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Findings of Consistency Index Ratio (CR) for Low Financial Growth of Higher Technical Education Service Industry in Jaipur from the Staff View

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Abstract: ***In service industry it is required to relate men, machine and money to optimize time and space constraints to achieve goal of optimum financial and industrial opportunists in educational pvt ltd service industries. These institutes continually analyze the situation, and try to implement solutions for any issues occur in these institutions but there is one common thread of these management techniques.***

In this research study, financial and industrial potentialities available in well established higher technical institutes are investigated using population and sampling theory. The research area selected for this research study is Jaipur (Urban and Rural both). Total 50 questionnaire are collected from respondents from different institutes located in different locations of Jaipur. The reason behind the selection of Jaipur is high dense availability of these type of institutes (Engineering Colleges, Diploma colleges, ITI colleges, Universities etc). The purpose of this study is to highlighted the reason behind the failure of these institutions and also find out the growth factors which can improve the quality of these institutions. All statistical methods are selected by proper literature review during this research study. In present research work, consistency ratio is calculated for three different sections of industrial survey conduct in present research work which are Job satisfactions section, Load satisfactions section and last section is Link with management is presented.

Keywords: Consistency index, Consistency ratio, Multi-criteria decision method, Eigen vector

I. INTRODUCTION

From the beginning of human development to the advanced cultivated society, the essential physiological needs viz. - sustenance, material and sanctuary have continued as before, yet these necessities have experienced exceptional changes. Such changes have kept pace with the advancement of human civilisation. With the improvement of social measures and development of human advancement, the loving, tastes, and styles of satisfying these physiological needs have likewise changed. The human needs and fulfillment are changed with time. The human needs have not been limited to the physiological needs like sustenance, apparel and safe house yet human creatures additionally yearn for status, acknowledgment, regard and so on. The human development has gone through the changed stages with settled life, town society or family framework, craftsmanship framework, factory framework, mechanical town and city life, worldwide association organize and so on.

Industrial development of service industry in India since independence has been truly remarkable; the process brought about in its wake a wide range of serious problems. Such as:

1) Failure to achieve targets of production. Even investments made in productive assets do not bring fruits as expected in terms of time, value and quality and cost.
2) Underestimation of capacity. The factors responsible for under utilization of capacity are said to be: demand short- falls, Supply bottle-necks, labour problems and deliberate under – utilization to create shortages and thereby to corner more profits.
3) Increasing capital – output ratio: Another very disturbing future of industrial development of India is the ever- rising average and Incremental Capital Output Ratios (ICOR).
4) Sectoral imbalance: Planned economic and industrial development pre-supposes co-ordinated and balanced development of all sectors. But in reality several sectoral imbalances at a point of time and over a period of time plague the industrial economy of India.
5) Regional imbalances: Industrial development continues to be lopsided, regionwise, large scale industries are concentrated in a very few states. All states have not been able to attract major industrial units in spite of incentives and facilities because of the magnetic pull of industrially advanced states.

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The present examination in Jaipur, a higher technical institutes center point winds up intriguing from two purposes of perspectives. One the instructive city is arranged between two major modern townships, in particular Alwar mechanical region and Jaipur mechanical region, in genuine sense the center point of world class training in very focused condition. A large number of understudies are profiting these foundations for higher investigations and research. Also, educationalists, technocrats and supervisors with high aptitudes and smaller scale little medium to vast scale businesses framed a group of common intrigue and advantages bestowing to the general public.

A. MCDM-Theory

Analytic Hierarchy Process (AHP) is one of Multi Criteria decision making method that was initially created by Prof. Thomas L. Saaty. To put it plainly, it is a method to get proportion scales from combined correlations. The info can be gotten from real estimation, for example, value, weight and so on., or from emotional assessment, for example, fulfillment sentiments and inclination. AHP permit some little irregularity in judgment since human isn't constantly predictable. The proportion scales are gotten from the essential Eigen vectors and the consistency list is gotten from the key Eigen esteem.

B. Pair Wise Comparison

In present research work three type of survey is conduct among various engineering faculties in Jaipur and its near region. These survey are conduct by digital medium and offline medium. In present work from full survey conduct for identify the loop holes present in failure of these institutions due to faculty dis-satisfactions. The survey outcomes are present in three sections which are following and present in table 1 to table 3.

Table 1 Job satisfaction section

Salary	Bonus	Salary transfer rate	PF benefits
J-1	J-2	J-3	J-4

Table 2 Job Load satisfaction section

Teaching Load	Official Load	Working Environment	Job security
L-1	L-2	L-3	L-4

Table 3 Link with Management section

Connection with management	Connection with superiors	Link among performance and salary	Job Termination Fear
M-1	M-2	M-3	M-4

In table 1 to table 3 coded values are also present. As seen in tables each section has some unique survey questions which are fill by respondents of various engineering colleges. After selection of these sections, it is required to set Eigen vectors for each section. The results are present in next sections in this research paper.

One custom pairwise scale is generated for these sections are present in table 4. This scale has 1 to 9 odd values for this scale. This scale is fill by expert respondents. This scale is helping tool for generation of relative attribute matrix.

Table 4 pairwise scale matrix

	Extreme	Very Strong	High Strong	Strong	Neutral	Strong	High Strong	Very Strong	Extreme	
Coded Value	9	7	5	3	1	3	5	7	9	Coded Value

This scale is generated for each section and present in following section for these three sections. These scale values are used for generation of decision matrix development. Pair wise scale for all three sections are present in table 5 to table 7 for Job satisfactions, Job Load satisfactions and Link with management respectively

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Table 5 pairwise scale matrix for Job Satisfaction

Coded Value	Extreme(9)	Very Strong (7)	High Strong (5)	Strong (3)	Neutral (1)	Strong (3)	High Strong (5)	Very Strong (7)	Extreme (9)	Coded Value
J-1	9	7	5	3	1	3	5	7	9	J-2
J-1	9	7	5	3	1	3	5	7	9	J-3
J-1	9	7	5	3	1	3	5	7	9	J-4
J-2	9	7	5	3	1	3	5	7	9	J-3
J-2	9	7	5	3	1	3	5	7	9	J-4
J-3	9	7	5	3	1	3	5	7	9	J-4

Highlighted color in table 5 show the result provide by respondents for these comparisons for generation of pair wise matrix table. The same results are generate for remaining sections of survey questions and present in table 6 and table 7.

Table 6 pairwise scale matrix for Job Load Satisfaction

Coded Value	Extreme(9)	Very Strong (7)	High Strong (5)	Strong (3)	Neutral (1)	Strong (3)	High Strong (5)	Very Strong (7)	Extreme (9)	Coded Value
L-1	9	7	5	3	1	3	5	7	9	L-2
L-1	9	7	5	3	1	3	5	7	9	L-3
L-1	9	7	5	3	1	3	5	7	9	L-4
L-2	9	7	5	3	1	3	5	7	9	L-3
L-2	9	7	5	3	1	3	5	7	9	L-4
L-3	9	7	5	3	1	3	5	7	9	L-4

Table 7 pairwise scale matrix for Link with Management Satisfaction

Coded Value	Extreme(9)	Very Strong (7)	High Strong (5)	Strong (3)	Neutral (1)	Strong (3)	High Strong (5)	Very Strong (7)	Extreme (9)	Coded Value
M-1	9	7	5	3	1	3	5	7	9	M-2
M-1	9	7	5	3	1	3	5	7	9	M-3
M-1	9	7	5	3	1	3	5	7	9	M-4
M-2	9	7	5	3	1	3	5	7	9	M-3
M-2	9	7	5	3	1	3	5	7	9	M-4
M-3	9	7	5	3	1	3	5	7	9	M-4

C. Relative Attribute Matrix

After table generation using custom scale for three sections of questions, time to develop relative attribute matrix for three sections and these tables are present in table 8 to table 10 for this research work.

Table 8 Attribute matrix for Job Satisfactions

	J-1	J-2	J-3	J-4
J-1	1	5	3	7
J-2	1/5	1	1/7	3
J-3	1/3	7	1	5
J-4	1/9	1/5	1/7	1
SUM	1 5/8	13 1/5	4 2/7	16

As seen in table 8, upper diagonal matrix is fill by scale results present in table 5 and lower table is fill by reciprocal of upper diagonal matrix results. The same procedure is adopted for remaining tables.

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Table 9 Attribute matrix for Job Load Satisfactions

	L-1	L-2	L-3	L-4
L-1	1	3	7	9
L-2	1/3	1	5	3
L-3	1/7	1/5	1	3
L-4	1/9	1/3	1/3	1
SUM	1 3/5	4 5/9	13 1/3	16

Table 10 Attribute matrix for Link with Management Satisfactions

	M-1	M-2	M-3	M-4
M-1	1	1/5	3	3
M-2	5	1	5	9
M-3	1/3	1/5	1	3
M-4	1/3	1/9	1/3	1
SUM	6 2/3	1 1/2	9 1/3	16

D. Eigen Normalization Weights

After creation of attribute table for three sections, time to generate Eigen vector normalization matrix using MATLAB software. The Eigen value for these three sections are present in table 11 to table 13.

Table 11 Eigen Vector for Job satisfaction

	J-1	J-2	J-3	J-4	Eigen Value
J-1	0.61	0.38	0.70	0.44	0.53
J-2	0.12	0.08	0.03	0.19	0.10
J-3	0.20	0.53	0.23	0.31	0.32
J-4	0.07	0.02	0.03	0.06	0.04
SUM	1	1	1	1	1

These Eigen values are help to find the principal eigen vector which is called Lemda max for further analysis.

Table 12 Eigen Vector for Job Load satisfaction

	L-1	L-2	L-3	L-4	Eigen Value
L-1	0.63	0.66	0.53	0.56	0.59
L-2	0.21	0.22	0.38	0.19	0.25
L-3	0.09	0.04	0.08	0.19	0.10
L-4	0.07	0.07	0.03	0.06	0.06
SUM	1	1	1	1	1

Table 13 Eigen Vector for Link with management satisfaction

	M-1	M-2	M-3	M-4	Eigen Value
M-1	0.15	0.13	0.32	0.19	0.20
M-2	0.75	0.66	0.54	0.56	0.63
M-3	0.05	0.13	0.11	0.19	0.12
M-4	0.05	0.07	0.04	0.06	0.06
SUM	1	1	1	1	1

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As seen in table 11, the most promising question which is responsible for failure of this industry is seem to be J-1 (Salary give by institute to staff), whereas for Job Load satisfactions the best question is L-1 (Teaching Load provided by Institute). In last section the best question is M-2 (Connection with superiors). These results are help to improve the failure of these stock holders and management can improve this problem. After generation of eigen vector, time to solve consistency index and ratio by using these formulas.

$$CI = \frac{\lambda_{max} - n}{n-1}$$

$$CR = \frac{CI}{RI}$$

The CI and CR are for all three sections are present in table 14. This CR index help to find the importance of attribute scale. If CR is less or equal to 15%, then the selective scale is most optimum attribute scale for this research study and now AHP technique can apply easily. In present study only this scale role is present and discussed.

Table 14 Lemda (Max) for all three sections (Principal Eigen vector)

Job satisfaction	Job Load satisfaction	Link with management
4.34	4.32	4.27

And the final result of CR is present in table 15 for all three sections.

Table 15CR for all three sections (Consistency ratio)

Job satisfaction	Job Load satisfaction	Link with management
12.51	11.70	9.89

As seen in table 15 all three section are range of CR approval condition, so the scale for this questionnaire is accepted and approved for further study.

II. CONCLUSION

The aim of present study is to develop a custom attribute scale for industrial survey conduct for failure analysis of higher technical educational institutes. In present study three different type of questionnaire are present and the scale is verified for these scales. The main conclusion of this study is following:

A. The most promising question which is responsible for failure of this industry is seem to be J-1 (Salary give by institute to staff), whereas for Job Load satisfactions the best question is L-1 (Teaching Load provided by Institute). In last section the best question is M-2 (Connection with superiors).

B. The CR value for three sections are within the range of 15% upper value and the same study is verified for further study.

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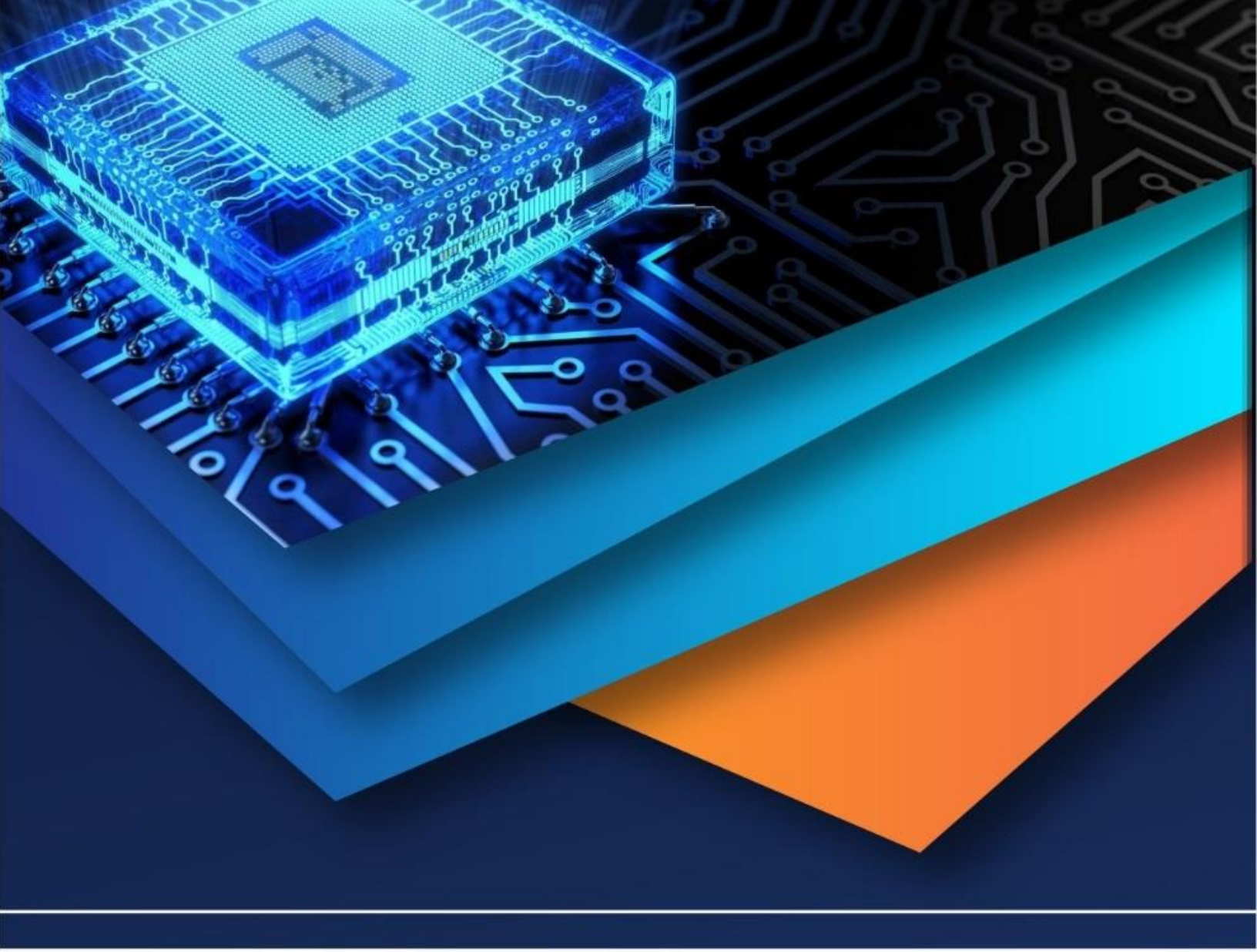

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