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Total Quality Management: An Important Growth Strategy For Small- Scale Scientific Instrument Industry Of Ambala

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Abstract

Scientific instruments are the important instruments which have prominent use in the area of education, medical and industry. Scientific instruments are used since the ancient times. In the modern era the life is impossible without the existence of scientific instruments. Perhaps the 'Astrolabe' was based on the scientific technology which is called the first scientific instrument. The small scale scientific instrument industry of Ambala district is world famous due to its historical glory. Lala Hargolal is famous as the founder of scientific instrument industry in Ambala. Now, more than 800 small scale scientific instruments units are working in Ambala. The aim of this research paper is to highlight the importance of total quality management in the scientific instrument industry of Ambala District. This paper further emphasised the role of total quality management in this industry which has provided the recognition to the district of Ambala at world level.

Key Words

Scientific Instruments; The Ambala District; Small-scale Scientific Instrument Industry; Total Quality Management.

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Introductory View

Scientific instruments have important role in the area of education, medical and industrial sector. Various types of scientific instruments are used in our daily life. The use of instruments makes our working possible and expedient. The small scale industrial units of our country account for 70 percent of innovation. Mr. Santosh Oswal who is the farmer has developed a wonderful device 'Nano Ganesh' for the automatic function of water pump which saves the time as well as increases the optimum utilisation of energy. MSMED Act 2006 has defined the small scale unit in terms of manufacturing enterprises and service enterprises. According to the provisions a manufacturing small scale industrial unit is that unit in which the cost of plant and machinery engaged is more than ` 25 lakh and upto ` 5 crore and a service providing small industrial unit is that unit in which the cost of equipment installed is more than ` 10 lakh and upto ` 2 crore. Three important categories of small scale units are, (a).the small units engaged in the manufacture and assembling of all the components of scientific instruments, (b). the small units engaged in the manufacturing of instruments with the components received from other local small units and (c). the small units which manufacture the specific components for the assembling of scientific instruments.

Review of Literature

Various researchers have suggested different points related to the implementation of total quality management practices in small scale units. Some of the important reviews have been summarizes as follows:

Eng Quek Eng and Yusof Sha'ri Mohd (2003) have suggested the TQM practices as the key approach for attaining the organisational objectives. It can be achieved through the improvement in the performance. **Bikshapathi Vijayagiri (2011)** has pointed out the total quality management as the magic for the organisation which can change the attitude and behaviour of the workforce. ISO certification is the bon for the small units. **Muturi Philip, Maranga Stephen and Getecha Ciru (2013)** have suggested implementation of total quality management practices in the small units through education, training and leadership. They have also stressed the need of future research in the area of TQM practices.

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About the District of Ambala

The Ambala district is the famous district of Haryana state. The area of this district is spread in the 1,574 square kilometers. Ambala Cantt, Naraingarh, Saha, Mullana and Shahzadpur are the famous cities of this district. According to a historical statement this district was founded in the fourteenth century by an Amba Rajput. Various types industries like mixer grinders and metal castings etc. are the other main industries of this district. Ambala is world famous for its scientific instruments manufacturing units.

Meaning of Scientific Instrument

The scientific instruments are used in the area of measurement since the ancient times. Astrolabe is assumed the first scientific instrument of this world. Miicroscope and the telescope were other instruments which were invented for measuring all types of measurements. The Barometer was invented in the seventeenth century which was another revolution in the history of scientific instruments. Later on various scientific instruments such as the pendulum, magnetic compass, electroscope and air pump etc were also discovered for the use in the area of science. A scientific instrument can be defined as that instrument which is helpful for understanding the features of scientific practices.

Growth and Performance of Small Scale Scientific Instrument Industry of Ambala

Before the development of scientific industry in Ambala, the scientific instruments were imported by the country from England. The cost of these instruments was very high. Firstly, Lala Hargolal started a unit at Bengali Mohalla of Ambala Cantt in 1897. This unit is famous as the 'Hargolal and Sons.' The scientific instrument industry of Ambala district is old more than hundred years. "OSAW" is the very famous scientific units of this district which was established in 1919.

The scientific industry of Ambala is manufacturing more than 20,000 types of scientific instruments. The annual turnover of this industry is ` 800 crore. The small scale scientific instruments industry of this district contribute upto 34% of the total production of the country. These units fulfill the need of education institutions, hospitals, research laboratories, engineering colleges, defence sector and the space agencies. Ambala city is famous as the 'Scientific Instruments City' at global level.

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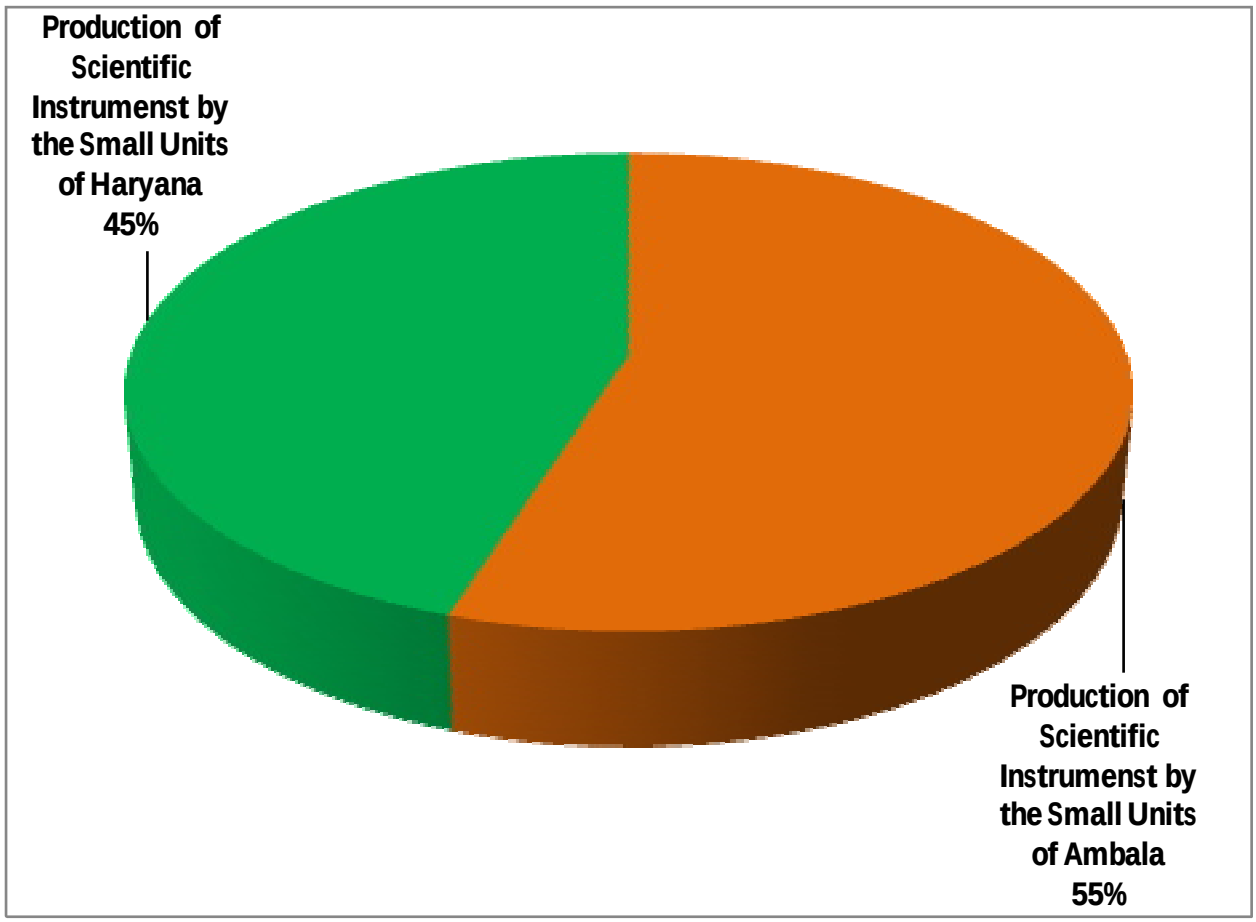
In the year 2015-16, the small scale scientific units of Ambala produced the instruments of ` 3,537 lakh while total production of the units of Haryana was ` 6,462 lakh. Hence, the small-scale scientific instruments units of Ambala contribute in the production of state upto 55%.



Source: Statistical Abstract of Haryana, 2017-18, Government of Haryana, pp. 447.

This is the major industry of Haryana which makes the export of scientific instruments to many destinations in abroad namely, Europe, United States, Africa, the Middle East and the far East etc. In 1966-67, the production of the scientific instruments of Haryana was only ` 136 lakh which has increased to ` 6462 lakh in the year 2015-16. The increase in the production of scientific instruments is the shining symbol for the industry.

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Total Quality Management in the Small Scale Scientific Industry of Ambala

The district of Ambala is famous as the origin of the small scale scientific instrument industry in the country. Many scientific instruments are world famous of this industry. The 'Spectometer' manufactured by the 'Gian Chand' of Ambala is an important and famous instrument which is used in the educational institutions providing higher education. The scientific industry of Ambala has manufactured the battery-operated scooter in the decade of fifties. In 2018, this industry has made significant contribution in the Agni-V Missile project of the Government of India by providing engineering support. The small scale scientific units of Ambala have earned the reputation at national level by supplying 450-tonne load cell calibration machine for the Mars Mission of the Government. This industry has glorious history as well as the present. In present times this industry is gaining reputation at international level with its awesome performance. These units are also making a significant contribution to the quality and innovation in the industry.

Improvement in the quality is the most important issue at the present times. Small scale units are expected to deliver quality products. The quality of the scientific instruments of Ambala should match the quality standards at global level due to large market of these instruments in international market. For identifying the practice of total quality management in the scientific instruments industry of Ambala, a survey was conducted in which responses were obtained from 210 respondents who are engaged in these units. The practices of total quality management are shown in the following table:

Table 1: Quality is Given the Top Priority by the Firm

Attributes/ Responses	Ranks	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	p
Period of Working	Less Than 10 Years	0 (00.0)	0 (00.0)	4 (20.0)	5 (25.0)	11 (55.0)	0.287
	10 to 20 Years	0 (00.0)	0 (00.0)	9 (16.1)	29 (51.8)	18 (32.1)	
	Above 20 Years	0 (00.0)	0 (00.0)	18 (13.4)	65 (48.5)	51 (38.1)	
No. of Employees	Less Than 10	0 (00.0)	0 (00.0)	0 (00.0)	13 (28.9)	32 (71.1)	0.074
	10 to 20	0 (00.0)	0 (00.0)	0 (00.0)	29 (29.9)	68 (70.1)	
	Above 20	0 (00.0)	0 (00.0)	0 (00.0)	31 (45.6)	37 (54.4)	

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Annual Turnover	Less than ` 25 Lakh	0 (00.0)	0 (00.0)	0 (00.0)	12 (26.7)	33 (73.3)	0.154
	` 25 Lakh to ` 1 Crore	0 (00.0)	0 (00.0)	0 (00.0)	19 (30.2)	44 (69.8)	
	Above ` 1 Crore	0 (00.0)	0 (00.0)	0 (00.0)	42 (41.2)	60 (58.8)	

Source: Computed from the Primary Data. P Value is Significant at 0.05 Level. Figures in Bracket are in percentages.

Table 2: Karl Pearson's Correlation between the Variables

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.006	.074	-.090	.928[c]
		-.138	.069	-2.008	.046[c]
		-.129	.067	-1.872	.063[c]

Table 1 is indicating that in case of period of working with less than 10 years the high majority of the respondents (75.00 per cent) have provided positive statement with the quality management practices. Significant majority of the respondents (83.90 per cent) in case of second category of first variable have also favoured the statement. Again the significant majority of respondents (86.60 per cent) with the working period above 20 years went along with the statement. All the respondents with respect to the variables of number of employees and the annual turnover have supported the query. Statistically significant association was seen between the variable of number of employees and the statement.

Table 2 presenting the high correlation between the variable of number of employees and the responses but remaining two variables have shown low relationship with the responses of the respondents.

Conclusion

The small scale scientific instrument industry of Ambala is the innovative and qualitative industry which is not famous in India only but also at international map. This industry requires special knowledge and expertise for the various operations. The small scale units engaged in the scientific work have prominent place in the export business and have special

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contribution in earning the foreign exchange. This industry is more than 100 years old which caters the needs of various prominent sectors like education, medical, research and industry. Based on the above discussion, we can say that the entrepreneurs engaged in the small scale scientific instruments units of Ambala are supporting the practice of total quality management. They are considering the quality related issues during the production of the instruments. At the last but not the least, it can be said that total quality management can be considered as the important growth strategy for the small scale scientific instrument industry of the Ambala district.

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