

Comparative Study of Rewards, Training and Ergonomics Parameters among Quality Award and Non-Quality Award Winning Manufacturing industries in Karnataka

Ravi Kumar R¹, Subrahmanya Bhat², Gururaj Upadyaya³, Satyabodh M Raichur⁴

¹Research Scholar, Mechanical Engineering, Nnamit, Nitte, Udupi, Karnataka India. ^{2,3} Professor, Mechanical Engineering, Nnamit, Nitte, Udupi, Karnataka, India, ⁴Professor, Mechanical Engineering, APS College of Engineering, Bangalore, Karnataka ¹Corresponding Author: ravi.kr727@gmail.com

Article Info

Page Number: 8150 - 8172

Publication Issue:

Vol 71 No. 4 (2022)

Abstract

This work talks about comparative study of Employee involvement parameters such as top management and team building in quality award and non-quality award winning manufacturing organisation in Karnataka state in India. Parameters such as Rewards and Motivation, Training and skill development and Ergonomics and Work safety are examined with statistically. The purpose is to identify differences in the manufacturing industries who have won quality awards such as Deming, CII-Exim and Ramakrishna Bajaj Awards etc. in terms of Rewards and Motivation, Training and skill development and Ergonomics and Work safety for Employee Involvement and to give suggestions to non-quality award winning organisation. For this survey has been extensively carried out to get response from employees across various manufacturing industries in Karnataka. Primary survey was carried out and received response from 736 out of which 650 of non quality award winning and 86 of quality award winning organisation from various industry in Karnataka a state in India.

Article History

Article Received: 25 March 2022

Revised: 30 April 2022

Accepted: 15 June 2022

Publication: 19 August 2022

Keywords: Rewards and Motivation, Training and skill development and Ergonomics and Work safety, Quality management, employee involvement

1. INTRODUCTION:

Today's business environment is very competitive, which has challenged business thinkers to be creative in examining new strategies for survival, growth, competitiveness, and profitability. The reality is that businesses must "shape up" or "ship out" in today's markets where stakeholders continuously demand more value and competitors provide increasing challenges. Modern business problems demand modern business solutions, thus managers have addressed innovation from many different perspectives, including product, production, procedures, and interactions. Being the department closest to the company's consumers and competitors, marketing has been given the difficult duty of creatively managing innovation projects and innovation itself in the current era of fierce global rivalry, knowledgeable and demanding customers, and activist shareholders. Quality Awards helps to acquire more customer's and Employee Involvement plays a vital role.

2. Literature Review

This Study is carried to understand how Employee Involvement parameter such as top management and team leadership effects on TQM practices. Parameters that effect Rewards are Recognition and appreciation, Caring & encouraging, Variables that define Training and skill development are Induction for new employee, Training as required, Product and process awareness, Aware of life cycle and manufacturing techniques, Change of technology adoption, Professional certification for promotions, Functional skills, Critical thinking skills, Future skills, Social skills, Ethics and value. Variables that define Ergonomics and work safety are Opinions are considered, Job freedom & promotion opportunities, work life balance, Periodic increase in salary, Performance based plan, Job security, Variables define Work safety are Health and safety instructions, First aid equipment's, Inspection of work place , machineInvestigation and take corrective action when injured, Mechanical aidsJob rotation, Job interval, Work place in order for Physical movements, Regular Work place changes.

3. Objective of the Present work:

This paper concentrate on comparative study of employee involvement in Quality award and non Quality Award firms in manufacturing industries for parameters such as Rewards and Motivation, Training and skill development and Ergonomics and Work safety . The performance of the firms are tested statistically.

4. General Information of the participant companies

The information provided by the participant companies and the survey results are discussed below. It begins with the general descriptive statistics of respondents. It consists of the response rate, percentage of responses, types of industry involved and the status of employee involvement. The survey covered 736 companies. A total of 650 responses were received from non-quality award winning and 86 from quality award winning firms in Karnataka. Breakdown of the respondents regarding their size and type of industry is shown in Table`. A small proportion 18% of the organization was categorized as large industries with more than 500 employees, and another 39% of the organization were medium sized industries employing between 100 to 500 employees, while the small industries, those having less than 100 employees, represented 26% of the total respondents from Non Quality Award winning firms. Breakdown of the respondents of non quality award winning firms regarding their size and type of industry is shown in Table 1. About 56% of the organization was categorized as large industries with more than 500 employees, and another 44% of the organization were medium sized industries employing between 100 to 500 employees from Quality Award winning firms.

Table 1 Responses received by size of the company

Type / Size	Number of Responses	Percentage (%)	Number of Responses	Percentage (%)
Size of the Company				

(a) > 1000 employees (Large)	121	18	48	56
(b) between 500 & 1000 Employees (Medium)	257	39	38	44
(c) <500 employees (Small)	171	26		
(d) Undisclosed	101	15		
Total	650	100	86	100

5. Results and Discussion

Normality Test: A normality test assesses whether a sample of data is representative of a population that has a normal distribution. It is typically carried out to see if the research's data have a normal distribution. The Kolmogorov-Smirnov Test for Normality was carried and the data was found normal distribution curve.

Factor test: Factor analysis was conducted to condense or summarize the information on reasons for Employee Involvement into a smaller set of new composite dimensions (factors) with a minimum loss of information.

Table2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.486
Bartlett's Test of Sphericity	Approx. Chi-Square 1397.675

Reliability Test: The Factors decided were then subjected to reliability analysis, which is the requirement for such type of data analyses. Internal consistency method was used to conduct reliability analysis. Internal consistency can be established using a reliability coefficient such as Cronbach's alpha. Alpha is the average of the correlation coefficient of each item with each other item. Table 3

Factor name	Cronbach alpha
Rewards and motivation	0.696
Training	0.641
Health and Ergonomics	0.769

Hypothesis test: Hypothesis are formulated for each and every questions for both quality award and non quality award firms. Table:4 Null Hypothesis for Quality Award Firm.

H ₀ (3.-W)	Rewards doesn't exist in respondent firms
H ₀ (3.1-W)	Intrinsic awards doesn't exist in respondent firms
H ₀ (3.1.1-W)	Firm does not encourage and appreciate their employees
H ₀ (3.1.2-W)	Firm does not care and encourages their employees
H ₀ (3.1.3-W)	Firm doesn't consider opinion of employee's in decision making
H ₀ (3.1.4-W)	Firm doesn't provide scope for liberty of all employees further provide them promotion opportunities
H ₀ (3.1.5-W)	Firm doesn't promote work-life balance
H ₀ (3.2-W)	Extrinsic Awards doesn't exist in respondent firms
H ₀ (3.2.1-W)	Firm doesn't offer periodic increase in salary
H ₀ (3.2.2-W)	Firm doesn't provide pay plan based on performance
H ₀ (3.2.3-W)	Firm doesn't confirm job secure
H ₀ (4.0-W)	Training and skill development not exist in the respondent firms
H ₀ (4.1-W)	Regular training policies do not exist in the respondent firms
H ₀ (4.1.1-W)	Firm doesn't provide new hire orientation training
H ₀ (4.1.2-W)	Firm doesn't provide training as needed
H ₀ (4.2-W)	Technical Skills do not exist in the respondent firms
H ₀ (4.2.1-W)	Firm doesn't educate employees trained on its products and processes
H ₀ (4.2.2-W)	Firm doesn't educate their trained on products life cycle
H ₀ (4.2.3-W)	Firm doesn't adopt for their employers by conducting regular sessions on technological advancements
H ₀ (4.2.4-W)	Firm doesn't expect their employers for acquiring professional certification for their promotional growth
H ₀ (4.3-W)	Life Skills doesn't exist in the respondent firms
H ₀ (4.3.1-W)	Firm does not offer functional skills to the employees to upgrade their life skills in work environment
H ₀ (4.3.2-W)	Firm doesn't promote critical thinking skills among their employees to upgrade their life skills in work environment
H ₀ (4.3.3-W)	Firm doesn't offer future skills to the employees to upgrade their life skills in work environment
H ₀ (4.3.4-W)	Firm doesn't involve employees and enhance social skills
H ₀ (4.3.5-W)	Firm does not enhance the employer's value and ethics
H ₀ (5.0W)	Ergonomics and work safety do not exist in the respondent firms
H ₀ (5.1-W)	Work Safety principles do not exist in firm
H ₀ (5.1.1-W)	Firm doesn't offer safety instructions and supply safety gears
H ₀ (5.1.2-W)	Firm doesn't inspect and follow up on their machineries
H ₀ (5.1.3-W)	Firm doesn't investigate injuries and take corrective measure when necessary
H ₀ (5.1.4-W)	In case of occupational injuries, firm doesn't transport and not take care of injured workers
H ₀ (5.2-W)	Ergonomics do not exist in the respondent firms
H ₀ (5.2.1-W)	Firm doesn't provide mechanical aids for making the job easier
H ₀ (5.2.2-W)	Firm doesn't provide mechanical aids for making the job easier
H ₀ (5.2.3-W)	Firm doesn't provide regular job intervals

H ₀ (5.2.4-W)	Firm doesnot provides knowledge on reducing the efforts of bending, forward-reaching, and twisting in all tasks
H ₀ (5.2.5-W)	Firm doesnot provides Regular Work place changes

We now state hypothesis for non quality award firms

Table 5: Null Hypothesis for Non-Quality award winning firms

H ₀ (3.-NW)	Rewards doesnot exists in respondent firms
H ₀ (3.1-NW)	Intrinsic awards doesnot exists in respondent firms
H ₀ (3.1.1-NW)	Firm does not encourage and appreciate their employees
H ₀ (3.1.2-NW)	Firm does not care and encourages their employees
H ₀ (3.1.3-NW)	Firm doesnot considers opinion of employee's in decision making
H ₀ (3.1.4-NW)	Firm doesnot provides scope for liberty of all employers further provide them promotion opportunities
H ₀ (3.1.5-NW)	Firm doesnot promotes work -life balance
H ₀ (3.2-NW)	Extrinsic Awards doesnot exists in respondent firms
H ₀ (3.2.1-NW)	Firm doesnot offers periodic increase in salary
H ₀ (3.2.2-NW)	Firm doesnot provide pay plan based on performance
H ₀ (3.2.3-NW)	Firm doesnot Confirms job secure
H ₀ (4.0-NW)	Training and skill development not exists in the respondant firms
H ₀ (4.1-NW)	Regular training policies does not exists in the respondant firms
H ₀ (4.1.1-NW)	Firm doesnot provide new hire orientation training
H ₀ (4.1.2-NW)	Firm doesnot provides training as needed
H ₀ (4.2-NW)	Technical Skills does not exists in the respondant firms
H ₀ (4.2.1-NW)	Firm doesnot educates employees traineed on its products and processes
H ₀ (4.2.2-NW)	Firm doesnot educates their traineed on products life cycle
H ₀ (4.2.3-NW)	Firm doesnot adopts for their emplyers by conducting regular sessions on technological advancements
H ₀ (4.2.4-NW)	Firm doesnot expects their employers for acquiring professional certification for ther promotional growth
H ₀ (4.3-NW)	Life Skills doesnot exists in the respondant firms
H ₀ (4.3.1-NW)	Firm does not offers functional skills to the employees to upgrade their life skills in work environment
H ₀ (4.3.2-NW)	Firm doesnot promotes critical thinking skills among their employees to upgrade their life skills in work environment
H ₀ (4.3.3-NW)	Firm doesnot offers future skills to the employees to upgrade their life skills in work environment
H ₀ (4.3.4-NW)	Firmdoesnot involves employees and enhance social skills
H ₀ (4.3.5-NW)	Firm does not enhances the employers value and ethics
H ₀ (5.0NW)	Ergonomics and work safety does notexist in the respondent firms
H ₀ (5.1-NW)	Work Safety principles does not exist in firm
H ₀ (5.1.1-NW)	Firm doesnot offers safety instructions and supply safety gears

H ₀ (5.1.2-NW)	Firm doesnot inspects and follow up on their machinaries
H ₀ (5.1.3-NW)	Firm doesnot investigates injuries and take corrective measure when necessary
H ₀ (5.1.4-NW)	In case of occupational injuries, firm doesnot transports and not take care of injured workers
H ₀ (5.2-NW)	Ergonomics does not exist in the respondent firms
H ₀ (5.2.1-NW)	Firm doesnot provides mechanical aids for making the job easier
H ₀ (5.2.2-NW)	Firm doesnot provides mechanical aids for making the job easier
H ₀ (5.2.3-NW)	Firm doesnot provides regular job intervals
H ₀ (5.2.4-NW)	Firm doesnot provides knowledge on reducing the efforts of bending, forward-reaching, and twisting in all tasks
H ₀ (5.2.5-NW)	Firm doesnot provides Regular Work place changes

Above tables we have stated hypothesis for conducting independent sample test and have carried test for all the variables . We have also carried F Test to identification of significance difference between the firms. To accept null hypothesis significance value from T test should be less than or equal to 0.05. Similarly to accept significance of the results through F test we will be doing further F test and if Significance is less than or equal to 0.05 then we accept null hypothesis.

Table 7 T test & F Test								
Intrinsic rewards	Recognition and appreciation	20.85	0.04	1.51	0.09	Non-Quality	H ₀ (3.1.1-NW) Null Hypothesis Accepted	H ₁ (3.1.1-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Recognition and appreciation
				7.32	0	Quality	H ₁ (3.1.1-W) Alternative Hypothesis Accepted	
	Caring & encouraging	3.52	0.04	3.29	0.03	Non-Quality	H ₀ (3.1.2-NW) Null Hypothesis Accepted	H ₁ (3.1.2-SD) There is a significant difference

				3.58	0	Quality	H1(3.1.2-W) Alternative Hypothesis Accepted	between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Caring & encouraging
	Opinions are considered	7.82	0.03	1.76	0.09	Non-Quality	H0(3.1.3-NW) Null Hypothesis Accepted	H1(3.1.3-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Opinions considering
				6.38	0	Quality	H1(3.1.3-W) Alternative Hypothesis Accepted	
	Job freedom & promotion opportunities	6.29	0.01	1.67	0.07	Non-Quality	H0(3.1.4-NW) Null Hypothesis Accepted	H1(3.1.4-SD) There is a significant difference between employees of Quality Award

				11.54	0	Quality	H1(3.1.4-W) Alternative Hypothesis Accepted	winning firms and firms that have not won Quality Awards in terms of Job freedom & promotion opportunities
	work life balance	10.51	0.01	1.39	0.12	Non-Quality	H0(3.1.5-NW) Null Hypothesis Accepted	H1(3.1.5-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of work life balance
				5.82	0	Quality	H1(3.1.5-W) Alternative Hypothesis Accepted	
Extrinsic rewards	Periodic increase in salary	18.69	0	1.51	0.06	Non-Quality	H0(3.2.1-NW) Null Hypothesis Accepted	H1(3.2.1-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Periodic increase in salary

			7.32	0	Quality	H1(3.2.1-W) Alternative Hypothesis Accepted	
Performance based plan	12.7	0.02	5.77	0.11	Non-Quality	H0(3.2.2-NW) Null Hypothesis Accepted	H1(3.2.2-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Performance based plan
			5.62	0	Quality	H1(3.2.2-W) Alternative Hypothesis Accepted	
Job security	6.37	0.04	1.76	0.06	Non-Quality	H0(3.2.3-NW) Null Hypothesis Accepted	H1(3.2.3-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Job security
			6.38	0	Quality	H1(3.2.3-W) Alternative Hypothesis Accepted	

Training	Induction for new employee	14.81	0	1.67	0.06	Non-Quality	H0(4.1.1-NW) Null Hypothesis Accepted	H1(4.1.1-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Induction for new employee
				11.54	0	Quality	H1(4.1.1-W) Alternative Hypothesis Accepted	
	Training as required	9.26	0.03	1.39	0.09	Non-Quality	H0(4.1.2-NW) Null Hypothesis Accepted	H1(4.1.2-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Training as required

				5.82	0	Quality	H1(4.1.2-W) Alternative Hypothesis Accepted	
Technical skill	Product and process awareness	18.31	0	1.51	0.09	Non-Quality	H0(4.2.1-NW) Null Hypothesis Accepted	H1(4.2.1-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Product and process awareness
				7.32	0	Quality	H1(4.2.1-W) Alternative Hypothesis Accepted	
	Aware of life cycle and manufacturing techniques	4.64	0.03	1.1	0.07	Non-Quality	H0(4.2.2-NW) Null Hypothesis Accepted	H1(4.2.2-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Aware of life cycle and manufacturing techniques

			3.65	0	Quality	H1(4.2.2-W) Alternative Hypothesis Accepted	
Change of technology adoption	20.4	0	1.58	0.12	Non-Quality	H0(4.2.3-NW) Null Hypothesis Accepted	H1(4.2.3-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Change of technology adoption
			5.57	0	Quality	H1(4.2.3-W) Alternative Hypothesis Accepted	
Professional certification for promotions	8.57	0	1.32	0.1	Non-Quality	H0(4.2.4-NW) Null Hypothesis Accepted	H1(4.2.4-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Professional certification for promotions

				7.49	0	Quality	H1(4.2.4-W) Alternative Hypothesis Accepted	
Life Skills	Functional skills	14.28	0	1.29	0.09	Non-Quality	H0(4.3.1-NW) Null Hypothesis Accepted	H1(4.3.1-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Functional skills
				7.65	0	Quality	H1(4.3-W) Alternative Hypothesis Accepted	
	Critical thinking skills	15.93	0	1.89	0.08	Non-Quality	H0(4.3.2-NW) Null Hypothesis Accepted	H1(4.3.2-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Critical thinking skills

			8.67	0	Quality	H1(4.3.1-W) Alternative Hypothesis Accepted	
Future skills	12.38	0	1.86	0.09	Non-Quality	H0(4.3.3-NW) Null Hypothesis Accepted	H1(4.3.3-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Future skills
			8.59	0	Quality	H1(4.3.2-W) Alternative Hypothesis Accepted	
Social skills	6.49	0.01	1.53	0.08	Non-Quality	H0(4.3.4-NW) Null Hypothesis Accepted	H1(4.3.4-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Social skills

				5.6	0	Quality	H1(4.3.3-W) Alternative Hypothesis Accepted	
	Ethics and value	13.67	0	1.68	0.07	Non-Quality	H0(4.3.5-NW) Null Hypothesis Accepted	H1(4.3.5-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Ethics and value
				9.77	0	Quality	H1(4.3.4-W) Alternative Hypothesis Accepted	
Work safety	Health and safety instructions	48.18	0	1.53	0.06	Non-Quality	H0(5.1.1-NW) Null Hypothesis Accepted	H1(5.1.1-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Health and safety instructions

			14.8	0	Quality	H1(4.3.5-W) Alternative Hypothesis Accepted	
First aid equipment's	4.64	0.03	3.82	0	Non-Quality	H0(5.1.2-NW) Alternative Hypothesis Accepted	H1(5.1.2-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of First aid equipments
			9.47	0	Quality	H1(5.1.1-W) Alternative Hypothesis Accepted	
Inspection of work place and machine	12.4	0	1.76	0.09	Non-Quality	H0(5.1.3-NW) Null Hypothesis Accepted	H1(5.1.3-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Inspection of work place and machine

			7.34	0	Quality	H1(5.1.2-W) Alternative Hypothesis Accepted	
Investigation and take corrective action when injured	15.03	0	1.39	0.06	Non-Quality	H0(5.1.4-NW) Null Hypothesis Accepted	H1(5.1.4-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Investigation and take corrective action when injured
			9.68	0	Quality	H1(5.1.3-W) Alternative Hypothesis Accepted	

Ergonomic	Mechanical aids	37.15	0	1.62	0.07	Non-Quality	H0(5.2.1-NW) Null Hypothesis Accepted	H1(5.2.1-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Mechanical aids
				12.57	0	Quality	H1(5.1.4-W) Alternative Hypothesis Accepted	
	Job rotation	25.84	0	1.3	0.07	Non-Quality	H0(5.2.2-NW) Null Hypothesis Accepted	H1(5.2.2-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Job rotation
				7.98	0.02	Quality	H1(5.2.2-W) Alternative Hypothesis Accepted	
	Job interval	13.81	0	1.99	0.1	Non-Quality	H0(5.2.3-NW) Null Hypothesis	H1(5.2.3-SD) There is a significant

						Accepted	difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Job interval
			7.35	0	Quality	H1(5.2.3-W) Alternative Hypothesis Accepted	
Work place in order for Physical movements	52.69	0	1.89	0.09	Non-Quality	H0(5.2.4-NW) Null Hypothesis Accepted	H1(5.2.4-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of Work place in order for Physical movements
			11.9	0	Quality	H1(5.2.4-W) Alternative Hypothesis Accepted	

	Regular Work place changes	3.94	0.03	5.14	0.07	Non-Quality	H0(5.2.5-NW) Null Hypothesis Accepted	H1(5.2.5-SD) There is a significant difference between employees of Quality Award winning firms and firms that have not won Quality Awards in terms of the Firm providing Regular Work place changes
				10.67	0	Quality	H1(5.2.5-W) Alternative Hypothesis Accepted	

6. Conclusions:

From the above table we can conclude that for parameter that effect Employee involvement named **Rewards and Motivation** variables such as Recognition and appreciation, Opinions are considered, Job freedom & promotion opportunities, work life balance, Periodic increase in salary, Performance based plan, Job security accepts Null Hypothesis H_0 and Caring & encouraging variable accepts alternative hypothesis H1 in Non Quality award winning firms i.e this indicates there is no rewards and motivation in the firms with respect to Employee Involvement how ever there is caring and encouraging variable considered.

From the above table we can conclude that for parameter that effect Employee involvement named **Training and skill development** variables such as Induction for new employee, Training as required, Product and process awareness, Aware of life cycle and manufacturing techniques, Change of technology adoption, Professional certification for promotions, Functional skills, Critical thinking skills, Future skills, Social skills, Ethics and value accepts Null Hypothesis in Non Quality

award winning firms i.e this indicates there is no training and skill development in the firms with respect to Employee Involvement.

From the above table we can conclude that for parameter that effect Employee involvement named **Ergonomics and work safety** variables such as Health and safety instructions, Inspection of work place and machine, Investigation and take corrective action when injured, Mechanical aids, Job rotation, Job interval, Work place in order for Physical movements, Regular Work place changes accepts null hypothesis in Non Quality award winning firms where as First aid equipment's, availability in workplace accept Alternative hypothesis i.e this indicates there is no Ergonomics and work safety in the firms with respect to Employee Involvement however there is immediate First aid equipment's variable considered.

From the above table we can conclude that for parameter that effect Employee involvement named **Rewards and Motivation** variables such as Recognition and appreciation, Opinions are considered, Job freedom & promotion opportunities, work life balance, Periodic increase in salary, Performance based plan, Job security accepts Alternate Hypothesis and Caring & encouraging variable accepts null hypothesis in Quality award winning firms i.e this indicates there is rewards and motivation in the firms with respect to Employee Involvement how ever there is ambiguity that both firms cares and encourages employee.

From the above table we can conclude that for parameter that effect Employee involvement named **Training and skill development** Induction for new employee, Training as required, Product and process awareness, Aware of life cycle and manufacturing techniques, Change of technology adoption, Professional certification for promotions, Functional skills, Critical thinking skills, Future skills, Social skills, Ethics and value accepts Alternate Hypothesis in Quality award winning firms i.e this indicates there is training and skill development and motivation in the firms with respect to Employee Involvement.

From the above table we can conclude that for parameter that effect Employee involvement named **Ergonomics and work safety** variables such as Health and safety instructions, Inspection of work place and machine, Investigation and take corrective action when injured, Mechanical aids, Job rotation, Job interval, Work place in order for Physical movements, Regular Work place changes accepts Alternate hypothesis in Quality award winning firms where as First aid equipment's, availability in workplace accept Null hypothesis i.e this indicates there is no Ergonomics and work safety in the firms with respect to Employee Involvement however there is immediate First aid equipment's variable considered.

To conclude and justify the results F test was carried and the results from the F test signifies for Rewards and motivation parameters variables such as Recognition and appreciation, Opinions are considered, Job freedom & promotion opportunities, work life balance, Periodic increase in salary, Performance based plan, Job security accepts null Hypothesis Signifying that there is Difference between Quality Award winning Firm and Non Quality Award Winning Firm with respect to Rewards and motivation. How ever there is ambiguity that caring and encouraging follows in both type of firms.

To conclude and justify the results F test was carried and the results from the F test signifies for **Training and Skill development** variables such as Induction for new employee, Training as required, Product and process awareness, Aware of life cycle and manufacturing techniques, Change of technology adoption, Professional certification for promotions, Functional skills, Critical thinking skills, Future skills, Social skills, Ethics and value accepts null Hypothesis Signifying that there is Difference between Quality Award winning Firm and Non Quality Award Winning Firm.

To conclude and justify the results F test was carried and the results from the F test signifies for work safety variables such as Health and safety instructions, Inspection of work place and machine, Investigation and take corrective action when injured, Mechanical aids, Job rotation, Job interval, Work place in order for Physical movements, Regular Work place ,accept Null hypothesis this Signifying that there is Difference between Quality Award winning Firm and Non Quality Award Winning Firm. Where as First aid equipment's, availability in workplace the results says that there is no difference that is this parameter is followed by both firms.

Here by Author suggest Firms to improve Employee Involvement . Thee non quality awards need to look into parameters of Rewards, Training and work safety for achieving Employee Involvement.

References

- [1] Simon Albort et. al "Organizational resources and engagement, Career Development International" Vol. 23 No. 1, 2015
- [2] Gary Cattermole et. al . "Employee engagement welcomes the dawn of an empowerment culture" STRATEGIC HR REVIEW journal VOL. 12 NO. 5 2013, pp. 250-254,
- [3] Randy K. Chiu et. al. "Employee involvement in a total quality management programme: problems in Chinese firms in Hong Kong" Managerial Auditing Journal, 14,1/2 [1999] 8–11
- [4] Jens J. Dahlgaard et.al. "Lean production, six sigma quality, TQM and company culture" The TQM Magazine, Vol. 18 No. 3, 2006 pp. 263-281
- [5] Zoe S. Dimitriades et.al. "Total involvement in quality management", Team Performance Management: An International Journal, Vol. 6 Issue: 7/8, pp.117-122
- [6] Kit fai pun "An Emperical Study of EI,TQM and Organisational performance in manufacturing enterpriees " Asian Journal on Quality, 2002 Vol. 3 Iss 1 pp. 28 -47
- [7] Tor Guimaraes "TQM's impact on employee attitudes" The TQM Magazine Volume 8 · Number 1· 1996 · pp. 20–25
- [8] Martin Jaeger "Perception of TQM benefits, practices and obstacles The case of project managers and quality management representatives in Kuwait" The TQM Journal Vol. 28 No. , 2016 pp. 317-336
- [9] NoorlizaKaria, "The effects of total quality management practices on employees' work-related attitudes" The TQM Magazine Vol. 18 No. 1, 2006, pp. 30-43
- [10] Simon S.K, "Quality management and job satisfaction, An empirical study" Lam International Journal of Quality & Reliability Management, Vol. 12 No. 4, 1995, pp. 72-78,

- [11] Ali Mohammad Mosadeghrad ,”Essentials of total quality management: a meta-analysis” September 2013 International Journal of Health Care Quality Assurance Vol. 27 No. 6, 2014 pp. 544-558
- [12] Keng-Boon Ooi, “TQM practices and its association with production workers TQM practices and production workers” , March 2008
- [13] S. SubbaRao,”The best commonly followed practices in the human resource dimension of quality management in new industrializing countries The case of China, India and Mexico” HR dimension of quality management IJQRM
- [14] F. Vouzas, Assessing managers’ awareness of TQM, The TQM Magazine Vol. 19
- [15] Muhammad Naeem Khan (2018) TQM practices and workrelated outcomes, International Journal of Quality & Reliability Management,
- [16] Quazi, H.A. and Padibjo, S. R. (1998). A journey toward total quality management through ISO 9000 certification – a study on small and medium sized enterprises in Singapore. International Journal of Quality and Reliability Management. 15(5), pp. 489-508.