



# **A Structural Equation Model for Assessing the link between Human Capital Components and Customer Satisfaction: An Analytical Study on four star and five Star Hotels in West Bengal**

**Dipa Banerjee<sup>1</sup>, Dr. Debasish Biswas<sup>2</sup>**

<sup>1</sup> *Research Scholar, Department of Business Administration,  
Vidyasagar University, West Bengal, India.*

<sup>2</sup> *Assistant Professor, Department of Business Administration,  
Vidyasagar University, West Bengal, India.*

## **ABSTRACT**

*This research article aims to validate the human capital components and customer satisfaction of the guests of the hotels. The main objective of the study is to evaluate the relative importance of human capital components for achieving customer satisfaction on the basis of service quality in four star and five star hotels in West Bengal. The data was collected from five hundred guests staying at these luxurious hotels in West Bengal. Through Structural Equation Modeling (SEM), we found that there is a significant positive interrelationship among the constructs of the proposed framework. In this study, five common factor measurement models were found to be valid and reliable to be used in determining performance of the hotels.*

**Key words:** *Customer Satisfaction , Hotels.Human Capital, Service quality, ,Structural Equation Modeling (SEM),*

## **I. INTRODUCTION**

This paper attempted to validate a model based on the perception of hotel guests regarding the major components of human capital which are deemed essential for quality service and customer satisfaction. The main focus of the study is to evaluate the relative importance of human capital components through service quality which leads to customer satisfaction. Using Structural Equation Modeling (SEM), we found significant positive interrelationships among the human capital components, service quality and customer satisfaction. The results of this study showed that service quality has a positive relationship with customer satisfaction.

## **II. REVIEW OF LITERATURE**

[1] In their study analyzed customer satisfaction in terms of eight satisfaction attributes, a measure of overall satisfaction and likelihood of future purchase. The initial analysis considered analysis of individual scale items. The implications of this analysis for mail-order speciallyfood businesses depend very much on the perspective that is taken. From the perspective of the proportion of customers who are very satisfied there is concern because only in the case of product quality is a majority of customers very satisfied. The results of the SEM



show that it is possible to establish credible inter-relationships between the sub-constructs of transaction satisfaction with mail order, overall satisfaction, and re-purchase intentions.

[2] SEM uses simultaneous equation models in which variables (both observed and latent) may influence one another reciprocally. This makes SEM a very suitable method for analyzing tourism demand (Song & Li, 2008).

[3] Critically documented that how SEM has been applied from a technical perspective. The paper focused on how SEM has been used in published papers and provides guidance for future users. The paper then evaluates the methodological quality of applications by assessing how they conform to formal statistical assumptions required for the valid use of these techniques while identifying problem areas and suggesting avenues for improvement. Finally, the paper concludes by summarizing the findings and results and providing a checklist of technical issues to consider when using SEM methodology in tourism demand modeling.

[4] This research examines the antecedents of tourist satisfaction among international tourists using SEM. Jordan image is found to be positively and significantly related to tourist satisfaction. The result also shows that the Generating Model (GM) is the best model to explain the international tourists' satisfaction as compared to the Hypothesized Models.

[5]The authors have identified four important strategic-facets namely Intelligence ,Big Bossing, Contract Orientation and Expert for Indian distributions. Result indicates deviation from the global research outcome. The authors have developed a valid & reliable scale (instrument) that would able to measure the 'mechanism of channel control' by the channel leaders for various distribution

[6]This research paper aims to validate the model of performance of the airline services from the perspectives of Malaysian passengers Apparently, data was collected through convenience sampling from 500 passengers departing from Kuala Lumpur International Airport. The results confirmed that the model of performance criteria is multi-dimensional; tangibles, reliability, responsiveness, assurance, and empathy. They also found significant positive interrelationships among the constructs of the proposed framework. In this study, five-common factor measurement model was found to be valid and reliable to be used in determining performance of the airline providers. Out of these five factors, three factors (tangibility, reliability, assurance) resulted in strong significance.

[7] The main objective of this research paper is to construct a model of hospitality service quality, within the borders of Eastern Province in the Saudi Arabia. The research initially examines the literature review, then adapts the features of hotel industry. Empathy, Credibility, Responsiveness, Security, Tangibles, Courtesy and Competence are the seven dimensions assessing hospitality service quality. Structural Equation Modeling used in order to study conceptual model of hospitality service quality. The results, indicate that service quality is a significant ascendant of customer satisfaction and customer loyalty

### **III. RESEARCH GAPS**

From the literature reviewed it is evident that there have been a limited studies conducted on human capital and customer satisfaction, It is also evident that in the study location there have been less studies conducted in the hotel sector. Most of the studies are focused on the importance of customer satisfaction but not focused on the human capital components to achieve customer satisfaction. Also, not much literature is available from the study location.



#### **IV. OBJECTIVES OF THE STUDY**

- To find out the relationship among Human Capital, Service Quality and Customer Satisfaction.
- To find out the essential components of Human Capital which are basically responsible to achieve the Customer Satisfaction

#### **V. RESEARCH METHODOLOGY**

##### **5.1 Sources of Data**

Secondary data have been collected from the various sources like textbooks and hotel websites and extensive literature review using electronic library databases. The primary data collection have been done through the questionnaire filled by the guest of the hotels.

##### **5.2 Sample size**

In our study, a sample of five hundred guests from the selected hotels was drawn for this research. The respondents who have fully completed their questionnaires were considered as the sample. A sample size is consisted with the responses of five hundred guests visited the hotels.

##### **5.3 Variable Measurements**

Independent Variables: This measure is based on the Human Capital variables such as Knowledge, Skills, Attitude, Behavior, Training, Education, Ability and Experience. Dependent Variables: Customer Satisfaction and Service Quality

#### **VI. FINDINGS AND ANALYSIS**

##### **6.1. Confirmatory Factor Analysis**

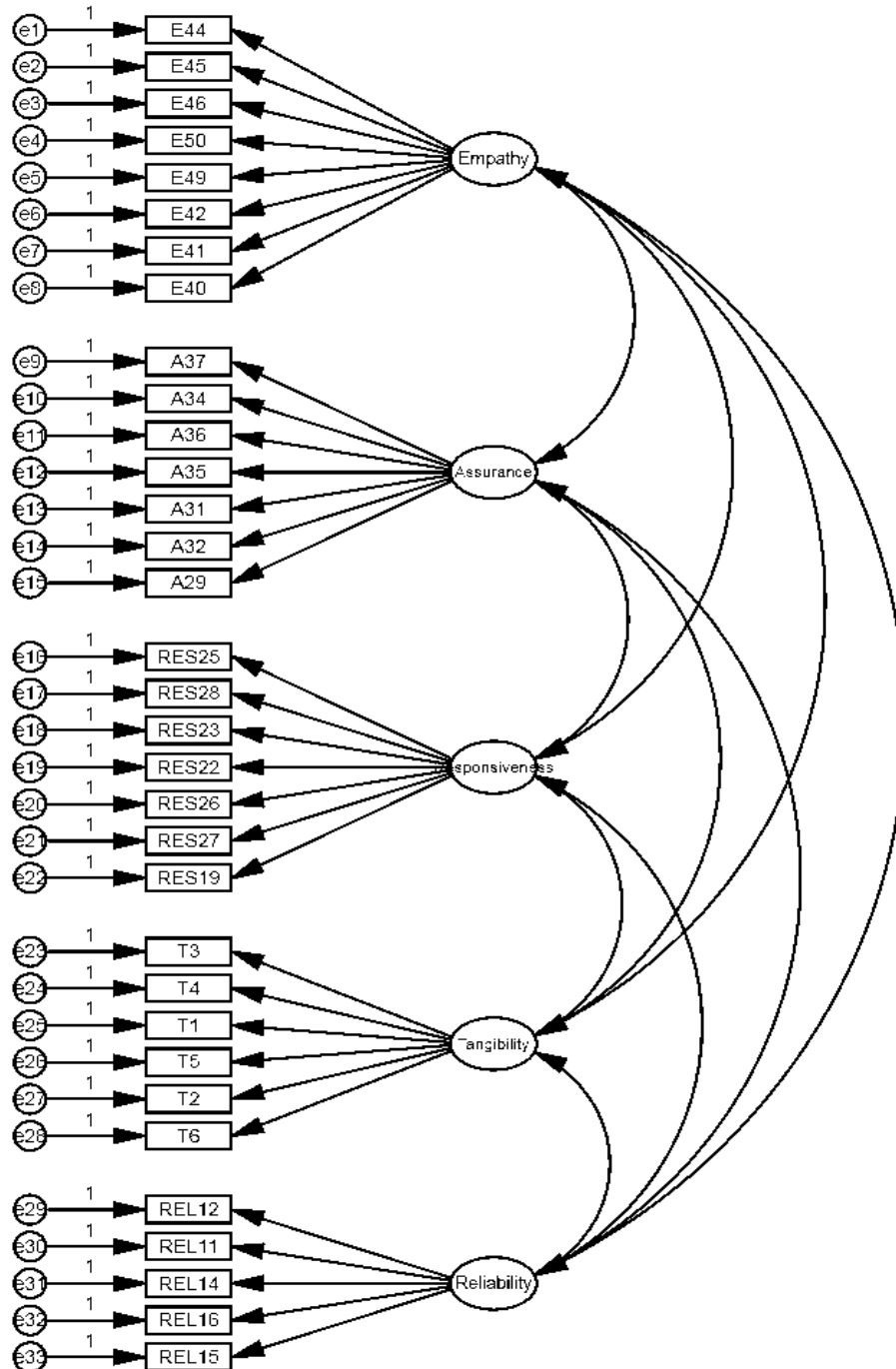
We have conducted Confirmatory factor analysis (CFA) on the result of exploratory factor analysis by using software called analysis of moment structure (AMOS). CFA is same as a structural equation modeling (SEM) technique. We use CFA to determine the goodness of fit between hypothesized model & sample data. For goodness of fit statistics, we focus on three models. The three models are hypothesized model (our test model), saturated model and independence model or null model. The null model means where the correlation among the variables are zero i.e. all variables are independent. In case of saturated models the number of estimated parameters equals the number of data points (i.e. variance and covariance of the observed variables).

Focusing on the exploratory factor analysis using AMOS, we get the first set of fit statistics which are given in table no. 6 in appendix. From the result it is clear that CMIN which represents the discrepancy between the unrestricted sample covariance matrix  $S$  and the restricted covariance matrix  $\Sigma(\theta)$ .

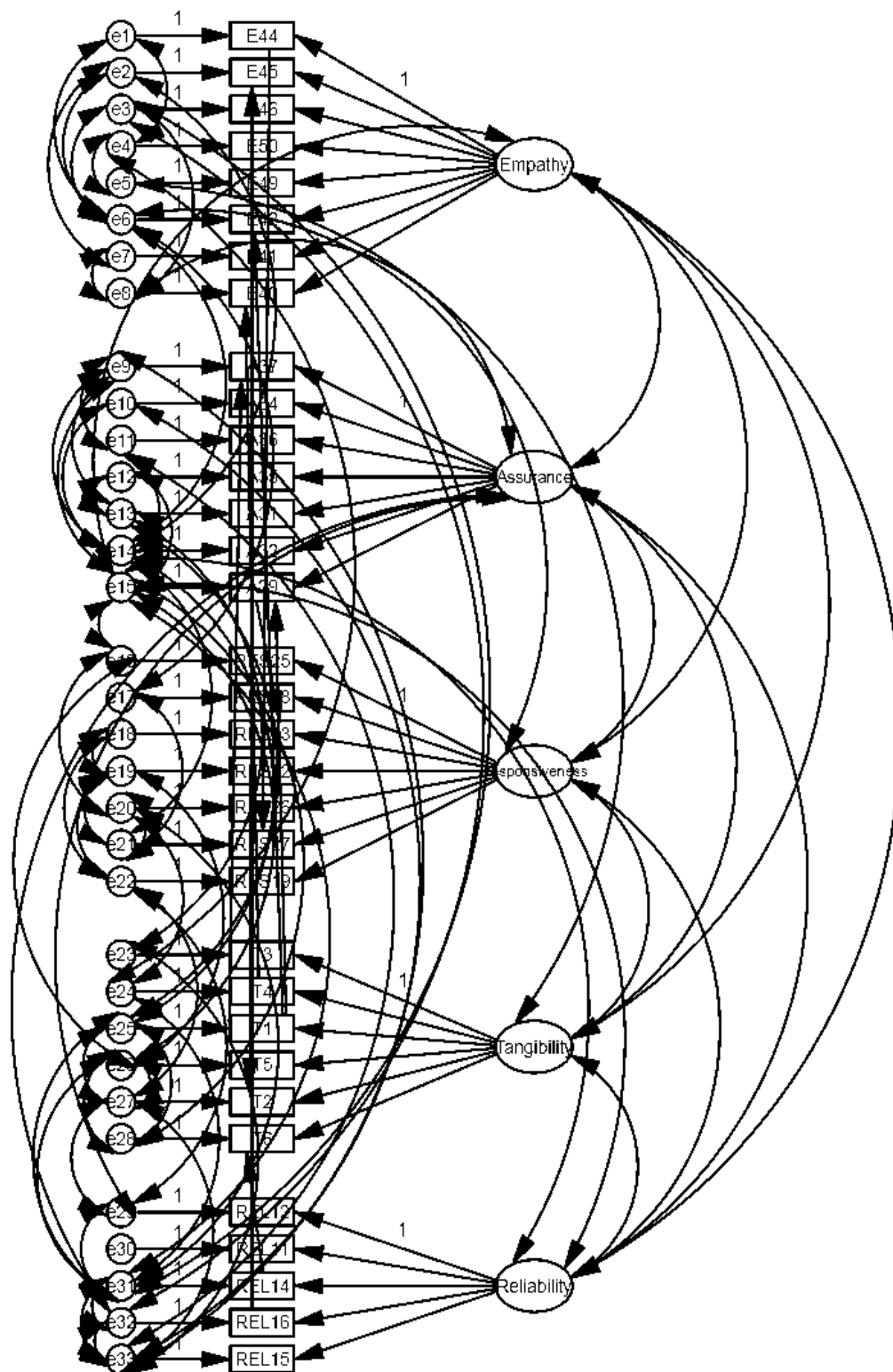
[8] In large sample, CMIN is distributed as a central  $\chi^2$  with degrees of freedom equal to  $\frac{1}{2} p(p+1) - t$ , where  $p$  is the number of observed variables and  $t$  is the number of parameters to be estimated (Boolen, 1989). In general the test statistic is  $H_0: \Sigma = \Sigma(\theta)$  is equivalent to the hypothesis that  $\Sigma - \Sigma(\theta) = 0$ , follows a central  $\chi^2$  with  $p(p+1) - t$  degree of freedom. If  $H_0$  is accepted i.e. higher the probability associated with  $\chi^2$ , the closer fit between the hypothesized model (under  $H_0$ ) and the perfect fit. We can add a path to a factor model based on the combined understanding of theoretical, logical and empirical knowledge. Modification indices guide us for

effective path addition to the model. Using AMOS we get idea for addition of path to improve the goodness fit of the proposed factor model.

**Fig.1 Initial Model Derived From Exploratory Factor Analysis (without Modification Index)**



**Fig.2 Final Model Confirmed by Confirmatory Factor analysis (with Modification Index)**





**Table.1 Model Fit Summary (After Modification)**

Models		Default Model	Saturated Model	Independence Model
C MIN	N PAR	154	561	33
	CMIN	389.52	.000	25468.14
	DF	407	.000	528
	P	.725		.000
	CMIN/DF	.957		48.235
RMR,GFI	RMR	.008	.000	.119
	GFI	.957	1.000	.160
	AGFI	.940		.107
	PGFI	.694		.150
Parsimony Adjusted Measure	PRATIO	.771	.000	1.000
	PNFI	.759	.000	.000
	PCFI	.771	.000	.000
FMIN	FMIN	.781	.000	51.038
	FO	.000	.000	49.980
	LO 90	.000	.000	48.940
	HI 90	.064	.000	51.033
RMSEA	RMSEA	.000		.308
	LO90	.000		.304
	HI90	.013		.311
	PCLOSE	1.000		.000
Base line comparison	NFI Delta1	.985	1.000	.000
	RFI rho1	.980		.000
	IFI Delta2	1.001	1.000	.000
	TLI rho2	1.001		.000
	CFI	1.000	1.000	.000
HOELTER	HOELTER .05	583		12
	HOELTER .01	611		12



**Table. 2Fit Indices of CFA for Structural Model**

<b>Fit Index</b>	<b>Acceptable Threshold Levels</b>	<b>Structural Model Values</b>
$\chi^2/d.f$ ( Chi-square / degree of freedom)	Values less than 3	.957
RMSEA (Root mean-square error of approximation)	Values less than 0.08	.013
GFI (Goodness of fit index)	Values greater than 0.90	.957
AGFI (Adjusted goodness of fit index)	Values greater than 0.90	.940
NFI (Normed fit index)	Values greater than 0.90	.985
CFI (Comparative fit index)	Values greater than 0.90	1.00

**6.1 C MIN / DF**

The relative chi square is an index of modification towards the model evaluation. It helps to modify the path to obtain a better result on the model fit. As per our analysis shown in Table 2 it is .957, which is acceptable.

**6.2 Goodness of Fit Index (GFI)**

These are chi square based calculations independent of degree of freedom. It varies from 0 (poor fit) to 1 (perfect fit). It indicates the proportion of variance in the sample variance co variance matrix and that is accounted for by the model. In this study, we obtained the GFI value .957 as shown in table 2. So, our model is good and it matches the criteria of goodness of fit.

**6.3 Adjusted Goodness of Fit (AGFI)**

It should be  $\geq .90$  for goodness of model fit. In this analysis, we obtained the AGFI of .940 as shown in table 2 which matched the criteria of goodness of fit.

**6.4 Root Mean Square Error of Approximation (RMSEA)**

It is based on predicted versus observed co-variance but penalizing for lack of parsimony (or simplicity), in assessing a model’s amount of error. It is popular because it does not require comparison with a null mode. In our study as shown in Table 2, we got RMSEA of .013 which indicates the excellent fitness of the model. According to [9] it is estimated at 90% upper ends.  $RMSEA < .08$ , acceptable,  $< .05$  excellent.

**6.5 Normed Fit Index (NFI) and Comparative Fit Index (CFI)**

It should be  $\geq .90$  for goodness of model fit. In this analysis, we obtained the NFI of .985 and CFI of 1.000 as shown in table 2 which also matched the criteria of goodness of fit. The result of path analysis of structural model is shown below. It clearly indicates that all the hypotheses framed in our study are fully supported with significant ‘p’ values.

**6.6 Hoelter Model**

In our study, the results of Hoelter are satisfactory as null hypothesis are rejected and made this model fit.



## **VIII. DISCUSSION AND CONCLUSIONS**

This analytical study will focus on the customer satisfaction in respect of human capital components with special reference to four and five star hotels located in West Bengal. The customer satisfaction is the ultimate motto of any organization. The customer with optimum level of satisfaction mobilizes and generates goodwill in business. The customer satisfaction is highly dependent upon the employee's attitude and the service quality offered to the customer. We found significant positive interrelationships among the human capital components, service quality and customer satisfaction.

So, we may conclude that managing human capital is one of the permanent solutions to ensure the employee's performance. Specifically, the organization has to pay more attention to components of human capital which trends to have a greater impact on employee's performance and ultimately leads to the customer satisfaction.

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