

Synergy Assessment through Mapping Multi-Dimensional Competencies in an Auto Component Major

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Abstract

Skills mapping is a technique of studying and analyzing the skills possessed by the persons concerned. Skill mapping evolves as a result, which not only specifies the skill level of the persons but also identifies the grey areas where improvement can be made by training or by other means. Companies are changing their approach of having multi-skilled employees with knowledge of only one skill. This study measures the assessment of various competencies and its prevailing levels among the employees of an auto component engineering company. The study reveals that the employees of the company think sharing information is highly productive and thus may initiate new ways of doing job also motivate employees to improve and develop their performance. The employees consistently question and use diverse perspective to improve the effectiveness of a current existing business strategy by thinking creatively. They are good at trouble shooting and try to balance between departmental and client needs. They get work done by providing guidance and resources, this happens when a leader supports team members working on related objectives.

KEYWORDS: Skill Mapping, Multi-Skill, Competencies

1. Introduction

The ongoing globalization process necessitates innovative approaches in managing the work force. Skills mapping is a technique of studying and analyzing the skills possessed by the persons concerned. Skill mapping evolves a result, which not only specifies the skill level of the persons but also identifies the grey areas where improvement can be made by training or by other means. Companies are changing their approach of having multi-skilled employees with knowledge of only one skill. This study measures the assessment of various competencies and its prevailing levels among the employees of an auto component engineering company.

2. Review of Literature

Bradley, Elizabeth H (2008) states that achieving the benefits of competency-based curricula requires substantial effort to identify competencies that are both specific & comprehensive, and that reflects consensus among faculty and stakeholders. **Lecocq (2006)** opines that parallel to the advancement of knowledge management, authors and practitioners have recently been paying special attention to knowledge mapping. **Paul Lyons (2003)** provides a brief exposition on the general definitions and features of skills and competence in organizations, presents an overview of skill charting, offers specific methods to demonstrate training for skill development using

constructivist approaches (skill charting/competency mapping); **Macmillan (1994)** has studied the performance improvement attained through the application of skill charting methods. **John C Trinder (2004)** showed that competency standards are increasingly being used by professions and governments to define the qualifications required for professionals to practise in a discipline. **De Vos (2007)** has drawn the attention of practitioners leading them to introduce competency development as a central part of their human resource practices. **N.R. Banerjee (2003)** states that the role of Competency Based Management System is to identify relevant and important competencies for successful accomplishment of desired tasks. **Carlene L. (1998)** says that the concept of "competency mapping" emerged from a study of the state-of-the-art of adult education needs assessment to provide the basis for development of a model for states to adopt or adapt to fulfil requirements of the 1978 amendments to the Adult Education Act. **John C Trinder(2004)** states that Competency Standards are increasingly being used by professions and governments to define the qualifications required for professionals to practise in a discipline.

3. Hypothesis Formulated

Ho: There is no significance difference in planning and swift delivery of the job among employees.

Ho: There is no correlation between change in the job and managing the job in critical situation.

Ho: There is no correlation between delegating a job and tracking a delegated activity.

Ho: There is no significance difference between assertive and troubleshooting aspect between the genders.

Ho: There is no significance difference in job progress when empowering the employees.

Ho: Majority of the Employees are aware about these organization statements. ($\mu_1 = \mu_2 = \mu_3$)

Ho: The training needs for various levels of management are equal.

Ho: There is no significance difference the adapting to change among employees. ($\mu_1 = \mu_2 = \mu_3$)

Ho : There is no significance difference between the reward and recognition given to employees.

4. STATISTICAL CALCULATIONS:

Kolmagorov-Smirnov (K-S) Test:

H0: There is no significance difference in planning and swift delivery of the job among employees.

H1: There is significance difference in planning and swift delivery of the job among employees.

Value of variable (x)	Observed frequency (O _i)	Observed cumulative frequency	Observed relative cumulative frequency (F _O)	Expected frequency P(x)= $\frac{e^{-22x}}{x!}$	Expected relative cumulative frequency (F _e)	Absolute deviation F _e -F _O
0	26	26	0.26	0.1353	0.1353	0.1247
1	50	76	0.76	0.2706	0.4059	0.3541
2	15	91	0.91	0.2706	0.6765	0.2335
3	5	96	0.96	0.1804	0.8569	0.1031
4	4	100	1	0.0902	1	0

Given: $n=100$ at 0.05 confidence level. $= \frac{1.36}{\sqrt{n}} = \frac{1.36}{\sqrt{100}} = 0.136$

Reject H_0 . There is significant difference in planning and delivering a job on time.

Karl Pearson Correlation Coefficient:

Ho: There is no correlation between change in the job and managing the job in critical situation.

H1: There is correlation between change in the job and managing the job in critical situation.

Attitude towards change(x)	55	28	10	7
Response towards change(y)	22	11	46	21

X	y	xy	x^2	y^2
55	22	1210	3025	484
28	11	308	784	121
10	46	460	100	2116
7	21	147	49	441
100	100	2125	3958	3162

By substituting the corresponding values in the formula from the above table, we get

$$\rho = \frac{-1500}{76.37 \cdot 51.45} = -0.3816. \rho \text{ lies between } \pm 1 \text{ (i.e. } -1 \leq \rho \leq 1\text{)}. \text{ Accept } H_0$$

Coefficient Of Correlation:

Ho: There is no correlation between delegating a job and tracking a delegated activity.

H1: There is correlation between delegating a job and tracking a delegated activity.

Delegating a job(X)	11	34	55
Tracking a delegated activity(Y)	50	33	17

X	Y	XY	X^2	Y^2
11	50	187	121	289
34	33	112	1156	1089
55	17	2750	3025	2500
100	100	3049	4302	3878

$$\bar{x} = \frac{\sum x}{n} = \frac{100}{3} = 33.33 \quad \bar{y} = \frac{\sum y}{n} = \frac{100}{3} = 33.33$$

By substituting the values from the table in the formula, we get

$$b = \frac{-283.67}{969.33}, b = -0.293$$

$$a = \bar{Y} - b\bar{X}$$

$$a = 33.33 - (-0.293)(33.33), a = 43.09$$

The estimating equation., = 43.09 + (-0.293)X

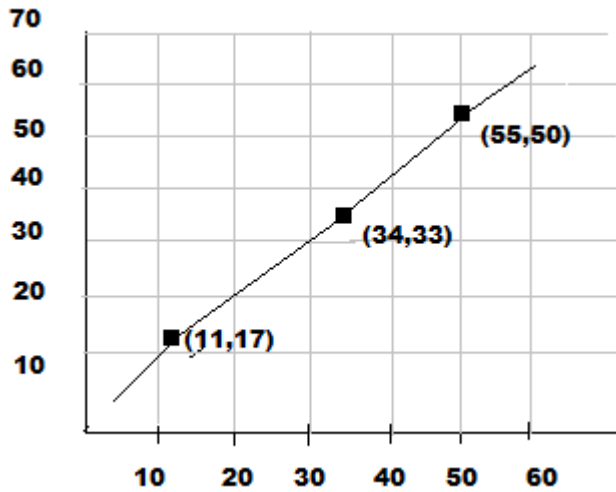
The sample coefficient of determination

$$r^2 = \frac{a \sum y + b \sum xy - n\bar{y}^2}{\sum y^2 - n\bar{y}^2}$$

$$\frac{43.09(100) - (-0.293)(3049) - 0(33.33)}{3878 - 3(33.33)}$$

$$r = \sqrt{\frac{3315.65}{3778.01}}$$

r=0.937. r lies between ± 1(i.e) -1 ≤ r ≤1. Accept H0



Graph1: shows the correlation between delegating and ways tracking of delegated job. The slope is positive, therefore there exist a positive correlation between the variable(X &Y)

INTERVAL ESTIMATION:

$$= P \pm Z \sqrt{\frac{PQ}{N}}$$

$P = \frac{82}{100} = 0.82$ $Q = \frac{18}{100} = 0.18$ $N = 100$

By substituting all the values in the formula we get,

$0.82 + 0.075 = 0.895$

$0.82 - 0.075 = -0.745$

The employee recognition lies between -0.745 to 0.895

Negligible number of employees spends time on their own development. Therefore organization should motive employee to sets smart target & develop performance.

Weighted Average:

$$\bar{x} = \frac{w_1x_1+w_2x_2+ \dots +w_nx_n}{w_1+w_2+\dots+w_3}$$

OPTIONS	Ranks awarded by the employees				
	R1	R2	R3	R4	R5
Good listener	55	22	13	6	4
Open minded	5	7	10	25	53
Well prepared	13	10	62	10	5
Creative	20	57	10	5	5
Experience	7	4	5	54	30

Weighted total: (Observed value * weights). good listener : (55*5) + (24*4) + (13*3) + (6*2) + (4*1) =418

	Ranks awarded by the employees			
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Options	R1	R2	R3	R4	R5	Total	Weighted Average	Ranks
Good listener	55	22	13	6	4	418	84	1
Open minded	5	7	10	25	53	186	37	5
Well prepared	13	10	62	10	5	316	63	3
Creative	20	57	10	5	5	373	75	2
Experience	7	4	5	54	30	204	41	4
Weights	5	4	3	2	1			

Most of the employees possess listening skill in maximum when compared to other skills, by this way employees indirectly own some more supporting skills like attentiveness, paraphrasing, will listen to wishes of the opponent speaker, many conflict can be resolved easily if we learn how to listen.

Chi-Square(Contingency Matrix):

Ho: There is no significance difference between being assertive and troubleshooting between genders.

H1: There is significance difference between being assertive and troubleshooting aspect between genders.

Levels Gender	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Male	17	21	24	12	13	87
Female	3	1	4	3	2	13
Total	20	22	28	15	15	100

$$\text{male - strongly agree} = \frac{87 \times 20}{100} = 17$$

Levels Gender	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Male	17 17	21 19	24 24	12 13	13 13
Female	3 03	1 03	4 04	3 02	2 02

=0.211+1.231+1.333+0.5 i.e., 3.275. Table Value: 9.488. Accept Ho.

Weighted Average:

OPTIONS	Ranks awarded by the employees					
	R1	R2	R3	R4	R5	R6
Language	37	21	15	12	10	5
Unwillingness	6	9	14	15	37	19
Conflict	15	18	30	18	8	11
Lack of knowledge	25	33	18	11	6	7
Lack of listening skill	12	10	12	33	17	16
Lack of confident	5	9	11	11	22	42

Options	Ranks awarded by the employees						Total	Weighted Average	Ranks
	R1	R2	R3	R4	R5	R6			
Language	37	21	15	12	10	5	448	75	1
Unwillingness	6	9	14	15	37	19	275	46	5
Conflict	15	18	30	18	8	11	381	64	3
Lack of Knowledge	25	33	18	11	6	7	439	73	2
Lack of listening skill	12	10	12	33	17	16	319	53	4
Lack of confident	5	9	11	11	22	42	238	40	6
WEIGHTS	6	5	4	3	2	1			

Chi – Square Test:

H_0 = There is no significance difference in job progress when empowering the employees.

H_1 = There is no significance difference in job progress when empowering the employees.

O_i	E_i	$(O_i - E_i)^2$	$\frac{(O_i - E_i)^2}{E_i}$
23	20	4	0.2
36	20	9	0.45
22	20	196	9.8
13	20	49	2.45
6	20	256	12.8
100			25.7

Degree of freedom= 5 – 1 = 4 @ 0.05 confidence interval

Reject Ho

Table value	Calculated value
9.488	25.7

Kruskal – Wallis:

Category	F1 Values & ethics	F2 Vision & mission	F3 Safety & rules	signs
Highly aware	48	38	40	
Aware	36	52	37	
Neutral	12	5	10	
Unaware	2	4	8	
Highly unaware	2	1	5	

H_0 : Majority of the Employees are aware about these organization statements.

H_1 : Majority of the Employees are not aware about these organization statements.

Initially, values are arranged in the ascending order and then ranked

F	1	2	2	4	5	5	8	10	12	36	37	38	40	48	52
R	1	2.5	2.5	4	5.5	5.5	7	8	9	10	11	12	13	14	15

Data: $n_1 = n_2 = n_3 = 5$, $n=15$, $R_1 = 38$, $R_2 = 37.5$, $R_3 = 44.5$

$$H = \frac{12}{n(n+1)} \left[\frac{R_1^2}{n_1} + \frac{R_2^2}{n_2} + \frac{R_3^2}{n_3} \right] - 3(n+1)$$

By substituting the data's in the formula, we get 0.05(966)-48

H = 0.305. Degree of freedom = k = 3-1 = 2 @ 0.05 confidence level

Table value	Calculated value
5.99	> 0.305

The calculated value lies in the region, hence accept H_0 . Therefore Majority of the employees are aware about the organization statements. It is proved using the kruskal-wallis tool

Two –Way Annova:

H_0 : There is no significance difference the career growth status among employees.

H_0^1 : There is no significance difference between the reward and recognition given to employees.

Adapt to change	Reward and recognition			Total
	Large extent	Some extent	Not at all	
Preference to personal needs	11	32	6	49
Preference to orgnl. needs	4	4	3	11
Manage both organizational and personal need	7	27	6	40
Total	22	63	15	100

Recognition & reward Adapts to change	To large extent	To some extent	To no extent	R_i	R_i^2	n_i	$\frac{R_i^2}{n_i}$
Regrets change	8	1	4	13	169	3	56
Adapts change	29	1	24	54	2916	3	972
Manage both	3	0	3	6		3	12
T_i	40	2	31	T =73			$\sum =1040$
T_i^2	1600	4	961				
n_i	3	3	3				
$\frac{T_i^2}{n_i}$	533	1	320	$\sum =855$			

$\sum \sum X_{ij}^2 = 1517$

Correction factor (C.F) = $\frac{T^2}{n} = \frac{(73)^2}{9} = 592$

Total sum of square (TSS) = $\sum \sum X_{ij}^2 - C.F$. TSS= 943

Column sum of square = $\sum \frac{T_i^2}{n} - C.F$. CSS = 263

Row sum of square = $\sum \frac{R_i^2}{n} - C.F$. RSS = 448. Error sum of square = TSS – CSS – RSS. ESS = 214

Source of variation	Sum of square	Degree of freedom	Mean sum of square
Between Rows	263	2	131
Between Column	448	2	224
Residual	214	4	53

F-ratio :

$$F_c = \frac{\text{Between columns}}{\text{Residual}} \quad F_r = \frac{\text{Between rows}}{\text{Residual}} \quad F_c = 2.46 \quad F_r = 4.19$$

Degree of freedom	Table value	Calculated value
(2,4)	6.94	> 2.46

Accept H_0 . Accordingly, there is no significance difference between adapting to change among employee

Degree of freedom	Table value	Calculated value
(2,4)	6.94	>4.19

Accept H_0 . Accordingly, there is no significance difference between the reward and recognition given to employees.

Result: From the result, it is proved that the most of the employees are ready to correlate their growth and organizational growth and the employees are recognized for their excellent work.

Kruskal – Wallis (K – Test):

H_0 : The training need for various levels of management is equal ($\mu_1 = \mu_2 = \mu_3$).

H_1 : The training need for various levels of management is not equal ($\mu_1 \neq \mu_2 \neq \mu_3$)

Training need	2	2	3	3	4	4	4	4	5	6	6	6
Ranks	1.5	1.5	3.5	3.5	6.5	6.5	6.5	6.5	9	11	11	11

Training needs	8	12	12	13	21	25	29	61	65	69	71	75
Ranks	13	14.5	14.5	16	17	18	19	20	21	22	23	24

R_1	R_2	R_3
Lower management ranks	Middle management ranks	Top management ranks
158	95.5	56.5

$n = 24$ $k = 3$. Degree of freedom = $(k - 1) = 2$

$$H = \frac{12}{n(n + 1)} \left[\frac{R_1^2}{n_1} + \frac{R_2^2}{n_2} + \frac{R_3^2}{n_3} \right] - 3(n + 1)$$

By applying all the values in the formula, we get 0.02 (4660)-75. $H = 18.2$. Reject H_0

5. Summary of Findings and Conclusion:

The employees of the company think sharing information is highly productive and thus may initiate new ways of doing job also motivate employees to improve and develop their performance. The employees consistently question and use diverse perspective to improve the effectiveness of a current existing business strategy by thinking creatively. They are good at trouble shooting and try to balance between

departmental and client needs. The employees get work done by providing guidance and resources, this happens when a leader supports team members working on related objectives. The company employees usually track the job by establishing day to day tracking system by conducting regular performance and job status review discussion. Majority of the employees respond to others need instantly. They gain interest to train themselves and therefore they control strong emotions or any stressful responses and take action to respond constructively to the source of the problem. The employees rely on personal effort to enrich their knowledge indicating interest towards self development and attachment towards the job role. Problems are solved through personal initiative and there is regular interaction regarding the job process, for devising the optimal solution to the problem, to breakdown the bottlenecks. Majority of the employees think that language as the dominating barrier to communicate to their subordinates. Majority of the employees have climbed the career ladder by improvising them diversely with the organizations support. The employees accept that empowering is essential to complete the task perfectly. They extend their influence and power to their subordinates/co-staff by sharing control and responsibility. The employees' commitment is recognized to some extent, enabling reinforcement through rewards. The employees are equally talented in planning and execution.

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