ISSN (Online) : 2319 – 8753
ISSN (Print) : 2347 - 6710

International Journal of Innovative Research in Science, Engineering and Technology

An ISO 3297: 2007 Certified Organization, Volume 3, Special Issue 1, February 2014

International Conference on Engineering Technology and Science-(ICETS'14)

On 10th & 11th February Organized by

Department of CIVIL, CSE, ECE, EEE, MECHNICAL Engg. and S&H of Muthayammal College of Engineering, Rasipuram, Tamilnadu, India

A Study on the Building Demand Forecasting For the Erode Town, Tamilnadu, India

T.R.Raghavan[1], Mr. T. Prateep M.E. [2], Mr. M. Suresh MSc. M.Phil. PGDCA. [3]

Student of Final Year- M.E (CE&M), Department of Civil Engineering,, Kongu Engineering College, Perundurai, Tamil Nadu, India[1]

Assistant Professor, Department of Civil Engineering, Kongu Engineering College, Perundurai, Tamil Nadu, India [2]

Assistant Professor, Department of management studies, Kongu Engineering College, Perundurai, Tamil Nadu, India [3]

ABSTRACT-- An accurate forecasting of prospective building demand in a developing city with high growing population is always a useful task for the socio-economic improvements all along the city. As it also involves in the welfare and improvement of the peoples of all categories. Despite that, a realistic forecasting of all types of buildings (incl. residential, commercial, and governmental) is never an easy task, as it governed by a number of social and economic factors. In this project a leading indicator model is developed especially for the demand forecasting of a all type of buildings in Erode city, District headquarters of Erode District, Tamilnadu. This study comprises factors and statistics required for the Linear Regression Analysis (LRA) model. The search through past history expresses that LRA model provides that most accurate forecasting for a long time horizon. In providing a random of possible forecasts, the LRA model also paves way for an opportunity of selecting mere possible and accurate forecasting for the decision-makers. This study provides exhaustic empirical research and detailed study (both macro and micro level) of past statistics and current statistics by combining with the future prediction of building growth in the city. This will give an alarming indication to the government authorities about the rapid demand in all type of building in the city.

KEYWORDS: Forecasting, Building Demand, Regression models, LRA.

I. INTRODUCTION

The effects of population growth are varied and vast. While population growth, of any species, may be beneficial to a certain extent, there may come a time when the number in the population exceeds the natural resources available to sustain it. This is referred to as overpopulation. The consequences of such an event are severe and major.

As the population grows the opportunities for quality, available housing may become an issue. More people crowded into less space is not a good combination in any locality. As space is taken up, it becomes more valuable. Eventually, it begins to affect to poorest in the area. In the long run the effect of population growth may be substandard housing or homelessness.

Cost of living is Higher- when land is limited in a country and population grows rapidly the cost of housing becomes expensive. Sometimes it is very difficult for people earning upper middle income to buy a decent home.

II. URBANISATION

According to the 2001 Census, Tamil Nadu has the highest level of urbanisation (43.86%) in India, which accounts for 6% of India's total population and 9.6% of the urban population. It has 10 corporations, namely Chennai, Madurai, Coimbatore, Trichy, Salem, Tirunelveli, Erode, Tirupur, Vellore and Thoothukudi.

Due to the development of the globalization, peoples are eager and wish to settle in cities. So most of the people after been graduated, moves into the cities and settled down.

III. OBJECTIVE OF THE STUDY

A Study on the building demand forecasting for a Satellite Town through Artificial Neural Network (ANN) by developing a Linear Regression Analysis (LRA) model in it.

ISSN (Online) : 2319 – 8753
ISSN (Print) : 2347 - 6710

International Journal of Innovative Research in Science, Engineering and Technology

An ISO 3297: 2007 Certified Organization, Volume 3, Special Issue 1, February 2014

International Conference on Engineering Technology and Science-(ICETS'14)

On 10th & 11th February Organized by

Department of CIVIL, CSE, ECE, EEE, MECHNICAL Engg. and S&H of Muthayammal College of Engineering, Rasipuram, Tamilnadu, India

IV. NEED FOR THE STUDY

- According to the 2011 land survey, 83.25% of the ERODE municipal area has been developed along the road side in all major road .
- According to the 2011 census, ERODE city population is increasing by 11% annually and it seems mear impossible to provide a shelter for both the residents and commercial peoples of the city.
- This building demand forecasting will overview and predict the year, in which population of the city exceeds beyond the building capacity.

V. STUDY AREA DESCRIPTION

Erode District lies on the extreme north of Tamil Nadu. It is bounded mostly by Karnataka State and also River Palar covers pretty long distance. To the East lies Namakkal and Karur Districts. Dindigal District is its immediate neighbour to the South and on the West, it has Coimbatore and Nilgiri Districts, as its boundaries. Thus Erode District is essentially a land-locked area having no sea-cost of its own. Erode District situated at between 10 36" and 11 58" North Latitude and between 76 49" and 77 58" East Longitude.

Erode district had a population of 22,59,608 as of 2011. It is 46.25% urbanized as per census 2001. The district has a literacy rate of 72.96% and is on the rise. Erode is the largest city in the district followed by Gopichettipalayam which is another major center.

TABLE 5.1

POPULATION AS PER CENSUS 2011

Erode City	Total	Male	Female
Population	156,953	78,094	78,859
Literates	126,638	66,307	60,331
Children (0-6)	13,675	6,935	6,740
Average Literacy (%)	88.39	93.18	83.65
Sex ratio	1010		
Sex ratio	972		

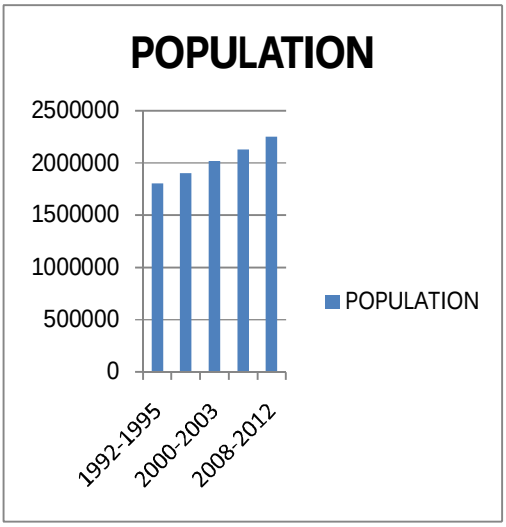

FIG 5.1
POPULATION OF ERODE DISTRICT

TABLE 5.2 POPULATION OF THE DISTRICT
DECENNIAL GROWTH

PERIOD (subject to the period of availability)	REGION	POPULATION	PERCENTAGE VARIATION SINCE PREVIOUS CENSUS
1991-2001	Total	2016582	11 %
	Rural	1028983	-21 %
	Urban	987599	108 %

VI. AREA OF THE ERODE DISTRICT

Area - 2198sq.miles (5692 sq.kms)
(whole district)

ISSN (Online) : 2319 – 8753
ISSN (Print) : 2347 - 6710

International Journal of Innovative Research in Science, Engineering and Technology

An ISO 3297: 2007 Certified Organization, Volume 3, Special Issue 1, February 2014

International Conference on Engineering Technology and Science-(ICETS'14)

On 10th & 11th February Organized by

Department of CIVIL, CSE, ECE, EEE, MECHNICAL Engg. and S&H of Muthayammal College of Engineering, Rasipuram, Tamilnadu, India

6.1 AREA OF THE ERODE CITY

Rural Area - 287sq.miles ($MILES^2$)
(743 sq.kms)
Urban Area - 3.22sq.miles ($MILES^2$)
(8.34 sq.kms)

VII. FACTORS IDENTIFICATION

There is a close relationship between the increase in population and building demand of a particular region. The building demand forecasting of a particular region will be based on may criteria and data, which includes the past history and statistics about the building demand relation with population. The increase in population paves way for the construction and emerging of Residential, Industrial, Commercial and Public Offices.

Some of the factors considered as necessary data for finding the building demand forecasting are as follows:

- ✓ Free space available inside the city (private & public)
- ✓ Population of the city
- ✓ Percentage of population of the city Increased/Decreased yearly
- ✓ Population of the whole city
- ✓ Percentage of Area of the city Increased/Decreased yearly
- ✓ Number of Residential buildings in the city
- ✓ Number of Governmental buildings in the city
- ✓ Number of commercial buildings in the city
- ✓ Capacity of the buildings as per the codal provision & raw data

VIII. METHODOLOGY

- ➢ Literature collection
- ➢ Review of literature
- ➢ Selection of parameters
- ➢ Data collection
- ➢ Data analysis using spss
- ➢ Developing lra model
- ➢ Results and discussions

IX. DATA COLLECTION AND ANALYSIS

9.1 POPULATION OF THE ERODE CITY

- •2011 - 5,21,776 peoples
- •Male - 2,61,470 peoples (82.2%)
- •Female - 2,60,306 peoples (72.42%)
- •Ratio - 996 Females : 1000 Males

TABLE 9.1
BUILDINGS CONSTRUCTED
UNDER PUBLIC SECTOR

YEAR	MODE	ROOM SIZE	TOTAL
2006-2007	Panchayat Union	1-4 units (OR) more	668
	Municipalities	1-4 units (OR) more	15
	Government Offices	1-4 units (OR) more	169
	TOTAL		852

TABLE 9.2
BUILDINGS CONSTRUCTED
UNDER PUBLIC SECTOR

YEAR	MODE	ROOM SIZE	TOTAL
2007-2008	Panchayat Union	1-4 units (or) more	40
	Municipalities	1-4 units (or) more	831
	Government Offices	1-4 units (or) more	162
	TOTAL		1033

ISSN (Online) : 2319 – 8753
ISSN (Print) : 2347 - 6710

International Journal of Innovative Research in Science, Engineering and Technology

An ISO 3297: 2007 Certified Organization, Volume 3, Special Issue 1, February 2014

International Conference on Engineering Technology and Science-(ICETS'14)

On 10th & 11th February Organized by

Department of CIVIL, CSE, ECE, EEE, MECHNICAL Engg. and S&H of Muthayammal College of Engineering, Rasipuram, Tamilnadu, India

TABLE 9.3
BUILDINGS CONSTRUCTED
UNDER PUBLIC SECTOR

YEAR	MODE	ROOM SIZE	TOTAL
2008-2009	Corporation	1-4 units (or) more	8
	Municipalities	1-4 units (or) more	24
	Town panchayats	1-4 units (or) more	574
	Public offices	1-4 units (or) more	109
	TOTAL		715

TABLE 9.4
BUILDINGS CONSTRUCTED
UNDER PUBLIC SECTOR

YEAR	MODE	ROOM SIZE	TOTAL
2009-2010	Corporation	1-4 units (or) more	7
	Municipalities	1-4 units (or) more	29
	Town Panchayats	1-4 units (or) more	684
	Public Offices	1-4 units (or) more	105
	`TOTAL		825

TABLE 9.5
BUILDINGS CONSTRUCTED
UNDER PUBLIC SECTOR

YEAR	MODE	ROOM SIZE	TOTAL
2010-2011	Corporation	1-4 units (or) more	13
	Municipalities	1-4 units (or) more	23
	Town Panchayats	1-4 units (or) more	918
	Public Offices	1-4 units (or) more	100
	TOTAL		1054

TABLE 9.6
BUILDINGS CONSTRUCTED
UNDER PUBLIC SECTOR

YEAR	MODE	ROOM SIZE	TOTAL
2011-2012	Corporation	1-4 units (or) more	15
	Municipalities	1-4 units (or) more	3
	Town Panchayats	1-4 units (or) more	749
	Public Offices	1-4 units (or) more	68
	TOTAL		835

ISSN (Online) : 2319 – 8753
ISSN (Print) : 2347 - 6710

International Journal of Innovative Research in Science, Engineering and Technology

An ISO 3297: 2007 Certified Organization, Volume 3, Special Issue 1, February 2014

International Conference on Engineering Technology and Science-(ICETS'14)

On 10th & 11th February Organized by

Department of CIVIL, CSE, ECE, EEE, MECHNICAL Engg. and S&H of Muthayammal College of Engineering, Rasipuram, Tamilnadu, India

TABLE 9.7
BUILDINGS CONSTRUCTED
UNDER PRIVATE SECTOR

YEAR	NAME OF THE SECTOR	TOTAL NUMBERS	NO.OF RESIDENTIAL BUILDINGS	NO.OF NON-RESIDENTIAL BUILDINGS	TOTAL
2007-2008	Municipalities	11	1457	114	1571
	Town Panchayats	53	2414	229	2643
	TOTAL	64	3871	343	4214

TABLE 9.8
BUILDINGS CONSTRUCTED
UNDER PRIVATE SECTOR

YEAR	NAME OF THE SECTOR	TOTAL NUMBERS	NO.OF RESIDENTIAL BUILDINGS	NO.OF NON-RESIDENTIAL BUILDINGS`	TOTAL
2008 - 2009	Corporation	1	209	29	238
	Municipalities	10	1144	51	1195
	Town Panchayats	53	2005	218	2223
	TOTAL	64	3358	558	3656

TABLE 9.9
BUILDINGS CONSTRUCTED
UNDER PRIVATE SECTOR

YEAR	NAME OF THE SECTOR	TOTAL NUMBERS	NO.OF RESIDENTIAL BUILDINGS	NO.OF NON-RESIDENTIAL BUILDINGS`	TOTAL
2009 - 2010	Corporation	1	175	20	195
	Municipalities	10	719	24	743
	Town Panchayats	53	2878	273	3151
	TOTAL	64	3358	558	3656

TABLE 9.10
BUILDINGS CONSTRUCTED
UNDER PRIVATE SECTOR

YEAR	NAME OF THE SECTOR	TOTAL NUMBERS	NO.OF RESIDENTIAL BUILDINGS	NO.OF NON-RESIDENTIAL BUILDINGS`	TOTAL
2010-2011	Corporation	1	130	50	180
	Municipalities	10	1421	106	1527
	Town Panchayats	53	3713	254	3967
	TOTAL	64	5264	410	5674

ISSN (Online) : 2319 – 8753
ISSN (Print) : 2347 - 6710

International Journal of Innovative Research in Science, Engineering and Technology

An ISO 3297: 2007 Certified Organization, Volume 3, Special Issue 1, February 2014

International Conference on Engineering Technology and Science-(ICETS'14)

On 10th & 11th February Organized by

Department of CIVIL, CSE, ECE, EEE, MECHNICAL Engg. and S&H of Muthayammal College of Engineering, Rasipuram, Tamilnadu, India

TABLE 9.11
BUILDINGS CONSTRUCTED
UNDER PRIVATE SECTOR

YEAR	NAME OF THE SECTOR	TOTAL NUMBERS	NO.OF RESIDENTIAL BUILDINGS	NO.OF NON-RESIDENTIAL BUILDINGS`	TOTAL
2011-2012	Corporation	1	531	31	562
	Municipalities	10	453	27	480
	Town Panchayats	53	2468	176	2644
	TOTAL	64	3452	234	3686

X. DEMAND FORECASTING TOOLS

10.1 LINEAR REGRESSION ANALYSIS

In statistics, linear regression is an approach to model the relationship between a scalar dependent variable y and one or more explanatory variables denoted X. The case of one explanatory variable is called simple linear regression. For more than one explanatory variable, it is called multiple linear regression. (This term should be distinguished from multivariate linear regression, where multiple correlated dependent variables are predicted,[citation needed] rather than a single scalar variable.)

In linear regression, data are modeled using linear predictor functions, and unknown model parameters are estimated from the data. Such models are called linear models. Most commonly, linear regression refers to a model in which the conditional mean of y given the value of X is an affine function of X. Less commonly, linear regression could refer to a model in which the median, or some other quantile of the conditional distribution of y given X is expressed as a linear function of X. Like all forms of regression analysis, linear regression focuses on the conditional probability distribution of *y* given *X*, rather than on the joint probability distribution of *y* and *X*, which is the domain of multivariate analysis.

XI. SPSS

SPSS Statistics is a software package used for statistical analysis. Statistics included in the base software:

- ✓ Descriptive statistics: Cross tabulation, Frequencies, Descriptives, Explore, Descriptive Ratio Statistics
- ✓ Bivariate statistics: Means, t-test, ANOVA, Correlation (bivariate, partial, distances), Nonparametric tests
- ✓ Prediction for numerical outcomes: Linear regression
- ✓ Prediction for identifying groups: Factor analysis, cluster analysis (two-step, K-means, hierarchical), Discriminant

SPSS Statistics places constraints on internal file structure, data types, data processing, and matching files, which together considerably simplify programming. SPSS datasets have a two-dimensional table structure, where the rows typically represent cases (such as individuals or households) and the columns represent measurements (such as age, sex, or household income). Only two data types are defined: numeric and text (or "string"). All data processing occurs sequentially case-by-case through the file. Files can be matched one-to-one and one-to-many, but not many-to-many.

Statistical output is to a proprietary file format (*.spv file, supporting pivot tables) for which, in addition to the in-package viewer, a stand-alone reader can be downloaded. The proprietary output can be exported to text or Microsoft Word, PDF, Excel, and other formats. Alternatively, output can be captured as data (using the OMS command), as text, tab-delimited text, PDF, XLS, HTML, XML, SPSS dataset or a variety of graphic image formats (JPEG, PNG, BMP and EMF).

ISSN (Online) : 2319 – 8753
ISSN (Print) : 2347 - 6710

International Journal of Innovative Research in Science, Engineering and Technology

An ISO 3297: 2007 Certified Organization, Volume 3, Special Issue 1, February 2014

International Conference on Engineering Technology and Science-(ICETS'14)

On 10th & 11th February Organized by

Department of CIVIL, CSE, ECE, EEE, MECHNICAL Engg. and S&H of Muthayammal College of Engineering, Rasipuram, Tamilnadu, India

TABLE 11.1
CORELATION MATRIX FOR
RESIDENTIAL BUILDING :

		Buildings Constructed	Total number of population	Percentage (%) of population Increased	Percentage (%) of area decreased
Buildings Constructed	Pearson Correlation	1	.011	.774	.797
	Sig. (2-tailed)		.986	.125	.107
	N	5	5	5	5
Total number of population	Pearson Correlation	.011	1	.571	.517
	Sig. (2-tailed)	.986		.314	.372
	N	5	5	5	5
Percentage (%) of population Increased	Pearson Correlation	.774	.571	1	.871
	Sig. (2-tailed)	.125	.314		.054
	N	5	5	5	5
Percentage (%) of area decreased	Pearson Correlation	.797	.517	.871	1
	Sig. (2-tailed)	.107	.372	.054	
	N	5	5	5	5

		Buildings Constructed	Total number of population	Percentage (%) of population Increased	Percentage (%) of area decreased
Buildings Constructed	Pearson Correlation	1	.011	.774	.797
	Sig. (2-tailed)		.986	.125	.107
	N	5	5	5	5
Total number of population	Pearson Correlation	.011	1	.571	.517
	Sig. (2-tailed)	.986		.314	.372
	N	5	5	5	5
Percentage (%) of population Increased	Pearson Correlation	.774	.571	1	.871
	Sig. (2-tailed)	.125	.314		.054
	N	5	5	5	5
Percentage (%) of area decreased	Pearson Correlation	.797	.517	.871	1
	Sig. (2-tailed)	.107	.372	.054	
	N	5	5	5	5

ISSN (Online) : 2319 – 8753
ISSN (Print) : 2347 - 6710

International Journal of Innovative Research in Science, Engineering and Technology

An ISO 3297: 2007 Certified Organization, Volume 3, Special Issue 1, February 2014

International Conference on Engineering Technology and Science-(ICETS'14)

On 10th & 11th February Organized by

Department of CIVIL, CSE, ECE, EEE, MECHNICAL Engg. and S&H of Muthayammal College of Engineering, Rasipuram, Tamilnadu, India

TABLE 11.2

CORELATION MATRIX FOR NON-RESIDENTIAL BUILDING :

		Buildings Constructed	Total number of population	Percentage (%) of population Increased	Percentage (%) of area
Buildings Constructed	Pearson Correlation	1	.649	.569	.856
	Sig. (2-tailed)		.236	.317	.064
	N	5	5	5	5
Total number of population	Pearson Correlation	.649	1	.571	.517
	Sig. (2-tailed)	.236		.314	.372
	N	5	5	5	5
Percentage (%) of population Increased	Pearson Correlation	.569	.571	1	.871
	Sig. (2-tailed)	.317	.314		.054
	N	5	5	5	5
Percentage (%) of area decreased	Pearson Correlation	.856	.517	.871	1
	Sig. (2-tailed)	.064	.372	.054	

ISSN (Online) : 2319 – 8753
ISSN (Print) : 2347 - 6710

International Journal of Innovative Research in Science, Engineering and Technology

An ISO 3297: 2007 Certified Organization, Volume 3, Special Issue 1, February 2014

International Conference on Engineering Technology and Science-(ICETS'14)

On 10th & 11th February Organized by

Department of CIVIL, CSE, ECE, EEE, MECHNICAL Engg. and S&H of Muthayammal College of Engineering, Rasipuram, Tamilnadu, India

TABLE 11.2

CORELATION MATRIX FOR NON-RESIDENTIAL BUILDING :

		Buildings Constructed	Total number of population	Percentage (%) of population Increased	Percentage (%) of area
Buildings Constructed	Pearson Correlation	1	.649	.569	.856
	Sig. (2-tailed)		.236	.317	.064
	N	5	5	5	5
Total number of population	Pearson Correlation	.649	1	.571	.517
	Sig. (2-tailed)	.236		.314	.372
	N	5	5	5	5
Percentage (%) of population Increased	Pearson Correlation	.569	.571	1	.871
	Sig. (2-tailed)	.317	.314		.054
	N	5	5	5	5
Percentage (%) of area decreased	Pearson Correlation	.856	.517	.871	1
	Sig. (2-tailed)	.064	.372	.054	
	N	5	5	5	5

TABLE 11.3

CORELATION MATRIX FOR GOVERNMENT BUILDING :

		Buildings Constructed	Total number of population	Percentage (%) of population Increased	Percentage (%) of area
Buildings Constructed	Pearson Correlation	1	.919*	.762	.616
	Sig. (2-tailed)		.027	.134	.269
	N	5	5	5	5
Total number of population	Pearson Correlation	.919*	1	.571	.517
	Sig. (2-tailed)	.027		.314	.372
	N	5	5	5	5
Percentage (%) of population Increased	Pearson Correlation	.762	.571	1	.871

ISSN (Online) : 2319 – 8753
ISSN (Print) : 2347 - 6710

International Journal of Innovative Research in Science, Engineering and Technology

An ISO 3297: 2007 Certified Organization, Volume 3, Special Issue 1, February 2014

International Conference on Engineering Technology and Science-(ICETS'14)

On 10th & 11th February Organized by

Department of CIVIL, CSE, ECE, EEE, MECHNICAL Engg. and S&H of Muthayammal College of Engineering, Rasipuram, Tamilnadu, India

	Sig. (2-tailed)	.134	.314		.054
	N	5	5	5	5
Percentage (%) of area decreased	Pearson Correlation	.616	.517	.871	1
	Sig. (2-tailed)	.269	.372	.054	
	N	5	5	5	5

12. The following equations for all the three types of buildings have been formed from the collected data.

SIMULTANEOUS LINEAR EQUATION FORMAT

$Y = a_0 + a_1x_1 + a_2x_2 + a_3x_3$

$£y = a_0 + a_1£x_1 + a_2£x_2 + a_3£x_3$

$£x_1y = a_0£x1 + a_1£x_1^2 + a_2£x_2x_1 + a_3£x_1x_3$

$£x_2y = a_0£x_2 + a_1£x_1x_2 + a_2£x_2^2 + a_3£x_2x_3$

$£x_3y = a_0£x_3 + a_1£x_1x_3 + a_2£x_2x_3 + a_3£x_3^2$

RESIDENTIAL BUILDING EQUATION :

$1502=5a_0+21.24335a_1+51a_2+11a_3$

$6387.3744=21.24335a_0+92.33095841a_1+217.0854a_2+47.20627a_3$

$15457.5=51a_0+217.0854a_1+520.44a_2+112.47a_3$

$3486.6=11a_0+47.20627a_1+112.47a_2+24.6a_3$

NON-RESIDENTIAL BUILDING EQUATION :

$244=5a_0+21.24335a_1+51a_2+11a_3$

$1107.8304=21.24335a_0+92.33095841a_1+217.0854a_2+47.20627a_3$

$2510=51a_0+217.0854a_1+520.44a_2+112.47a_3$

$578=11a_0+47.20627a_1+112.47a_2+24.6a_3$

GOVERNMENT BUILDING EQUATION :

$673=5a_0+21.24335a_1+51a_2+11a_3$

$2934.5038=21.24335a_0+92.33095841a_1+217.0854a_2+47.20627a_3$

$6885.8=51a_0+217.0854a_1+520.44a_2+112.47a_3$

$1502.7=11a_0+47.20627a_1+112.47a_2+24.6a_3$\

XIII. RESULTS AND DISCUSSIONS

THE TOTAL EQUATION OBTAINED FROM LRA MODEL

BUILDINGS	REGRESSION EQUATION
RESIDENTIAL	$Y = - 4679.14 - 164.58X_1 + 487.71X_2 + 320.05X_3$
NON-RESIDENTIAL	$Y = 1080.72 + 23.25X_1 – 148.83X_2 + 176.09X_3$
GOVERNMENT	$Y = - 614.21 + 28.58X_1 + 66.53X_2 – 23.30X_3$

Thus. Total equation for each area is developed using SPSS software.

Here,

Y is the dependent variable that represents buildings in demand

X_1 = Population in that area

X_2 = Percentage (%) of Population increased/decreased than previous year

X_3 = Percentage (%) of Area increased/decreased than previous year

Methods of linear regression model have been developed for evaluating subsets of independent variables wholly ("best subset" regression), by adding variable one at a time ("forward" selection), deleting one at a time ("backward" elimination) or a combination of these latter two ("stepwise" regression). The stepwise regression was selected. The Linear Regression analysis method is easier to operate and the amount of time required to build a model is shorter.

Thus the results have been obtained by using linear regression analysis. From this analysis we can easily predict the future building demands of Erode city for the year 2013-2018.

XIV. CONCLUSIONS

Building demand of the erode city increasing rapidly day by day due to the over population (or) increase in population. The increase in floating population are also one of the main reason for the increase in building demand. Thus, the above results (Linear Regression Equation) which shows the building demand forecasting of the city will be very handy in predicting the demand of the city and take the necessary steps to meet the demand.

ISSN (Online) : 2319 – 8753
ISSN (Print) : 2347 - 6710

International Journal of Innovative Research in Science, Engineering and Technology

An ISO 3297: 2007 Certified Organization, Volume 3, Special Issue 1, February 2014

International Conference on Engineering Technology and Science-(ICETS'14)

On 10th & 11th February Organized by

Department of CIVIL, CSE, ECE, EEE, MECHNICAL Engg. and S&H of Muthayammal College of Engineering, Rasipuram, Tamilnadu, India

REFERENCES

1. Refense, A.N.; Zapranis, A. and Francis, G. (1994): "Stock Performance Modelling using Neural Networks: a comparitive study with regression models." Neural Networks, 7, No.2, PP. 375-388

2. Zheng, D.X.M., NG, S.T. and Kumaraswamy, M.M. (2004) Applying a GA-based multiobjective approach for time-cost optimization. Journal of Construction Engineering and Management, ASCE, 130(2), 168-176.

3. Zhang, G. and Hu, M. Y.(1998): "Neural Network forecasting of the British/US dollar exchange rate." Omega, Vol.26, No. 44, PP. 495-506.

4. Tse, R.Y.C., Ho, C.W. and Ganesan, S.(1999) Matching housing supply and demand: an emprical study of Hong Kong's market, Construction Management and Economics, 17(5), 625-634.

5. S. Saravanan, S. Kannan and C. Thangaraj Department of Electrical and Electronics Engineering, Kalasalingam University, India , India's Electricity Demand Forecast Using Regression Analysis and Artificial Neural Networks based on Principal Components, ICTACT Journal on Soft Computing, july 2012, Volume: 02, ISSUE: 04

6. Jan Franklin Adamwoski, Peak Daily water demand fprecast modelling using Artificial Neural Networks, Journal of Water Resources Planning and Management © ASCE / March/April 2008

7. Guoqiang Zhang, B. Eddy Patuwo, Michael Y. Hu*, Forecasting with artificial neural networks:The state of the art, Graduate School of Management, Kent State University, Kent, Ohio 44242-0001, USA Accepted 31 July 1997

8. Bassam M. AbuAl-Foul , Economics Department -American University of Sharjah., Forecasting Energy Demand in Jordan Using Artificial Neural Networks

9. Noor Yasmin Zainun ,, Ismail Abdul Rahman and Mahroo Eftekhari , Faculty of Civil and Environmental Engineering, Universiti Tun Hussein Onn Malaysia,. Forecasting low-cost housing demand in Pahang, Malaysia using Artificial Neural Networks

10. Ng, S.Thomas and Skitmore, Martin and Wong, Keung Fai (2008), "Linear Regression Analysis", Building and Environment, 43(6), 1171-1184.

11. Zadeh, L.A. (1963), "Linear system theory approach", Mcgraw-Hill, Newyork.

12. Thomas, R.W. and Stelker, H.O. (1963), "A regional forecasting model for construction activity". Regional science and Urban Economics, 13(4), 557.

13. Ng.S.Thomas and Skitmore, Martin and Wong, Keung Fai (2008), ' Linear Regression Analysis ', Building and Environment, 43(6), 1171-1184.

14. Rob Law, (1997) Norman Au A neural network model to forecast Japanese demand for travel to Hong Kong.

15. Karin Kandananond , (2001), world academy of science, engineering and technology, Consumer Product Demand Forecasting based on Artificial Neural Network and Support Vector Machine