

Statistical Analysis on Workers of Fire Work Industry Using SPSS

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Abstract: This survey aims to perceive the level of satisfaction of the people working in match box and fireworks industry in Virudhunagar district, towards the working environment and other aspects. The basic purpose behind the survey is to find whether the people working in such working circumstances are satisfied with their life style, and to know whether the government policies and schemes reach them and how far it helps them to improve their lifestyle and also to know about the satisfaction level of the basic facilities they get. For this study 100 respondents are opted those who are working in various fireworks industry in Virudhunagar district. The study reveals that the people are facing problems in the following areas: salary, housing, children's study, health condition, awareness towards the hazards of chemicals and finally some suggestions are given. Statistical analysis is done using SPSS software.

Keywords: match-box industry-health-education-economic condition-statistical test.

1. Introduction

Wooden match production in India is split into three categories: Large-scale division, Small-scale division and the cottage segment. 82% of total match production is in the handmade small-scale and cottage segment. People of all age categories are involved in this work. Fire work products for festive season involve large number of labour work. It requires low levels of expertise and relatively small capital investments. Our study highlights the outcome of rigorous government efforts to encourage the small-scale sector. The study also points out some important issues and limitation. Firsthand and secondary data for the study were drawn from various sources. Women and children are being exploited, paid low, provided poor working conditions and given hardly any benefits. While the industry has definitely been economically beneficial to the region, and very few cases of labour unrest have been reported, the low-wage structure in the handmade sector enables it to manufacture its product at lower cost.

Virudhunagar District is an administrative district of Tamil Nadu state. Virudhunagar district has a population of 1,943,309 (by 2011 census) in which major population are engaged in Industry, Agriculture and other works. The district is well known and famous for fireworks, matches, printing. Sivakasi and Saatur are giant fire work industrial centre of Virudhunagar district. Sivakasi is otherwise called as "Little Japan" and it carries the pride that it was named by Prime Minister Jawaharlal Nehru as the export of fireworks and matches are highly

dependent on their production and has a prime role in countries economy. In 1922, P. Ayya Nadar and A. Shaunmuga Nadar learned about safety matches production from a Swedish Multi-National firm at Calcutta. By their learning they implemented their ideas in their establishment, "The South India Lucifer Match Industry" in 1923. Now Sivakasi meet about 55 to 60% of India's requirement of safety matches. The market is estimated to grow at an average of 10% of per annum. Nearly 55% of workers are employed in the match sector. About 3500 Match works are situated in Sivakasi and Sattur. From 1991, these fire work industries are facing problems like Mechanization and causes Excess production (ie 38% surplus than demand). Since the fire work industry is Hazardous, the firework units are governed by Laws such as the Arms Act 1959, Explosive Act 1984, Explosives rules 1983, and Arms rules 1962. The Department of Explosives of Government of India and various Departments of State Government serves as the regulating agencies. If the government provides technical facilities for testing, Research & Development and incentives, then there will be a scope for exporting the fireworks to Europeans and other Asian countries which are fascinated by Indian Fireworks so that the economy will improve remarkably.



Fig. 1. Virudhunagar District

2. Objectives of the Study

The study is carried out with the objectives.

- To measure the level of satisfaction of the people working in match box and fireworks industry in Virudhunagar district, towards the working environment.

- To what level people working in such working circumstances are satisfied with their life style.
- To know whether the government policies and schemes reach them and how far it helps them to improve their lifestyle.
- To know about the satisfaction level of the basic facilities they get.

All these objectives are studied using statistical package SPSS.

3. Methodology

Convenient random personal interview technique is followed in this survey. The participants were selected randomly from fire work industry in Virudhunagar and a questionnaire has been given individually. The collected data were analyzed using SPSS (Statistical Package for Social Sciences) and the results are discussed and presented. Suggestions for improvement of the people's life style are also presented.

4. Report Based on the Survey

1. 100 respondents were taken for this survey out of which 50 were male respondents and 50 were female respondents.
2. 15 respondents were from the age group of 14-25. Majority of the respondents (46) are from the age group of 26-35. 20 belong to the age group of 36-45 and 11 respondents from 46-55.8 respondents were above 55.
3. 64 respondents were married and out of them, 44 respondents have more than two children.
4. 4 respondents are illiterate and 6 respondents are degree holders.
5. The nature of occupation of 62 respondents was of low level. 28 works in the middle level and 10 belong to high middle level.
6. 8 respondents are getting salary below 2000 rupees. 12 respondents get salary between 3000-4000 rupees. A majority of 44 members get salary between 4001-5000. The number of respondents getting salary between 5001-6000 are 23 and 10 respondents get salary above 7000.
7. The experience of 37 respondents in the match box industry is from 5-8 years. 15 respondent's experience is 8-10 years and 9 respondents are working in match box industry for more than ten years.
8. The respondents who are working in match box industry get sick often and their health condition were not found good. They are suffering from asthma problem, breathing trouble and skin disease.
9. Women respondents said that they had crisis with their lords and out of 50 female respondents 9 said that they face women harassment.
10. 44 respondents live in thatched house and 56 respondents live under concrete roof. 64 respondents are staying in rental home.
11. 42 respondents said that they are not satisfied with the health care centre and the availability of medicine.
12. 58 respondents are not aware of Life insurance and they are

also not satisfied with the PF and ESI scheme. 70 respondents are not satisfied with the safety of the individual. 39 respondents are not satisfied with the municipality services. They feel that water facility and electricity supply should be improved.

5. Testing of Hypothesis

Chi square test:

From the survey, two variables were taken and the dependency is checked using chi- square test.

Hypothesis: 1

H_0 : 'Nature of work' is independent to the factor 'Number of times they get sick'

H_1 : 'Nature of work' is dependent to the factor 'Number of times they get sick'

Calculated value= $(O_i - E_i)^2 / E_i = 4.45$

Degrees of freedom= $(R-1) * (C-1) = 2$

Level of Significance= 5%

Table value= 3.841

T.V. < C.V. Reject H_0

It is concluded that the 'Nature of work' is dependent to the factor 'Number of times they get sick'

Hypothesis: 2

H_0 : 'Education of the respondent' is independent to the factor 'Awareness about the safety of individual'.

H_1 : 'Education of the respondent' is dependent to the factor 'Awareness about the safety of individual'.

Calculated value= $(O_i - E_i)^2 / E_i = 4.99$

Degrees of freedom= $(R-1) * (C-1) = 2$

Level of Significance= 5%

Table value= 3.841

T.V < C.V. Reject H_0 .

It is concluded that 'Education of the respondent' is dependent to the factor 'Awareness about the safety of individual'.

Chi-Square Test

Table 1
Educational qualification

	Observed N	Expected N	Residual
Nil	4	20.0	-16.0
upto 10th standard	57	20.0	37.0
HSC	34	20.0	14.0
UG	3	20.0	-17.0
PG	2	20.0	-18.0

Chi-Square Test

Table 2
Educational qualification

	Observed N	Expected N	Residual
Nil	4	20.0	-16.0
upto 10th standard	57	20.0	37.0
HSC	34	20.0	14.0
UG	3	20.0	-17.0
PG	2	20.0	-18.0
Total	100		

Table 3

Care on safety of individuals			
	Observed N	Expected N	Residual
excellent	1	20.0	-19.0
verygood	10	20.0	-10.0
good	21	20.0	1.0
satisfied	19	20.0	-1.0
not satisfied	49	20.0	29.0
Total	100		

Table 4
Test statistics

	Educational Qualification	Care on Safety of Individuals
Chi-Square	121.700 ^a	65.200 ^a
df	4	4
Asymp. Sig.	.000	.000

7. Suggestions

1. The higher authorities can give proper training periodically to the employees who handle chemicals.
2. Hand gloves can be given.
3. Children below 14 years should not be encouraged to work in match box industry.
4. Salary structure can be revised.

5. PF and ESI scheme should be made compulsory for all the

Table 5
Descriptive statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic
age	100	4	2	6	3.51	.112	1.124	1.263	.759
educational qualification	100	4	1	5	2.42	.071	.713	.509	1.055
care on safety of individuals	100	4	1	5	4.05	.110	1.095	1.199	-.760
Valid N (listwise)	100								

Descriptives

6. Findings

1. 45.7% of the workers are in the age group of 26-35.
2. 69.47% of the respondents have more than 2 children (ie) more than 2 dependents, which will be very difficult for them to run their family within the given income.
3. 55.9 % of the respondents are not well educated (below 10th), this may cause problem in having awareness in the industrial premise.
4. 62.1% are working in lower level which will lead to poor salary.
5. 66.4% get income less than 4000, so that they cannot afford much for housing, food, children's education, medicine, etc.,
6. 62.7% work for more than 5 years, which shows that they inhale lot of chemicals and lead to health problem.
7. 77.7% of the respondents cannot send their children to higher studies due to poor economy.
8. 39.2% go to hospital frequently due to poor working environment.
9. 19.10% of women face problems with their lords.
10. 58.8% do not have insurance.
11. 61% aware of PF/ESI.
12. 56.6% are not satisfied with food items in ration.
13. 53.6% not aware of safety of the individual.
14. 32.5% not satisfied about Health care/ medicine.
15. 70.9% feel good about the fees structure in schools.
16. 44.6% of the people are living in thatched houses where 64% are rental.

employees.

6. Life Insurance should be mandatory for all employees as they are working in a hazardous environment.
7. Proper water Supply and Power supply should be given.
8. Education of their wards can be encouraged through free education.
9. Strict action should be taken over women harassment.
10. Government should open schools and colleges on a service motive.
11. Health centres should be properly maintained and medicines should be available at any time.
12. Inspection in industry should be conducted periodically.

8. Conclusion

The study reveals that the people working in fireworks industry of Virudhunagar district are facing problems in the following areas: Health hazards due to chemicals used in industries, their ward studies, the salary structure, the economic condition, basic needs and they feel the scheme of government do not reach the people properly. Government and higher authorities of the industries should work together to chart out things in a proper way and try to eliminate the problems faced by the people working in a match box industry in Virudhunagar district.

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