



“PORT USERS LEVEL OF SATISFACTION TOWARDS CARGO HANDLING PROCESS- AN ANALYTICAL STUDY”

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ABSTRACT

This study has focused on analyzing the procedure of Cargo handling through Chennai Port trust. The scope of the study is restricted to 100 customers only. Findings and conclusion given in the study may help the Port trust to take effective step and improving the Cargo handling process.

Keywords:Port Users, Cargo Handling Process, Users Satisfaction.

1. INTRODUCTION

Port is a place where facilities are provided for the ships and other Sea going Crafts to take shelter, have and facilities for unloading and loading, for fuelling, and for taking fresh waters and such facilities as may be required by them.

Various types of Export & Import cargoes are handled at each Port for International Trade as well as Coastal Trade. The Export Cargoes are those cargoes which are loaded in a ship and go out of the Port and or to the country. The Import Cargoes are the various types of Export & Import cargoes are handled at each Port for International Trade as well as Coastal Trade. The Export Cargoes are those cargoes which are loaded incoming cargo from outside the country and are generally unloaded at the Port.

For handling various cargoes as well as for shipping movements and/or Marine Operation within and outside the Port, a no. of equipment are needed to support the services to be rendered to the Port Users.

2. OBJECTIVE

To find the level of satisfaction in the Cargo and handling process.

To determine the most used type equipment for Cargo handling.

3. RESEARCH METHODOLOGY

3.1 RESEARCH

Research can be defined as “a scientific and systematic search for pertinent information on a specific topic”. The Advanced Learners Dictionary of current English gives the meaning of research as “a careful investigation or inquiry especially through search for new facts in any branch of knowledge”.

3.2 RESEARCH DESIGN

Research design stands for advanced planning of methods to be adopted for collecting the relevant data and the techniques to be used in their analysis keeping in view the objective of the research. The present study is based on survey and fact-findings enquiries with the customers. Here the descriptive method of research has been followed.

3.3 SAMPLING UNIT

The sampling unit for present study is port users in Chennai PortTrust.

3.4 SAMPLING TECHNIQUE

We have used convenience sampling technique to collect the required information from the respondents.

3.5 SAMPLE SIZE

The total sample size selected for the present study is 100 customers from Chennai Port Trust.

3.6 DATA COLLECTION

Primary Data are that, which are collected afresh and for the first time and happens to be original in character. Here the primary data was collected using a structured questionnaire from various respondents among port users. The respondents were contacted personally.

Secondary data was collected for port related information from the internal source of the port trust itself.

4 . DATA ANALYSIS AND INTERPRETATION

4.1.Chi-squire Test

Ho: There is no significant difference between responses regarding satisfaction in cargo handling process.

	Observed	Expecte N	Residual
Strongly Agree	9	25%	-16%
Agree	79	25%	54%
Can't say	7	25%	-18%
Disagree	5	25%	-20%
Total	100		

Step.1: Formula:

$$\text{Chi Square: } X^2 = \sum [(O_{ij} - E_{ij})^2 / E_{ij}]$$

Where:

O_{ij} = Observed frequency of the cell in the *ith* row and *jth* column. E_{ij} = Expected frequency of the cell in the *ith* row and *jth* column.

Step.2: Expected frequency and Chi-square value

$$E = N / n$$

$$E = 100 / 4 = 25$$

Chi-Square	155.840
Df	3
Asymp	
Sig	.00

	O	E	O-E	(O-E) ²	(O-E) ² / E
Strongly Agree	9	25.0	-16.0	256	256/25
Agree	79	25.0	54.0	2916	2916/25
Can't say	7	25.0	-18.0	324	324/25
Disagree	5	25.0	-20.0	400	400/25
Total	100				3896/25

Calculated value of chi-square= 155.840

Degrees of freedom= 3

Table value of chi-square = 7.81

P value= <0.001

Inference

Since the calculated value of p is less than 0.05, therefore the null hypothesis is rejected. So **we conclude that there is a significant difference between responses regarding satisfaction in cargo handling process.**i.e., Maximum number of respondents are agreed that the Cargo handling process is good.

4.2. T-TEST

T-test is any statistical hypothesis test in which the test statistic follows a Student's t distribution if the null hypothesis is true. It is most commonly applied when the test statistic would follow a normal distribution if the value of a scaling term in the test statistic were known. When the scaling term is unknown and is replaced by an estimate based on the data, the test statistic (under certain conditions) follows a Student's t distribution.

Most t-test statistics have the form $T = Z/s$, where Z and s are functions of the data. Typically, Z is designed to be sensitive to the alternative hypothesis (i.e. its magnitude tends to be larger when the alternative hypothesis is true), whereas s is a scaling parameter that allows the distribution of T to be determined.

The assumptions underlying a t-test are that

- Z follows a standard normal distribution under the null hypothesis
- ps^2 follows a x^2 distribution with p degrees of freedom under the null hypothesis, where p is a positive constant
- Z and s are independent.

The Independent Samples T Test compares the mean scores of two groups on a given variable. Under the Analyze menu, choose Compare Means, the Independent Samples T Test. Move your dependent variable into the box marked "Test Variable." Move your independent variable into the box marked "Grouping Variable." Click on the box marked "Define Groups" and specify the value labels of the two groups you wish to compare.

The t statistic to test whether the means are different can be calculated as follows

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

Ho: There is no significant difference between the respondents regarding own equipment for handling cargos.

Step.1:

Group Statistics

Own equipment	N	Mean	Std. Deviation	Std. Error Mean
Avg_Score Yes	47	2.8865	.48293	.07044
No	53	3.1195	.49396	.06785

Independent Samples Test

		Levene's Test for Equality of Variances		T-test for Equality of Means						
Avg_Score	Equal variances assumed	.712	.401	T	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
	Equal variances assumed			-2.379	98	.19	-.2329	.9794	-.42	-.3862
	Equal variances not assumed			-2.382	97.51	.19	-.2329	.9780	-.42	-.3886

Step.2: Formula

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

$$t = (2.88 - 3.11) / \sqrt{(0.48)^2/47 + (0.49)^2/53} = 2.379$$

Calculated value of $t = 2.379$ Degrees of freedom = 98

Table value of $t = 1.96$

P value = 0.019

Inference

Since the calculated value of p is less than 0.05, therefore the null hypothesis is rejected. So we **conclude that respondents having own equipment are more satisfied in handling cargos.**

4.3 ANALYSIS OF VARIANCE

In statistics, analysis of variance (ANOVA) is a collection of statistical models, and their associated procedures, in which the observed variance is partitioned into components due to different explanatory variables. In its simplest form ANOVA provides a statistical test of whether or not the means of several groups are all equal, and therefore generalizes Student's two-sample t -test to more than two groups. ANOVAs are helpful because they possess a certain advantage over a two-sample t -test. Doing multiple two-sample t -tests would result in a largely increased chance of committing a type I error.

One-way ANOVA is used to test for differences among two or more independent groups. Typically, however, the one-way ANOVA is used to test for differences among at least three groups, since the two-group case can be covered by a t -test (Gosset, 1908). When there are only two means to compare, the t -test and the F -test are equivalent; the relation between ANOVA and is given by $F = t^2$.

Total sum of square $TSS = \sum X^2 - CF$

Treatment sum of square $SST = \sum (T^2/n) - CF$

Error sum of square $ESS = TSS - SST$

	N	Mean	Std.Deviation	Std.Error	95% Confidence Interval for		Minimum	Maximum
					Mean			
Liquid Bulk		2.9048	0.56334	0.9524	2.7112	3.983	2.0	3.67
Dry Bulk		2.9716	0.39824	0.5809	2.8547	3.886	2.0	4.0
Break Bulk		3.3148	0.51731	0.12193	3.576	3.5712	2.0	4.0
Total	1		0.50018	0.5002	2.9108	3.1092	2.0	4.0

Ho: There is no significant difference between the types of cargos regarding satisfaction for handling cargo

Total sum of square $TSS = \sum X^2 - CF$
 $= 24.768$

Treatment sum of square $SST = \sum (T^2/n) - CF$
 $= 2.129$

Error sum of square $ESS = TSS - SST$
 $= 22.639$

ANOVA

	Sum of Squares	df	Mean Squa	F	Sig.
Between Group	2.129	2	1.65	4.562	.13
Within Groups	22.639	97	.233		
Total	24.768	99			

Inference

Since the calculated value of p is less than 0%5, therefore the null hypothesis is rejected. So we conclude **that there is significant difference between the types of cargos regarding satisfaction for handling cargo** .i.e., Maximum number of respondents are satisfied for handling Liquid Bulk & Dry Bulk cargo types.

4.4 CORRELATION

In statistics, correlation and dependence are any of a broad class of statistical relationships between two or more random variables or observed data values. In general statistical usage, correlation or co-relation can refer to any departure of two or more random variables from independence, but most commonly refers to a more specialized type of relationship between mean values. There are several correlation coefficients, often denoted p or r, measuring the degree of correlation. The most common of these is the Pearson correlation coefficient, which is mainly sensitive to a linear relationship between two variables. Other correlation coefficients have been developed to be more robust than the Pearson correlation, or more sensitive to nonlinear relationships.

The degree of dependence between variables X and Y should not depend on the scale on which the variables are expressed. Therefore, most correlation measures in common use are invariant to location and scale transformations of the marginal distributions. That is, if we are analyzing the relationship between X and Y, most correlation measures are unaffected by transforming X to a +

bX and Y to c + dY, where a, b, c, and d are constants. This is true of most correlation statistics as well as their population analogues. Some correlation statistics, such as the rank correlation coefficient, are also invariant to monotone transformations of the marginal distributions of X and/or Y.

Formula

$$r = \frac{\sum XY}{\sqrt{\sum x^2 \sum y^2}}$$

Ho : Null Hypothesis : There is a possibility of using the equipments for different types of cargos effectively.

X	Y	X ²	Y ²	XY
23	7	529	49	161
75	82	5625	6724	6150
2	8	4	64	16
0	3	0	9	0
100	100	6158	6846	6327

$$r = \frac{\sum XY}{\sqrt{\sum x^2 \sum y^2}}$$

$$r = \frac{6327}{\sqrt{6158 \times 6846}}$$

$$r = \frac{6327}{6492.89} = 0.98$$

$$r = 0.98$$

Inference

Since the calculated value co-efficient and correlation indicates 0.98.

We conclude that the usage of equipment is fully depending on types of cargos and their handling

5. SUGGESTIONS AND RECOMMENDATIONS

> Number of free days offered for handling of import and export cargo should be increased.

Charges used for handling Import and Export cargo must be decreased.

> Also to reduce man power in Chennai port automatic handling of cargo should be encouraged more.

> This will also enable to handle the cargo easily and much quicker compared to manual operation which is done now.

- > Most of the Respondents feel that Transport facility provided is not sufficient, So the Transport facility provided by Chennai Port Trust must be improved.
- > Chennai Port can improve their Safety Procedures for handling of Cargo.
- > Most of the Respondent feels that there is no enough lightening around Chennai port, So Lightening can be improved.
- > The Infrastructure around Chennai port is not clean to carry clean cargo, in order to carry clean cargo the infrastructure and cleanliness must be well maintained.

6.CONCLUSION

Majority of the respondents use Ship crane for cargo And they feel that the Cargo handling process is good in Chennai port and Import and export documentation procedure is simple in Chennai port, But most of them were dissatisfied with the free days offered for handling of Import and Export cargo and half of them dissatisfied with the charges used for handling Import and Export cargo. Therefore the study concludes the most of the equipment's used for Cargo handling is best in Chennai Port Trust.

Reference Books

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