

PROBLEMS FACED BY THE SAFETY MATCH INDUSTRY WORKERS

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Abstract

SSIs, the backbone of large scale industries have achieved remarkable all round development in very short span of time. The credit for the success of SSIs in industrial sector goes to Banking and financial institutions, and well framed objectives of every five year plan. This plans have focused on financial assistance and removable of problems in SSIs in economy. The success of any organisation depends upon its employees. In sustaining the market share, every organisation has a big responsibility of keeping its workforce satisfied. Employees of the day expect not a mere decent living but also a satisfied life. Personal satisfaction in the life of an employee depends upon the satisfaction he/she gets in his/her job. There is no work has been done on the problems and issues of safety match industry, either at national or at state. Hence, there is need and urgency to analyse the problems and prospects of safety match industry in India in general and with particulars reference to TamilNadu. It is with this background, this work has been taken up for a detailed analytical study of safety match industry.

Key word: safety match, health hazards, fire.

INTRODUCTION

Safety of Industrial workers is an important as their health. An Industrial accident is an unfortunate occurrence resulting in cessation of work by a worker or a group of workers. Although the life of an industrial worker is generally full of risks and hazards and an accident may be the result of any unsafe act on his own part or any unsafe condition, investigations reveal that some people are "accident prone". The problems faced by the safety match industry workers are divided into three categories. They are Risk and Occupational Health Hazards, Technology Related Problems and Management and Supervisor related problems.

STATEMENT OF THE PROBLEM

Match Industries are labour intensive industry in nature. It provides employment opportunities of the people in and around the Sattur, Sivakasi and Kovilpatti considerably. The development of Fireworks, Match Industry, Printing Industry and other industries raise the standard of living of the people. But these industries suffer due to fire accidents every year. Though government and concerned authorities are taking serious steps to mitigate the fire accidents in these industries, it is still continuing. Fire accidents are common for match works. There are more number of dangerous operations involved in match works production processes namely, chemical mixing, chemical grinding, box filling, packing and the like. The chemical used in the match head composition is so harmful. It affects the employee's health and the working condition of the employees may also affect the employee's health. In this context, it is imperative to trace out the solution to the problem of fire accidents in these industries in the study area. So the researcher has undertaken the study entitles "Problems and Prospects of Safety Match Industry Employees".

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SCOPE OF THE STUDY

The survey has been conducted in three taluks of Tamilnadu namely sattu sivakasi and kovilpatti as these three taluks contributes about 75 percent of the total match production in india. So these areas are selected.

OBJECTIVES OF THE STUDY

1. To evaluate the problems faced by the safety match industry employees of TamilNadu.
2. To trace out the solution to the problems of accidents and other problems faced by the employees of safety match industry.

HYPOTHESIS OF THE STUDY

1. The rating given by the employees and their opinion regarding their technology related problems in safety match industries do not differ significantly.
2. There is no significant difference between each segment and opinion of employees regarding management and supervisors in relation to work in match industries.
3. There is no significant relationship between the gender and the problems faced by the employees.

METHODOLOGY

This study is empirical in nature. The study has used both primary data and secondary data. In order to have an in-depth analysis of the research problem, the information is to be obtained from the match industry workers. Interview schedule has been used for this purpose. The secondary data were collected from standard books, research article.

SAMPLE DESIGN

As per the office of thashildar, office of labour welfare department and the central excise department there are 2696 safety match industries are situated in and around sivakasi sattu and kovilpatti. From those 110 that is, 4% of the total safety match industries are selected as sample. In sample match industries total of 3397 employees are working 510 employees that is 15% of 3397 employees are selected as a sample. From this simple random sample method is used.

PROBLEMS REGARDING RISK AND OCCUPATIONAL HEALTH HAZARDS

Accidents are a menace to the community from all points of view, national industrial and individual. Industrial accidents whenever they arise lead to physical duress, financial loss to worker and his family, loss of production and productivity, financial burden on the employer and the State as well as a great loss to the economy. Hence the problems regarding risk and occupational health hazards related data collected and tabulated.

TABLE No 1

Problems Regarding Risk and Occupational Health Hazards

(S.A. – Strongly Satisfied, A. – Agree, N.O – No Opinion, D.A. Disagree, S.D.A. – Strongly Disagree)

Sl. No.	Risk and Occupational Health Hazards	S.A.	A.	N.O.	D.A.	S.D.A.	Total Scores
1.	Fire Accidents	95 (18.63)	380 (74.51)	25 (4.90)	9 (1.76)	1 (0.20)	500 (100.00)
2.	Loss of Fire	59 (11.57)	320 (62.75)	70 (13.73)	54 (10.59)	7 (1.37)	500 (100.00)
3.	Chemical Harmful	70 (13.73)	328 (64.31)	73 (14.31)	38 (7.45)	1 (0.20)	500 (100.00)
4.	Chemical is not flammable	54 (10.59)	337 (66.08)	84 (16.47)	33 (6.47)	2 (0.39)	500 (100.00)
5.	Breathing Problem	27 (5.29)	136 (26.67)	248 (48.63)	92 (18.04)	7 (1.37)	500 (100.00)

6.	Skin Problem	47 (9.22)	272 (53.33)	92 (18.04)	88 (17.25)	11 (2.16)	500 (100.00)
7.	Lungs Problem	38 (7.45)	138 (27.06)	141 (27.65)	182 (35.69)	11 (2.16)	500 (100.00)
8.	Kidney Problem	42 (8.24)	339 (66.47)	75 (14.71)	44 (8.63)	10 (1.96)	500 (100.00)
9.	Neck Problem	38 (7.45)	176 (34.51)	119 (23.33)	162 (31.76)	15 (2.94)	500 (100.00)
10.	Shoulder Pain	13 (2.55)	72 (14.12)	298 (58.43)	111 (21.76)	16 (3.14)	500 (100.00)
11.	Chest Pain	25 (4.90)	70 (13.73)	290 (56.86)	112 (21.96)	13 (2.55)	500 (100.00)
12.	Elbow Pain	27 (5.29)	91 (17.84)	152 (29.80)	213 (41.76)	27 (5.29)	500 (100.00)
13.	Back Pain	91 (17.84)	378 (74.12)	29 (5.69)	9 (1.76)	3 (0.59)	500 (100.00)
14.	Wrist Pain	44 (8.63)	259 (50.78)	192 (37.65)	14 (2.75)	1 (0.20)	500 (100.00)
15.	Knee Pain	73 (14.31)	327 (64.12)	82 (16.08)	24 (4.71)	4 (0.78)	500 (100.00)

Source: Primary Data.

Note: Figures in bracket indicates the percentage to total

It is concluded from table that 15 factors listed for this study “Strongly Dis Agree” responses of employees range from 2.55 to 18.63percent, “Dis Agree” responses of employees range from 13.73 to 74.51 percent, “No Opinion” responses of employees range from 4.90 to 58.43 percent, “Agree” responses of employees range from 1.76 to 41.76 percent, “Strongly Dis Agree” range from 0.20 to 5.29 percent.

It is finalized that majority of the respondents have opinion negatively towards the opinion of employees regarding the risk and occupational health hazards related problems.

OPINION OF THE EMPLOYEES REGARDING THE TECHNOLOGY RELATED PROBLEMS IN SAFETY MATCH INDUSTRIES IN TAMILNADU

The introduction of technology, no doubt, is absolutely essential for the overall progress in the safety match industry. Technology introduction will have certain effects on the processes. Table 2 depicts the employee’s opinion about the technology related problems of safety match industry in TamilNadu.

TABLE No 2
Technology Related Problems

Sl. No.	Technology Related Problems	S.A.	A.	N.O.	D.A.	S.D.A.	Total Scores
1.	Lack of latest machine for frame	136	305	61	7	1	510

	filling	(26.67)	(59.80)	(11.96)	(1.37)	(0.20)	(100.00)
2.	Lack of Latest machine for box making	95 (18.63)	248 (48.63)	143 (28.04)	23 (4.51)	1 (0.20)	510 (100.00)
3.	No Latest Machines for Packing	79 (15.49)	228 (44.71)	170 (33.33)	27 (5.29)	6 (1.18)	510 (100.00)
4.	There is no latest machine for brand rolling	104 (20.39)	281 (55.10)	83 (16.27)	36 (7.06)	6 (1.18)	510 (100.00)
5.	Lack of latest machine for other work	78 (15.29)	184 (36.08)	136 (26.67)	93 (18.24)	19 (3.73)	510 (100.00)

Source: Primary Data.

It is evident from table 5.67, 5 factors listed for this study “Strongly Agree” responses of employees range from 15.29(78) percent to 26.67(136) percent, “Agree” responses range from 36.08(184) percent to 59.80(305) percent, “No Opinion” response range from 11.96(61) percent to 33.33(170) percent, “DisAgree” responses range from 1.37(7) percent to 18.24(93) percent and “Strongly Disagree” responses range from 0.20(1) percent to 3.73(19) percent.

It is finalized that majority of the respondents have opinioned positively towards the level of opinion of employees regarding lack of technology in safety match industries.

APPLICATION OF CRONBACHS’ ALPHA TEST FOR THE OPINION OF THE EMPLOYEES REGARDING THE TECHNOLOGY RELATED PROBLEMS IN SAFETY MATCH INDUSTRIES IN TAMILNADU

In order to test the reliability of scale, Cronbach’s Alpha test is applied and the result is shown in Table No 3.

TABLE No 3

Cronbach’s Alpha Test for the Opinion of the Employees Regarding the Technology Related Problems in Safety Match Industries in Tamilnadu

Particulars	Cronbach’s Alpha Score
Opinion of the employees regarding the technology related problems t in safety match industries in Tamilnadu	0.857

Source: Computed Primary Data.

Table No 3 shows the calculated value of Cronbach’s Alpha score of opinion of the employees regarding the technology related problems in safety match industries in Tamilnadu which is more than 0.7; therefore, it is concluded that the opinion of the employees regarding the technology related problems in safety match industries in Tamilnadu could be relied upon.

K.S. TEST

For the purpose of analyzing whether there is any difference in the importance of ratings given by the employees on various statements, the hypothesis has been formulated. The hypothesis has been tested by the researcher with the help of Kolmogorow-Smirnov test (here after known as KS – Test).

$$\text{Formula } D = O - E$$

D – refers to the calculated value

O – refers to the cumulative observed proportion and

E – refers to cumulative expected proportion.

TESTING OF HYPOTHESES

To assess the employees' opinion regarding the technology related problem in safety match industries, they are presented in Likert Five point scaling namely, Strongly Agree, Agree, No opinion, Disagree and Strongly Disagree and the following hypotheses are framed and Tested by applying 'KS' Test.

H_0 The ratings given by the employees and their opinion regarding their technology related problems in safety match industries do not differ significantly.

Cumulative observed proportion is calculated on the basis of observed frequency that is, observed number. The total number of employees is 510. About 510 employees have given their opinion for the gradation "Strongly Agree". In the case of first statement the observed properties are calculated by dividing 60 by total employees. The resultant values (0.60) help us to grade the observed properties. For all gradations, the same method of calculation is followed. On the basis of observed proportion, cumulative observed proportion is calculated.

Cumulative expected proportion is calculated on the basis of expected proportion. Since there are five gradations, each gradation (that is, 0.20) is assigned as expected proportion. On the basis of expected proportion, the cumulative expected proportion is calculated.

For each gradation, the difference between cumulative observed proportion and cumulative expected proportion is calculated. The largest difference will be taken as calculated value. The calculated value is compared with the table value.

If the calculated value is greater than the table value, the null hypothesis is rejected. On the other hand if the calculated value is less than the table value, the null hypothesis is accepted.

Lack of Latest Machine for Frame Filling

The data on the opinion of the respondents regarding lack of latest machine for frame filling – KS test are presented in table.

TABLE No 4

Lack of Latest Machine for Frame Filling – K.S. Test

Sl. No.	Opinion	Observed Number	Observed Proportion	Cumulative Observed Proportion	Expected Proportion	Cumulative Expected Proportion	D = O-E.
1.	Strongly Agree	136	0.27	0.27	0.20	0.20	0.07
2.	Agree	305	0.60	0.86	0.20	0.40	0.46
3.	No Opinion	61	0.12	0.98	0.20	0.60	0.38
4.	Disagree	7	0.01	1.00	0.20	0.80	0.20
5.	Strongly Disagree	1	0.00	1.00	0.20	1.00	0.00

Source: Primary Data.

Calculated value: (largest difference) = 0.46

The table value at 95 per cent confidence level = $1.36/\sqrt{510} = 0.060$.

As the calculated value (0.46) is greater than the Table value (0.060), the null hypothesis is rejected. Hence, there is a difference in the importance of ratings given by the employees about the lack of latest machine for frame filling in safety match industries in Tamilnadu.

Lack of Latest Machine for Box-making

The data on the opinion of the respondents regarding the statement "lack of latest machine for Box Making" and the results of KS test presented in table.

TABLE No 5

Lack of Latest machine for Box-Making K.S. Test

Sl. No.	Opinion	Observed Number	Observed Proportion	Cumulative Observed Proportion	Expected Proportion	Cumulative Expected Proportion	D = O-E.
1.	Strongly Agree	95	0.19	0.19	0.20	0.20	-0.01
2.	Agree	248	0.49	0.67	0.20	0.40	0.27
3.	No Opinion	143	0.28	0.95	0.20	0.60	0.35
4.	Disagree	23	0.05	1.00	0.20	0.80	0.20
5.	Strongly Disagree	1	0.00	1.00	0.20	1.00	0.00

Source: Primary Data.

Calculated value: (largest difference) = 0.35

The table value at 95 per cent confidence level = $1.36/\sqrt{510} = 0.060$.

As the calculated value (0.35) is greater than the Table value (0.060), the null hypothesis is rejected. Hence, there is a difference in the importance of ratings given by the employees about the lack of latest machine for box-making in safety match industries in Tamilnadu.

No Latest Machine for Packing

The data on the opinion of the respondents regarding the statement “No latest machine for packing” and the results of K S test are presented in table

TABLE No 6**No Latest Machine for Packing – K.S. Test**

Sl. No.	Opinion	Observed Number	Observed Proportion	Cumulative Observed Proportion	Expected Proportion	Cumulative Expected Proportion	D = O-E.
1.	Strongly Agree	78	0.15	0.15	0.20	0.20	-0.05
2.	Agree	228	0.45	0.60	0.20	0.40	0.20
3.	No Opinion	170	0.33	0.93	0.20	0.60	0.33
4.	Disagree	27	0.05	0.99	0.20	0.80	0.19
5.	Strongly Disagree	6	0.01	1.00	0.20	1.00	0.00

Source: Primary Data.

Calculated value: (largest difference) = 0.33

The table value at 95 per cent confidence level = $1.36/\sqrt{510} = 0.060$.

As the calculated value (0.33) is greater than the Table value (0.060), the null hypothesis is rejected. Hence, there is a difference in the importance of ratings given by the employees about the No latest machine for packing in safety match industries in Tamilnadu.

There is No Latest Machine for Band Rolling

The data on the opinion of the respondents regarding the statement “No latest machine for band rolling” and the results of K S test are presented in table.

TABLE No 8**There is No Latest Machine for Brand Rolling – K.S. Test**

Sl. No.	Opinion	Observed Number	Observed Proportion	Cumulative Observed Proportion	Expected Proportion	Cumulative Expected Proportion	D = O-E.
1.	Strongly Agree	104	0.20	0.20	0.20	0.20	0.00
2.	Agree	281	0.55	0.75	0.20	0.40	0.35
3.	No Opinion	83	0.16	0.92	0.20	0.60	0.32
4.	Disagree	36	0.07	0.99	0.20	0.80	0.19
5.	Strongly Disagree	6	0.01	1.00	0.20	1.00	0.00

Source: Primary Data.

Calculated value: (largest difference) = 0.32

The table value at 95 per cent confidence level = $1.36/\sqrt{510} = 0.060$.

As the calculated value (0.32) is greater than the Table value (0.060), the null hypothesis is rejected. Hence, there is a difference in the importance of ratings given by the employees that there is no latest machine for Brand Rolling in safety match industries in Tamilnadu.

Lack of Latest Machine for other Works

The data on the opinion of the respondents regarding the statement "Lack of latest machine for other works" and the results of K S test are presented in table.

TABLE No 9**Lack of Latest Machine for Other Works – K.S. Test**

Sl. No.	Opinion	Observed Number	Observed Proportion	Cumulative Observed Proportion	Expected Proportion	Cumulative Expected Proportion	D = O-E.
1.	Strongly Agree	78	0.15	0.15	0.20	0.20	-0.05
2.	Agree	184	0.36	0.51	0.20	0.40	0.11
3.	No Opinion	136	0.27	0.78	0.20	0.60	0.18
4.	Disagree	102	0.20	0.98	0.20	0.80	0.18
5.	Strongly Disagree	10	0.02	1.00	0.20	1.00	0.00

Source: Primary Data.

Calculated value: (largest difference) = 0.18

The table value at 95 per cent confidence level = $1.36/\sqrt{510} = 0.060$.

As the calculated value (0.18) is greater than the Table value (0.060), the null hypothesis is rejected. Hence, there is a difference in the importance of ratings given by the employees about the lack of latest machine for other works in safety match industries in Tamilnadu.

OPINION REGARDING MANAGEMENT AND SUPERVISORS RELATED PROBLEMS

A good relationship between employer and employee leads to the mental satisfaction of the workers, which enable them to achieve the ultimate goal of the organization. Table 10 presents the relationship with their management and supervisors.

TABLE 10

Management and Supervisors Related Problems

(S.A. – Strongly Agree, A. – Agree, N.O – No Opinion, D.A. Disagree S.D.A. – Strongly Disagree)

Sl. No.	Management and Supervisors Related Problems	S.A.	A.	N.O.	D.A.	S.D.A.	Total Scores
1.	The management did not considered the workers view	84 (16.47)	376 (73.73)	35 (6.86)	10 (1.96)	5 (0.98)	510 (100.00)
2.	The management is not for workers welfare	69 (13.53)	266 (52.16)	160 (31.37)	11 (2.16)	4 (0.78)	510 (100.00)
3.	Supervisor do not mind the workers	62 (12.16)	125 (24.51)	238 (46.67)	73 (14.31)	12 (2.35)	510 (100.00)
4.	Supervisor ignores the complaints forwarded to him	122 (23.92)	335 (65.69)	32 (6.27)	19 (3.73)	2 (0.39)	510 (100.00)
5.	Supervisors rood behaviour	68 (13.33)	333 (65.29)	77 (15.10)	26 (5.10)	6 (1.18)	510 (100.00)
6.	Supervisors do not communicate directly	143 (28.04)	303 (59.41)	33 (6.47)	26 (5.10)	5 (0.98)	510 (100.00)
7.	Supervisors do not give suggestions about the work	142 (27.84)	306 (60.00)	34 (6.67)	22 (4.31)	6 (1.18)	510 (100.00)
8.	Supervisors recognize hard work	17 (3.33)	51 (10.00)	274 (53.73)	162 (31.76)	6 (1.18)	510 (100.00)
9.	Supervisors give counseling to workers	32 (6.27)	281 (55.10)	149 (29.22)	40 (7.84)	8 (1.57)	510 (100.00)
10.	Supervisors help to solve the problems	17 (3.33)	54 (10.59)	305 (59.80)	118 (23.14)	16 (3.14)	510 (100.00)
11.	Supervisors do not provides tools equipments and materials	129 (25.29)	305 (59.80)	66 (12.94)	9 (1.76)	1 (0.20)	510 (100.00)
12.	Supervisors do not have grievances	88 (17.25)	250 (49.02)	145 (28.43)	26 (5.10)	1 (0.20)	510 (100.00)

Source: Primary Data.

Note: Figures in bracket indicates the percentage to total

It is concluded from table 10 that 12 factors listed for this study “Strongly Dis Agree” responses of employees range from 3.33 to 28.04 percent, “DisAgree” responses of employees range from 10.0 to 73.73 percent, “No Opinion” responses of

employees range from 6.27 to 59.80 percent, “Agree” responses of employees range from 1.76 to 31.76 percent, “Strongly Dis Agree” range from 0.20 to 3.14 percent.

It is finalized that majority of the respondents have opinioned negatively towards the opinion of employees regarding the management and supervisors related problems.

PROBLEMS FACED BY THE EMPLOYEES IN MATCH INDUSTRIES

Match Industries is one of the important industries to work people for their livelihood, there are problems affecting the employees themselves in match industries. The problems are Risk and Occupational Health Hazards, Technology related problems and Management and Supervision related problems of the employees. Out of all these personal factors, gender is considered the most important factor, because irrespective of male and female all the respondents have faced problems while working themselves in the match industries. In order to assess the problem faced by the employees, the Mann-Whitney ‘U’ test has been utilized.

It is a non-parametric test which is used to determine whether two independent samples that have been drawn from population with same distribution. This test is also known as ‘U’ test. This model helps to determine whether the two samples have come from identical population. If it is true that the samples have come from the same population, it is reasonable to assume that the means of ranks assigned to the values of two samples are more or less the same.

Calculation of ‘U’ statistic to test the difference between the rank sums.

$$U = \frac{n_1(n_1+1)}{2} + \frac{n_2(n_2+1)}{2} - R_1$$

Here the null hypothesis is that there is no significant relationship between the gender and the problems faced by the employees.

TABLE 11

Employees’ Opinion towards the Problems Faced by the Match Industries - Mann-Whitney ‘U’ Test

Particulars	Gender	N	Mean Rank	Sum of Ranks	U Value	Z	Significant Value at 0.05	Results
Risk and Occupational Hazards	Male	122	141.42	17253.00	9750.00	-0.707	0.479	Not Significant
	Female	168	148.46	24942.00				
	Total	290						
Technology Related Problems	Male	122	135.34	16512.00	9009.00	-1.763	0.078	Not Significant
	Female	168	152.88	25683.00				
	Total	290						
Management and Supervision Related Problems	Male	122	143.99	17566.50	1063.00	-0.262	0.793	Not Significant
	Female	168	146.60	24628.50				
	Total	290						

Source: Computed Primary Data.

Table shows that the P value is greater than 0.05; hence the null hypothesis is accepted t five percent significant level. Therefore, it is concluded that irrespective of the gender, the respondents have not faced the problem like Risk and Occupation Hazard Technology related problems and Management and Supervision Related Problems and so on.

SUGGESTIONS

- The risk of fire and explosion is ever present in the safety match industry besides health hazards due to the inhalation of dust and fumes. It is suggested that, good housekeeping, fire resistance, provisions of alarm and training in using them are necessary to minimize the damages of fire.
- The management is suggested for free medical checkup should be provided to them
- The management must take precautionary measures to overcome occupational problems. This problem by keeping the chemicals used in the match manufacture separately or by giving gloves and safety gadgets to the workers to avoid this problem.
- It is the responsibility of the Labour Office to visit frequently to the match industry to ensure the cleanliness of the work place.

SUMMARY

The problems faced by the match industry workers are also collected and discussed in this paper. The study areas suttur, sivakasi, and kovilpatti are economically backward due to low rainfall and dry climatic conditions which affects the rural people of this areas and the another side is suitable climate for the production of match boxes therefore many safety match industries are situated in this places. These industries are help to improve the economic status of an employer and the nation, but it fails to concentrate the economic development of the employees due to unawareness of the workers and no separate union for claiming their rights. So they are facing so many problems both mentally and physically. This study gives some remedial measures to overcome their problems. The employer and the government should implement these for the well being of the workers of safety match industries

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