork related competencies: 'Positive attitude', 'Belief in Team Work', 'Supportive', 'Communication skills', 'Open minded' and 'Flexibility in Approach'. Similarly, a programme on 'Performing leadership' Is desirable covering topics like: 'Commitment to job' 'Decision making skills', 'Result Oriented', 'Willing to take responsibilities', 'Hard work', 'Time management' and 'Lead by example'. In order to develop engineers in those behavioural areas, they may be deputed to the related management institutions such as Indian Institutes of Management, XLRI, MDI. The programmes could be part from the present trainings at Water and Land Management Training Institute, Engineering Staff College of India, DR.Marri Chenna Reddy HRD Institute and Administrative Staff College India at Hyderabad. The present study of competency mapping assessment and development at Central Designs Organisation is a right step at right time for the state of AP in its journey towards economic development, through its major focus on irrigation and agriculture, aiming to complete 75 irrigation projects benefiting 10 million acres with a capital outlay of Rs.1, 000,000 millions.

Suggestions for Further Research

Human Resource Management as a profession is in a transition stage in India like elsewhere. Many studies have been completed focusing the role and importance of human resources management. As new approaches, models, tools and techniques are emerging in the field of HRM, the organizations in both government and private sector have taken initiatives in implementing them. For instance, competency based training and development is taking place in NTPC. Therefore, the authors' opine that they made a modest attempt to apply competency mapping in a state government organizations, compared to commercial organizations, the future scholars could take up number of empirical researches in the area of HRM in government sector. The scholars can take up case studies/comparative studies with different combinations of the departments of state government. Further, the scholars can explore the reasons why peers and subordinates rate their Colleagues/superiors high unlike a notion that they rate latter conservatively.