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STUDY ON COMPETENCY MAPPING FOR EMPLOYEES TOWARDS CORAL MANUFACTURING WORKS INDIA PRIVATE, LIMITED AT ERODE

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ABSTRACT

This study examines competency mapping among employees at Coral Manufacturing Works India Private Limited (CMW), Erode. The objective was to identify the competencies required for different job roles and assess employees' existing competency levels. It also aimed to identify competency gaps and evaluate the effectiveness of training and development programs. A descriptive research design was adopted for the study. Primary datawas collected from 234 employees using a structured questionnaire, while secondary data wasgathered from company records, books, journals, and online sources. The collected data was analyzed using Percentage Analysis, Weighted Average, Chi-Square Test, One-Way ANOVA, and Pearson Correlation with IBM SPSS and Microsoft Excel. The findings reveal that employees possess strong technical knowledge and perform their jobs effectively. However, gaps were identified in handling unfamiliar tasks and communication skills. The study also found that training programs positively influence employee performance and confidence. Statistical analysis showed no significant difference based on gender or age regarding training effectiveness and adaptability. The study concludes that regular competency assessments, role-specific training, mentoring, and structured competency mapping can enhance employee skills, productivity, and overall organizational performance.

1. INTRODUCTION

Background of Competency Mapping

In today's competitive business environment, employees are the most valuable asset of an organization. Organizational success depends on employees' knowledge, skills, and ability to adapt to changing technologies and job requirements.

Competency mapping is a systematic process used to identify the knowledge, skills, and

behaviors required for specific job roles. Based on the concept introduced by David C. McClelland and later developed by Richard Boyatzis and Lyle Spencer, it helps organizations improve recruitment, training, performance appraisal, and career development.

In the wind turbine generator manufacturing industry, competency mapping is especially important due to the need for technical expertise, precision, and adherence to quality and safety standards. This study aims to identify the key competencies required for different job roles, assess employees' existing competency levels, identify competency gaps, evaluate training effectiveness, and recommend measures to enhance employee performance.

2. Need for the Study

The growing demand for wind energy has increased the need for efficient and skilled employees in the manufacturing sector. Organizations must maintain high quality and safety standards while increasing production. To achieve this, employees must have the right competencies for their roles.

At Coral Manufacturing Works India Private Ltd, the workforce has increased significantly, and employees are working in different departments. As the organization grows, it becomes difficult to manage employee performance without a structured system. In many cases, employees may not have the exact skills required for their roles, and training programs may not focus on actual needs.

This creates a need to identify the competencies required for each job role, assess the current skill level of employees, and analyze the gap between required and existing competencies. It is also important to evaluate whether training programs are effective in improving employee skills and to suggest measures for better competency development and performance improvement.

STATEMENT OF THE PROBLEM

Coral Manufacturing Works India Private Ltd operates in a technically demanding industry and has experienced rapid growth in its workforce. However, the organization does not have a proper system to assess employee competencies and link them with training and performance improvement.

Due to this, it becomes difficult to clearly identify the skills required for different job roles and to measure employee performance accurately. Skill gaps among employees are not properly identified, and training programs may not fully address these gaps. This can affect productivity, product quality, and overall organizational performance.

Employees may also lack clarity about what is expected from them and how they can improve their performance. This can reduce motivation and limit their growth within the organization.

Therefore, there is a need to implement a structured competency mapping approach to identify required competencies, assess employee skill levels, analyze gaps, evaluate training effectiveness, and suggest improvements. This study aims to address these issues and help the organization improve employee competencies and overall performance

OBJECTIVES OF THE STUDY

- To identify the key competencies required for various job roles within the organization.
- To assess the existing competency levels of employees.
- To analyze the gap between the required competencies and the existing competency levels of employees.

- To evaluate the effectiveness of training and development programs in enhancing employee competencies.
- To suggest measures for improving competency development and overall employee performance.

SCOPE OF THE STUDY

- The present study focuses on competency mapping of employees at Coral Manufacturing Works India Pvt. Ltd., with emphasis on identifying, assessing, and analyzing the competencies required for effective job performance within the organization.
- The study covers the identification of key competencies required for various job roles, particularly at the operational and shop-floor level, and evaluates the existing competency levels of employees in terms of their knowledge, skills, and abilities.
- It includes an analysis of the gap between the competencies required by the organization and the current competency levels of employees, helping to identify areas that require improvement.
- The study also examines the effectiveness of training and development programs in enhancing employee competencies and improving job performance.
- Further, the study suggests suitable measures to improve competency development and overall employee performance, contributing to increased organizational efficiency and productivity.

LIMITATIONS OF THE STUDY

- The study is limited to employees of Coral Manufacturing Works India Pvt. Ltd., and therefore, the findings may not be applicable to other organizations.
- The data is collected through a structured questionnaire, and the accuracy of the results depends on the honesty and understanding of the respondents.
- Time constraints may limit the depth of the study and the data collection process.
- The study focuses mainly on employees at the shop-floor level and may not fully represent all levels of management.
- There is a possibility of personal bias in the responses, which may affect the results of the study.

The study considers selected competency factors and may not cover all aspects of competency mapping.

2. RESEARCH METHODOLOGY

Research methodology refers to the systematic approach used to conduct a study in a scientific and organized manner. It includes the research design, sources of data, sampling methods, data collection techniques, and tools used for analysis.

In this study, a suitable methodology has been adopted to analyze the competency mapping of employees at Coral Manufacturing Works India Pvt. Ltd. The study focuses on identifying required competencies, assessing existing competency levels, analyzing competency gaps, and evaluating the effectiveness of training and development programs.

2.1.1 Research Design

The study is based on a descriptive research design, which is used to describe the characteristics of a population or a particular phenomenon.

This research design is appropriate for the present study as it focuses on understanding employee competencies, assessing their current competency

levels, identifying gaps between required and existing competencies, and evaluating the effectiveness of training programs.

Descriptive research enables the collection of quantitative data through structured questionnaires and facilitates systematic analysis of employee responses

2.1.2 Sources of Data

The study is based on both primary and secondary data to ensure a comprehensive understanding of the research problem.

a) Primary Data

Primary data refers to first-hand data collected directly from respondents for the specific purpose of the study.

In this research, primary data was collected through a structured questionnaire administered to employees of the organization. The questionnaire consists of 30 statements designed based on the objectives of the study and measured using a 5-point Likert scale.

The questionnaire covers areas such as required competencies for job roles, existing competency levels of employees, competency gaps, effectiveness of training programs, and measures for improving competency development.

This method provides direct insights into employee perceptions and experiences, ensuring reliability of the data collected.

b) Secondary Data

Secondary data refers to data that has already been collected and published by other sources.

For this study, secondary data was collected from internal company documents and reports, academic books related to Human Resource Management, journals and research papers on competency mapping, and relevant online sources.

Secondary data helps in building a theoretical foundation and supports the INTERPRETATION of primary data findings.

2.1.3 Time Period Covered

The study was conducted over a period of three months, from February to April.

During this period, activities such as questionnaire design, data collection, data organization, coding, analysis, and INTERPRETATION were carried out. The defined time frame ensured systematic completion of the research process.

3.1.4 Sampling Design

Sampling design refers to the process of selecting a representative group from the population for the purpose of data collection.

a) Sample Size

The sample size of the study consists of 234 employees working at Coral Manufacturing Works India Pvt. Ltd. A sufficient sample size improves the reliability and accuracy of the study findings.

b) Sampling Unit

The sampling unit includes employees from various functional departments of the organization such as Human Resource (HR), Operations, Quality, Materials, Finance, and other supporting departments.

These employees were selected as they contribute to the overall functioning of the organization and

play a significant role in achieving organizational performance.

c) Sampling Technique

The study uses a convenience sampling technique with representation from different departments.

Respondents were selected based on their availability and willingness to participate during the data collection period. At the same time, efforts were made to include employees from different departments and job roles to ensure broader representation of the workforce.This method was adopted due to time constraints, ease of data collection, and accessibility of respondents in the organizational environment.

3.1.5 Tools Used for Analysis

The data collected for the study was analyzed using both descriptive and inferential statistical tools. The following methods were used:

1. Simple Percentage Analysis

Simple percentage analysis was used to analyze the demographic profile of respondents such as age, gender, department, educational qualification, years of experience, and employment type. It was also used to examine employee responses toward competency-related statements included in the questionnaire.

This method helped in understanding the proportion and distribution of employee responses regarding competency mapping practices within the organization.

Formula:

$$\text{Percentage} = \left(\frac{\text{Number of respondents}}{\text{Total Number of Respondents}}\right) \times 100$$

2. Weighted Average (Mean Score Analysis)

The weighted average method was used to measure the overall opinion and satisfaction level of employees regarding competency-related factors. This technique helped identify the importance and ranking of various competency dimensions influencing employee performance and skill development.

Formula:

$$\text{Weighted Average} = \frac{\sum(f \times x)}{\sum f}$$

Where:

- **f = Frequency of responses**
- **x = Weight assigned to each response**

3. Chi-Square Analysis

Chi-Square analysis was performed using IBM SPSS Statistics to identify the relationship between categorical variables. This statistical tool was used to determine whether there is a significant association between demographic variables and competency-related factors.

4. ANOVA (Analysis of Variance)

One-Way ANOVA was conducted using IBM SPSS Statistics to identify whether significant differences exist among different employee groups with respect to competency-related variables.

This technique was mainly used to compare the mean responses of employees belonging to different age groups regarding competency-related factors.

5. Correlation Analysis

Pearson Correlation analysis was carried out using IBM SPSS Statistics to measure the degree and direction of relationship between competency variables included in the study.

This analysis helped identify the strength of association between employee competencies, training effectiveness, problem-solving ability, and work performance variables.

6. IBM SPSS Statistics

IBM SPSS Statistics (Statistical Package for Social Sciences) was used for performing advanced statistical analyses in the study. SPSS helped in conducting statistical tests accurately and interpreting the relationships and differences among variables.

SPSS was mainly used for:

- Chi-Square Analysis
- One-Way ANOVA
- Correlation Analysis
- Statistical Interpretation and hypothesis testing

7. Microsoft Excel

Microsoft Excel was used for data entry, classification, tabulation, percentage calculation, weighted average analysis, and chart preparation. The collected responses were organized and converted into tables and graphical representations for easy understanding and Interpretation.

Excel was mainly used for:

- Demographic analysis
- Simple percentage analysis
- Weighted average analysis
- Preparation of tables and charts

Data organization and presentatio

IV. DATA ANALYSIS AND INTERPRETATION OF DATA:

4.1 Simple Percentage Analysis:

I. Demographic Analysis:

Table 4.1.1 Table Indicating the Age:

1. Age Group Distribution		
Category	**Freq (Sample)**	**% (Sample)**
20-25 yrs	40	17.09%
26-30 yrs	78	33.33%
31-40 yrs	66	28.20%
41-45 yrs	45	19.23%
Above 50 yrs	5	2.13%
Total	**234**	**100.00%**

Source: Primary data

INTERPRETATION:
Most respondents are aged **26–30 years (33.33%)**, followed by **31–40 years (28.20%)**, showing a mainly young and mid-age group.

INFERENCE:
The sample is dominated by young and mid-career employees.

Table 4.1.2 Table Indicating the Gender:

2. Gender Distribution		
Category	**Freq (Sample)**	**% (Sample)**
Male	207	88.46
Female	27	11.53
Total	**234**	**100.00%**

Source: Primary data

INTERPRETATION:
Most respondents are **male (88.46%)**, while **female respondents (11.53%)** are comparatively low.

INFERENCE:
The sample is male-dominated.

Table 4.1.3 Table Indicating the Department :

3. Department-wise Distribution		
Category	**Freq (Sample)**	**% (Sample)**
HR	4	1.70%
Operations	145	61.96%
Quality	20	8.54%
Materials	25	10.68%
Finance	5	2.13%
Others	35	14.95%
Total	**234**	**100.00%**

Source: Primary data

INTERPRETATION:
Most respondents are from **Operations (61.96%)**, followed by **Others (14.95%)** and **Materials (10.68%)**, while very few are from HR and Finance.

INFERENCE:
The sample is heavily concentrated in the Operations department.

4.2 WEIGHTED AVERAGE:

Q. No	Statement	SD (×1)	D (×2)	N (×3)	A (×4)	SA (×5)	Total Score	WA	RANK
7	Clear understanding of skills & knowledge required	10	16	19	102	87	942	4.03	16
8	Training programs develop new useful skills	9	14	23	92	96	954	4.08	12
9	Need for additional training to improve performance	7	20	26	109	72	921	3.94	23
10	Problem identification & solving important in daily work	5	6	9	107	107	1007	4.30	2
11	Organization provides adequate training opportunities	15	20	27	88	84	908	3.88	25
12	Able to adapt to changes in work processes	4	22	20	104	84	944	4.03	17
13	Confident in carrying out job responsibilities	7	12	18	108	89	962	4.11	11
14	Possess required knowledge and skills	6	18	22	98	90	950	4.06	14
15	Training programs increased confidence in work	9	18	18	108	81	936	4	20
16	Can handle work-related problems and find solutions	6	13	20	113	82	954	4.08	13
17	Maintain good quality and accuracy in work output	5	9	17	118	85	971	4.15	10
18	Organization clearly communicates skills & expectations	15	22	18	105	74	903	3.86	26
19	Difference between current and required skills	13	21	31	96	73	897	3.83	28
20	Improving competencies will help perform better	9	1	14	104	106	999	4.27	3
21	Difficulties due to lack of knowledge or skills	20	23	28	93	70	872	3.73	30

22	Complete tasks independently without frequent support	7	18	26	112	71	924	3.95	22
23	Regular training necessary for improving performance	5	9	13	107	100	990	4.23	5
24	Current skills sufficient to meet job requirements	11	28	21	115	59	885	3.78	29
25	Apply knowledge from training in daily work	4	23	22	118	67	923	3.94	24
26	Organization encourages skill improvement	8	10	29	106	81	944	4.03	18
27	Teamwork and standard procedures important	7	5	17	113	92	980	4.19	7
28	Training programs relevant to job role	7	18	19	116	74	934	3.99	21
29	Difficulty handling new or unfamiliar tasks	18	36	31	87	62	841	3.59	31
30	Feedback helps identify areas for improvement	2	10	20	105	97	987	4.22	6
31	Technical knowledge essential for job performance	3	6	18	93	114	1011	4.32	1
32	Organization should provide more L&D opportunities	8	7	20	101	98	976	4.17	9
33	Supervisor support helps improve skills	3	10	19	112	90	978	4.18	8
34	Good communication necessary for job success	4	11	16	95	108	994	4.25	4
35	Competencies are Regularly Assessed	12	24	30	90	78	900	3.85	27
36	Competencies Aligned with Career Growth	8	20	26	80	100	946	4.04	15

INTERPRETATION

The highest-ranked factor is **technical knowledge (WA = 4.32)**, followed by **problem-solving ability and competency improvement**, indicating strong Agreement on core performance skills. Lower-ranked factors such as **difficulty in handling new tasks (WA = 3.59)** and **skill gaps** suggest areas needing improvement.

INFERENCE:

Employees strongly value technical skills, training, and communication, while some gaps exist in handling new tasks and skill adequacy

4.3 CHI-SQUARE TEST

Null Hypothesis H0: There is no significant relationship between gender of the respondents and training develops new useful skills.

Alternate Hypothesis H1: There is a significant relationship between gender of the respondents and training develops new useful skills.

Crosstabs

Table 4.3.1 Case Processing Summary

Cases	**Valid**		**Missing**		**Total**	
	N	Percent	N	Percent	N	Percent
Gender *Training_develops_new _useful_skills	234	100.0%	0	0.0%	234	100.0%

Table 4.3.2 Crosstabulation

Gender * Training develops new useful skills Crosstabulation

Gender		**SD**	**D**	**N**	**A**	**SA**	**Total**
Male	Count	5	18	24	93	67	207
	Expected Count	6.2	17.7	23.0	96.4	63.7	207.0
Female	Count	2	2	2	16	5	27
	Expected Count	0.8	2.3	3.0	12.6	8.3	27.0
Total	Count	7	20	26	109	72	234
	Expected Count	7.0	20.0	26.0	109.0	72.0	234.0

Table 4.3.3 Chi-Square Tests

Value		**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	5.842[a]	4	0.211
Likelihood Ratio	5.106	4	0.276

Linear-by-Linear Association	.364	1	0.546
N of Valid Cases	234		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is .81.

INTERPRETATION:

Since "p-value" is 0.211 which is greater than 0.05, the null hypothesis is accepted and alternate hypothesis is rejected. Hence, there is no significant relationship between gender of the respondents and employees' opinion regarding training developing new useful skills.

INFERENCE:

The analysis reveals that gender does not significantly influence employees' perception regarding training developing new useful skills.

4.4 ANOVA

ONE WAY ANOVA

Null Hypothesis (H0): There is no significant difference between age group and employees' ability to adapt to changes in work processes.

Alternative Hypothesis (H1): There is a significant difference between age group and employees' ability to adapt to changes in work processes.

Table 4.4.1 Descriptive Statistics

Age Group	**N**	**Mean**	**Std. Deviation**	**Std. Error**	**95% Confidence Interval for Mean**		**Minimum**	**Maximum**
					Lower Bound	**Upper Bound**		
20–25 yrs	44	4.00	1.012	0.152	3.69	4.31	1	5
26–30 yrs	71	4.15	0.749	0.089	3.98	4.33	2	5
31–40 yrs	70	4.14	1.081	0.129	3.89	4.40	1	5
41–45 yrs	44	4.18	0.971	0.146	3.89	4.48	1	5
Above 50 yrs	5	3.40	1.342	0.600	1.73	5.07	2	5
Total	**234**	**4.11**	**0.961**	**0.063**	**3.99**	**4.23**	**1**	**5**

Table 4.4.2 ANOVA Table

Source of Variation	**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**

Between Groups	3.498	4	0.875	0.946	0.438
Within Groups	211.613	229	0.924		
Total	215.111	233			

Table 4.4.3 Post HOC: Tests Homogeneous Subsets using Tukey HSD

Age Group	**N**	**Subset for α = 0.05**
Above 50 yrs	5	3.40
20–25 yrs	44	4.00
31–40 yrs	70	4.14
26–30 yrs	71	4.15
41–45 yrs	44	4.18
Sig.		0.104

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 18.260.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

INTERPRETATION

Since p-value is 0.438 is greater than the 0.05 so the null hypothesis is accepted and alternate hypothesis is rejected. Therefore, there is no statistically significant difference between age group and employees' ability to adapt to changes in work processes.

INFERENCE

The analysis shows that age group does not significantly influence employees' ability to adapt to changes in work processes

4.5 CORRELATION ANALYSIS

Null Hypothesis (H0): There is no significant relationship between organization providing adequate training opportunities and applying training knowledge in daily work.

Alternative Hypothesis (H1): There is a significant relationship between organization providing adequate training opportunities and applying training knowledge in daily work.

Table 4.5.1 Correlation Analysis

Correlations

	Organization provides adequate training opportunities	**Apply training knowledge in daily work**
Organization provides adequate training opportunities	1	.624
Sig. (2-tailed)		.000
N	234	234
Apply training knowledge in daily work	.624	1
Sig. (2-tailed)	.000	
N	234	234

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

INTERPRETATION

The Pearson correlation value is 0.624 and the significance value is 0.000. Since the p-value is less than 0.05, the null hypothesis is rejected. Therefore, there is a significant positive relationship between the variables.

INFERENCE

The study concludes that adequate training opportunities provided by the organization positively influence employees in applying training knowledge in their daily work.

5.1 FINDINGS

1. Majority of the respondents belong to the age group of 26–30 years constituting **33.33%** of the total respondents, followed by 31–40 years with **28.20%**.
2. The study reveals that male employees constitute the majority with **88.46%**, while female employees account for **11.53%**.
3. Majority of the respondents belong to the Operations department representing **61.96%** of the total sample.
4. Most of the employees possess Diploma qualification (**30.78%**), followed by HSC qualification (**23.51%**) and Graduate qualification (**22.64%**).
5. Majority of the respondents Agreed (**43.6%**) and strongly Agreed (**37.2%**) that they clearly understand the skills and knowledge required for their work.
6. The study shows that **39.3%** of respondents Agreed and **41.0%** strongly Agreed that training programs develop new useful skills.
7. About **46.6%** of respondents Agreed that additional training is required to improve performance, while **30.8%** strongly Agreed.
8. Majority of employees Agreed (**42.3%**) and strongly Agreed (**45.7%**) that problem-solving skills are important in daily work.
9. Around **37.6%** of respondents Agreed and **35.9%** strongly Agreed that the organization provides adequate training opportunities.

10. Majority of employees Agreed (**44.4%**) and strongly Agreed (**35.9%**) that they are able to adapt to changes in work processes.

5.2 SUGGESTIONSS

1. The organization should establish a comprehensive competency mapping framework to systematically identify the skills, knowledge, and behavioral competencies required for each job role.
2. Regular competency gap analysis should be conducted to identify areas where employees require additional training and development support.
3. Training programs should be customized according to departmental requirements and employee competency levels to ensure maximum effectiveness and practical application.
4. The organization should introduce advanced technical training, soft skill development programs, and leadership development initiatives to improve overall employee capability.
5. Employees should be encouraged to participate in continuous learning activities such as workshops, seminars, certification courses, and industrial training programs to enhance professional growth.
6. A structured performance evaluation system linked with competency assessment should be implemented to measure employee progress and identify future development needs.
7. Managers and supervisors should provide continuous mentoring, guidance, and constructive feedback to help employees improve their competencies and work performance.
8. The organization should strengthen communication regarding role expectations, performance standards, and career growth opportunities to improve employee clarity and motivation.
9. Competency mapping should be integrated with recruitment and selection processes to ensure that suitable candidates with the required competencies are appointed for the right job roles.
10. The organization should provide more opportunities for cross-functional learning and job rotation to improve employee adaptability and exposure to different work processes.

5.3 CONCLUSION

Competency mapping is an important HR tool that helps identify employee strengths, competency gaps, and training needs. The study found that employees possess satisfactory technical, communication, and problem-solving skills, with positive feedback on training and career development opportunities. Statistical analysis showed no significant impact of age and gender on competency factors, while training had a strong positive relationship with employees' ability to apply their skills. The study concludes that regular competency assessment and focused development programs improve employee performance, organizational productivity, and long-term growth by aligning employee competencies with organizational goals**.**