

IPE Journal of

Management

A Hybrid Multi-Criteria Decision Analysis Technique to Set the Preference for Variables: Application on Social Data

Prasun Chatterjee, Susmita Bandyopadhyay and Gautam Mitra

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Role of Customer Satisfaction & Trust in Increasing the Repurchase Intent of Prepaid Mobile Subscribers in India

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Aims and Scope

IPE Journal of Management is a bi-annual, peer-reviewed journal which publishes empirical, theoretical and review articles dealing with the theory and practice of management. The aim of the journal is to provide a platform for researchers, academicians, practitioners and policy-makers from diverse domains of management to share innovative research achievements and practical experience, to stimulate scholarly debate both in India and abroad on contemporary issues and emerging trends of management science and decision-making.

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From the Editor's Desk...

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The issue for July-Dec 2021 is bouquet of articles that explore poignant issues that would arouse the interest in academicians, researchers and management practitioners. The present issue contains five articles from researchers exploring diverse topics.

The first article discusses Multi-Criteria Decision Analysis (MCDA) techniques which are applicable in technical and management related disciplines problems. These techniques deal with multiple alternatives and multiple criteria i.e. – IDOCRIW, CRITIC, CILOS and TOPSIS. The article proposes a hybrid MCDA technique for determining the weights of criteria technique by combining IDOCRIW, CRITIC and CILOS. Further the applicability of the proposed technique is demonstrated in a case. The next article is, Modelling the Effect of Low-Cost Major Indian Airlines Services Quality on Passenger's Satisfaction and their Re-Flying Intention. This study examines the Impact of Airline Services Quality that influences the Satisfaction and their Re-flying Intention among the passengers who travelled recently with Indian Low-Cost Airlines such as IndiGo, SpiceJet, GoAir, Air India / Express during the pandemic period. Based on the study the authors suggest ways to enhance the satisfaction of the airline passengers. The third article discusses techno stress for online purchase using Stimulus Organism Response (SOR) Model from the field of environmental psychology. Further, this study focuses on user abandonment of shopping apps using four important environmental stimuli factors viz. complexity, uncertainty, invasion, and information overload which were compared with two important internal states of the organism i.e., techno-stress and online shopping exhaustion; thereby leading to the response of discontinuance intentions. The fourth article claims that the optimal model for technology acceptance is dependent on the market conditions and suggests Contingency Model of Technology Acceptance (CMTA). The authors base their findings on the extensive literature review. The final article Role of Customer Satisfaction & Trust in Increasing the Repurchase Intent of Prepaid Mobile Subscribers in India, discusses the repurchase intent of Prepaid Mobile Subscribers in India. The paper focuses on the means or the factors that increase the repurchase likelihood of the prepaid mobile subscribers. Fuzzy AHP technique is used as the framework to analyze different brand-related, emotional components and individual-related

factors that contribute towards the choice of a prepaid mobile service by the customers.

IPE Journal of Management has constantly aspired to explore diverse challenges in the domain of management research. The findings and the studies have been appreciated by the practitioners as well as researchers. So continuing this tradition we present the latest set of studies in the field of management research and hope the readers will gain substantial insight through the articles.

**Kiranmai J
Samarendra Kumar Mohanty**

A Hybrid Multi-Criteria Decision Analysis Technique to Set the Preference for Variables: Application on Social Data

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Abstract

While collecting primary data for an insurance related study, the authors observed the dilemma in the individual decision makers, in prioritizing the importance of various variables on which the data were being gathered. The random preference as set by the decision makers were biased in most cases, because of the lack of proper understanding of the variables. In order to face the situation and to assist the individual decision makers in setting the priorities to different variables on which data are collected, this paper hybridizes three frequently applied different Multi-Criteria Decision Analysis (MCDA) techniques in order to determine the priorities of the variables. Such objective method is certainly free from any bias and therefore, is dependable. Proper numerical example based on a case study establishes the effectiveness of the proposed hybrid technique.

Keywords: CILOS, CRITIC, IDOCRIW, Multi-Criteria Decision Analysis (MCDA) Techniques, Prioritization, TOPSIS

Introduction

Multi-Criteria Decision Analysis (MCDA) technique can be defined as quantitative technique to rank various alternatives based on certain number of criteria or conditions. Thus, such techniques are applicable to problems which deal with multiple alternatives and multiple criteria.

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Multi-Criteria Decision Analysis (MCDA) techniques are very commonly applied techniques in both technical and management related disciplines. The existing literature shows the applications of MCDA techniques in various fields of Management, such as Financial Management (Han et al., 2004; Keršulienė and Turskis, 2014; Xidonas et al., 2012; Voulgaris et al., 2000), Marketing Management (Kumar et al., 1994; Baourakis et al., 2002; Denguir-Rekik et al., 2009; Shikhalev et al., 2018), Human Resource Management (Ensslin et al., 2013; Liang et al., 2018; Ishizaka and Pereira, 2016; Mammadova and Jabrayilova, 2018), Information Technology Management (Lima et al., 2018; Ferreira et al., 2016; de Moraes et al., 2010; Tamošaitienė et al., 2013) and so on. However, the existing literature shows significant number of MCDA techniques such as, TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) (Behzadian et al. 2012), PROMETHEE (Preference Ranking Organization METHod for Enriched Evaluation) (Brans & Mareschal 2005), AHP (Analytic Hierarchy Process) (Saaty 1977), ANP (Analytic Network Process) (Saaty 1996), MAUT (Multi-Attribute Utility Theory) (Emovon et al. 2016), ELECTRE-III, (ELimination Et Choix Traduisant la REalité – Elimination of Choice Expressing Reality) (Figueira et al. 2013), VIKOR (Opricovic & Tzeng 2002), COPRAS (COMplex PROportional ASsessment) (Zavadskas et al. 2007), and TODIM (Gomes et al. 2013) and so on. The existing literature also shows various modifications of already existing MCDA techniques and varieties of hybridized techniques. However, this paper applies three different MCDA techniques which basically determine the weights of the criteria and applies the hybridization of these techniques in TOPSIS for a social study based case study. The basic motivation of such work has come from the observation of the dilemma in the decision makers while prioritizing the variables for a social study based application and study.

Literature Review

This paper applies a total of four different existing MCDA techniques – IDOCRIW, CRITIC, CILOS and TOPSIS. Among these techniques, the first three techniques have been combined to develop a hybridized technique and the fourth technique has been applied to rank the alternatives for the case study based on the proposed hybrid techniques. Therefore, this section reviews the existing literature on these four techniques so as to identify the research gap in which the proposed MCDA technique as presented in this paper fits in.

Different existing MCDA techniques for finding the weights of the criteria have different purposes and considerations. For example, the MCDA technique, IDOCRIW (Integrated Determination of Objective CRIteria Weights) (Alinezhad and Khalili, 2019) considers the information

content or entropy in the criteria; the MCDA technique, CRITIC (CRiteria Importance Through Intercriteria Correlation) (Wang and Zhao, 2016) considers the relationships among the criteria; the MCDA technique, CILOS (Criterion Impact LOSs) (Vinogradova et al., 2018) considers the loss incurred as a result of not regarding a criterion as the most preferred one or as the highest weighted criterion.

IDOCRIW technique has been applied by several researchers as evident from the existing literature. For example, Eghbali-Zarch et al. (2021) applied IDOCRIW to find the weights of criteria to be applied in another MCDA technique, WASPAS to rank the alternatives as considered. Čereška et al. (2018) hybridized IDOCRIW with CILOS to calculate weights of the criteria. Some of the other research studies applying IDOCRIW include the research studies of Podvezko et al. (2020), Zavadskas and Podvezko (2016), Zavadskas et al. (2017) and Vavrekand Bečica(2020). Similarly, some of the research studies applying CRITIC and CILOS include the research studies of Čereška et al. (2018), Eslami et al. (2021), Mohammadiand Rezaei (2020). Some of the other MCDA techniques for calculating the weights of the criteria include ENTROPY, CRITIC, MW, SD, IDOCRIW, CV, IDP, and SVP. Some of the research studies applying CRITIC include the research studies of Peng et al. (2020), Mukhametzyanov (2021), Madicand Radovanović (2015), Diakoulaki et al. (1995). Among these research studies, Mukhametzyanov (2021) combined Entropy, CRITIC and SD; Madicand Radovanović (2015) combined ROV and CRITIC techniques to determine weights of the criteria. However, none of the above mentioned techniques for calculating weights of criteria combined IDOCRIW, CRITIC and CILOS to determine the weights. These methods consider three essential required characteristics of weight-determining MCDA techniques such as considering the information content or entropy in the criteria (as considered by IDOCRIW), relationships among the criteria (as considered by CRITIC), the relative loss incurred for not choosing a criterion as the most preferred one (as considered by CILOS). This paper fills this research gap by considering all these three essential characteristics by combining IDOCRIW, CRITIC and CILOS. The next section introduces the hybrid technique as proposed in this paper.

Proposed MCDA Technique

The proposed MCDA technique for determining the weights of criteria is a hybrid technique by combining IDOCRIW, CRITIC and CILOS. These techniques are applied partially and then combined. At first, the portion taken from IDOCRIW is described below. At first, the elements a_{ij} of the decision matrix are normalized by expression (1). The normalized elements $\overline{a_{ij}}$ is now used to determine the degree of entropy Epy_j for each criterion

j by using expression (2). Next, the deviation rate for each criterion is determined by expression (3). The entropy weight is now determined by normalizing the deviations with the help of expression (4). This shows that expression (4) is obtained by considering the entropy or information content in the criteria.

$$\overline{a_{ij}} = \frac{a_{ij}}{\sum_{i=1}^m a_{ij}} \quad \dots (1)$$

$$epy_j = -\frac{1}{\ln m} \sum_{i=1}^m \overline{a_{ij}} \times \ln \overline{a_{ij}} \quad \dots (2)$$

$$dev_j = 1 - epy_j \quad \dots (3)$$

$$w_{IDOCRIW,j} = \frac{dev_j}{\sum_{j=1}^n dev_j} \quad \dots (4)$$

$$\overline{a_{ij}} = \frac{a_{ij} - a_{\min,j}}{a_{\max,j} - a_{\min,j}} \quad \dots (5)$$

$$\overline{a_{ij}} = \frac{a_{ij} - a_{\max,j}}{a_{\min,j} - a_{\max,j}} \quad \dots (6)$$

The portion taken from CRITIC is described next. Expressions (5) and (6) are the expressions for the normalizing elements of decision matrix for the benefit and the cost types of criteria respectively where $a_{\max,j}$ and $a_{\min,j}$ are the maximum and minimum values of j -th criterion. The correlation coefficients among the criteria are determined next, by expression (7). Expression (8) shows the expression for standard deviation for each criterion j . The correlation coefficients and standard deviations are now combined following expression (9) to calculate index for each criterion. The weights of the criteria are finally calculated by normalizing the indices for the criteria through expression (10) where $a_{avg,j}$ is the average of the j -th criterion.

$$r_{ij} = \frac{\sum_{i=1}^m (a_{ij} - a_{avg,j})(a_{ik} - a_{avg,k})}{\sqrt{\sum_{i=1}^m (a_{ij} - a_{avg,j})^2 \sum_{i=1}^m (a_{ik} - a_{avg,k})^2}} \quad \dots (7)$$

$$\sigma_j = \sqrt{\frac{1}{n-1} (a_{ij} - a_{avg,j})^2} \quad \dots (8)$$

$$I_j = \sigma_j \sum_{j=1}^n r_{ij} \quad \dots (9)$$

$$w_{CRITIC,j} = \frac{I_j}{\sum_{j=1}^m I_j} \quad \dots (10)$$

Expression (10) therefore considers the relationships among the criteria since the expression considers the correlations among the criteria through expression (7). The portion of CILOS that has been taken to determine the final weights of the criteria is now explained. At first, the cost types of criteria are converted to benefit type of criteria by dividing the minimum of each criterion by each of the elements of that criterion by expression (11). Now, find the maximum value $a_{\max,j}$ of each criterion. Next, form a square matrix $S_{n \times n}$ of the order equal to the number of criteria. The elements of the main diagonal are the maximum values of the criteria and the remaining elements of each row are the remaining elements in the same row of the maximum value in the respective row as the diagonal element. The loss matrix is now formed by expression (12) where $i, j = 1, 2, \dots, n$. Find the median or mean $w_{CILOS,j}$ of each row of the loss matrix

$$\overline{a}_{ij} = \frac{a_{\min,j}}{a_{ij}} \quad \dots (11)$$

$$L_{ij} = \frac{a_{\max,j} - S_{ij}}{a_{\max,j}} \quad \dots (12)$$

Thus, finally, the symbol L_{ij} considers the loss incurred for not considering a criterion as the most preferred one. The final weights of the criteria are calculated by multiplying expression (4), (10) with $w_{CILOS,j}$ as shown in expression (13).

$$w_j = w_{IDOCRIW,j} \times w_{CRITIC,j} \times w_{CILOS,j} \quad \dots (13)$$

These weights w_j are used in the MCDA technique, TOPSIS which is applied on the case study to rank the alternatives. For TOPSIS, at first, the elements of the decision matrix are normalized by following expression (1) and then weighted decision matrix is formed by multiplying each normalized element a_{ij} by the corresponding weight w_j . Next, the best element, $a_{\text{best},j}$ and the worst element, $a_{\text{worst},j}$ for each criterion are identified. Each element a_{ij} of this weighted normalized matrix is then used to find the Euclidian distance for each alternative from $a_{\text{best},j}$ and $a_{\text{worst},j}$ by expression (14) and expression (15) respectively. Finally, closeness coefficient for each alternative is calculated by following expression (16). The final ranking of the alternatives is done in the descending order of

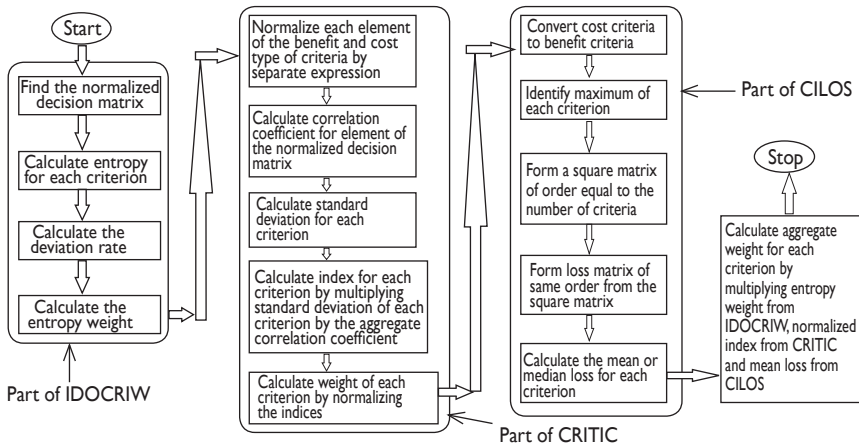
closeness coefficients. The procedure of finding the aggregate weights of the criteria by the hybridization of IDOCRIW, CRITIC and CILOS is shown in diagrammatic form in Figure-1.

$$d_i^+ = \sqrt{\sum_{j=1}^m (a_{best,j} - a_{ij})^2} \quad \dots (14)$$

$$d_i^- = \sqrt{\sum_{j=1}^m (a_{ij} - a_{worst,j})^2} \quad \dots (15)$$

$$CC_i = \frac{d_i^-}{d_i^+ + d_i^-} \quad \dots (16)$$

Figure-1: Hybrid Method for Calculating Aggregate Weight of Criteria



Case Study

Data on personal and income-expenditure has been collected through a survey to conduct analysis of individual insurance. A total of twelve different variables (criteria) have been gathered on which these data have been collected. Some of the respondents have responded to all the queries and some have not. Therefore, a total of 86 responses have been sorted for which data on all the variables are available. The twelve criteria (variables) as considered in this study are – C1: age, C2: number of family members, C3: number of dependents, C4: number of income earners in the family, C5: years of work experience, C6: number of valuable assets, C7: minimum expenses, C8: minimum savings, C9: minimum income, C10: health expenditure, C11: expenditure on food and beverages, and C12: educational expenditure. Here, criteria C1, C2, C3, C5, C7, C10, C11, C12 are the cost type of criteria and the criteria C4, C6, C8, C9 are the

benefit type of criteria. A portion of the decision matrix (data as collected) is shown in Table-1. All the MCDA techniques as considered in this paper are applied on this decision matrix as shown in Table-1.

Application of Proposed MCDA Technique on Case Study

The proposed MCDA technique for determining the weights of the criteria (variables) are calculated based on the data in the decision matrix. The total number of alternatives assumed is 86 which is actually, the number of individuals who have provided these data. Thus, the size of the decision matrix is 86 x 12. Simple Excel sheet has been used for all the calculations.

Table-1: Decision Matrix

S No	Age	No of Family Members	No of Dependents	No of Income Earners in the Family	Years of Work Experience	Assets	Minimum Expenses	Minimum Savings	Minimum Income	Health Expenses	Expense on Food and Beverages	Educational Expenses
1	31	2	0	2	10	1	35000	5000	50000	0	10000	0
2	43	6	3	2	15	2	20000	20000	50000	1000	10000	500
3	55	4	3	1	30	3	50000	50000	50000	2000	20000	20000
4	32	5	0	3	8	1	15000	20000	50000	500	2000	0
5	43	3	1	2	11	3	30000	10000	25000	500	20000	10000
6	47	3	1	2	15	1	30000	20000	25000	500	20000	10000
7	51	3	2	1	15	1	50000	0	50000	5000	20000	10000
8	44	3	2	1	15	2	20000	5000	25000	500	10000	1000
9	32	4	2	2	5	1	10000	5000	25000	500	5000	500
10	43	5	4	2	12	3	50000	15000	50000	2000	10000	1000

At first, the part of the MCDA technique, IDOCRIW (expression 1 to expression 4) is applied on the data as provided in Table-1. At first, the decision matrix is normalized by expression (1). The degree of entropy for the criteria is shown in Table-2 by expression (2). Table-3 shows the deviations for the criteria following expression (3). Table-4 shows the entropy weights as calculated by expression (4).

Table-2: Degree of Entropy

Criteria	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
Degree of Entropy	1.785	1.764	1.688	1.75	1.727	1.726	1.724	1.569	1.709	1.362	1.641	1.403

Table-3: Deviation Rates for the Criteria

Criteria	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
Deviation	-0.78	-0.76	-0.69	-0.8	-0.73	-0.73	-0.72	-0.57	-0.709	-0.36	-0.64	-0.4

Table-4: Entropy Weight

Criteria	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
Entropy Weight	0.1	0.097	0.088	0.1	0.093	0.092	0.092	0.072	0.09	0.046	0.082	0.051

Next, the MCDA technique CRITIC is applied partially following expression (5) to expression (10). At first, the elements of the decision matrix are normalized following expressions (5) and (6). Then correlation coefficients are calculated for each element by expression (7) along with the standard deviations for the criteria by expression (8). Then, index for each criterion is calculated by expression (9) and the results are shown in Table-5. Finally, the weights of the criteria which are actually, the normalized indices are calculated by expression (10) and the results are shown in Table-6.

Table-5: Indices of Criteria

Criteria	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
Index	0.052	0.804	0.337	0.073	-0.156	1.388	0.215	1.421	1.609	0.035	0.237	0.007

Table-6: Weights of Criteria by CRITIC

Criteria	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
Weight	0.009	0.133	0.056	0.012	0.0259	0.23	0.036	0.236	0.267	0.006	0.039	0.001

Next, the MCDA technique CILOS is applied partially. At first, the cost criteria are converted to benefit type of criteria and then the maximum value for each criterion is identified. Now, the square matrix is formed in the way as depicted before and is shown in Table-7. The loss matrix is now formed following expression (12) and is shown in Table-8. Finally, the weights of the criteria which are actually the median of each row of the loss matrix is calculated and are shown in Table-9.

Table-7: Square Matrix

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
C1	2.102	0.962	0	4	3.331	3	1.101	0	35000	0	2.825	0
C2	0.849	3.849	0	1	0.666	1	3.303	10000	20000	6.587	1.4125	0
C3	0.981	1.283	1.919	2	0.833	2	0.33	100000	100000	3.294	0.2825	0.649
C4	1.576	0.428	0.959	7	8.327	1	3.303	5000	15000	3.294	1.4125	3.244
C5	1.766	0.641	0.384	1	16.65	1	1.101	20000	50000	0	1.4125	0.324
C6	0.96	0.962	0.959	2	0.833	4	0.661	20000	100000	3.294	0.2825	0.324
C7	0.736	1.924	1.919	1	0.37	1	6.607	0	20000	6.587	1.4125	0
C8	0.981	1.283	1.919	2	0.833	2	0.33	100000	100000	3.294	0.2825	0.649
C9	0.92	0.641	0.959	1	0.724	2	0.661	25000	150000	0.471	0.4708	0.216
C10	0.901	1.283	0.959	1	0.925	1	0.944	5000	50000	13.17	56.5	0
C11	0.901	1.283	0.959	1	0.925	1	0.944	5000	50000	13.17	56.5	0
C12	0.724	0.962	1.919	3	0.476	1	1.101	5000	100000	0.329	0.7063	12.98

Table-8: Loss Matrix

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
C1	0	0.75	1	0.4	0.8	0	0.833	1	0.7667	1	0.95	1
C2	0.596	0	1	0.9	0.96	1	0.5	0.9	0.8667	0.5	0.975	1
C3	0.533	0.667	0	0.7	0.95	1	0.95	0	0.3333	0.75	0.995	0.95
C4	0.25	0.889	0.5	0	0.5	1	0.5	0.95	0.9	0.75	0.975	0.75
C5	0.16	0.833	0.8	0.9	0	1	0.833	0.8	0.6667	1	0.975	0.975
C6	0.543	0.75	0.5	0.7	0.95	0	0.9	0.8	0.3333	0.75	0.995	0.975
C7	0.65	0.5	0	0.9	0.978	1	0	1	0.8667	0.5	0.75	1
C8	0.533	0.667	0	0.7	0.95	1	0.95	0	0.3333	0.75	0.995	0.95
C9	0.563	0.833	0.5	0.9	0.957	1	0.9	0.75	0	0.964	0.9917	0.983
C10	0.571	0.667	0.5	0.9	0.944	1	0.857	0.95	0.6667	0	0	1
C11	0.571	0.667	0.5	0.9	0.944	1	0.857	0.95	0.6667	0	0	1
C12	0.656	0.75	0	0.6	0.971	1	0.833	0.95	0.3333	0.975	0.9875	0

Table-9: Weights of Criteria by CILOS

Criteria	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
Weight	0.817	0.862	0.69	0.75	0.817	0.75	0.75	0.69	0.845	0.708	0.708	0.75

Table-10: Aggregate Final Weights of Criteria

Criteria	Weight by IDOCRIW	Weight by CRITIC	Weight by CILOS	Weight by Proposed Technique	Normalized Weight
C1	0.099959	0.00863	0.816667	0.00070409	0.009875426
C2	0.09735	0.13347	0.861905	0.011199073	0.157076029
C3	0.087711	0.05598	0.690476	0.003390028	0.04754787
C4	0.095565	0.01209	0.75	0.000866212	0.012149324
C5	0.092665	0.02587	0.816667	0.001957758	0.027459131
C6	0.09245	0.23043	0.75	0.015977618	0.224098972
C7	0.092223	0.03563	0.75	0.002464638	0.034568536
C8	0.072449	0.23597	0.690476	0.011804214	0.165563612
C9	0.090379	0.26727	0.845238	0.020417267	0.286368615
C10	0.046152	0.00589	0.708333	0.000192418	0.00269882
C11	0.081727	0.03939	0.708333	0.002280201	0.031981663
C12	0.051369	0.00113	0.75	4.3634E-05	0.000612002
TOTAL				0.071297151	

The final weights of the criteria are calculated by expression (13), by combining the weights as obtained from IDOCRIW (from Table-4), CRITIC (from Table-6) and CILOS (from Table-9) and are shown in Table-10. Now, these weights are now applied on TOPSIS MCDA technique in order to verify the effectiveness of the proposed technique as shown in the next section. The purpose here is not to rank the alternatives

(individuals), but to prepare the way of verifying the effectiveness of the proposed MCDA technique. In order to apply TOPSIS, at first, the decision matrix as shown in Table-1 is normalized by expression (1) and then each element of the normalized decision matrix is multiplied with the aggregate weights of the criteria. Table-11 shows a portion of the weighted normalized decision matrix. Next, the Euclidian distances from the best and the worst weighted normalized values for each of the criteria are calculated by using expressions (14) and (15). Closeness Coefficients are finally calculated using expression (16) and the alternatives are ranked in the descending order of Closeness Coefficients. Table-12 shows the Euclidian distances, Closeness Coefficients and the ranks of the alternatives.

Table-11: Sample Results of Weighted Normalized Matrix for TOPSIS

Serial	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
1	0.00082	0.0006	0	0.00122	0.00065	0.0005	0.0011	0.00024	0.00095	0	0.00067	0
2	0.00113	0.0018	0.0016	0.00122	0.00097	0.0011	0.001	0.00096	0.00095	0.00016	0.00067	4.6E-05
3	0.00145	0.0012	0.0016	0.00061	0.00194	0.0016	0.0016	0.00241	0.00095	0.00033	0.00135	0.00184
4	0.00084	0.0015	0	0.00183	0.00052	0.0005	0.0005	0.00096	0.00095	8.1E-05	0.00013	0
5	0.00113	0.0009	0.0005	0.00122	0.00071	0.0016	0.001	0.00048	0.00047	8.1E-05	0.00135	0.00092
6	0.00124	0.0009	0.0005	0.00122	0.00097	0.0005	0.001	0.00096	0.00047	8.1E-05	0.00135	0.00092
7	0.00134	0.0009	0.0011	0.00061	0.00097	0.0005	0.0016	0	0.00095	0.00081	0.00135	0.00092
8	0.00116	0.0009	0.0011	0.00061	0.00097	0.0011	0.0006	0.00024	0.00047	8.1E-05	0.00067	9.2E-05
9	0.00084	0.0012	0.0011	0.00122	0.00032	0.0005	0.0003	0.00024	0.00047	8.1E-05	0.00034	4.6E-05
10	0.00113	0.0015	0.0021	0.00122	0.00078	0.0016	0.0016	0.00072	0.00095	0.00033	0.00067	9.2E-05

Table-12: Euclidian Distances, Closeness Coefficients and Ranks for TOPSIS for Some Alternatives

Serial	d+	d-	CC	Rank	Serial	d+	d-	CC	Rank
1	0.00619	0.011168	0.643406	19	44	0.006722	0.010578	0.611453	54
2	0.005989	0.010466	0.636049	27	45	0.006287	0.011232	0.641116	23
3	0.00617	0.009606	0.608892	55	46	0.006341	0.011093	0.636277	26
4	0.005367	0.011382	0.679542	3	47	0.006041	0.010843	0.642184	21
5	0.006216	0.010476	0.62761	38	48	0.006345	0.010506	0.623468	42
6	0.006129	0.010341	0.627855	36	49	0.006763	0.010366	0.605183	57
7	0.007149	0.009436	0.568963	77	50	0.006366	0.010842	0.630034	34
8	0.006665	0.010722	0.616662	49	51	0.00517	0.010811	0.676487	4
9	0.006376	0.011005	0.633147	32	52	0.005985	0.010887	0.645265	16
10	0.006273	0.010222	0.619707	43	53	0.006713	0.01057	0.611566	53
11	0.007535	0.00997	0.569573	76	54	0.006895	0.010954	0.613708	51
12	0.007583	0.01048	0.580204	73	55	0.005995	0.010381	0.633926	31
13	0.006293	0.010206	0.618555	47	56	0.006685	0.010814	0.617978	48
14	0.007238	0.010243	0.585952	71	57	0.006531	0.0109	0.62532	40
15	0.006329	0.01136	0.642197	20	58	0.006029	0.011428	0.654625	12
16	0.005381	0.010606	0.663431	7	59	0.006044	0.010834	0.641889	22
17	0.007124	0.009303	0.566328	78	60	0.005887	0.011621	0.663773	6

Serial	d+	d-	CC	Rank	Serial	d+	d-	CC	Rank
18	0.006519	0.009508	0.593259	66	61	0.006222	0.010624	0.630639	33
19	0.006189	0.009166	0.596939	64	62	0.004632	0.010904	0.701857	2
20	0.006199	0.010325	0.624855	41	63	0.007753	0.008154	0.512607	85
21	0.006241	0.010152	0.619295	45	64	0.006742	0.010941	0.618733	46
22	0.005883	0.010243	0.635208	29	65	0.006965	0.010239	0.595146	65
23	0.00708	0.009471	0.572224	75	66	0.007161	0.010753	0.600257	61
24	0.005542	0.010709	0.658956	9	67	0.006955	0.011092	0.614625	50
25	0.006938	0.009968	0.589599	70	68	0.007402	0.011018	0.598141	63
26	0.0058	0.010796	0.650511	13	69	0.006803	0.010242	0.60089	59
27	0.006131	0.011162	0.645474	15	70	0.005687	0.010793	0.654921	11
28	0.007473	0.009018	0.54684	83	71	0.006666	0.01025	0.605956	56
29	0.006805	0.007612	0.527974	84	72	0.007366	0.009929	0.574106	74
30	0.004082	0.011682	0.741038	1	73	0.007524	0.009687	0.562844	79
31	0.005715	0.00998	0.635869	28	74	0.006456	0.009393	0.592669	67
32	0.005934	0.01001	0.627832	37	75	0.00668	0.010208	0.60445	58
33	0.006522	0.009712	0.598253	62	76	0.010708	0.005461	0.337762	86
34	0.005818	0.011352	0.661148	8	77	0.006807	0.009609	0.585343	72
35	0.006236	0.011113	0.640569	24	78	0.006754	0.00976	0.591002	69
36	0.006162	0.009767	0.613165	52	79	0.006663	0.011125	0.625431	39
37	0.005937	0.010088	0.629515	35	80	0.007016	0.008723	0.554244	82
38	0.005855	0.011204	0.656781	10	81	0.006209	0.011206	0.643459	18
39	0.006112	0.011365	0.650285	14	82	0.006204	0.011219	0.643922	17
40	0.006768	0.01102	0.619496	44	83	0.005773	0.010137	0.637151	25
41	0.006163	0.009271	0.600677	60	84	0.006903	0.01	0.591595	68
42	0.006906	0.008647	0.55598	81	85	0.006961	0.00877	0.557504	80
43	0.005762	0.01151	0.666394	5	86	0.006344	0.010996	0.634155	30

Comparison of Proposed Technique with IDOCRIW, CRITIC and CILOS

In order to verify the effectiveness of the proposed MCDA technique which may be very effective in determining the importance of different variables in research studies especially in the fields of Social Science, this section compares the results of the proposed MCDA technique for determining weights of criteria with those for the individual techniques, IDOCRIW, CRITIC and CILOS. The weights of the criteria as obtained from IDOCRIW, CRITIC, CILOS and the proposed technique are applied on the TOPSIS through the same case study. The ranks obtained from TOPSIS by applying the weights from the proposed technique are already shown in Table-12. Table-13 shows the ranks as obtained by applying IDOCRIW, CRITIC, and CILOS separately on TOPSIS. The purpose is to verify the associations among the ranks so that it can be established that the ranks are consistent and therefore, the proposed technique is as effective as the other three already established techniques for calculating weights of the criteria.

Table-13: Ranks as Obtained from Different Techniques

	IDOCRIW	CRITIC	CILOS	Proposed Technique
1	19	57	19	55
2	27	40	14	46
3	55	9	57	12
4	3	41	5	48
5	38	46	44	45
6	36	49	37	60
7	77	71	74	69
8	49	66	48	64
9	32	78	34	78
10	43	37	36	38
11	76	43	71	42
12	73	86	64	86
13	47	42	42	39
14	71	83	66	83
15	20	76	29	77
16	7	4	3	5
17	78	67	76	67
18	66	36	72	32
19	64	27	73	25
20	41	25	45	20
21	45	54	50	51
22	29	17	25	28
23	75	73	77	72
24	9	19	6	16
25	70	53	68	61
26	13	18	11	19
27	15	51	23	47
28	83	32	82	34
29	84	10	84	14
30	1	1	1	1
31	28	28	31	35
32	37	6	22	7
33	62	52	63	54
34	8	59	10	57
35	24	72	21	76
36	52	30	47	33
37	35	3	56	3
38	10	45	8	52
39	14	85	30	85
40	44	69	51	70
41	60	21	67	29
42	81	61	83	59
43	5	50	9	50
44	54	26	46	22
45	23	39	28	40
46	26	31	26	27
47	21	38	13	37
48	42	34	35	30
49	57	14	39	11
50	34	29	32	26
51	4	12	4	10
52	16	35	17	36
53	53	82	52	80

	IDOCRIW	CRITIC	CILOS	Proposed Technique
54	51	68	53	68
55	31	33	18	31
56	48	65	43	62
57	40	70	41	73
58	12	79	20	82
59	22	84	33	84
60	6	44	12	44
61	33	81	38	81
62	2	11	2	24
63	85	48	85	41
64	46	62	49	63
65	65	56	58	53
66	61	77	60	74
67	50	80	54	79
68	63	74	62	71
69	59	75	65	75
70	11	16	7	15
71	56	47	59	43
72	74	8	80	8
73	79	5	81	6
74	67	22	75	17
75	58	60	61	56
76	86	20	86	21
77	72	24	70	23
78	69	15	69	13
79	39	58	40	58
80	82	55	78	49
81	18	64	27	66
82	17	63	24	65
83	25	7	15	4
84	68	23	55	18
85	80	13	79	9
86	30	2	16	2

In order to verify the associations among the ranks, Spearman's rank correlation has been applied to find the rank correlations between the proposed technique and each of the techniques, IDOCRIW, CRITIC, and CILOS. Table-14 shows the values of Spearman's rank correlations. Table-14 shows that all the rank correlations are positive which establish the consistency or positive association among the rankings. The rank correlations between the proposed technique and that for IDOCRIW and CILOS are very low indicating very low or negligible associations or consistency between the proposed technique and each of IDOCRIW and CILOS. However, the rank correlation between the proposed technique and CRITIC is significantly high indicating very high consistency or association between the proposed technique and CRITIC. This indicates the effectiveness of the proposed MCDA technique since CRITIC is also a very popular and significantly applied technique for determining weights of criteria as evident from the existing literature.

Table-14: Spearman's Rank Correlations

	IDOCRIW	CRITIC	CILOS
Proposed Technique	0.020048	0.988282	0.092391

Conclusion

This paper proposes a Multi-Criteria Decision Analysis (MCDA) technique for determining the weights of criteria in such problems. In general, MCDA techniques are used to rank alternatives based on some criteria or conditions. But there are existing MCDA techniques that are used to find the weights of criteria. Various such MCDA techniques have various purpose or considerations to take into account. The proposed MCDA technique for calculating the weights of criteria considers entropy or information content in the criteria as taken from another frequently applied technique called IDOCRIW, relationships among the criteria as borrowed from another significantly applied technique called CRITIC and loss incurred for not identifying a criterion as the highest weighted criterion as taken from another popular technique called CILOS. Such a MCDA technique combining all the essential features required for determining weights of criteria has been proposed in the existing literature, based on the best knowledge of the authors. The weights obtained from the proposed technique, IDOCRIW, CRITIC and CILOS are applied in another MCDA technique called TOPSIS to rank alternatives through a case study. Spearman's rank correlation has been used to verify the association or consistency between the rankings obtained from the proposed technique and each of the techniques, IDOCRIW, CRITIC and CILOS. The results show that the proposed MCDA technique for determining weights of criteria is highly consistent or associated with especially that of CRITIC. This indicates the effectiveness of the proposed MCDA technique.

References

- Baourakis, G., Doumpos, M., Kalogeras, N., & Zopounidis, C. (2002). Multicriteria Analysis and Assessment of Financial Viability of Agribusinesses: The Case of Marketing Co-Operatives and Juice-Producing Companies. *Agribusiness: An International Journal*, 18(4), 543-558.
- Behzadian, M., Otaghsara, S. K., Yazdani, M., & Ignatius, J. (2012). A State-of-the-art Survey of TOPSIS Applications. *Expert Systems with Applications*, 39(17), 13051-13069.
- Brans, J. P., & Mareschal, B. (2005). Multiple Criteria Decision Analysis: State-of-the-art Surveys. New York: Springer.

- Čereška, A., Zavadskas, E. K., Bucinskas, V., Podvezko, V., & Sutinyš, E. (2018). Analysis of Steel Wire Rope Diagnostic Data Applying Multi-Criteria Methods. *Applied Sciences*, 8(2), 260.
- de Moraes, L., Garcia, R., Ensslin, L., da Conceição, M. J., & de Carvalho, S. M. (2010). The Multicriteria Analysis for Construction of Benchmarks to Support the Clinical Engineering in the Healthcare Technology Management. *European Journal of Operational Research*, 200(2), 607-615.
- Denguir-Rekik, A., Montmain, J., & Mauris, G. (2009). A Possibilistic-Valued Multi-Criteria Decision-Making Support for Marketing Activities in E-Commerce: Feedback Based Diagnosis System. *European Journal of Operational Research*, 195(3), 876-888.
- Diakoulaki, D., Mavrotas, G., & Papayannakis, L. (1995). Determining Objective Weights in Multiple Criteria Problems: The Critic Method. *Computers & Operations Research*, 22(7), 763-770.
- Emovon, I., Norman, R. A., & Murphy, A. J. (2016). Methodology of Using an Integrated Averaging Technique and MAUT Method for Failure Mode and Effects Analysis. *Journal of Engineering and Technology*, 7(1), 140-155.
- Ensslin, S. R., Ensslin, L., Back, F., & de Oliveira Lacerda, R. T. (2013). Improved Decision Aiding in Human Resource Management: A Case Using Constructivist Multi-Criteria Decision Aiding. *International Journal of Productivity and Performance Management*, 62(7), 735-757.
- Eslami, V., Ashofteh, P. S., Golfam, P., & Loáiciga, H. A. (2021). Multi-Criteria Decision-Making Approach for Environmental Impact Assessment to Reduce the Adverse Effects of Dams. *Water Resources Management*, 35(12), 4085-4110.
- Figueira, J. R., Greco, S., Roy, B., & Słowiński, R. (2013). An Overview of ELECTRE Methods and their Recent Extensions. *Journal of Multi-Criteria Decision Analysis*, 20(1-2), 61-85.
- Ferreira, C., Nery, A., & Pinheiro, P. R. (2016). A Multi-Criteria Model In Information Technology Infrastructure Problems. *Procedia Computer Science*, 91, 642-651.
- Gomes, L. F. A. M., Machado, M. A. S., & Rangel, L. A. D. (2013). Behavioral Multi-criteria Decision Analysis: The TODIM Method with Criteria Interactions. *Annals of Operations Research*, 211(1), 531-548.
- Han, S. H., Diekmann, J. E., Lee, Y., & Ock, J. H. (2004). Multicriteria Financial Portfolio Risk Management for International Projects. *Journal of Construction Engineering and Management*, 130(3), 346-356.
- Ishizaka, A., & Pereira, V. E. (2016). Portraying An Employee Performance Management System Based on Multi-Criteria Decision Analysis and Visual Techniques. *International Journal of Manpower*, 37(4), 628-659.

- Keršulienė, V., & Turskis, Z. (2014). An Integrated Multi-Criteria Group Decision Making Process: Selection of the Chief Accountant. *Procedia-Social and Behavioral Sciences*, 110, 897-904.
- Kumar, V., Stam, A., & Joachimsthaler, E. A. (1994). An Interactive Multicriteria Approach to Identifying Potential Foreign Markets. *Journal of International Marketing*, 2(1), 29-52.
- Liang, R. X., Jiang, Z. B., & Wang, J. Q. (2018). A Linguistic Neutrosophic Multi-Criteria Group Decision-Making Method to University Human Resource Management. *Symmetry*, 10(9), 364.
- Lima, A. S., de Souza, J. N., Moura, J. A. B., & da Silva, I. P. (2018). A Consensus-Based Multicriteria Group Decision Model for Information Technology Management Committees. *IEEE Transactions on Engineering Management*, 65(2), 276-292.
- Madic, M., & Radovanović, M. (2015). Ranking of Some Most Commonly Used Nontraditional Machining Processes Using ROV and CRITIC Methods. *UPB Sci. Bull., Series D*, 77(2), 193-204.
- Mammadova, M. H., & Jabrayilova, Z. G. (2018). Fuzzy Multi-Criteria Method to Support Group Decision Making in Human Resource Management. In *Recent Developments and the New Direction in Soft-Computing Foundations and Applications* (pp: 209-222). Springer, Cham.
- Mohammadi, M., & Rezaei, J. (2020). Bayesian Best-Worst Method: A Probabilistic Group Decision Making Model. *Omega*, 96, 102075.
- Mukhametzhanov, I. (2021). Specific Character of Objective Methods for Determining Weights of Criteria in MCDM Problems: Entropy, CRITIC and SD. *Decision Making: Applications in Management and Engineering*, 4(2), 76-105.
- Oprićović, S., & Tzeng, G. H. (2002). Multicriteria Planning of Post-Earthquake Sustainable Reconstruction. *Computer-Aided Civil and Infrastructure Engineering*, 17(3), 211-220.
- Peng, X., Zhang, X., & Luo, Z. (2020). Pythagorean Fuzzy MCDM Method Based on CoCoSo and CRITIC with Score Function for 5G Industry Evaluation. *Artificial Intelligence Review*, 53(5), 3813-3847.
- Podvezko, V., Zavadskas, E. K., & Podviekzo, A. (2020). An Extension of the New Objective Weight Assessment Methods CILOS and IDOCRIW to Fuzzy MCDM. *Economic Computation & Economic Cybernetics Studies & Research*, 54(2), 59-75.
- Saaty, T. L. (1977). A Scaling Method for Priorities in Hierarchical Structures. *Journal of Mathematical Psychology*, 15(3), 234-281.
- Saaty, T.L. (1996). Decision Making with Dependence and Feedback. The Analytic Network Process, Pittsburgh: RWS Publications.

- Shikhalev, A. M., Vorontsov, D. P., Khamidullina, G. R., & Solovev, D. B. (2018, October). An Optimal and Quasi-Optimal Alternatives Determination in the Multicriteria Marketing Researches. *The International Science and Technology Conference 'FarEastCon'* (pp: 826-833). Springer, Cham.
- Tamošaitienė, J., Zavadskas, E. K., & Turskis, Z. (2013). Multi-criteria Risk Assessment of A Construction Project. *Procedia Computer Science*, 17, 129-133.
- Vavrek, R., & Bečica, J. (2020). Capital City as a Factor of Multi-Criteria Decision Analysis – Application on Transport Companies in the Czech Republic. *Mathematics*, 8(10), 1765.
- Vinogradova, I., Podvezko, V., & Zavadskas, E. K. (2018). The Recalculation of the Weights of Criteria in MCDM Methods Using the Bayes Approach. *Symmetry*, 10(6), 205.
- Voulgaris, F., Doumpos, M., & Zopounidis, C. (2000). On the Evaluation of Greek Industrial SME's Performance via Multicriteria Analysis of Financial Ratios. *Small Business Economics*, 15(2), 127-136.
- Wang, D., & Zhao, J. (2016). Design Optimization of Mechanical Properties of Ceramic Tool Material During Turning of Ultra-High-Strength Steel 300M with AHP and CRITIC method. *The International Journal of Advanced Manufacturing Technology*, 84(9), 2381-2390.
- Xidonas, P., Mavrotas, G., Krintas, T., Psarras, J., & Zopounidis, C. (2012). Multicriteria Portfolio Management. In *Multicriteria Portfolio Management* (pp. 5-21). Springer, New York, NY.
- Zavadskas, E. K., Kaklauskas, A., Peldschus, F., & Turskis, Z. (2007) Multi-attribute Assessment of Road Design Solutions by Using the COPRAS Method, *The Baltic Journal of Road and Bridge Engineering*, 2, 4, 195-203.
- Zavadskas, E. K., & Podvezko, V. (2016) Integrated Determination of Objective Criteria Weights in MCDM, *International Journal of Information Technology & Decision Making*, 15, 2, 267-283.
- Zavadskas, E. K., Cavallaro, F., Podvezko, V., Ubarte, I., & Kaklauskas, A. (2017) MCDM Assessment of A Healthy and Safe Built Environment According to Sustainable Development Principles: A Practical Neighborhood Approach in Vilnius, *Sustainability*, 9, 5, 702.



Modelling the Effect of Low-Cost Major Indian Airlines Services Quality on Passenger's Satisfaction and their Re-Flying Intention

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Abstract

This research made an attempt to evaluate the Impact of Airline Services Quality that influences the Satisfaction and their Re-flying Intention among the passengers who travelled recently with Indian Low-Cost Airlines such as IndiGo, SpiceJet, GoAir, Air India / Express during the pandemic period. Structural equation models were fitted to scrutinize the multi-dimensional impact among airline services quality, satisfaction and Re-flying intention by using competing model strategy. Four different Structural models were fitted with indicators and constructs under different assumptions and one among the best model is selected based on the information criteria.

Keywords: Airline Services Quality, Competing Model Strategy, Constructs, Indicators, Model Selection Criteria, Re-flying Intention, Satisfaction, Structural Equation Models

Introduction and Related Works

Airlines industry is totally based on services, in which the product is transferred to consumer during the travel in the form of total experience and satisfaction. This is very hard to accomplish by any air service provider. Retaining customers and earning satisfaction through service quality management are the issues faced by the companies in all industries.

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However, in this intense competition, important questions raised are how an airline company become arrives early before others do by satisfying customers at the highest level and improving service quality so as to enhance consumers' purchase intention. Food and Beverage quality is one of the most important requisites for passengers' pleasurable flight experiences in the full-service airline industry. Nonetheless, little is known about its role in forming re-flying intention. The present research successfully addressed this omission by uncovering the positive relationships among multiple quality factors namely Airline Employees, Assurance, Image, Comfort and Cleanliness, Easiness, Satisfaction and re-flying intention in an empirical manner. Therefore, this study has been carried out to examine the relationship among the construct of service quality, passenger satisfaction and Re-flying intentions in low-cost carrier offering their services in India. It is mandatory to review the literature available with respect to the area of the research study. Several studies have been undertaken to analyze the service quality among low-cost airlines. The present section enumerates the past studies conducted by the academicians. They are arranged as follows: Porter (1980) argued that in order to gain a competitive advantage, organizations need to diversify their strategies such as cost leadership, differentiation, focused differentiation and focused low cost. Sasser and Leonard (1982) stated that the quality of services and goods have become one of the key issues in marketing context. Gronroos (1984) shows airline passengers satisfaction level can bring out through establishing better results with the employees of the organization. Parasuraman et.al (1988) stated in his research that the conceptual definition of service quality has emerged due to comparison of the excellence of the service being provided to the customers. The various situations allow the customers to decide and evaluate the process quality being delivered to them. Cronin and Taylor (1992) originate the empirical provision for the idea that perceived service quality led to satisfaction. Ostrowski (1993) stated in his research that when all airlines have an equal range of fare prices and flying programs, then the airline company with better perceived service quality is more likely to attract the customers. Bitner and Hubbert (1994) determined that service encounter satisfaction was quite distinct from overall satisfaction and perceived quality. Denner et.al (2000) suggested that as competition created by deregulation has become more intense, service quality in the airline industry has also received more attention. Chang and Keller (2002) described that the customers are the one who can interpret about service quality in airline industry. Bateson and Hoffman (2002) suggested that 'cognitive formation of service quality is the customer's overall evaluation of the service provider's performance'. Tiernan (2008) emphasizes that the

aviation industry is one of the more intangible service industries and play a crucial role in the present global economy. Saha and Theingi (2009) pointed out the fact that the emergence of the low-cost airlines has brought up the concern on how much the travelers feel satisfied with the various provided to them. In the case of Low-cost carrier airlines, there always remained an uncertainty among the travelers that lower cost structure would have a direct effect on the service quality of the organization. Chou et al. (2011) noted that in Airline industry, the service quality is the major problem in the international air travel transportation industry. Lien et al. (2014) studied the effect of service quality on trust and trust transfer of patients in the health care industry and examined especially the switching costs on the trust transfer. Shah et al. (2020) measured the service quality in airline industry and examined how the service quality influences passenger's behavioral intentions.

Airline Services Quality, Passenger Satisfaction and Re-Flying Intention

The cause of success of any service industry acknowledged by the way of service provided to the customers itself. It is very difficult to define 'service' because of their diverse nature. While a service provider delivered a service to a consumer is often hard to understand due to intangible outputs and inputs. But there are two approaches are used by in his book named 'Principles of service marketing and management'. A service is an act or performance offered by one party to another. Services are economic activities that create value and provide benefits for customers at specific times and places, as a result of bringing about a desired change in or on behalf of the recipient of the service. They provided a common definition to services as 'something that may be bought and sold, but which cannot be dropped on your foot.' Services are classified in the form of core services and the supplementary services. In service industries it is very difficult task to evaluate the service quality of the performance used during the delivery of the service. Service quality is among the most important dimension in the service industry to know. There is an extensive literature available to understand the service quality dimensions and there was too much researchers took initiative to know the service quality paradigms. In terms service quality is the way through which a customer meets and exceeds their expectations. In his book 'Quality without tears the art of hassle-free management' defined quality is a conformance to requirement but not wow. Do it right the first time, management Commitment and policy deployment are the key concerns of the Crosby's study, in this study 'service quality and customer satisfaction in the airlines industry' used

diverse dimensions of service quality proposed by several researchers. Which included two-dimensional model and stated that service quality is technical 'the tangible aspects of service quality' and functional 'the expressive performance of service'. Anticipated five dimensions of service quality as 'Airline Employees, Assurance, Image, Comfort & Cleanliness and Easiness'. A three-dimensional model of service quality developed by and cleared that service quality is derived by a 'service product (i.e., technical quality), service delivery (i.e., functional quality) and service environment' where service to be delivered at the time of consumption. On the basis of above-mentioned Rust & Oliver's model a three-element model developed and defined service quality as an outcome quality, interaction quality and environmental quality.

Airline Services Quality

Airline services mainly deals with providing support to the passengers before, during and after a flight. Industrialists accepted that the service quality is perceived as multidimensional and all the elements are recognized on the basis of precise industry. However, airlines industry confirmed that the growth in service sector not only provides business opportunities but also forms competitive pressures on many service industries. This competitive environment enforced the airline firms to accept that service quality will be a function of market demand for airline. To understand the need of service quality in airline business there was a lot of work done in the past decades. These models adopted by the various service firms including airline travel industry. In his study stated that service quality concept in airlines concern was examined at very first time. They had shown their interest in service variables. They used price, income and population as a demand specific variable. As service quality variables they had used flight frequency and load factor. This was considered a supportive instrument for the airline firms and they recognized that service quality plays a crucial role to maintain competitiveness. Confined that air passenger demand is a combination of service quality, traffic and fare and maintained that service quality the foremost required attribute for the air traffic. Different dimensional / econometric models of gravity model, designed a frequency delay function related with airline demand and service quality. They used flight frequency as the service quality in airlines industry. Used a three-dimensional airline service quality model; i.e., 'price, safety, and timeliness of flights'. Similarly, seat comfort, food, and on time departures of flights adopted as the airline service quality aspects. Although used seat cleanliness, flights time, on board food and beverages, check-in procedure, and the way of customer complaints management, for service quality

attributes for airline services. By resolving the difficulties of air travel, this will lead to gain the satisfied and happier customers, enhanced services and finer travel experiences.

Dimensions

Airline Employees

The 1st factor belongs to Airlines Employees. It contains 8 items. Variables included in this factor are knowledge of ground staff / cabin crew towards passenger queries, polite & courteous behavior of ground staff / cabin crew, employees willingness to help passengers when they required any helps, understanding the special needs of the passengers by employees by observing them during the whole journey, language used by ground staff / cabin crew is also matters well, why because, as a low cost airlines many type of people will be travelling with them and they won't be much literate, offering services right at very first time to the passengers will lead to make a good thought about the airline. Employees willingness to provide individual attention to the passengers and availability to contact to ground staff / cabin crew will also made a positive impact. Here airline employees are the most important factor because, they are the people who is directly involved with the passengers.

Assurance

This factor includes five items. Delivery of baggage at the time of check out, Ticket Price charged by the airlines, Handling of baggage at the time of check in, Safety provided by the airlines while traveling, Quality of food served during flight are the variables included in this factor. These variables are very much important to be considered, these items guarantee the passengers and help to build the bridges of trust between passengers and airline operators.

Image

This factor contains 4 variables. The variables included in this factor are, On time arrival of flight, flight schedules, on time departure of flight and Modern appearance of aircraft. Its all about how much the airline has influenced in passenger's mind. When it comes to on time operations, that's the most ultimate requirement of any passenger who prefer airways.

Comfort & Cleanliness

This factor contains four variables. Cleanliness of the aircraft, Cleanliness and comfort of seat during flight, Uniform and Appearance of employees and Air conditioning with in the cabin are the variables which are included in this factor. This factor mainly deals with the hygiene and comfort during the flight as well as in airports.

Easiness

Four variables are included in the last factor. The variable named as waiting time at check in counters, Provision of seat as per choice, waiting time at boarding gate and Promptness of services offered by the staff are included in this factor. All these items are related to Easiness which refers to quality of being comfortable or relaxed during the journey.

Relationship among Airline Services Quality, Passenger Satisfaction and Re-flying Intention

The concepts of service quality and customer satisfaction are closely related, yet there are several differences between them. First, perceiving quality does not necessarily require the experience of the consumption. Next is the dimensions that underlie the evaluation. While quality is the result of the evaluation of rather specific dimensions, satisfaction can be judged with any dimension. In contrast, customer satisfaction is evaluated during or immediately after a particular service delivery process and is only based on that experience. In addition to it, the relation of the causal and effect shows that quality is regarded to be an antecedent of customer satisfaction. The better the service quality, the higher is the customer satisfaction. However, there are also researchers that claim that customer satisfaction leads to service quality or that the two concepts are independent from each other. Likewise, the concepts of service quality and re-flying intention are closely related. Both involve a comparison service delivered and future loyalty. However, there are some contrasts with these two: They are the dimensions or attributes that underlie the evaluation. While quality is the result of the evaluation of rather specific dimensions, re-flying intention can be judged with any dimension. In contrast, customer satisfaction is evaluated during or immediately after a particular service delivery process and is only based on that experience. Moreover, quality is considered to be an antecedent of customer re-purchase. The better the service quality, the higher is the customer loyalty. However, there are also researchers that claim that customer satisfaction leads to re-flying intention or that the two concepts are inter dependent. In this study, the first type of relationship will be tested, thus if service quality influence the re-flying intention of airline passengers. It is very important to understand the customer satisfaction for every service industry to survive in stiff competition. To understand the importance of customer satisfaction with the service quality too much initiatives have been done by the researchers since liberalization. They used satisfaction as self-actualization response and admitted that fulfillment is the final consumption goal which comprises the basic impetuses of thrust, hunger then safety. These goals can be

changed as per the time obligation in several ways. In his study clarified that when 'customer's perceived experience either matches or exceeds the customer's expectations resulting customer satisfaction'. However, when the perceived experience of a consumer exceeds to the 'excellent' level (leading to repeat business) occurs customer's loyalty. That loyalty can be called as the re-flying intention, Gratification response is an evaluation of a consumer towards a product and service perception, likewise product or service that one, delivered (or delivering) a satisfying experience to the user. Loyalty is the feelings and attitude of passengers towards the services provided by an airline which from the perception of quality of the services. It is a debate on 'overall customer attitude towards a service provider'. Rectified that satisfaction is an emotional reaction towards the customer's anticipation and perceptions. However, satisfaction is more comprehensive due to impreciseness of service quality, price, and quality of product and personal factors as well as some conditional factors. On the basis of previous studies and concepts derived by the various scholars the study squeezed that customer satisfaction is the result of excellent service attributes. This study demonstrates that passenger's satisfaction positively affects re-flying intention.

Research Problem and Need

Indian aviation sector is renowned as fifth fastest rising aviation market in the world (Hindustan Times). Moreover, it will be third largest market in passenger movement through overtaking UK by 2024, and largest by 2030. The commercial airline sub-segment has seen significant improvements in services and passenger carrying from FY 2019 to FY 2020. The year 2019-20 saw the airline industry carried 123.23 million domestic passengers (growth rate 10.76% CAGR) and 60.58 million international passengers (growth rate 8.32% CAGR). In India there is significant growth opportunities for the airline operators as economy growing at tremendous growth rate, and time is more valuable for all in snug schedule of daily life. Stiff competition and decreasing profits forced the airlines to think over improving the service quality. Because customers are very sensitive towards their needs and often there is a chance to shift to opponents that offers the better services. There is limited studies are conducted on airline perceived service quality and passenger satisfaction in Indian context. In the context of Indian aviation industry perceived service quality and passenger satisfaction became a burning research topic. The service sector is acknowledged as the tertiary sector of the economy which involves transport, hospitality and tourism, banking, airlines etc. In service industry transaction of product from production unit to the consumer is very difficult

due to its intangible nature. With this view the airlines industry is also treated as a service-oriented business, in which the product is transferred to consumer during the travel in the form of total experience and satisfaction. Due to its cyclic nature it is very difficult to accomplish by any air service provider. In the service industry to maximize profits and keep going is very difficult task for the service suppliers. That is the main reason which makes Indian aviation industry tremendously unattractive. To overcome from this problem most business executives gave more emphasis on service quality as a greater concern than product quality. Which is greatly followed by the airline operators. In 1980's many firms adopted that delivering service quality is one of the most significant marketing strategies to gain more profits. But in Indian aviation business it was neglected due to monopoly of regional carriers.

Increasing pressure for market liberalization, and due to unavailability of regional carrier's the Air Corporation act 1953 had been repealed. It requires to adopt a new policy for the aviation sector and at that moment the Indian Government, launched new open sky policy. It ended the domination of Indian airline and Air India in Indian skies. This new act is (Transfer of Undertaking and Repeal) Act, 1994 which enables the new private airlines to start their business in India. Many of rules and regulations have made it nearly impossible to adopt by the airline companies. In 1995 some private airlines had entered into the airlines business. As a result of with the end of 20th century only Jet Airlines and Air Sahara continued their business and others are shut down their operations. Confined that 'Civil Aviation in India has slowly transformed itself from a mode of transportation for the elite to an essential infrastructure necessity for the society'. In 2003, with the new phase of civil aviation of India there were first time no frill airlines commenced their business to cater the air passengers. But the definition of LCC is quite unclear because of product differentiation. In terms all the airlines are sharing a commitment to follow the 'cult of cost reduction', a low-cost business model that strips out overall costs. Emergence of LCC have not just changed the airline ticket pricing but also consumers price expectations. In 2003 Air Deccan commenced their business as low-cost carrier, which allows the middle class to fly on their wings. On the other hand, growth in GDP and per capita income improved the living standard of the middle class and directly benefited the airline industry. However, in the new competitive business environment all low-cost operators are struggling and trying to remain sustained in the market. Before liberalization all airlines in India operated with exceeding supply over demand and earned much more profits over the years till 1990s. After the open sky policy announcement more competition had confronted by

the airline carriers on both international and domestic routes, it is a big challenge faced by the industry. In India few major service industries witnessed that competitive battle was violent, then which had been seen in airline industry since 1990 deregulation act. In 2007 due to the stiff competition, it is obligated for the airlines to merge with well-established operators.

High quality service directly influenced an organization and it will help in retaining their customers and sustained market share. It is very important for any airlines to now the expectations of their passengers about their services, and delivery of high service quality is essential to survive. Service quality and passenger satisfaction is the excellent asset for any airline carrier in today's uncertain settings, if the passengers are not satisfied with the on-board experience there is more chances to shift to other airlines and obligate to rethink over their purchasing decision. The research on service quality and customer satisfaction is the need of time in airline business, because it will play a crucial role in profit maximizing and to sustain in the business in airlines industry. Nowadays, airline business is getting more competitive and very difficult to cater the needs of passengers in all aspects. Especially in-service oriented industries managers were realized that to win customers faith, they have to adopt new strategies to approaching more and more customers. Re-flying intention of the customers is another main aspect in airline business. There is a huge amount of research studies carried out to examining the airlines service quality and its effect on passenger satisfaction. But in India such studies are not much carried out, Especially in Low-Cost Airlines operating in India. This study made an attempt to conduct a scientific inquiry to scrutinize the effect of the services quality provided by the low-cost airlines and its effect on customer satisfaction and their re-flying intention.

Research Methodology

Objectives

- To classify the demographics of airline passengers based on Airline operators, travelling class and travelling sector.
- To evaluate the impact of services quality of airline operators on customer satisfaction and re-flying intention.
- To propose a best multidimensional model of investigating the effect among the services quality, satisfaction and re-flying intention.
- To give suitable suggestions and recommendations to the low-cost airline operators to enhance their services quality.

Hypotheses (H₀)
Figure-1: Hypothesis of Competing Model-1

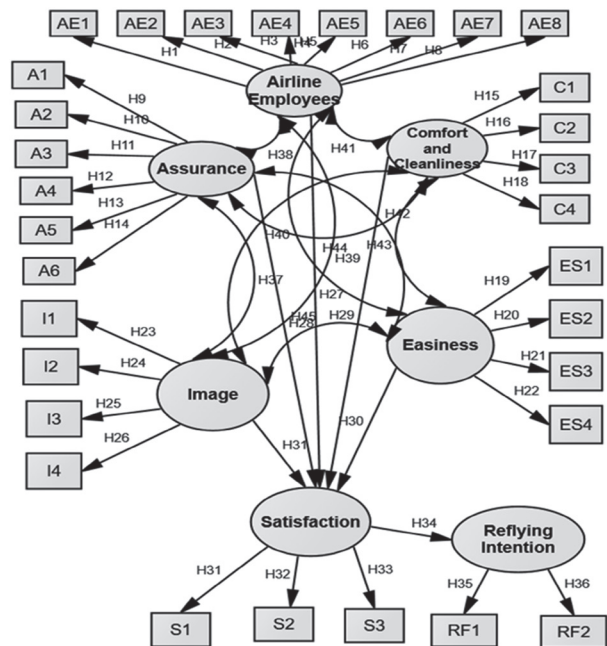


Figure-2: Hypothesis of Competing Model-2

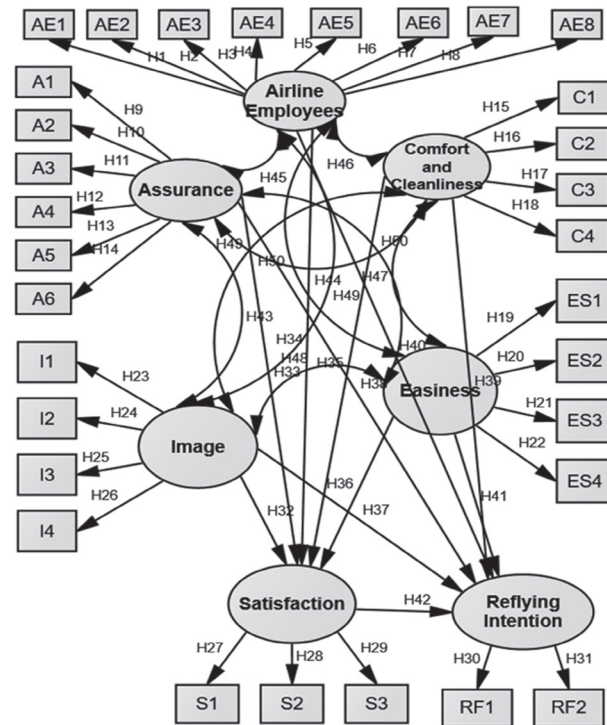


Figure-3: Hypothesis of Competing Model-3

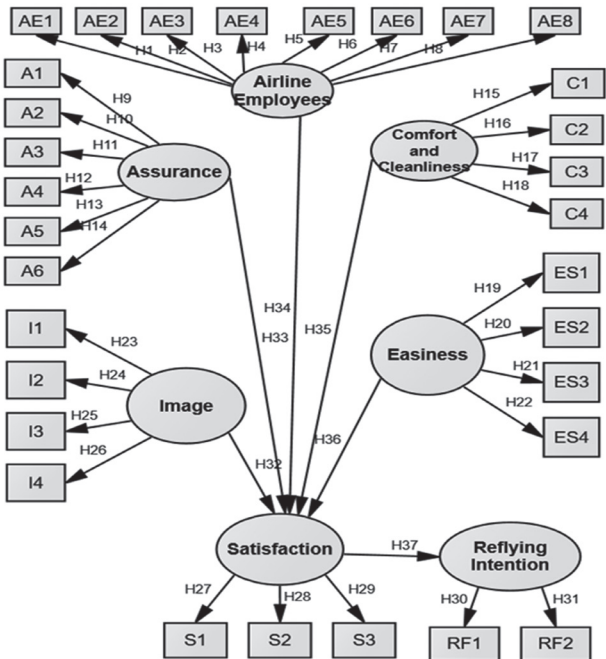
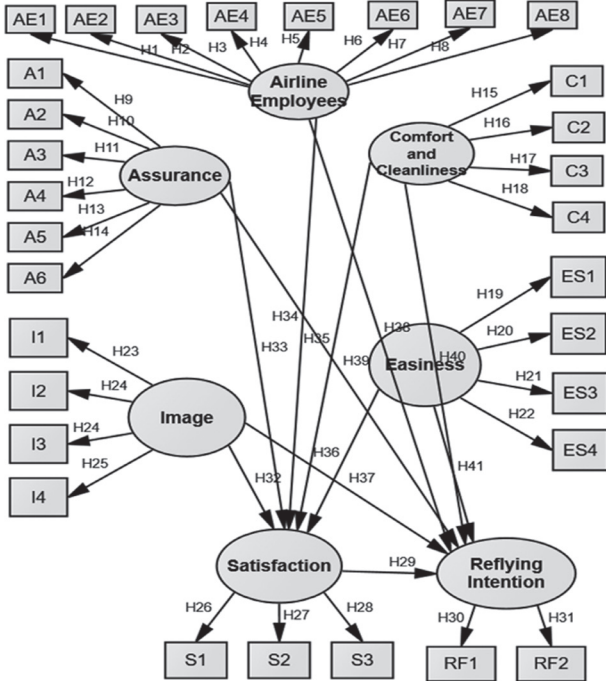


Figure-4: Hypothesis of Competing Model-4



Pilot Study

The authors prepared a draft questionnaire to evaluate the impact of services quality on passenger satisfaction and their re-flying intention. But the authors only include the 26 services quality items under 5 dimensions in the draft questionnaire, which are anchored at five-point Linkert scale. 35 passengers were randomly selected based upon the airlines namely IndiGo, SpiceJet, GoAir and Air India / Express which they travelled recently, and the draft questionnaire was issued to the passengers for the purpose of computing the lower limit of the sample size for the research study.

Sampling Framework

The authors conducted a sample survey to evaluate the impact of service quality on passenger satisfaction and their Re-Flying Intention. For this, purposive sampling method is adopted. This comes under the non-probabilistic sampling technique. The passengers who travel in IndiGo, SpiceJet, Go Air and Air India / Express airlines are focused in the study.

Sample Size Determination

$n = \left(\frac{Z \times s}{e} \right)^2$ determine the sample size, the following formula was used:

Where,

n is the sample size

Z is the standard normal variate (0.05) at 5% significance level

e is the allowable sampling error at 5% and

s is the standard deviation (0.366)

Based on the pilot study, the standard deviation of the raw services quality of 26 items is (0.36614) and substitute the Z , e and s in the above-mentioned formula, we will get the lower limit of the required sample size to conduct the sample survey for this research study is 206.

Data Collection and Instrumentation

A well-structured Questionnaire was prepared. After finishing the pilot study, the shortcomings are rectified. The finalized questionnaire is classified into three parts, the first part comprises the questions regarding personal and demographic profile (10) of Airline Passengers. The second part comprises the conceptual questions under 5 dimensions namely Airline employees, Assurance, Image, Comfort & cleanliness and Easiness. In order to evaluate the effect services quality on satisfaction and re-flying intention, the authors raised 3 and 2 items respectively. All these items were anchored at five-point Linkert scale from (1 to 5). The authors collected data from the passengers with the help of printed questionnaire through the google forms.

Data Analysis

After the completion of the data collection, computerized data analysis was conducted with the help of famous statistical software IBM SPSS 25 and AMOS 25. The variables code of each variable under different dimensions are given in the following Table-1. At stage 1, the univariate and multivariate normality of the Airline Services Quality Items, Satisfaction items, Re-flying Intention items were checked by using Shapiro-Wilk test, Mardia's multivariate Skewness, Kurtosis and Henze Zirkler test respectively. Similarly, the reliability of the Likert scaled conceptual items are also checked based on 5 dimensions of services quality by using Cronbach's Alpha and Tukey's Test of non-additivity, Hotellings T-Square test are also employed. In stage 2, Cross tabulations were prepared based on the personal and demographic factors of the airline passengers. In the final stage, Structural equation models were fitted to scrutinize the multi-dimensional impact among airline services quality, satisfaction and Re-flying intention by using competing model strategy. 4 different Structural models were fitted with indicators and constructs under different assumptions and one among the best model is selected based on the information criteria.

Table-1: Personal and Demographic Profile of Airline Passengers Based on Travelling Class

Factors	Categories	Travelling Class		Total
		Business Class (n=20)	Economy Class (n=186)	
Age	20-30	7 (35.0%)	90 (48.4%)	97 (47.1%)
	31-40	9 (45.0%)	49 (26.3%)	58 (28.2%)
	41-50	3 (15.0%)	34 (18.3%)	37 (18.0%)
	Above 50	1 (5.0%)	13 (7.0%)	14 (6.8%)
Gender	Male	17 (85.0%)	145 (78.0%)	162 (78.6%)
	Female	3 (15.0%)	41 (22.0%)	44 (21.4%)
	Up to 10+2	4 (20.0%)	28 (15.1%)	32 (15.5%)
Education Qualification	Diploma	1 (5.0%)	6 (3.2%)	7 (3.4%)
	UG	8 (40.0%)	67 (36.0%)	75 (36.4%)
	PG	7 (35.0%)	81 (43.5%)	88 (42.7%)
	Other	0 (0.0%)	4 (2.2%)	4 (1.9%)
Annual Income	Up to 3 Lakhs	1 (5.0%)	78 (41.9%)	79 (38.3%)
	3 to 6 Lakhs	0 (0.0%)	36 (19.4%)	36 (17.5%)
	6 to 10 Lakhs	1 (5.0%)	37 (19.9%)	38 (18.4%)
	Above 10 Lakhs	18 (90.0%)	35 (18.8%)	53 (25.7%)
Flights per Year	1 to 5 Flights	8 (40.0%)	127 (68.3%)	135 (65.5%)
	6 to 10 Flights	3 (15.0%)	30 (16.1%)	33 (16.0%)
	11 to 15 Flights	3 (15.0%)	10 (5.4%)	13 (6.3%)
	15 or more flights	6 (30.0%)	19 (10.2%)	25 (12.1%)
	Price	1 (5.0%)	84 (45.2%)	85 (41.3%)
Reason for Choosing the Airline	Flight Services	13 (65.0%)	54 (29.0%)	67 (32.5%)
	Flight Time	0 (0.0%)	0 (0.0%)	0 (0.0%)
	Safety	1 (5.0%)	13 (7.0%)	14 (6.8%)
	Employee's Attitude	0 (0.0%)	2 (1.1%)	2 (1%)
	Exact Time	5 (25.0%)	33 (17.7%)	38 (18.4%)
	Others	0 (0.0%)	0 (0.0%)	0 (0.0%)

Table-2: Test of Univariate Normality for Airline Services Quality items

Dimensions	Items	SW Test
Airline Employees	Employees Knowledge for Queries	0.703*
	Behavior of Employees	0.604*
	Willingness to help Passengers	0.734*
	Understanding Passengers Needs	0.817*
	Attractive Languages used by Employees	0.740*
	Right services at Exact Time	0.704*
	Individual attention to the passengers	0.823*
	Accessibility in Contacting Staffs	0.727*
Assurance	Minimum Delivery time of Baggage's	0.855*
	Reasonable Ticket Price	0.861*
	Handling of baggage during Check-in	0.864*
	Adequate Safety while traveling	0.790*
	Good Food Quality	0.832*
Image	Comfortable and Safety transactions	0.774*
	Arrival at Exact Time	0.847*
	Clear Flight Schedules	0.824*
	Promised Time Departure	0.829*
	Aircraft Appearance	0.849*
Comfort & Cleanliness	Cleanliness of the aircraft	0.820*
	Comfortable Seats	0.679*
	Attractive Employees Appearance	0.748*
	Cabin Air Conditioning	0.748*
Easiness	Waiting time at check in counters	0.823*
	Seats as per Choice	0.877*
	Tolerable Waiting time	0.815*
	Prompt services Provided	0.726*

*p-value <0.01 SW-Shapiro Wilk

Table-3: Test of Univariate Normality for Satisfaction, Re-Flying Intention Items

Dimensions	Items	SW Test
Satisfaction	Passenger Experience Satisfaction	0.756*
	Flight services Satisfaction	0.686*
	In-flight food and beverages Satisfaction	0.852*
Re-Flying Intention	Re-usage	0.744*
	Recommendation	0.843*

*p-value <0.01

Table-4: Test of Multivariate Normality for Airline Services Quality, Satisfaction, Re-Flying Intention Items

Construct	Test Name	Coefficients	Test Statistics
Airline Services Quality	Mardia Skewness	254.656	8,880.034*
	Mardia Kurtosis	931.635	38.298*
	Henze-Zirkler	-	1.889*
	Mardia Skewness	5.720	200.686*
Satisfaction	Mardia Kurtosis	26.123	14.573*
	Henze-Zirkler	-	15.485*
	Mardia Skewness	3.044	107.063*
Re-Flying Intention	Mardia Kurtosis	13.075	9.105*
	Henze-Zirkler	-	13.879*

*p-value <0.01

Table-5: Test of Reliability, Tukey's Test of Non-additivity and Hotelling's T-Squared test for Airline Services Quality Items

Concept	Dimensions	Number of Items	Reliability Statistics	Tukey's Test of Non-Additivity	Hotelling's T-Squared Test	
			Cronbach's Alpha	F-Statistic	T square Statistic	F-Statistic
Airline Services Quality	Airlines Employees	8	0.717	34.947*	58.690	8.139*
	Assurance	6	0.659	15.803*	82.624	16.202*
	Image	4	0.697	0.309**	4.511	1.489
	Comfort & Cleanliness	4	0.606	0.971**	39.359	12.992*
	Easiness	4	0.619	26.259*	26.789	8.842*
	Overall	26	0.885	43.387*	283.278	10.005*

*p-value <0.01, **p-value <0.05

Table-6: Variables Labelling

Dimensions	Variable Name	Variable Label
Airlines Employees	Employees Knowledge	AE 1
	Behavior of Employees	AE 2
	willingness to help passengers	AE 3
	Understanding Passengers Needs	AE 4
	Attractive Languages used by Employees	AE 5
	Right services at exact time	AE 6
	Individual attention to the passengers	AE 7
	Accessibility in Contacting Staffs	AE 8
Assurance	Minimum Delivery time of Baggage's	A1
	Reasonable Ticket Price	A2
	Handling of baggage during Check-in	A3
	Adequate Safety while traveling	A4
	Good Food Quality	A5
	Comfortable and Safety transactions	A6
Comfort & Cleanliness	Cleanliness of the aircraft	C1
	Comfortable Seats	C2
	Attractive Employees Appearance	C3
	Attractive Employees Appearance	C4
Easiness	Waiting time at check in counters	ES1
	Seats as per Choice	ES2
	Tolerable Waiting time	ES3
	Prompt services by Employees	ES4
Image	Arrival at Exact Time	I1
	Clear Flight Schedules	I2
	Promised Time Departure	I3
	Aircraft Appearance	I4
Satisfaction	Passenger Experience Satisfaction	S1
	Flight Services Satisfaction	S2
	In-Flight Food and Beverage Satisfaction	S3
Re-flying Intention	Re Usage	RF1
	Recommendation	RF2

Fitted Structural Equation Model shows the Multi-dimensional Impact of Airline Services Quality on Passengers Satisfaction and Re-Flying Intention.

Figure-5: Path Diagram of Fitted Competing Model-I

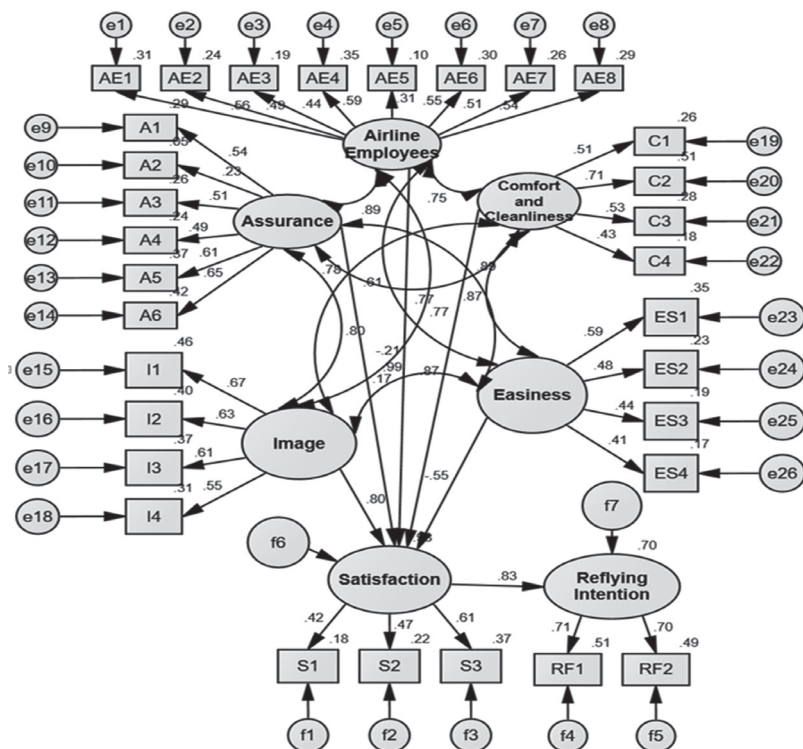


Table-7: Results of Fitted Competing Model-I

Constructs	Path Label	Indicators	Std. Path Coefficient	Standard Error	Critical Ratio	p-value
Airlines Employees	← AE 1	Employees Knowledge	.561	-	-	-
	← AE 2	Behavior of Employees	.488	.157	5.617	0.00
	← AE 3	willingness to help passengers	.436	.167	5.146	0.00
	← AE 4	Understanding Passengers Needs	.593	.234	6.472	0.00
	← AE 5	Attractive Languages by Employees	.309	.189	3.838	0.00
	← AE 6	Right services at exact time	.551	.182	6.149	0.00
	← AE 7	Individual attention to the passengers	.514	.258	5.844	0.00
	← AE 8	Accessibility in Contacting Staffs	.541	.206	6.066	0.00
Assurance	← A1	Minimum Delivery time of Baggage's	.538	.177	6.633	0.00
	← A2	Reasonable Ticket Price	.233	.143	3.033	.002
	← A3	Handling of baggage during Check-in	.511	.152	6.346	0.00
	← A4	Adequate Safety while traveling	.487	.122	6.073	0.00
	← A5	Good Food Quality	.609	.177	7.377	0.00
	← A6	Comfortable and Safety transactions	.650	-	-	-

Constructs	Path	Label	Indicators	Std. Path Coefficient	Standard Error	Critical Ratio	p-value
Comfort & Cleanliness	←	C1	Cleanliness of the aircraft	.514	-	-	-
	←	C2	Comfortable Seats	.712	.237	6.535	0.00
	←	C3	Attractive Employees Appearance	.527	.196	5.524	0.00
	←	C4	Attractive Employees Appearance	.426	.164	4.773	0.00
Image	←	ES1	Waiting time at check in counters	.593	-	-	-
	←	ES2	Seats as per Choice	.479	.155	6.131	0.00
	←	ES3	Tolerable Waiting time	.437	.122	5.671	0.00
	←	ES4	Prompt services by Employees	.411	.107	5.383	0.00
	←	I1	Arrival at Exact Time	.675	.164	6.946	0.00
	←	I2	Clear Flight Schedules	.633	.149	6.679	0.00
	←	I3	Promised Time Departure	.606	.151	6.492	0.00
	←	I4	Aircraft Appearance	.554	-	-	-
Satisfaction	←	S1	Passenger Experience Satisfaction	.425	.089	5.518	0.00
	←	S2	Flight Services Satisfaction	.470	.081	6.027	0.00
	←	S3	In-Flight Food and Beverage Satisfaction	.607	-	-	-
Re-flying Intention	←	RF1	Re Usage	.712	.130	8.102	0.00
	←	RF2	Recommendation	.700	-	-	-
Satisfaction	←		Airline Employees	-.208	.617	-.684	.494
	←		Assurance	.167	.443	.495	.621
	←		Easiness	-.553	.427	-1.632	.103
	←		Comfort and Cleanliness	.875	.502	2.706	.007
	←		Image	.797	.413	2.142	.032
Re-flying Intention	←		Satisfaction	.834	.116	7.212	0.00

Fitted Structural Equation Model shows the Multi-dimensional Impact of Airline Services Quality on Passengers Satisfaction and Re-Flying Intention.

Figure-6: Path Diagram of Fitted Competing Model-2

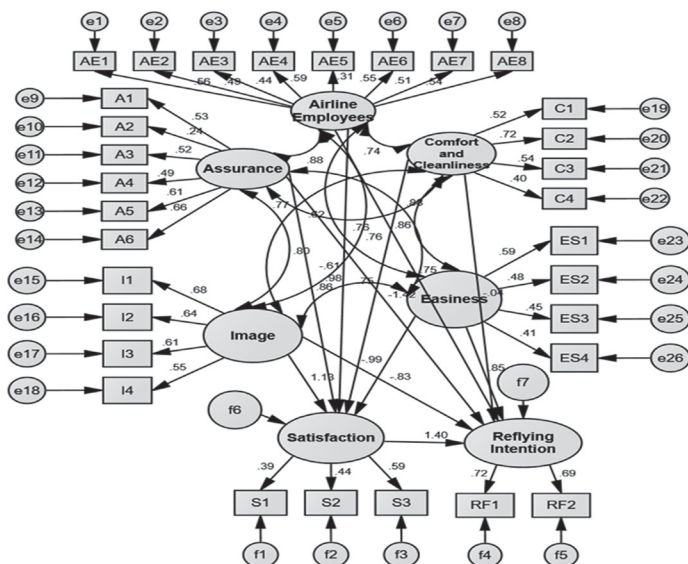


Table-8: Results of Fitted Competing Model-2

Constructs	Path	Label	Indicators	Path Coefficient	Standard Error	Critical Ratio	p-value
Airlines Employees	←	AE 1	Employees Knowledge	.558	-	-	-
	←	AE 2	Behavior of Employees	.489	.159	5.605	0.00
	←	AE 3	willingness to help passengers	.438	.168	5.150	0.00
	←	AE 4	Understanding Passengers Needs	.594	.237	6.444	0.00
	←	AE 5	Attractive Languages by Employees	.308	.191	3.824	0.00
	←	AE 6	Right services at exact time	.553	.184	6.130	0.00
	←	AE 7	Individual attention to the passengers	.512	.260	5.798	0.00
	←	AE 8	Accessibility in Contacting Staffs	.544	.208	6.060	0.00
Assurance	←	A1	Minimum Delivery time of Baggage's	.531	.173	6.605	0.00
	←	A2	Reasonable Ticket Price	.237	.141	3.084	.002
	←	A3	Handling of baggage during Check-in	.517	.150	6.446	0.00
	←	A4	Adequate Safety while traveling	.489	.120	6.137	0.00
	←	A5	Good Food Quality	.606	.174	7.408	0.00
	←	A6	Comfortable and Safety transactions	.657	-	-	-
Comfort & Cleanliness	←	C1	Cleanliness of the aircraft	.516	-	-	-
	←	C2	Comfortable Seats	.719	.236	6.602	0.00
	←	C3	Attractive Employees Appearance	.543	.196	5.660	0.00
	←	C4	Attractive Employees Appearance	.403	.160	4.588	0.00
Easiness	←	ES 1	Waiting time at check in counters	.588	-	-	-
	←	ES 2	Seats as per Choice	.484	.158	6.141	0.00
	←	ES 3	Tolerable Waiting time	.447	.125	5.746	0.00
	←	ES 4	Prompt services by Employees	.411	.108	5.345	0.00
Image	←	I1	Arrival at Exact Time	.677	.165	6.930	0.00
	←	I2	Clear Flight Schedules	.636	.150	6.676	0.00
	←	I3	Promised Time Departure	.606	.152	6.472	0.00
	←	I4	Aircraft Appearance	.553	-	-	-
Satisfaction	←	S1	Passenger Experience	.389	.086	5.431	0.00
	←	S2	Satisfaction	.436	.078	5.995	0.00
	←	S3	Flight Services Satisfaction	.436	.078	5.995	0.00
Re-flying Intention	←	S3	In-Flight Food and Beverage Satisfaction	.586	-	-	-
	←	RF1	Re Usage	.723	.132	8.232	0.00
Satisfaction	←	RF2	Recommendation	.689	-	-	-
	←		Airline Employees	-.613	.969	-1.248	.212
	←		Assurance	.864	.723	1.496	.135
	←		Easiness	-.992	.649	-1.879	.060
	←		Comfort and Cleanliness	.745	.629	1.768	.077
	←		Image	1.131	.595	2.041	.041
	←		Satisfaction	1.400	1.460	.984	.325
Re-flying Intention	←		Image	-.833	1.697	-.541	.588
	←		Assurance	-1.425	1.834	-.999	.318
	←		Airline Employees	.755	1.956	.781	.435
	←		Comfort & Cleanliness	-.038	1.533	-.038	.970
	←		Easiness	.846	1.653	.646	.519

Fitted Structural Equation Model shows the Multi-dimensional Impact of Airline Services Quality on Passengers Satisfaction and Re-Flying Intention.

Figure-7: Path Diagram of Fitted Competing Model-3

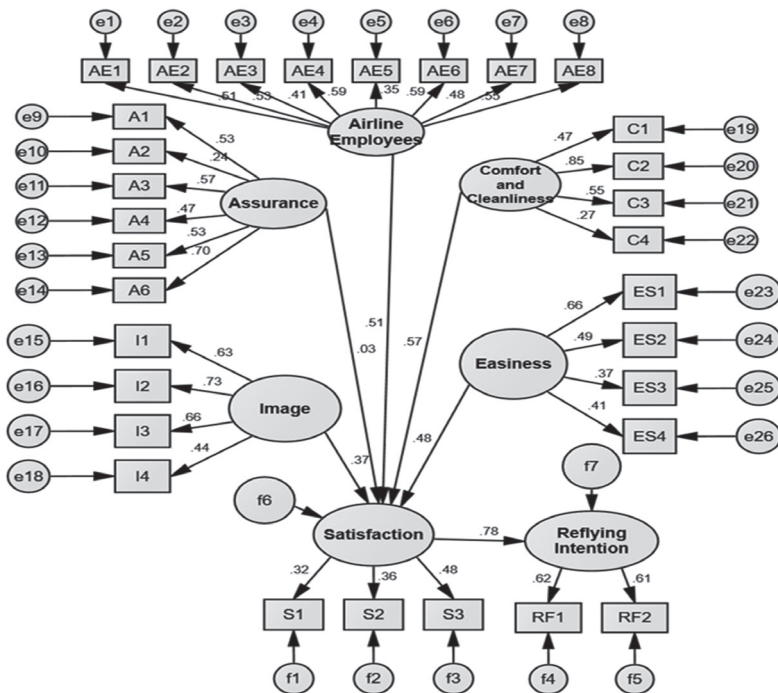


Table-9: Results of Fitted Competing Model-3

Constructs	Path Label	Indicators	Path Coefficient	Standard Error	Critical Ratio	p-value
Airlines Employees	← AE1	Employees Knowledge	.513	-	-	-
	← AE2	Behavior of Employees	.526	.202	5.161	0.00
	← AE3	Willingness to help passengers	.410	.202	4.371	0.00
	← AE4	Understanding Passengers Needs	.593	.301	5.522	0.00
	← AE5	Attractive Languages by Employees	.345	.232	3.834	0.00
	← AE6	Right services at exact time	.594	.239	5.527	0.00
	← AE7	Individual attention to the passengers	.484	.317	4.896	0.00
	← AE8	Accessibility in Contacting Staffs	.548	.262	5.285	0.00
Assurance	← A1	Minimum Delivery time of Baggage's	.531	.191	5.667	0.00
	← A2	Reasonable Ticket Price	.240	.147	2.842	.004
	← A3	Handling of baggage during Check-in	.567	.169	5.912	0.00
	← A4	Adequate Safety while traveling	.472	.129	5.189	0.00
	← A5	Good Food Quality	.533	.189	5.677	0.00
	← A6	Comfortable and Safety transactions	.695	-	-	-
Comfort & Cleanliness	← C1	Cleanliness of the aircraft	.472	-	-	-
	← C2	Comfortable Seats	.846	.384	5.220	0.00
	← C3	Attractive Employees Appearance	.550	.240	5.125	0.00
	← C4	Attractive Employees Appearance	.268	.172	3.100	.002

Constructs	Path Label	Indicators	Path Coefficient	Standard Error	Critical Ratio	p-value
Easiness	← ES 1	Waiting time at check in counters	.662	-	-	-
	← ES 2	Seats as per Choice	.495	.210	4.200	0.00
	← ES 3	Tolerable Waiting time	.374	.148	3.601	0.00
	← ES 4	Prompt services by Employees	.409	.134	3.819	0.00
Image	← I1	Arrival at Exact Time	.632	.273	4.942	0.00
	← I2	Clear Flight Schedules	.730	.284	5.108	0.00
	← I3	Promised Time Departure	.659	.269	5.008	0.00
	← I4	Aircraft Appearance	.437	-	-	-
Satisfaction	← S1	Passenger Experience Satisfaction	.319	.139	3.547	0.00
	← S2	Flight Services Satisfaction	.358	.126	3.871	0.00
	← S3	In-Flight Food and Beverage Satisfaction	.482	-	-	-
Re-flying Intention	← RF1	Re Usage	.622	.199	5.266	0.00
	← RF2	Recommendation	.612	-	-	-
Satisfaction	← Airline Employees		.511	.208	3.905	0.00
	← Assurance		.035	.081	.374	.709
	← Easiness		.484	.111	3.514	0.00
	← Comfort and Cleanliness		.565	.171	4.001	0.00
	← Image		.372	.121	3.105	.002
	← Satisfaction		.777	.185	4.662	0.00

Fitted Structural Equation Model shows the Multi-dimensional Impact of Airline Services Quality on Passengers Satisfaction and Re Flying Intention.

Figure-8: Path Diagram of Fitted Competing Model-4

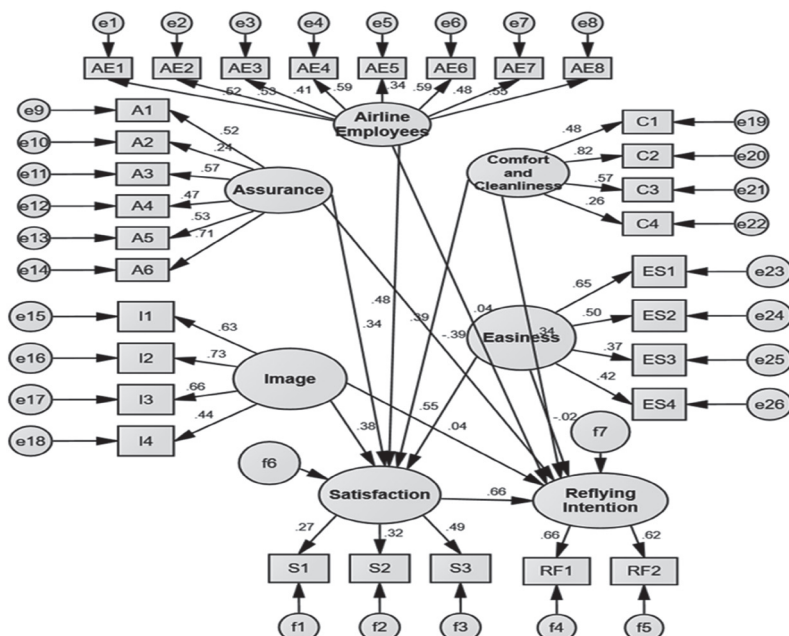


Table-10: Results of Fitted Competing Model-4

Constructs	Path	Label	Indicators	Path Coefficient	Standard Error	Critical Ratio	p-value
Airlines Employees	←	AE1	Employees Knowledge	.515	-	-	-
	←	AE2	Behavior of Employees	.528	.201	5.177	0.00
	←	AE3	willingness to help passengers	.409	.201	4.365	0.00
	←	AE4	Understanding Passengers Needs	.592	.298	5.525	0.00
	←	AE5	Attractive Languages by Employees	.343	.231	3.813	0.00
	←	AE6	Right services at exact time	.593	.237	5.533	0.00
	←	AE7	Individual attention to the passengers	.484	.315	4.903	0.00
	←	AE8	Accessibility in Contacting Staffs	.546	.260	5.285	0.00
Assurance	←	A1	Minimum Delivery time of Baggage's	.515	.182	5.665	0.00
	←	A2	Reasonable Ticket Price	.244	.143	2.915	.004
	←	A3	Handling of baggage during Check-in	.566	.162	6.057	0.00
	←	A4	Adequate Safety while traveling	.468	.124	5.252	0.00
	←	A5	Good Food Quality	.534	.181	5.819	0.00
	←	A6	Comfortable and Safety transactions	.709	-	-	-
Comfort & Cleanliness	←	C1	Cleanliness of the aircraft	.483	-	-	-
	←	C2	Comfortable Seats	.822	.352	5.415	0.00
	←	C3	Attractive Employees Appearance	.566	.238	5.211	0.00
	←	C4	Attractive Employees Appearance	.260	.169	3.008	.003
Easiness	←	ES1	Waiting time at check in counters	.647	-	-	-
	←	ES2	Seats as per Choice	.500	.215	4.238	0.00
	←	ES3	Tolerable Waiting time	.374	.151	3.610	0.00
	←	ES4	Prompt services by Employees	.415	.137	3.863	0.00
Image	←	I1	Arrival at Exact Time	.631	.272	4.947	0.00
	←	I2	Clear Flight Schedules	.729	.283	5.116	0.00
	←	I3	Promised Time Departure	.660	.269	5.018	0.00
	←	I4	Aircraft Appearance	.438	-	-	-
Satisfaction	←	S1	Passenger Experience Satisfaction	.270	.138	3.063	.002
	←	S2	Flight Services Satisfaction	.325	.125	3.563	0.00
	←	S3	In-Flight Food and Beverage Satisfaction	.494	-	-	-
Re-flying Intention	←	RF1	Re Usage	.655	.176	6.138	0.00
	←	RF2	Recommendation	.624	-	-	-
Satisfaction	←		Airline Employees	.482	.227	3.334	0.00
	←		Assurance	.343	.112	2.609	.009
	←		Easiness	.551	.137	3.304	0.00
	←		Comfort and Cleanliness	.393	.163	2.829	.005
	←		Image	.381	.141	2.685	.007
	←		Satisfaction	.655	3.139	.245	.806
	←		Easiness	-.020	1.429	-.013	.989
	←		Image	.040	1.200	.039	.969
Re-flying Intention	←		Assurance	-.392	.937	-.418	.676
	←		Airline Employees	.038	2.383	.029	.977
	←		Comfort & Cleanliness	.340	1.451	.322	.748

Table-1 I: Fit Indices and Model Selection

Competing Models	*Minimum Chi-square	df	RMR	RMSEA	GFI	AGFI	Information Criteria			Rank
							AIC	BIC	CAIC	
1	943.814	419	0.054	.078	0.780	0.740	1097.814	1354.060	1431.060	1
2	934.443	414	.053	.078	0.785	0.742	1098.443	1371.778	1453.328	2
3	1377.204	429	0.165	0.104	0.693	0.645	1511.204	1734.171	1801.171	3
4	1367.931	424	0.165	0.104	0.696	0.644	1511.931	1751.538	1823.538	4

*p-value<0.01, df-degrees of freedom, RMR-Root mean Residual; RMSEA-Root mean square error of Approximation, GFI-Goodness of fit Index; AGFI-Adjusted Goodness of fit Index, AIC-Akaike Information criterion; BIC-Bayesian Information criterion, CAIC-Consistent Akaike Information criterion

Discussion

Table-2 exhibits the results of univariate normality of five dimensions of service quality such as Airline Employees, Assurance, Image, Comfort and Cleanliness and Easiness. Shapiro-Wilk test was conducted to test the univariate normality. The result shows that it departs from Normal distribution at 1% level of significance. Therefore, it is assumed that the variables follow a univariate normal distribution. Similarly, Table-3 exhibits the results of univariate normality of two dimensions of Satisfaction and Re-Flying intention. Shapiro-Wilk test was conducted to test the univariate normality. The result shows that it also departs from Normal distribution at 1% level of significance. Therefore, it is assumed that the variables follow a univariate normal distribution. Table-4 visualizes the results of multivariate normality of five dimensions of airline service quality such as Airline Employees, Assurance, Image, Comfort and Cleanliness and Easiness. The two dimensions Satisfaction and Re-Flying Intention also considered for the test. Mardia's Skewness, Kurtosis and Henze Zirkler test was conducted to test the multivariate normality. The result shows that it departs from Normal distribution. Therefore, it is assumed that the variables follow a multivariate normal distribution. Table-5 exhibits the results of test of reliability, Tukey's test of Non-additivity, Hotelling's T-Squared test of variables and dimensions of service quality such as Airline Employees, Assurance, Image, Comfort and Cleanliness and Easiness. The result of reliability shows the items under services quality are highly consistent. The result of Tukey's test of Non-additivity emphasizes the use of the arithmetic mean to all the conceptual items are meaningful. The result of Hotelling's T-Squared test confirms that the conceptual items are different from one another and it conveys exact and respective meaning to the items. Table-7 shows the result of structural equation modeling along with the path diagram of fitted Competing model-1 visualizes the multi-dimensional impact of airline services quality on the passenger satisfaction and their Re-Flying intention. It is inferred that the services quality items under each dimension are significant positive impact. Moreover, the In-flight food and

beverages positively increase the satisfaction of airline passengers followed by flight services satisfaction and passenger experience satisfaction. In the same manner, the variable Recommendation made significant influence on the re flying intention of the airline passengers followed by the variable Re-Usage. Among those five dimensions of services quality, the comfort and cleanliness and image contributed positively to the satisfaction of passengers. Finally, the satisfaction of airline passengers gives a positive impact on their Re-Flying Intention. Table-8 elucidates the result of structural equation modeling along with the path diagram of Competing model 2 visualizes the multi-dimensional impact of airline services quality on the passenger satisfaction and their Re-Flying intention. Moreover, the In-flight food and beverages positively increase the satisfaction of airline passengers followed by flight services satisfaction and passenger experience satisfaction which significantly triggered their satisfaction. In the same manner the variable Recommendation significantly influence the re flying intention of the airline passengers at followed by the variable Re-Usage. Among those five dimensions of services quality the image and Assurance contributed positively to the satisfaction of passengers. Finally, the satisfaction of airline passengers gives a positive impact on their Re-Flying Intention. Table-9 exemplifies the result of structural equation modeling along with the path diagram of fitted competing model 3 visualizes the multi-dimensional impact of airline services quality on the passenger satisfaction and their Re-Flying intention. Moreover, the In-flight food and beverages positively increase the satisfaction of airline passengers followed by flight services satisfaction and passenger experience satisfaction which significantly triggered their satisfaction. In the same manner the variable Re-Usage significantly influence the re flying intention of the airline passengers followed by the variable Recommendation. Among those five dimensions of services quality the Comfort & Cleanliness and Airline Employees contributed positively to the satisfaction of passengers. Finally, the satisfaction of airline passengers gives a positive impact on their Re-Flying Intention. Table-10 exhibits the result of structural equation modeling along with the path diagram of competing model-4 visualizes the multi-dimensional impact of airline services quality on the passenger satisfaction and their Re-Flying intention. Moreover, the In-flight food and beverages positively increase the satisfaction of airline passengers followed by flight services satisfaction and passenger experience satisfaction which significantly triggered their satisfaction. In the same manner the variable Re-Usage significantly influence the re flying intention of the airline passengers followed by the variable Recommendation. Among those five dimensions of services quality the Easiness and Airline Employees contributed positively to the

satisfaction of passengers. Finally, the satisfaction of airline passengers gives a positive impact on their Re-Flying Intention. Table-10 shows the fit indices of the fitted competing models and various model selection criteria which helps to know the performance, Goodness of fit, Parsimony and to finalize and select a best fitted competing models. Among the various fitted models, for model-1, the RMR and RMSEA are close to a recommended level of 0 and the GFI, AGFI are close to a recommended level of 1. Moreover, the AIC, BIC, CAIC are minimum for the fitted model-1 when compared it with others. This shows the information loss between the true model and fitted model is least when compare to the fitted model-2, 3 and 4. Hence, the fitted model-1 is the best which it can be used to evaluate the impact of airline services quality on the satisfaction and re-flying intention of the Indian Airline passengers.

Recommendations

Based on the major findings extracted from the analysis, the authors suggested the recommendations that will be feasible to the managers of low-cost airlines.

Passenger Experience Satisfaction

Under the airline employees' dimension, the result of the analysis reveals the employee's knowledge is not adequate to meet the queries raised by passengers. In order to overcome this problem, the airline management should take necessary steps such as recruit right person for the job, give proper training to the employees as per the needs. Willingness of the employees to help the passengers is not as expected. To overcome this problem the supervisors, have to take care of the employees by delegating specified works to each and every one. In order to overcome the hindrances of the services which are not provided by the employees to the passengers at exact time, works can be delegated to the employees and be attentive all times. Whenever a person is in need of any service, employees have to do it as earliest as possible. Every airline operator they are providing the services but what actually matters is whether it's on right time or not. by tackling the delivery time of baggage which is very high during checkout, the ground staffs who is working with the handling of baggage's have to give much attention to reduce the inconvenience faced by the passengers. Adequate safety measures are not providing by the airlines to the passengers while travelling. To get rid of this issue airline management can increase the safety measures, like some full services airlines are providing visual presentation to the passengers about the safety measures, this type of guidelines will help the passengers feels that they are safe during the flights. Quality of the

food served during the flight is another variable which impact negatively. To overcome this quality checks can be conducted randomly and monitor the catering companies' services regularly. By introducing new attractive uniforms and providing separate sessions regarding grooming, etc will result in good appearance of employees. Passengers are not much satisfied about the air conditioning in cabin. To solve this problem the cabin crews can ask the passengers randomly about are they satisfied about the cabin temperature, and technical team have to take care of it.

Flight Services Satisfaction

During their journey, passengers are much worried about the handling of their baggage while check in, to get the better of this airline employees have to give more attention about this. in some carriers they are outsourcing the ground handling to other companies, in such cases the airline management want to keep a good supervision about this. Most of the people are using airways to travel for saving their precious time, but the late arrivals of flight always make the passengers unsatisfied. In order to overcome this issue airlines, want try to manage the time maximum. Flights schedules may change anytime due to many reasons, it may be because of the climate, sometimes it happens because of technical issues too. To conquer this problem the airline management, have to keep updating personally to the passengers about the delays, cancellations, or arrange seats in upcoming flights for the needy passengers. Passengers are not much happy with the waiting time they spent at check in counters. To clear up this issue airline management can provide online check-in options through websites, mobile apps, and kiosk points placed in various parts of the airports. Now a days some of the airlines are charging for counter check-in to avoid crowd at check-in counters due to COVID-19 Pandemic.

In-flight Food and Services Satisfaction

Cleanliness of the air craft is resulting a negative impact on in flight food and services satisfaction, to make the results into a positive aspect airline management have to focus more on the cleanliness because people always expect a clean ambience especially while having food. Quality of food is also a matter but it can be compensated with the help of monitoring in a regular basis

Re-usage of Airlines

Passengers are not satisfied with the language skills of the employees. So figure out this problem they have to hire the employees (especially cabin-crews and ground staffs) who is having multi lingual skills along with local language skills too. ticket price is another factor influencing re usage of the

airline. People always compare the prices of the airlines before booking their tickets. By providing cashbacks (with the support of third-party payment gateways) loyalty programme, or provide additional discounts on hotel bookings by linking with hotel chains all over the country. Another way is to set the prices a bit lower than the competitors that will help them to be in the first row while the people look the tickets for cheapest rates.

Recommendation of Airlines to Others

Selecting of seats as per choice is a factor which influence the recommendation of passengers to other people. As a solution many airlines are providing an option for selecting the seats at the time of booking itself by paying a small charge, and may of the passengers are not aware about these types of services, while booking the tickets with agents, they will try to give the tickets in cheaper rates without informing about all these services. So, the airline management can go for advertisements which helps to passengers aware about these types of services. Some airlines are providing options to select seats with the help of their PNR number in airline websites as well as in mobile applications. As per the response from the passengers waiting time at boarding gate is not bearable. As we know boarding into the aircraft is the last task in an airport. When the airlines provided all the services from check-in to boarding as much as good, and if the waiting time is higher at the time of boarding to aircraft, it will make a negative impact on customer's mind. Usually at gate they will start board the passengers before 15-20 minutes of departure with the help of a single counter which is accompanied by 2-5 staffs. To overcome this problem airline management can set one or two extra counters there with the help of the staffs who are idle in the boarding gates.

Adoption of Evaluating Airline Services Quality Model

As per the results derived from structural equation model, the authors came to a conclusion that the dimensions come under services quality named Airline employees and Easiness made a negative impact on overall satisfaction. In order to provide the satisfaction to the passengers to the highest-level, airline management have to focus more on the dimension Airline employees. In order to enhance the confidence of the customer/passenger in the airlines as well as in their staff, Airlines should focus on boosting its trust by discussing the major issues. This may result in the satisfaction of the customer and their re-flying intention.

Moreover, the satisfaction made a positive impact on the passengers re-flying intention. Even though the airline management focus more on the satisfaction of passengers by providing the better services, it will give a better impact than the existing results and it will definitely leads

towards passenger re-flying intention. Finally, the authors recommend a multi-dimensional model which helps the managers to bridge the gap between quality of services provided by them and the satisfaction of the airline passengers and their re-flying intention. It is recommended that the managers should adopt this model and evaluate their quality of services at regular intervals of time which helps them to understand their brand image also to gauge the future needs of the airline passengers.

Conclusion

The impact of services quality on airline passenger's satisfaction and their re-flying intention were measured and preferable suggestions were given to the airline management. The passengers who travelled recently with IndiGo, SpiceJet, Go Air and Air India / Express were considered in the study. Factors influence services quality and its impact on passenger's satisfaction and re-flying intention were discussed. This study is relevant for the service providers as the findings of the study explains about various factors and their relative importance in achieving customer satisfaction. The items come under each dimension is the most important factors of services quality. Accordingly, the service providers can concentrate on the factors which affect the service quality. With the increase of private low-cost airlines in recent decade in India, the emphasis has shifted to low fares as compared to luxury flying. India's growing middle class has contributed to the increasing demand for airline travels where the full-service carriers are seen to cut prices to remain competitive in the market. Thus, with an increasing focus on low prices, the emphasis is on value for money. Here in this study passenger's demographic details were also considered for understanding how the services quality, satisfaction and re-flying intentions are impacting on each type of people belongs to different categories such as travelling class, travelling sector, and the airline operators. Finally, for the managers of IndiGo, SpiceJet, Go Air and Air India / Express, these results provide with beneficial insights into the specific airline attributes that the companies should improve and maintain their resources to preserve their customers and to gain fresh ones. Moreover, this study shows the importance of items which included in the services quality and its impact on re-flying intention. The finer and improved services will draw passengers from other carriers.

References

- Archana, R., & Subha, M. V. (2012). A Study on Service Quality and Passenger Satisfaction on Indian Airlines. *International Journal of Multidisciplinary Research*, 2(2), 50-63.

- Bitner, M. J., & Hubbert, A. R. (1994). Encounter Satisfaction Versus Overall Satisfaction Versus Quality. *Service Quality: New Directions in Theory and Practice*, 34(2), 72-94.
- Boyd WL, Leonard M, and White C. (1994). Customer Preferences for Financial Services: An Analysis. *International Journal of Bank Marketing*, Vol. 12(1), 9-12.
- Butler, G. F. and Keller, M. R. (1992). The Cost-Constrained Global Airline Industry Environment: What is Quality?, *Transportation Quarterly*, Vol. 46, 599-618.
- Chang, Y. H., & Yeh, C. H. (2002). A Survey Analysis of Service Quality for Domestic Airlines. *European Journal of Operational Research*, 139(1), 166-177.
- Chou, C. C., Liu, L. J., Huang, S. F., Yih, J. M., & Han, T. C. (2011). An Evaluation of Airline Service Quality Using the Fuzzy Weighted SERVQUAL Method. *Applied Soft Computing*, 11(2), 2117-2128.
- Cronin Jr, J. J., & Taylor, S. A. (1992). Measuring Service Quality: A Reexamination and Extension. *Journal of Marketing*, 56(3), 55-68.
- Darby, I. (1999). NatWest Hires Shop to Build Community Links. *Marketing*, 26(3).
- Dennett, C., Ineson, E. M., Stone, G. J., & Colgate, M. (2000). Pre-Bookable Services in the Chartered Airline Industry: Increasing Satisfaction Through Differentiation. *The Service Industries Journal*, 20(2), 82-94.
- Earl, S. W., & Leonard, F. S. (1982). The Incline of Quality. *Harvard Business Review*, Sep/Oct, 82.
- Gronroos, C. (1988). Strategic Management and Marketing in the Service Sector Research. *Swedish School of Economics and Business Administration, Helsingfors*, 83-104.
- Haynes, R., & Percy, J. (1994). Perception paradox: Airline Service Quality Issues. *Proceedings of Decision Sciences Institute 1994 Annual Meeting* (Vol. 3, pp. 1950-1952).
- Lee, Moonkyu and Cunningham, L.F. (1996), Customer Loyalty in the Airline Industry, *Transportation Quarterly*, 50(2), 57-72.
- Lien, C. H., Wu, J. J., Chen, Y. H., & Wang, C. J. (2014). Trust Transfer and the Effect of Service Quality on Trust in the Healthcare Industry. *Managing Service Quality*.
- Ostrowski, P. L., O'Brien, T. V., & Gordon, G. L. (1993). Service Quality and Customer Loyalty in the Commercial Airline Industry. *Journal of Travel Research*, 32(2), 16-24.
- Ott, J. (1993). Airline Customer Service Rated 'Average' in Survey. *Aviation Week & Space Technology*.

- Parasuraman, A., Zeithaml, V. A., & Berry, L. (1988). SERVQUAL: A Multiple-item Scale for Measuring Consumer Perceptions of Service Quality. 1988, 64(1), 12-40.
- Patterson, P. G., & Spreng, R. A. (1997). Modelling the Relationship Between Perceived Value, Satisfaction and Repurchase Intentions in A Business-to-Business, Services Context: An Empirical Examination. *International Journal of Service Industry Management*.
- Rogerson W.P. (1983). Reputation and Product Quality, *Bell Journal of Economics*, 14, 500-510.
- Saha, G. C. (2009). Service Quality, Satisfaction, and Behavioural Intentions: A Study of Low-Cost Airline Carriers in Thailand. *Managing Service Quality: An International Journal*.
- Shah, F. T., Syed, Z., Imam, A., & Raza, A. (2020). The Impact of Airline Service Quality on Passengers' Behavioral Intentions Using Passenger Satisfaction as A Mediator. *Journal of Air Transport Management*, 85, 101815.
- Solomon, M. R. (1985). Packaging the Service Provider. *The Service Industries Journal*, 5(1), 64-72.
- Tepeci, M. (1999). Increasing Brand Loyalty in the Hospitality Industry. *International Journal of Contemporary Hospitality Management*.
- Tiernan, S., Rhoades, D. L., & Waguespack, B. (2008). Airline Service Quality: Exploratory Analysis of Consumer Perceptions and Operational Performance in the USA and EU. *Managing Service Quality: An International Journal*.
- Tiernan, S., Rhoades, D., & Waguespack, B. (2008). Airline Alliance Service Quality Performance – An Analysis of US and EU Member Airlines. *Journal of Air Transport Management*, 14(2), 99-102.



Discontinuance Intention of Online Shoppers Due to Techno Stress: An S-O-R Perspective

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Akhil MA⁴

Abstract

Mobile applications have gained a high proliferation due to the advent of smart phones in the market at a lower cost. Despite the increasing popularity of mobile applications in business, a pattern of clients quitting these applications has emerged in recent years. With the use of the Stimulus Organism Response (SOR) Model from the field of environmental psychology, this study focuses on user abandonment of shopping apps. Four important environmental stimuli factors viz. complexity, uncertainty, invasion, and information overload were compared with two important internal states of the organism i.e., techno-stress and online shopping exhaustion; thereby leading to the response of discontinuance intentions. Confirmatory factor analysis was used to ensure that the constructs were legitimate, and structural equation modelling was used to test and validate the hypothesized model. The findings revealed that all stimulus elements had a beneficial impact on the interior states of the organism, and that these internal states also had a good impact on the intention to discontinue shopping online. Information overload was the most influential factor of techno-stress and invasion was the most persuasive factor of online shopping exhaustion. Among the two internal states, techno-stress had more impact on the intentions to discontinue. The major contributions of this study have substantial real-world inferences for corporate

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establishments and decision-makers, in terms of the development of strategies for operative applications.

Keywords: Discontinuance Intention, Exhaustion, SOR Model, Techno-Stress

Introduction

Mobile commerce has been severely progressed by the rapid adoption of mobile devices and wireless technology (m-Commerce). Mobile shopping is regarded as a value-added service and the primary source of revenue generation for m-Commerce sellers. The mobile application has become a vital part of an individual's regular life, thanks to the remarkable expansion in the use of smartphones. The convenience offered by the mobile application has shifted an individual's habit of in-store purchases to purchases in online platforms. This increase in the intensity of shopping via app globally, widened the research gap and several studies had explored the factors causing initial adoption decision and continuous usage intention among the online shopping app users. In spite of the growing acceptance of online shopping apps, a new trend has emerged in recent years, with an average of 88 percent of people quitting them in diverse industries such as fashion, consumer electronics, and cosmetics (Statista 2020, Chen, et al 2019). There are three major phases in the life cycle of an Information System (IS) (Furneaux & Wade, 2010; 2011). Individuals create the intention to start using an IS in the first phase of the IS life cycle, the adoption phase; in the second phase, the ongoing usage phase, the individual develop intents to use the IS continually for a longer amount of time and in the third phase, termination phase, the users develop intentions to discontinue IS and develop intentions to switch to other alternatives as to the after-effects of these intentions (Maier, et.al, 2015). A review of the literature revealed that study methodologies have primarily concentrated on the first and second phases of the IS life cycle, with the third phase currently being investigated; because the murky side of mobile app use is emerging but underappreciated, it's interesting delving into the phenomena of a massive number of apps being abandoned and removed. As a result, an attempt is made to discover the most likely reasons for users' intents to stop using the service.

For the purpose of this study, the researchers used the Stimulus Organism Response (SOR) model from the field of environmental psychology, which has been used in a number of consumer behaviour studies (Lin et. al 2020; Cao et. al 2017). Given the importance of environmental cues in influencing customer behaviour, the SOR model provides a detailed and well-organized technique to examine the natural changes on shoppers'

psychological or emotional reactions, and consequently their intention to stop buying. Hence, the current study applied the SOR model to measure the discontinuance intention due to techno stress.

The concept assumes that various aspects of the environment operate as stimuli (S) that influence people's internal states (O), which then effect their behavioural responses (R). Various stimulus factors identified were complexity, uncertainty, invasion, and information overload. Internal states of the organism were identified as techno-stress, which is a psychological stage of trauma linked to technology usage that is supplemented by physical and natural indices, and online shopping exhaustion, which is 'an individual's psychological reaction to stressful situations such as perceiving the information overload when using Online Shopping Sites.' Finally, the individual's response was depicted as discontinuance intention, which was defined as an individual's behaviour to eliminate the negative consequences generated by technology as well as to reinstate emotional steadiness.

Despite the fact that numerous research have been undertaken to determine the impact and effectiveness of online shopping apps, the termination phase is left unlearned. The study explored the reasons for the intention to discontinue using a 7-dimensional validated model which was tested using SEM analysis with the help of AMOS software, and the results attempt to bridge the void in the literature by adding theoretical contributions to both techno-stress research and discontinuance research.

Contextual Background and Theoretical Development

Information System (IS) Discontinuance

Though extensive studies have been conducted on Information System (IS) continuance the studies focusing on IS discontinuance was found limited. But recently many scholars attempted to explore the IS discontinuance being an important phenomenon that requires attention (Turel, 2014). After the adoption and utilisation phases of the IS's life cycle, there is an unexplained termination phase (Furneaux & Wade, 2010; 2011). The adoption phase has been explained by different theoretical models, such as the Technology Acceptance Model (TAM) (Davis, 1989), the IS continuation model (Bhattacharjee, 2001), and the termination phase has been still overlooked by many pieces of research for a structured model (Turel, 2014). Parthasarathy and Bhattacharjee (1998) state that the perception of people continuing on IS greatly differs from the people discontinuing IS, and thus Turel (2014) tried to theorize these differences in perceptions. In short, when the users of IS are stressed by using technology, they might stop using them to avoid stress (Beaudry & Pinsonneault, 2005) and thus develop discontinuance intentions.

Technostress Research

Techno-stress is described as the tension that an IT user feels when utilising technology (Ragu-Nathan et al., 2008). In recent years, IS research has begun to focus on techno-stress (e.g. Tarafdar et al., 2007; 2010; Ragu-Nathan et al., 2008; Ayyagari et al., 2011; Maier, 2014). When IS users are constantly agitated as a result of their use of technology, the variables that cause the stress are referred to be technostress producers or stimuli (Tarafdar et al., 2007). According to Ayyagari et al., (2011), when a person is stressed by technology, he may respond by feeling exhausted, which is known as techno-exhaustion. The technostress makers have a big influence on user happiness, which is a yardstick for gauging a person's long-term technology usage intentions (Tarafdar et al. 2007; 2010; 2011). Maier et al. (2012; 2014) investigated the findings of Ayyagari et al. (2011) and Tarafdar et al. (2007; 2010; 2011) on social networking sites (SNS) and found that SNS-stress creators are a main factor responsible for SNS-exhaustion, which leads to discontinuous usage intention. The impact of several stressors on IS discontinuation intentions was still something that needed to be looked into.

SOR Model

The Stimulus Organism Response model (SOR) is an extensive model to study the behavioral responses (O) of people and their response (R) when an external environment stimulus acts on them (S) (Mehrabian & Russell, 1974). The external stimuli in the environment will alter people's interior states, according to a model from the study of environmental psychology (Eroglu, Machleit, & Davis, 2001). The phrase organisms, according to Bagozzi (1986), refers to the internal circumstances of insight, feelings, and reflective exercises. The SOR model has been utilised in many past research to investigate online user behaviour (Grace, Ross, & Shao, 2015; Min, & Liu, 2014; Zhang & Xu, 2016) and the SOR model is found appropriate to study the response of abandonment in human being when the internal states are affected by the technological features acting as external stimuli. As a result, the SOR model is used to investigate online shopping behaviour and its effects.

Online Shopping Sites Facet as Stimulus (S)

Stimulus factors refer to 'the environment as discovered by the individual' (Jacoby, 2002). Online shopping sites have become an imperative component in the everyday life but the flood of information, complexity, and various other factors create exhaustion in the mind of those users which leads to stress and ultimately ends up in a permanent discontinuance user intention or for a shorter duration of time. Maier et al., (2012; 2014),

has identified that stress creating factors are those factors which are faced by the users when using an SNS, we have adapted these stress creators for the development of a model for the study and they include four stimulus factors complexity, uncertainty, invasion, and information overload.

Virtual Users' Experiences as Organism (O)

Virtual encounters, according to the SOR world view, intervene in the effect of natural upgrades on customers' practices (Animesh, Pinsonneault, Yang, and Oh, 2011); such an effect is likewise clarified by the progressions in their conduct as they experience the innovative ecological boosts. 'Techno-stress,' which is characterized as a 'stress or psychosomatic sickness brought about by utilizing innovation' (Ayyagari et al., 2011) and 'an advanced infection of reception made by an ineptitude handle the inventive know-hows in a lively style' (Brod, 1984). Techno-stress is a mental state wherein individuals become totally involved inside an improvement, and the touchy expansion in the quantity of end-clients of online customer's advancements upgrades the seriousness of techno-stress. 'Web based shopping weariness,' can be characterized as 'a person's mental response to unpleasant circumstances, for example, seeing the data over-burden when utilizing Online Shopping Sites'. As a result, this study employs the concepts of techno-stress and Online shopping exhaustion to support the premise that certain aspects of online shopping may cause users to experience more tension, anxiety, and weariness.

Behavioural Reaction of Users as Response (R)

Many technical elements or functionalities, such as information overload, techno-stress, weariness, and push alerts, affect a user's participation behaviour in online buying while they are shopping. As a result, the users' intention to stop using the research model is taken into account. Meanwhile, online shopping fatigue refers to a user's inclination to cease using online shopping apps and sites as a result of a variety of issues, including too much information, too many emails and notifications, long hours spent on the Internet, guilt, fear of loss, and bewilderment. These factors add to the stress among users and thus to the developments of intentions to discontinue.

Research Gap and Objectives

The vast majority of previous studies have focused on the effects of techno-stressors on discontinuous usage intentions aimed only at broad IS or long-distance interpersonal communication destinations, but they have neglected to look into mobile shopping application abandonment, resulting in very few studies in the critical period of the internet shopping pattern's existence, which is the end stage. Users of mobile apps receive aggravating

or unsettling notifications, according to a study by Dennison, Morrison, Conway, and Yardley (2013), and they tend to uninstall those programmes. Because the scope of their study was confined to health-related apps, there remains a large field of research to be done on other apps. As a result, this research aims to fill a gap in the existing literature by delving deeper into the end-of-life phase of online shopping apps. This study will be advantageous to the corporates as it helps in improving the effectiveness of online shopping apps. This study also set forth the following research questions for investigation: Does the use of online shopping apps creates techno-stress? Whether the use of online shopping apps creates exhaustion? Will the techno-stress and Online Shopping exhaustion leads to discontinuance usage intention of online shopping apps? At this outset the study entails a detailed investigation to satisfy the following research objectives:

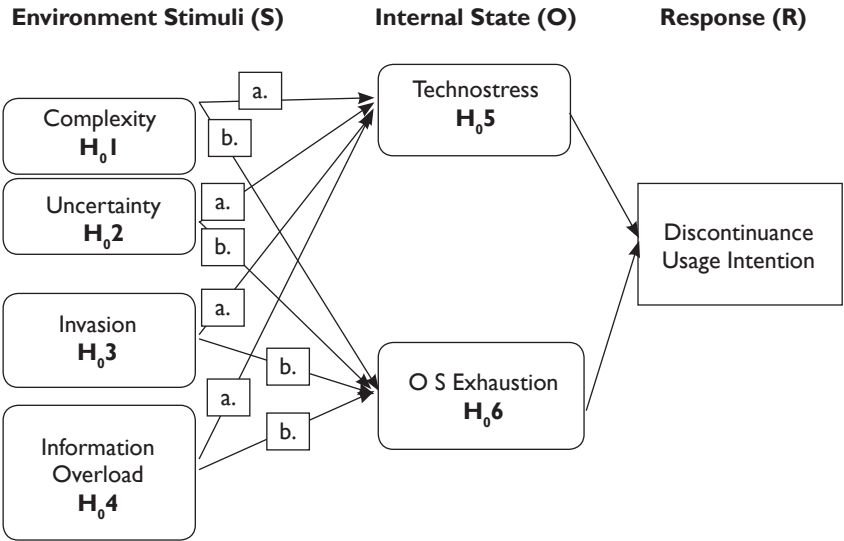
- To explore whether the use of online shopping apps creates techno-stress.
- To examine whether the use of online shopping apps is exhaustive.
- To study whether techno-stress and Online Shopping exhaustion lead to discontinuance usage intention.

Development of Hypothesis and Model for Validation

The researcher gained valuable insight into the development of a structured model for testing and validation after conducting a literature review. It was found that SOR is a suitable model to study the discontinuance intentions among online shopping apps users. From the findings of Albrecht et. al; (2016), it was found that shopping is one of the main source of stress in human being, which lead them to avoid shopping, hence they create a distance between the stress creators and also abandon the stressful conditions, these results were drawn upon an in-store purchase. Maier et.al. (2012) concluded that the people will develop discontinuance intentions as a result of exhaustion developed from overload, this was relating to social networking sites. From the conclusion of the various studies, four variables were identified as stimuli factors; a negative perception that OS apps are difficult to use (complexity), a negative interpretation that OS apps are continually shifting and updating (uncertainty), a negative insight that OS apps play an excessively dominant role in and have invaded daily life (invasion), and a negative perception that OS apps are flooded with information (information overload). The internal states of the organism are affected by stimuli variables, which indicate an individual's fatigued feeling when utilising technology' (Maier et al. 2015) called weariness. The men's mental feelings can also lead to 'intention to change behavioural patterns by limiting consumption intensity, or even abandoning platforms,'

according to the SOR model (Maier et al. 2015) called the discontinuance intention in a nutshell. The study tries to find out the relation between the identified stimuli factors on the internal states of human and their response to such stimuli factors.

Figure-1: Research Model for Validation



Source: Compiled by Researchers

Materials and Methods

The study was conducted using a survey method by collecting primary data from 325 IT sector employees who had temporarily or permanently abandoned any of the online shopping apps from their mobile phones. This empirical study collected its data from the major IT hubs of India; Bangalore, Chennai, and Kochi respectively. The data was collected by using the questionnaire method, the questionnaire was created and sent through Google forms to the mail address of IT sector employees. The questionnaire had undergone a pilot study among 15 respondents to measure the correctness of the instrument. The same group also was administered with an interview schedule to record differences, if any, in their responses. Significant differences if any were explored using t-test for a few items. The final questionnaire was drafted considering these aspects and with the expert opinion of technicians in the field. The sample size was determined using t tests as part of the power test analysis. - Multiple linear regression (LMR): Single regression coefficient in a fixed model(*Input: Effect size $f^2 = 0.0335$, α err prob = 0.05, Power ($1-\beta$ err prob) = 0.95; Output: Noncentrality parameter $\delta = 3.2996212$, Critical $t = 1.6496293$,*

Df = 320, Total sample size = 325). Out of a total of 518 employees who received the questionnaire, only 362 responded, and after scrutinizing incomplete responses, 325 responses were finally chosen for the aim of conducting this study. The study used pre-existing scales adapted from earlier research, with minor adjustments made to fit the scales for the online shopping discontinuation study. To guarantee good convergent and discriminant validity, the scales were adapted from prior investigations. All of the items were graded on a seven-point Likert scale, with 1 indicating 'strongly disagree' and 7 indicating 'strongly agree.' The constructs were taken from existing pieces of literature by Maier et al., (2012), Jacoby et al. (2002) for stimulus factors, Maier et al., (2015), Ayyagari et al., (2011) for internal state variables, and Maier et al., (2015) for response factors. The list of factors used for the study is detailed in Table-1.

Analysis of Data and Results

Sample Statistics

The demographic features indicated that out of the 325 IT employees responded, 55 percent were males and 45 percent were females. The majority of the respondents (71 percent) were between the ages of 21 and 25, indicating that the younger generation uses online shopping sites more than the older generation. Sixty-one percent of the total respondents had a monthly income of Rs. 10,000 to Rs. 20,000. 53.4 percent of respondents use online shopping sites for purchasing a product and they make monthly purchases. The spending habits of 65 percent of the respondents' amounts from Rs. 10,000 to Rs. 25,000 annually. Most of the respondents opined that the shopping apps that they have temporarily abandoned are snapdeal, shopclues and wishaddict. In short, it can be concluded that young males with a monthly income of up to Rs. 20,000 uses online shopping sites for making purchases monthly and they spend an average of Rs. 25,000 in a year on online shopping.

Measurement Items Validation

Because all of the constructs employed in the study were derived from previous research, there was no need to group the items, and so no exploratory factor analysis was performed. Cronbach's Coefficient Alpha was used to determine the reliability of the measurement items for all of the factors, and the values exceeded the basic limit of 0.70 (Nunnally 1978) for all of the factors, ranging between 0.732 and 0.868, indicating that all of the measures had good internal consistency. The validity of the entire measurement model was then tested using confirmatory factor

analysis (CFA). Table-1 shows that all measurement items had loadings larger than 0.75, and the expected seven-factor measurement model fit well ($X^2/df = 2.143$ ($X^2 = 390.0$, $df = 182$), $GFI = 0.912$, $AGFI = 0.900$, $CFI = 0.945$, $NFI = 0.868$, and $RMSEA = 0.008$). Table-1 shows that the average variance extracted for each construct was greater than 0.50, indicating convergent validity (Fornell & Larcker, 1981). In Table-2, the square root of AVE of each latent variable is greater than the correlations among the latent variables, indicating that the instrument has discriminant validity (Joseph F Hair et al., 2010). The model fit indices revealed that the 7-factor model is well defined by all 25 factors employed for measurement. Aside from the model fit indices, the 7-dimensional model was tested using standardised regression weights and critical ratio (CR). Apart from the model's psychometric properties, Hair et al. suggested using the aspects of composite reliability co-efficient (CRC) and average variance extracted (AVE) to measure the model's reliability and validity (both convergent and discriminant) (1998). To summarise, the constructs in the instrument provide sufficient support for the suggested theoretical model's validation, indicating that hypothesis testing can proceed.

Table-1: Model Estimates and Psychometric Properties of 7 Constructs

Construct	Item	Factor Loading (SRW)	Eigen Value	AVE	CRC	Cronbach's Alpha
Complexity (CO)	CO1	0.709	2.40	0.601	0.856	0.857
	CO2	0.653				
	CO3	0.845				
	CO4	0.874				
Uncertainty (UC)	UC1	0.768	1.70	0.568	0.797	0.761
	UC2	0.775				
	UC3	0.717				
Invasion (IV)	IV1	0.807	1.38	0.693	0.819	0.741
	IV2	0.858				
Information overload (IO)	IO1	0.707	2.36	0.590	0.852	0.782
	IO2	0.802				
	IO3	0.763				
	IO4	0.799				
Techno-stress (TS)	TS1	0.76	2.31	0.577	0.845	0.868
	TS2	0.755				
	TS3	0.768				
	TS4	0.757				

Construct	Item	Factor Loading (SRW)	Eigen Value	AVE	CRC	Cronbach's Alpha
OS exhaustion (OE)	OE1	0.72	2.96	0.592	0.918	0.831
	OE2	0.897				
	OE3	0.873				
	OE4	0.936				
Discontinuance intention (DI)	DI1	0.704	2.11	0.529	0.817	0.732
	DI2	0.753				
	DI3	0.795				
	DI4	0.652				

Source: Authors' Calculation

* SRW standardized regression weight, CRC composite reliability co-efficient, AVE average variance extracted

The proposal of Fornell and Larcker (1981) was taken into consideration in order to test the discriminant validity of the components employed in the study, which specifies that the AVE for each construct should be greater than the squared inter construct correlation with any other construct. Table-2 shows the discriminant validity of the study's constructs.

Table-2: Discriminant Validity

Construct	CO	UC	IV	IO	TS	OE	DI
Complexity (CO)	0.601						
Uncertainty (UC)	0.315	0.568					
Invasion (IV)	0.270	0.267	0.693				
Information overload (IO)	0.265	0.342	0.215	0.590			
Techno-stress (TS)	0.087	0.280	0.195	0.268	0.577		
OS exhaustion (OE)	0.038	0.143	0.142	0.180	0.274	0.592	
Discontinuance intention (DI)	0.279	0.447	0.253	0.518	0.180	0.170	0.529

Source: Authors' Calculation

Diagonal values are AVE and off diagonal values are squared inter-construct correlations

Table-2's interpretations reveal that the squared inter-construct correlations are substantially lower than the extracted average variances (AVE). As a result, it is possible to conclude that the constructs used for measurement in the model have high discriminant validity, implying that the constructs used for measurement have a closer relationship with the latent construct than other latent constructs. In summary, the 7-dimensional model utilised in the study is supported by high construct reliability and validity, as well as acceptable model fit indices.

Model Validation and Hypotheses Testing

SEM analysis was used to validate the 7-dimensional model and to assess the components that contribute to discontinuation intention among online buyers, as well as the hypothesis that was defined using AMOS at the outset. Structural equation modelling is a multivariate statistical analysis tool for analysing structural links between measurable and latent components. The study employs SEM to investigate the estimations and interconnectedness of the components in a single analysis. The structural model analysis of General Fit indicators are listed in Table-3.

Table-3: Model Estimates and Fit Index

Fit Index	Recommended Value	Model Value	Suggested by Author
X ² /df	< 3	2.312	Bentler and Bonett
GFI	>0.8	.902	Seyal et al.
AGFI	>0.8	.812	Scott
NFI	>0.9	.903	Bentler and Bonett
CFI	>0.9	.933	Bentler and Bonett
RMSEA	< 0.08	.053	Hair et al.

Source: Authors' Calculation

The model was validated using AMOS and SEM analysis, yielding the following findings for the fit of analysis. Apart from the Chi-square (X²/df; df = degrees of freedom), which should be less than five for models with good fitness (Bentler 1989), other measures such as the goodness of fit (GFI), adjusted GFI (AGFI), CFI, NFI, and RMSEA were computed to prove the model's fitness as suggested by previous studies. According to Hair et al. (2010), for an adequate model fit of the data, the GFI should be greater than 0.90 and the AGFI should be greater than 0.80. (Gefen et al. 2003). The comparative fit index (CFI) should be greater than 0.90, and the normed fit index (NFI) values of 0.90 or greater indicate a reasonable model fit, according to Bentler (1992). For an adequate model fit, the value of root means the square error of approximation (RMSEA) proposed by Bentler (1989) is less than or equal to 0.08. X²/df = 2.312 (X²=342.17, df =148), GFI = 0.902, AGFI = 0.812, CFI = 0.903, NFI = 0.933, and RMSEA = 0.053 were the model fit indices for the 7-dimension model. The model fit indices for the 7-dimension model to test the factors contributing to discontinuation intention among online shopping app users show that the model fits, as shown in Table-4.

Table-4: Regression Weights of Variables

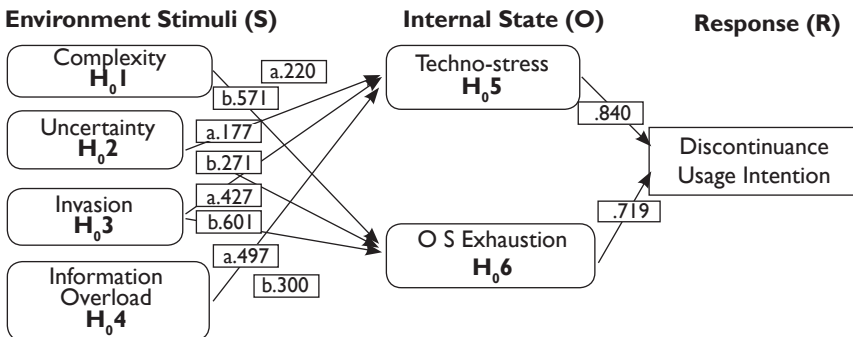
Variable Regression	Hypothesis Acronym	Standardised beta Co-efficient	P Value
CO --> TS	H01a	0.220**	<.001
CO --> OE	H01b	0.571**	<.001
UC --> TS	H02a	0.177**	<.001
UC --> OE	H02b	0.271**	<.001
IV --> TS	H03a	0.427**	<.001
IV --> OE	H03b	0.601**	<.001
IO --> TS	H04a	0.497**	<.001
IO --> OE	H04b	0.300**	<.001
TS --> DI	H05	0.840**	<.001
OE --> DI	H06	0.719**	<.001

** Significant at 1 percent Level

Source: Authors' Calculation

The null hypothesis (H01a, H01b, H02a, H02b, H03a, H03b, H04a, H04b, H05, H06) was completely rejected, and it was demonstrated that these variables have a highly significant positive connection. Based on the Standardized beta co-efficient given in Table-4 it can be inferred that all the factors of environmental stimuli positively affect the internal states of the organism and the internal states of the organism also positively affect the discontinuance intentions. Information overload was identified as the highest influencer in the creation of techno-stress followed by invasion. Also, online shopping exhaustion is highly influenced by invasion and complexity. Among the identified internal states of the organism techno-stress is the leading factor in creating intentions of discontinuance. So it can be vividly concluded that complexity, uncertainty, invasion, and information overload positively impacts the internal states of the organism and creates techno-stress and OS Exhaustion and this ends up in abandonment of the online shopping app.

Figure-2: Validated Model



Source: Authors calculation

Discussions and Managerial Implications

The study derived many findings that are beneficial to the corporates in the preparation of online campaigns and plans. Also, the assessment of a people's internal psychological process, especially, techno-stress and exhaustion, adds to the research area on antagonistic feelings in IS discontinuous usage. Turel's (2015) findings suggest that negative emotion cannot be ignored in a study of discontinuation intentions since unpleasant emotions have the motive and ability to lead users to abandon the IS. Besides from the former studies which highlighted the adoption and usage of online shopping sites, this study engrossed the final phase of the life cycle of the online shopping apps and sites i.e., the termination phase, thereby adding to the existing literature on techno-stress using SOR model.

Results of the study state that the negative emotion, techno-stress, is the most prominent factor in the creation of discontinuance intentions among the online shopping app users, whereas the exhaustion created by using these apps have only secondary effect on the discontinuance intention. The stimuli responsible for the creation of techno-stress were information overload experienced by the user and the exhaustion is developed because of the invasion of shopping apps into the personal life of the users. All of the stimulus factors investigated have a positive effect on human internal states, leading to a response of discontinuance intention, i.e., the greater the effect of the stimulus factor, the greater the techno-stress and exhaustion felt, and thus the higher the discontinuance intentions among users. The stimuli – information overload, being a major determinant of techno-stress, the service providers of online shopping apps should keep a check on the amount of information showered on users thereby preventing the development of negative emotions among the respondents. The reduction of invasion is possible only through the limited use, thus it would be better if the apps include a reminder mechanism or surfing time indicator that may help the users to make a check on the time spent by them. It was also found that other stimulus factors; complexity and uncertainty also have significant effects on the internal states of techno-stress and exhaustion. Reducing the complexity in the apps and also limiting frequent updates of apps can also impact in the reduction of discontinuance intentions among the online shoppers. Hence from the results of this study, it can be inferred that the rate of discontinuance is growing high, thus the service providers should control the effect of the stimulus factors in order to reduce the abandonment of online shoppers from their apps.

Managers can successfully plan for the implementation of timely techniques that will reduce information overload for users, resulting in less time spent on applications and a reduction in disarray in their use. More information offered in apps can sometimes cause more confusion among users. In terms of technological stress, an excessive amount of emails and

notifications sent after a transaction might be annoying to the customer. Frequent app upgrades, as well as new structural and style modifications, can add to the complexity of the client experience.

Since the study focused on IT sector professionals, who are meant to be technical experts with a solid understanding of app usage, their intention to abandon apps could serve as a wake-up call to the rest of society, who may not have a high degree of technical skill. As a result, reducing complexity in design and operations would tend to boost the overall appeal of the apps to all members of society.

Limitations and Suggestions for Future Research

Several issues are to be considered while making meaningful interpretations as the results are developed based on many limitations. Limitations are unavoidable for research, and no research is developed without limitations. The goal of the study was to learn about online shoppers' intentions to stop shopping as a result of technological stress. The study was confined to respondents from Bangalore, Chennai, and Kochi, as well as persons working in the IT industry. Future researches can study with a wider geographical boundary and also can test whether the result is the same for people who are employed in other sectors. The study identified only four stimulus factors affecting the internal states of human, there are many other factors which can also be considered for future researches. This study was limited by finding the probable factors of discontinuance intentions among the users and the measures to overcome this issue is an area for exploration.

Conclusion

The discontinuance intentions among the users of online shopping apps are influenced by many factors. This study attempts to find some of the probable reasons for the abandonment of online shopping apps by the users with the help of a model adopted from the field of psychology called the Stimulus Organism Response model (SOR). Based on the model, four factors namely, complexity (CO), uncertainty (UC), invasion (IV) and information overload (IO) were identified as environmental *stimulus factors* and two factors viz. techno-stress (TS) and online shopping Exhaustion (OE) were identified as *internal states* of human which results in the response of *discontinuance intentions* (DI) of online shoppers. The findings of the study are beneficial to both service providers and clients. Despite the fact that none of the observed stimulus elements have a direct relationship with discontinuation responses, they all have a substantial impact on human internal states, which ultimately leads to discontinuance intents among online buyers. Information overload was discovered to be the primary cause

of techno-stress and, as a result, discontinuance intentions among users. OS exhaustion, on the other hand, had a role in discontinuance intents, and it was mostly influenced by invasion. In order to lessen the likelihood of online shoppers abandoning their shopping carts, the impact of information overload must be reduced. The study's findings can be generalised because mobile application use is high among India's population, and developers with appropriate tactics can lessen techno-stress.

References

- Ajax Persaud, I. A. (2012). Innovative Mobile Marketing via Smartphones: Are Consumers Ready? *Marketing Intelligence & Planning*, 30(4), 418-443.
- Albrecht, C. M., Hattula, S., & Lehmann, D. R. (2017). The Relationship Between Consumer Shopping Stress and Purchase Abandonment in Task-Oriented and Recreation-Oriented Consumers. *Journal of the Academy of Marketing Science*, 45(5), 720-740.
- Aldás-Manzano, J., Ruiz-Mafé, C., & Sanz-Blas, S. (2009). Exploring Individual Personality Factors as Drivers of M-Shopping Acceptance. *Industrial Management & Data Systems*, 109(6), 739-757.
- Animesh, A., Pinsonneault, A., Yang, S. B., & Oh, W. (2011). An Odyssey into Virtual Worlds: Exploring the Impacts of Technological and Spatial Environments on Intention to Purchase Virtual Products. *MIS Quarterly*, 35(2), 789-810.
- Ayyagari, R., Grover, V., & Purvis, R. (2011). Technostress: Technological Antecedents and Implications. *MIS Quarterly*, 35(2), 831-858.
- Barkhuus, L., & Polichar, V. E. (2011). Empowerment through Seamfulness: Smart Phones in Everyday Life. *Personal and Ubiquitous Computing*, 15(6), 629-639.
- Barwise, P., & Strong, C. (2002). Permission-based Mobile Advertising. *Journal of Interactive Marketing*, 16(1), 14-24.
- Bauer, H. H., Reichardt, T., Barnes, S. J., & Neumann, M. M. (2005). Driving Consumer Acceptance of Mobile Marketing: A Theoretical Framework and Empirical Study. *Journal of Electronic Commerce Research*, 6(3), 181.
- Beaudry, A., & Pinsonneault, A. (2005). Understanding User Responses to Information Technology: A Coping Model of User Adaptation. *MIS Quarterly*, 29(3), 493-524.
- Begley, T. M. (1998). Coping Strategies as Predictors of Employee Distress and Turnover After An Organizational Consolidation: A Longitudinal Analysis. *Journal of Occupational and Organizational Psychology*, 71(4), 305-329.
- Bhattacharjee, A. (2001). Understanding Information Systems Continuance: An Expectation-Confirmation Model. *MIS Quarterly*, 25(3), 351-370.

- Brillhart, P. E. (2004). Technostress in the Workplace: Managing Stress in the Electronic Workplace. *Journal of American Academy of Business*, 5(1/2), 302-307.
- Brod, C. (1984). *Technostress: The Human Cost of the Computer Revolution*. The University of Michigan: Addison Wesley Publishing Company.
- Brooks, S., & Califf, C. (2017). Social Media-induced Technostress: Its Impact on the Job Performance of IT Professionals and the Moderating Role of Job Characteristics. *Computer Networks*, 114, 143-153.
- Canavan, M. (2017). Push Notifications vs. In-App Messaging: What's the Difference for App Marketing?
- Cao, Xiongfei & Sun, Jianshan. (2017). Exploring the Effect of Overload on the Discontinuous Intention of Social Media Users: An S-O-R Perspective. *Computers in Human Behavior*. 81. 10.1016/j.chb.2017.11.035.
- Chen, Y. C., Shang, R. A., & Kao, C. Y. (2009). The Effects of Information Overload on Consumers' Subjective State Towards Buying Decision in the Internet Shopping Environment. *Electronic Commerce Research and Applications*, 8(1), 48-58.
- Chen, J. V., Tran, A., & Nguyen, T. (2019). Understanding the Discontinuance Behavior of Mobile Shoppers as A Consequence of Technostress: An Application of the Stress-Coping Theory. *Computers in Human Behavior*, 95, 83-93. <https://doi.org/10.1016/j.chb.2019.01.022>
- Cho, I. H. (2015). Facebook Discontinuance: Discontinuance as a Temporal Settlement of the Constant Interplay Between Disturbance and Coping. *Quality & Quantity*, 49(4), 1531-1548.
- D'Arcy, J., Gupta, A., Tarafdar, M., & Turel, O. (2014). Reflecting on the 'Dark Side' of Information Technology Use. *Communications of the Association for Information Systems*, 35(1), 5.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 35(8), 982-1003.
- Dennison, L., Morrison, L., Conway, G., & Yardley, L. (2013). Opportunities and Challenges for Smartphone Applications in Supporting Health Behavior Change: Qualitative Study. *J MedInternet Res*, 15(4), e86. doi: 10.2196/jmir.2583
- Edwards, S. M., Li, H., & Lee, J. H. (2002). Forced Exposure and Psychological Reactance: Antecedents and Consequences of the Perceived Intrusiveness of Pop-Up Ads. *Journal of Advertising*, 31(3), 83- 95.
- Eroglu, S. A., Machleit, K. A., & Davis, L. M. (2001). An Empirical Study of Online Atmospherics and Shopper Responses. *ACR North American Advances*.
- Falaki, H., Mahajan, R., Kandula, S., Lymberopoulos, D., Govindan, R., & Estrin, D. (2010). *Diversity in Smartphone Usage*. Paper presented at

- the Proceedings of the 8th International Conference on Mobile Systems, Applications, and Services.
- Fuglseth, A. M., & Sørebo, Ø. (2014). The Effects of Technostress within the Context of Employee Use of ICT. *Computers in Human Behavior*, 40, 161-170.
- Furneaux, B., & Wade, M. (2010). The End of the Information System Life: A Model of IS Discontinuance. *ACM SIGMIS Database*, 41(2), 45-69.
- Furneaux, B., & Wade, M. R. (2011). An Exploration of Organizational Level Information Systems Discontinuance Intentions. *MIS Quarterly*, 573-598.
- Gao, W., Liu, Z., Guo, Q., & Li, X. (2018). The Dark Side of Ubiquitous Connectivity in Smartphone-Based SNS: An Integrated Model from Information Perspective. *Computers in Human Behavior*, 84, 185-193.
- Gaudioso, F., Turel, O., & Galimberti, C. (2017). The Mediating Roles of Strain Facets and Coping Strategies in Translating Techno-Stressors into Adverse Job Outcomes. *Computers in Human Behavior*, 69, 189-196.
- Goh, K. Y., Chu, J., & Wu, J. (2015). Mobile Advertising: An Empirical Study of Temporal and Spatial Differences in Search Behavior and Advertising Response. *Journal of Interactive Marketing*, 30(0), 34-45. doi: <https://doi.org/10.1016/j.intmar.2014.12.002>
- Grace, D., Ross, M., & Shao, W. (2015). Examining the Relationship Between Social Media Characteristics and Psychological Dispositions. *European Journal of Marketing*.
- Grant, I., & O'Donohoe, S. (2007). Why Young Consumers are Not Open to Mobile Marketing Communication. *International Journal of Advertising*, 26(2), 223-246.
- Hisnanick, J. (1989). In the Age of the Smart Machine: The Future of Work and Power. *Employee Responsibilities and Rights Journal*, 2(4), 313-314. doi: 10.1007/bf01423360
- Huang, L., Lu, X., & Ba, S. (2016). An Empirical Study of the Cross-Channel Effects Between Web and Mobile Shopping Channels. *Information & Management*, 53(2), 265-278.
- Hwang, I., & Cha, O. (2018). Examining Technostress Creators and Role Stress as Potential Threats to Employees' Information Security Compliance. *Computers in Human Behavior*, 81, 282-293.
- Jacoby, J. (2002). Stimulus-Organism-Response Reconsidered: An Evolutionary Step in Modeling (Consumer) Behavior. *Journal of Consumer Psychology*, 12(1), 51-57.
- Keith, M. J., Babb, J. S., Lowry, P. B., Furner, C. P., & Abdullat, A. (2015). The Role of Mobile-Computing Self-Efficacy in Consumer Information Disclosure. *Information Systems Journal*, 25(6), 637-667.

- Kim, S. J., Wang, R. J.-H., & Malthouse, E. C. (2015). The Effects of Adopting and Using A Brand's Mobile Application on Customers' Subsequent Purchase Behavior. *Journal of Interactive Marketing*, 31(0), 28-41.
- Krafft, M., Arden, C. M., & Verhoef, P. C. (2017). Permission Marketing and Privacy Concerns – Why Do Customers (Not) Grant Permissions? *Journal of Interactive Marketing*, 39, 39-54.
- Li, H., Edwards, S. M., & Lee, J. H. (2002). Measuring the Intrusiveness of Advertisements: Scale Development and Validation. *Journal of Advertising*, 31(2), 37-47.
- Liang, H., & Xue, Y. (2009). Avoidance of Information Technology Threats: A Theoretical Perspective. *MIS Quarterly*, 33(1), 71-90.
- Lin, Jiabao & Lin, Shunzhi & Turel, Ofir & Xu, Feng. (2020). The Buffering Effect of Flow Experience on the Relationship Between Overload and Social Media Users' Discontinuance Intentions. *Telematics and Informatics*. 49. 101374. 10.1016/j.tele.2020.101374.
- Liang, H., & Xue, Y. (2010). Understanding Security Behaviors in Personal Computer Usage: A Threat Avoidance Perspective. *Journal of the Association for Information Systems*, 11(7), 394-413.
- Luqman, A., Cao, X., Ali, A., Masood, A., & Yu, L. (2017). Empirical Investigation of Facebook Discontinues Usage Intentions Based on SOR Paradigm. *Computers in Human Behavior*, 70, 544- 555.
- Maddux, J. E., & Rogers, R. W. (1983). Protection Motivation and Self-Efficacy: A Revised Theory of Fear Appeals and Attitude Change. *Journal of Experimental Social Psychology*, 19(5), 469-479.
- Maier, C., Laumer, S., Eckhardt, A., & Weitzel, T. (2012). *When Social Networking Turns to Social Overload: Explaining the Stress, Emotional Exhaustion, and Quitting Behavior from Social Network Sites' Users*. Paper presented at the ECIS.
- Maier, C., Laumer, S., Eckhardt, A., & Weitzel, T. (2014). Explaining Technical and Social Stressors in Techno-Social Systems. *Theoretical Foundation and Empirical Evidence*, 95.
- Maier, C., Laumer, S., Eckhardt, A., & Weitzel, T. (2015). Giving Too Much Social Support: Social Overload on Social Networking Sites. *European Journal of Information Systems*, 24(5), 447-464.
- Maier, C., Laumer, S., Weinert, C., & Weitzel, T. (2015). The Effects of Technostress and Switching Stress on Discontinued Use of Social Networking Services: A Study of Facebook Use. *Information Systems Journal*, 25(3), 275-308.
- Majchrzak, A., Rice, R. E., Malhotra, A., King, N., & Ba, S. (2000). Technology Adaptation: The Case of a Computer-Supported Inter-Organizational Virtual Team. *MIS Quarterly*, 24(4), 569-600.

- Marakas, G. M., Yi, M. Y., & Johnson, R. D. (1998). The Multilevel and Multifaceted Character of Computer Self-Efficacy: Toward Clarification of the Construct and An Integrative Framework for Research. *Information Systems Research*, 9(2), 126-163.
- Mothersbaugh, D. L., Foxx, W. K., Beatty, S. E., & Wang, S. (2012). Disclosure Antecedents in An Online Service Context: The Role of Sensitivity of Information. *Journal of Service Research*, 15(1), 76-98.
- Moustakas, E., Ranganathan, C., & Duquenoy, P. (2006). E-mail Marketing at the Crossroads: A Stakeholder Analysis of Unsolicited Commercial. *Internet Research*, 16(1), 38-52.
- Parthasarathy, M., & Bhattacharjee, A. (1998). Understanding Post-Adoption Behavior in the Context of Online Services. *Information Systems Research*, 9(4), 362-379.
- Persaud, A., & Azhar, I. (2012). Innovative Mobile Marketing Via Smartphones: Are Consumers Ready? *Marketing Intelligence & Planning*, 30(4), 418-443.
- Pielot, M., Church, K., & De Oliveira, R. (2014). *An In-Situ Study of Mobile Phone Notifications*. Paper presented at the Proceedings of the 16th International Conference on Human-Computer Interaction with Mobile Devices & Services.
- Pollard, C. (2003). Exploring Continued and Discontinued Use of IT: A Case Study of Option Finder, A Group Support System. *Group Decision and Negotiation*, 12(3), 171-193.
- Ragu-Nathan, T., Tarafdar, M., Ragu-Nathan, B. S., & Tu, Q. (2008). The Consequences of Technostress for End Users in Organizations: Conceptual Development and Empirical Validation. *Information Systems Research*, 19(4), 417-433.
- Reinecke, L., Aufenanger, S., Beutel, M. E., Dreier, M., Quiring, O., Stark, B., Müller, K. W. (2017). Digital Stress Over the Life Span: The Effects of Communication Load and Internet Multitasking on Perceived Stress and Psychological Health Impairments in A German Probability Sample. *Media Psychology*, 20(1), 90-115.
- Ren, Y., Kiesler, S., & Fussell, S. R. (2008). Multiple Group Coordination in Complex and Dynamic Task Environments: Interruptions, Coping Mechanisms, and Technology Recommendations. *Journal of Management Information Systems*, 25(1), 105-130.
- Russell, J. A., & Mehrabian, A. (1974). Distinguishing Anger and Anxiety in Terms of Emotional Response Factors. *Journal of Consulting and Clinical Psychology*, 42(1), 79.
- Sahami Shirazi, A., Henze, N., Dingler, T., Pielot, M., Weber, D., & Schmidt, A. (2014). *Large-Scale Assessment of Mobile Notifications*. Paper presented at the Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.

- Savolainen, R. (2007). Filtering and Withdrawing: Strategies for Coping with Information Overload in Everyday Contexts. *Journal of Information Science*, 33(5), 611-621.
- Shankar, V., Venkatesh, A., Hofacker, C., & Naik, P. (2010). Mobile Marketing in the Retailing Environment: Current Insights and Future Research Avenues. *Journal of Interactive Marketing*, 24(2), 111-120.
- Somerfield, M. R., & McCrae, R. R. (2000). Stress and Coping Research: Methodological Challenges, Theoretical Advances, and Clinical Applications. *American Psychologist*, 55(6), 620-625.
- Son, J. Y., & Kim, S. S. (2008). Internet Users' Information Privacy-Protective Responses: A Taxonomy and A Nomological Model. *MIS Quarterly*, 32(3), 503-529.
- Sultan, F., Rohm, A. J., & Gao, T. T. (2009). Factors Influencing Consumer Acceptance of Mobile Marketing: A Two-Country Study of Youth Markets. *Journal of Interactive Marketing*, 23(4), 308- 320.
- Sun, H. (2013). A Longitudinal Study of Herd Behavior in the Adoption and Continued Use of Technology. *MIS Quarterly*, 37(4).
- Tarafdar, M., Tu, Q., Ragu-Nathan, B. S., & Ragu-Nathan, T. S. (2007). The Impact of Technostress on Role Stress and Productivity. *Journal of Management Information Systems*, 24(1), 301-328.
- Tarafdar, M., Tu, Q., & Ragu-Nathan, T. (2010). Impact of Technostress on End-User Satisfaction and Performance. *Journal of Management Information Systems*, 27(3), 303-334.
- Tarafdar, M., Tu, Q., Ragu-Nathan, T. S., & Ragu-Nathan, B. S. (2011). Crossing to the Dark Side: Examining Creators, Outcomes, and Inhibitors of Technostress. *Communications of the ACM*, 54(9), 113-120.
- Turel, O (2015). Quitting the Use of A Habituated Hedonic Information System: A Theoretical Model and Empirical Examination of Facebook Users. *European Journal of Information Systems*, 24(4), 431-446.
- Turel, O (2016). Untangling the Complex Role of Guilt in Rational Decisions to Discontinue the Use of A Hedonic Information System. *European Journal of Information Systems*, 25(5), 432-447.
- Wang, B., Kim, S., & Malthouse, E. C. (2016). Branded Apps and Mobile Platforms as New Tools for Advertising: ABC-CLIO.
- Wang, Q., Bowling, N. A., & Eschleman, K. J. (2010). A Meta-Analytic Examination of Work and General Locus of Control. *Journal of Applied Psychology*, 95(4), 761-768.
- Wang, W., Daneshvar Kakhki, M., & Uppala, V. (2017). The Interaction Effect of Technostress and Non-Technological Stress on Employees' Performance.
- Westermann, T., Möller, S., & Wechsung, I. (2015). *Assessing the Relationship Between Technical Affinity, Stress and Notifications On Smartphones*. Paper presented at the Proceedings of the 17th International

Conference on Human-Computer Interaction with Mobile Devices and Services Adjunct.

Zhang, S., Zhao, L., Lu, Y., & Yang, J. (2016). Do You Get Tired of Socializing? An Empirical Explanation of Discontinuous Usage Behaviour in Social Network Services. *Information & Management*, 53(7), 904-914.

Zhou, T., & Lu, Y. (2011). The Effects of Personality Traits on User Acceptance of Mobile Commerce. *International Journal of Human-Computer Interaction*, 27(6), 545-561.

Appendix I

Measures Used in the Study

Item Acronym	Measures
Environmental Stimuli (S) Maier et al., (2012), Jacoby et al.(2002),	
CO1	I want quite a while to comprehend and use online shopping apps
CO2	I need to update my technical knowledge to use shopping apps.
CO3	Younger people are better at using shopping apps than I am.
CO4	I often find shopping apps too complex to use.
UC1	The online shopping apps always have new updates
UC2	Shopping apps are constantly being changed.
UC3	Overall, shopping apps are constantly being changed.
IV1	I spent much of my free time surfing in shopping apps.
IV2	I prefer buying every single commodity online than offline.
IO1	I feel confused before choosing which product I should buy
IO2	I consider that more information would generate more confusion in my choice
IO3	I have to process so much information that it frequently takes me a too long time for a purchase
IO4	I receive a lot of emails and notifications after a purchase
Internal States (O) Maier, et al., (2015), Ayyagari et al., (2011)	
TS1	I am compelled to adopt the changes in online shopping apps
TS2	Online shopping apps consumes much of my personal time.
TS3	I feel that my personal life is being overrun by online shopping apps.
TS4	I feel nervous and stressed while using online shopping apps especially towards payment.
OE1	I feel more relaxed and comfortable while shopping offline.
OE2	I feel tired from my online shopping activities.
OE3	Finding products and purchasing good products online is tiresome
OE4	I get stressed with online shopping activities.
Response (R) Maier, et al., (2015)	
D11	I want to reduce my use of shopping apps
D12	I occasionally take a short break from shopping apps and return later.
D13	I sometimes uninstall my online shopping app.
D14	I prefer offline shopping than online shopping

Towards Contingency Model of Technology Acceptance: Integrating Incident Method and Effective Literature Review to Explore the Factors Affecting Intention to Use Facebook Marketplace

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Abstract

In the contemporary world, technology which is developing at a rapid speed has drastically caused an improvement in the lives of humans. Despite the countless benefits it offers, users accept or reject a technology based on numerous factors. Innumerable studies have been conducted in the past where in researchers have explored many technology acceptance models with myriad of factors. In the past, researchers used to select among these factors only after doing a literature review. Due to the huge number of factors selecting most relevant factors in newer studies becomes tedious and sometimes biased activity. Hence, there needs to be a mechanism by which most appropriate factors can be selected for any research. In the current study, an attempt has been made to come up with a solution to this problem by integrating Incident Method with the review of literature method while conducting the experiment on users of Facebook Marketplace. This study has named the method as Contingency Model of Technology Acceptance (CMTA). The CMTA shall not only help in selecting the most appropriate factors but may also be effective of exploring absolutely new factors.

Keywords: Contingency Model of Technology Acceptance (CMTA), Facebook Marketplace, Incident Method

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Introduction

The world is changing at a rapid speed and day by day we are becoming technologically more and more advanced. Technology is developing in every field be it medical sciences, extreme engineering, aerospace engineering, robotics, manufacturing and distribution in the business world, entertainment and many more. It is influencing us to an extreme extent. We cannot imagine a world without the use of any type of technology. Consequently, the business world is also not lagging behind any sector; we have seen much advancement in technology used in the Business world. Improvements in manufacturing, distribution, marketing, etc can be seen but along with it new mediums of buying n selling are being created to flourish the business process. Along with other forms of technology, there has been a rapid acceleration in the growth of the internet, smart phones, and computers which impacted all sectors including the business world, which in turn had an impact on the behavior of consumers. It is due to the reason that development in technology requires that users must have a certain type of knowledge, skills, experience, and readiness to accept that new technology. However, it has been seen in the past that whenever advancement in information systems / technology takes place, rejection or in less harsh words lack of approval due to technological and organizational reasons has caused a hindrance in its acceptance (Gould, Boies, & Lewis, 1991). It has been seen in many circumstances that People tend to reject the new technology even when it can drastically cause an improvement in their performance (Nickerson, 1981). Nickerson (1981) in his study *“Why interactive computer systems are sometimes not used by people who might benefit from them”* has also mentioned many reasons why people don't accept new technologies. There has been a lack of acceptance since the time the development in technology was in its infancy till now when technological advancements are booming every sphere of life. But to make people accept the new technologies, users or their representatives must be involved and consulted while its development process. Their participation plays an important part in the acceptance of the technology. But one may witness diverse opinions about user involvement (Barki and Hartwick, 1989) it is because if a technology is developed for a huge populace then the participation of users may become a cumbersome process. In that scenario, the developer team thinks that what suits best to them will suit the entire population of users. Usually, this type of problem takes place in the case of online shopping portals and apps where a huge number of users are expected to use it and unfortunately it cannot be custom made for everyone. Since the advent of Zappos (later brought by Amazon) in 1999, online shopping became a budding trend. Since then more and more user-friendly and secure portals came up where one could find any type of

a product. Online shopping moved a step further when online classified portals were started which let users buy and sell used products as well. Developers of websites try their best to make it easy for users to accept it. But again there are circumstances when even the biggest startups failed due to the non-acceptance of users. ('Biggest Online startup failure', n.d.) states some of the examples of such failures like 'Color' – a photo-sharing app: closed due to bad user experience, 'Nupedia' failed because it had a lengthy and time consuming seven-step article approval process, 'Pay by Touch' was shut down because users were not convinced about its security, 'Search me' was closed because of design problems. This proves that while developing a portal or any software, the developer must consult its users or its acceptance should be checked using any technology acceptance model and then must be improved if necessary. This study focuses on exploring the factors which influence the intention to use Facebook Marketplace (FBMP) – a newly added feature and a service by Facebook. This study intends to suggest a preliminary 'contingency model of technology acceptance' by integrating the Technology Acceptance model designed by Davis (1986) and Incident Method to explore factors that are more relevant to Facebook Marketplace. The Technology Acceptance Model as explained by Davis was built based on the attitude paradigm from psychology developed by Fishbein and Azjen (1975). TAM is also said to be an adaptation of the theory of Reasoned Action. According to Davis, Bagozzi, and Warshaw (1989) TAM:

... is specifically meant to explain computer usage behavior....(p.983)
The goal of Tam is to [be]...capable of explaining user behavior across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified, (p. 985).

Incident Method is a decision-making technique wherein discussion is provoked by giving participants a small idea of the situation. The participants then keep asking questions to the instructors to spin out more information from him / her. The process of drawing more information through questions and discussion continues until a solution to the problem is found out. This method requires more emotional involvement of participants as compared to other methods.

Literature Review

Factors in Different Versions of TAM and Conceptual Model Building

It was Davis (1986) who designed the first technology acceptance model with five factors viz, perceived ease of use (PEOU), perceived usefulness (PU), behavioral intention (BI), attitudes(Att) and actual usage (AU). This model was developed to study the acceptance of a system or technology by

studying the attitude towards the technology, intention to use it and actual usage of users. This model was based on the Theory of Reasoned Action by Ajzen and Fishbein (1980). The factors used in the Theory of Reasoned Action are Beliefs, Attitude, Subjective norms, Behavioural Intentions, and Actual behavior. The attitude which is one of the factors in TRA was later in TAM divided into two more sub-factors namely perceived usefulness (PU) and perceived ease of use (PEOU) which helps in understanding the user behavior towards computer / information systems. Davis believed that perceived ease of use and perceived usefulness have crucial applications in the technology acceptance model. Moreover, the study conducted by Davis, Bagozzi, and Warshaw (1989) confirms that these two factors are statistically distinct. The model given by Fishbein and Ajzen (1975) explains human behavior by studying their intentions. TAM mainly focused on the determinants which were used to explain the acceptance of people towards computer systems or Information systems (IS), softwares, mobile applications (APP), websites or other similar tools, etc. by studying intentions and ultimate behavior. However, with time, TAM found its relevance in other disciplines like marketing, HR, operations, education, etc as well. TAM has been used in the medical field as well but only four factors were included viz, Perceived ease of use, Perceived Usefulness, Attitudes, and Behavioral intention. The aim was to find out the acceptance of telemedicine technology among Physicians from Hong Kong (Hu, Chau, Sheng & Tam, 1999). It has been used by researchers from varied disciplines to check the acceptance of relevant technologies in their respective areas. In simple words, TAM helps in understanding whether a person will accept a particular technology or not.

The first study which checked acceptance through TAM was conducted by Davis (1989) wherein the acceptance of an Email / text editor was to be checked. The acceptance of text editor was again checked by Davis et al. (1993) but this time it was studied by integrating the Technology Acceptance Model (TAM) and Theory of Reasoned Action (TRA). Any website, App, software, etc nowadays must be user-friendly, interactive, informative and smooth in running. These things add up and help a user to have a better experience. Studies show that having an easy to use the website or in other words, the user-friendly website can improve user's experience (Rauniar et al., 2009; Molla and Licker, 2001; Yoo and Donthu, 2001; Zeithaml, 2000). Hence, to meet that purpose and to understand a point of view of users, TAM has been modified or has been integrated with other models by many researchers in their studies to make it meaningful, purposeful, and comprehensive. One of the studies conducted on user intention in case of spreadsheets compared TAM with Theory of Planned Behavior (TPB) and it was found that TAM provides general information and is easier to use as compared to TPB while as TPB provides more in-depth information (Mathieson, 1991).

TPB model was originally developed to study behaviors on which people usually don't have control (Fishbein & Ajzen, 1975). TAM along with perceived behavioral control and the subjective norm has been used to understand information technology usage (University computing and resource center) among students (Taylor & Todd, 1995). One more study conducted on the same software having the same population integrated Technology Acceptance Model with the Theory of Planned Behavior and the Decomposed Theory of Planned Behavior (DTPB) (Taylor & Todd, 1995). DTPB was formed by adding a little more multi-dimensional belief factors to the already existing TPB model (Taylor & Todd, 1995). A time-series adoption analysis of Microsoft windows 3.1 version was done using TAM and subjective norm; with Image, Visibility, Result Demonstrability, Triability as added sub factors to already existing factors of attitude. While as Normative Beliefs and Motivation to comply with friends, top management, peers, supervisor, MIS department, and local computer specialist formed sub-factors of the subjective norm (Karahanna et al, 1999).

When we use TAM there can be a lag time or gestation time till one factor makes an impact on another factor and a study conducted on debugging tool took into consideration this lagged effect along with TAM by proposing a loopback adjustment and TAM model (Bajaj & Nidumolu, 1998). Another study conducted on software maintenance tools integrated TAM and Task Technology Fit (TTF) wherein all five factors of actual TAM were taken into consideration and these were integrated with five factors of TTF which are Tool Functionality, Tool Experience, Task Characteristics, Task Technology Fit and Actual Tool use (Dishaw & Strong, 1999). A longitudinal study carried out on four different systems in four different organizations which not only included TAM and TTF but also extended TAM by adding Subjective norms (Venkatesh and Davis, 2000). There are studies which takes demographic factors also into consideration while applying TAM in their studies and one such study has been conducted on Data and Information Retrieval where in TAM has been used along with Subjective norm & experience and in addition to that the impact of demographic variable like gender has also been studied (Venkatesh and Morris, 2000).

TAM not only has been used in checking the acceptance and adoption of softwares as explained above rather it has found its application in the business and management field also. There are numerous studies where in exact TAM model or its other versions has been adopted to check the acceptance or adoption of different types of websites, Apps, tools or other paraphernalia. There are both empirical and theoretical studies related to TAM with E-commerce as a subject. Here again, TAM has been used in its original form, modified or integrated with other models to help in

making TAM better explain the relationships between different factors. While applying TAM in E-commerce other factors like Trust, perceived enjoyment and social presence were added so that to help in a better understanding of relationships between online portals and their customers (Qui & Li, 2008).

Trust as a factor has been introduced in many studies with E-commerce as a subject (McCloskey, 2006; Li & Liu, 2008; Pavlou, 2003). In one of the empirical studies using the experimental method, in addition to the questionnaire, TAM was extended by adding Trust and Risk for checking the acceptance of E-commerce (Pavlou, 2003). Internet Experience (IE), personal factor (PF), perceived innovation (PI) and perceived risk (PR) are among other factors that were introduced in TAM while studying the adoption of M-commerce in China (Li & Liu, 2008). TAM has been integrated with the theory of Perceived Risk to examine the acceptance of online shopping channels among online users (Li & Huang, 2009). TAM has been used in the banking sector in many countries also and while examining the internet banking acceptance among South African banking retail customers emphasis was laid on Trust, and two aspects of trust were taken in the study which were situational normality and situational assurance (Maduku, 2016).

Researchers not only keep adding new factors to TAM rather they try to find out if there can be any variable that can moderate the relationship between already existing factors. For example, the moderating effect of context and subject type was studied in a study that aimed to find out the influence of trust on TAM (Wu, Zhao, Zhu, Tan & Zheng, 2011). A model for acceptance of mobile banking was proposed in a case study conducted for users in the United Kingdom (UK). In this model Accessibility, Perceived Enjoyment, and Perceived Risk were added to original TAM. Besides, the impact of demographic variables like age, education level and gender on intentions was also studied (Mojtahed, Nunes & Peng, 2011). In another study conducted in Malaysia in demographics instead of age, level of income and education were taken in consumer traits and TAM was applied to check its impact on E-commerce Application System (Johar & Awalluddin, 2011). TAM has been rigorously used in mobile banking acceptance studies. Even in these studies, TAM has been modified over and over again. One of the studies carried out to check the adoption of mobile banking had integrated TAM with the theory of trying, cynicism and self-confidence. The factors in the model under study were general self-confidence, cynicism, attitude toward success, attitude toward failure, attitude toward learning to use mobile banking, attitude toward mobile banking adoption, intention to adopt mobile banking (Chaouali, Souiden & Ladhari, 2017). The adoption of mobile banking in American consumers was studied with an extended form of TAM in which the factors adopted

were new technology anxiety, mobile banking attitude, privacy, self-efficacy, perceived usefulness, ease of use and intention (Bailey, Pentina, Mishra & Ben Mimoun, 2017). Yet in another study in order to understand the TAM, it was studied in integration with cultural moderators and unified theory of acceptance (Baptista & Oliveira, 2015). Acceptance of mobile banking has been checked in India also and it was found in the study that customers need to be made aware of mobile banking (Jain, 2013).

TAM can be useful to governments as well while introducing online facilities for common people TAM can be of immense help. A study conducted in Taiwan used an extended form of TAM to study the adoption of online tax filling. TAM was extended by adding Trust to it and integrating the whole model with the Theory of Planned Behaviour (Wu & Chen, 2005). In another study, TAM was integrated with TPB, Perceived Risk, and Trust to examine the adoption of eGovernance in China (Xie, Song, Peng & Shabbir, 2017). E-Governance adoption was checked in government organizations in India also in which the factors used were performance expectancy, effort expectancy, social influence, facilitating conditions, trust in data and system, intention and adoption (Barua, 2012). The adoption of e-governance has been checked among teachers in Greece using TAM and diffusion of Innovation (DOI) (Karavasilis, Zafiroopoulos & Vrana, 2010). Yet in another study came up with a model that integrated TAM, trust, and risk to understand the adoption of e-governance (Al-Adawi, Yousafzai & Pallister, 2005).

From the above literature review, it can be said that TAM has been useful in many sectors like the business sector (to check acceptance of M-commerce, E-commerce, shopping portals / websites, etc) in the medical field, banking sector, governments & administration and Information technology in particular. In order to make the studies more meaningful and consequential, TAM has been modified meticulously according to the need. Many factors hitherto have been added and deleted in different versions of TAM. Based on the techniques employed in this study, few factors have been added while others have been deleted as well. The decision to add or delete new factors was taken based on the literature review and the outcomes of the incident method.

Contingency Model of Technology Acceptance (CMTA)

The contingency Model of Technology Acceptance claims that there is no model which best fits for measuring the acceptance of any type of technology. Instead, an optimal model is one that not only explores the factors based on literature but also checks the relevance of factors by thoroughly understanding a technology under study, the prevailing situation, the type of potential users, etc. The literature may suggest numerous factors but it is the responsibility of a researcher to give more weightage to those factors

which are found to have extra relevance than the rest. A researcher must not select the factors explored through literature review merely based on hunches. Additionally, an attempt should be made to explore new factors that might be affecting the acceptance of users but have not been explored in the literature yet. Literature must be used for provoking or igniting the thought process of a researcher rather than causing a blockade for it. This sometimes is called a psychological myopia where a researcher decides by overlooking less prominent pieces of information. Most of the studies in the past have shown that researchers usually find a gap based on context/sector in which TAM has not been used or the factor which has not been used in a particular context. Fewer studies in actuality have tried to explore purely new factors based on some unsullied investigation. Thus new ways of exploring possible spanking new factors must be employed. These ways or methods can be anything ranging from a simple interview of respondents to incident method or employing a case study method or Delphi technique for that matter. The explored factors can then be empirically tested for their relevance and significance.

The explanation of how TAM has been modified and tailored according to every single study has been studied in the previous section of the literature review. Based on the literature review it can be said that researchers not always use the same factors of TAM as given by Davis (1986) but fairly have modified the model countless times to suit their studies. More to the point, few researchers have produced the theoretical extension of the TAM as well (Venkatesh & Davis, 2000). Users give different weightage to the same factor indifferent circumstances and/or in different technologies when it comes to accepting a particular technology. For instance, the factor relevant to check the acceptance of a newly constructed free learning app for students might not be the same as the factor for checking the acceptance of a shopping portal or a website. Another example could be that risk of getting looted by giving credit card information online can be an important factor while checking acceptance of a shopping portal while it cannot be much relevant factor while checking the acceptance of a learning App for students. For them, the most influencing factor could be the easiness to understand a mathematical problem through the App. Consequently, the contingency model of technology acceptance suggests that further investigation using any relevant technique should be used to search for more appropriate factors.

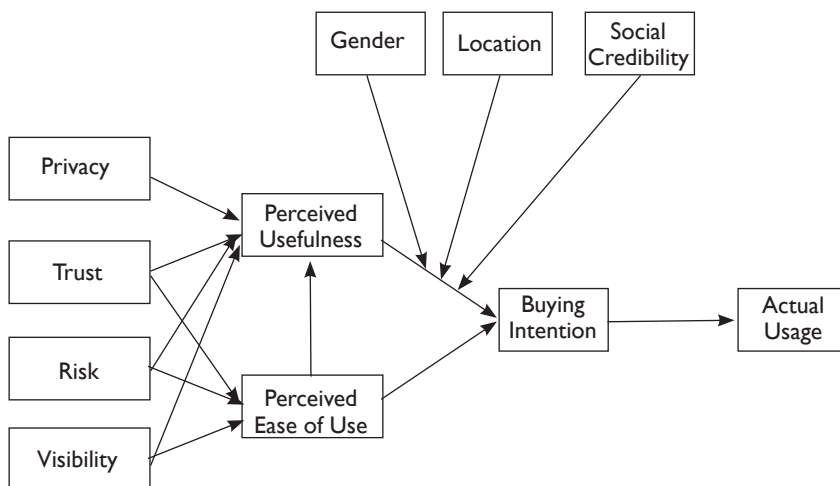
Conceptual Model Building using the Contingency Model of Technology Acceptance

While reviewing the past literature the researcher has come across an enormous number of factors that have been integrated with The TAM.

All the reviewed studies emphasize the importance and relevance of these factors based on empirical evidence. Notwithstanding the proven relevance of said factors, integrating all these factors with TAM in a single conceptual framework is practically impossible and not viable for many reasons. First of all, it would have caused an issue of multicollinearity hence masking the true effects of relevant variables. Second, it would have increased the technique's ability to fit the sample data but this over fit data, in turn, would have decreased the generalization ability of the results. Finally, it would have increased the size of the questionnaire, making it intricate for respondents to participate in the study. Hence, a different approach called 'Incident Method' was used to jot down the final list of factors that must be assumed more relevant by the experts. To come up with final factors for the study, a group of 30 people were consulted. All the members in the group were youth (i.e., between the age group of 15 to 29) as per the definition of the youth given by the Ministry of Statistics and Programme Implementation (MOSPI, 2017), etc. The group included six members from following each subset viz school goers, college students and postgraduate students, scholars and working youth below the age of thirty. The study included the service of two experts as observers. Many factors based on literature review were presented to the group and they were asked to present their point of view as to which factors were most important and relevant in case of checking the adoption of the Facebook Marketplace and why. The group members were asked to take down their responses on a response sheet for every factor along with a valid explanation. After completing this step another task started with reading out the explanations in front of observers and other members for their comments. This task was followed by extensive discussions and comprehensive question-answer sessions. In the last phase, the observers decided on the final list of factors to be included in the study based on a consensus. The most relevant factors which were derived based on the discussions and the consensus among the group members were: visibility, trust, privacy, perceived risk, perceived usefulness, perceived ease of use, shopping intention and actual usage. These factors were taken from literature however; through this study, few more factors surfaced which seems to influence the shopping intentions of the facebook marketplace. These factors were the location of the seller and the social credibility of the seller. Location matters to buyers in case of buying from the facebook marketplace. As FBMP doesn't itself check or ship the products, buyers are supposed to meet the seller in person and buy the products after checking it. Thus, how far the location of the seller is or whether the area/meeting place is a safe one or not affects the shopping intention. In the same manner reputation/social credibility of the seller i.e., whether the seller profile is a newly created ID or an old one, whether the

seller has been rated better or not also helps in building the confidence while connecting with the seller. It was further observed that females as compared to males were more apprehensive in taking the risk of meeting unknown sellers. Hence, demographic variables also tend to influence the intentions to buy from facebook Marketplace. Thus these three factors were taken as the moderators in the conceptual model. Among other factors, the ones which were given the least importance by the participants were peer influence or social influence (27 out of 30), and hedonic motivation (21 out of 30). The majority of participants replied with a consensus that they don't get influenced by these factors to use FBMP. Based on this interview with a group of people and the comprehensive literature review, the researchers came up with the following suggested conceptual model (Figure-1).

Figure-1: Suggested Conceptual Framework



Conclusion

This study focused on suggesting a methodology that can be used by researchers in exploring and selecting the factors. The study emphasized the importance of the fundamental method of review of literature while at the same time called attention to the proper selection of factors using any of the decision-making techniques. The present study for that matter used incident method and consequently, proposed the contingency model of technology acceptance (CMTA). The framework of the current study is very much distinct from the past studies as this is a creative combination of additional factors that have been integrated with the existing TAM model. The rationale for suggesting the contingency model of technology acceptance is that every website, system or any form of technology has

a different purpose, features, type of users, and different environment hence, the factors with high relevance in one context might lose their relevance in another context. Therefore, there should be some mechanism for the selection of relevant factors as per the need and context of the study.

References

- Al-Adawi, Z., Yousafzai, S., & Pallister, J. (2005, September). Conceptual Model of Citizen Adoption of E-Government. *The Second International Conference on Innovations in Information Technology (IIT'05)* (pp: 1-10).
- Bailey, A. A., Pentina, I., Mishra, A. S., & Ben Mimoun, M. S. (2017). Mobile Payments Adoption by US Consumers: An Extended TAM. *International Journal of Retail & Distribution Management*, 45(6), 626-640.
- Bajaj, A., & Nidumolu, S. R. (1998). A Feedback Model to Understand Information System Usage. *Information & Management*, 33(4), 213-224.
- Baptista, G., & Oliveira, T. (2015). Understanding Mobile Banking: The Unified Theory of Acceptance and Use of Technology Combined with Cultural Moderators. *Computers in Human Behavior*, 50, 418-430.
- Barki, H., & Hartwick, J. (1989). Rethinking the Concept of User Involvement. *MIS Quarterly*, 53-63.
- Barua, M. (2012). E-governance Adoption in Government Organization of India. *International Journal of Managing Public Sector Information and Communication Technologies*, 3(1), 1.
- Chaouali, W., Souiden, N., & Ladhari, R. (2017). Explaining Adoption of Mobile Banking with the Theory of Trying, General Self-Confidence, and Cynicism. *Journal of Retailing and Consumer Services*, 35, 57-67.
- Davis, F. D. (1993). User Acceptance of Information Technology: System Characteristics, User Perceptions and Behavioral Impacts. *International Journal of Man-Machine Studies*, 38(3), 475-487.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 35(8), 982-1003.
- Dishaw, M. T., & Strong, D. M. (1999). Extending the Technology Acceptance Model with Task-Technology Fit Constructs. *Information & Management*, 36(1), 9-21.
- Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*.
- Gould, J. D., Boies, S. J., & Lewis, C. (1991). Making Usable, Useful, Productivity-Enhancing Computer Applications. *Communications of the ACM*, 34(1), 74-85.
- Hu, P. J., Chau, P. Y., Sheng, O. R. L., & Tam, K. Y. (1999). Examining the Technology Acceptance Model Using Physician Acceptance of Telemedicine Technology. *Journal of Management Information Systems*, 16(2), 91-112.

- Jain, Y. (2013). Mobile Banking: A Study on Adoption & Challenges in Southern Rajasthan, India. *International Journal of Innovative Research and Development*, 2(4), 902-914.
- Johar, M. G. M., & Awalluddin, J. A. A. (2011). The Role of Technology Acceptance Model in Explaining Effect on E-Commerce Application System. *International Journal of Managing Information Technology*, 3(3), 1-14.
- Karahanna, E., Straub, D. W., & Chervany, N. L. (1999). Information Technology Adoption Across Time: A Cross-Sectional Comparison of Pre-Adoption and Post-Adoption Beliefs. *MIS Quarterly*, 183-213.
- Karavasilis, I., Zafropoulos, K., & Vrana, V. (2010, September). Extending TAM to Understand E-governance Adoption by Teachers in Greece. *World Summit on Knowledge Society* (pp: 57-68). Springer, Berlin, Heidelberg.
- Li, Q., & Liu, Z. (2008). Modeling and Empirical Research of Online Trust Based on TAM. *China Journal of Information Systems*, 2, 48-54.
- Li, W., & Liu, Y. M. (2008). Research on Adopting Behaviour of Mcommerce. *Technological Development of Enterprise*, 27, 70-72.
- Li, Y. H., & Huang, J. W. (2009). Applying Theory of Perceived Risk and Technology Acceptance Model in the Online Shopping Channel. *World Academy of Science, Engineering and Technology*, 53(1), 919-925.
- Maduku, D. K. (2016). The Effect of Institutional Trust on Internet Banking Acceptance: Perspectives of South African Banking Retail Customers. *South African Journal of Economic and Management Sciences*, 19(4), 533-548.
- Mathieson, K. (1991). Predicting User Intentions: Comparing the Technology Acceptance Model with the Theory of Planned Behavior. *Information Systems Research*, 2(3), 173-191.
- McCloskey, D. W. (2006). The Importance of Ease of Use, Usefulness, and Trust to Online Consumers: An Examination of the Technology Acceptance Model with Older Customers. *Journal of Organizational and End User Computing (JOEUC)*, 18(3), 47-65.
- Ministry of Statistics and Programme Implementation (MOSPI) (Government of India). (2017) Youth in India. Retrieved February 05, 2019, from http://mospi.nic.in/sites/default/files/publication_reports/Youth_in_India-2017.pdf
- Mojtahed, R., Nunes, J. M. B., & Peng, G. C. (2011). The Role of the Technology Acceptance Model in Information Systems Research: A Case Study. *Proceedings of the IADIS International Workshop on Information Systems Research Trends, Approaches and Methodologies*. Sheffield.
- Molla, A., & Licker, P. S. (2001). E-commerce Systems Success: An Attempt to Extend and Respecify the Delone and MacLean Model of IS Success. *J. Electron. Commerce Res.*, 2(4), 131-141.

- N.D (2018, March 20). Biggest Online Startup Failures – Read to Learn What NOT to Do. Retrieved January 12, 2019, from <https://www.fatbit.com/fab/biggest-online-startup-failures-read-learn/>
- Nickerson, R. S. (1981). Why Interactive Computer Systems are Sometimes Not Used by People Who Might Benefit from Them. *International Journal of Man-Machine Studies*, 15(4), 469-483.
- Pavlou, P. A. (2003). Consumer Acceptance of Electronic Commerce: Integrating Trust and Risk with the Technology Acceptance Model. *International Journal of Electronic Commerce*, 7(3), 101-134.
- Qiu, L., & Li, D. (2008). Applying TAM in B2C E-commerce Research: An Extended Model. *Tsinghua Science and Technology*, 13(3), 265-272.
- Rauniar, R., Rawski, G., Crumbly, J., & Simms, J. (2009). C2C online Auction Website Performance: Buyer's Perspective. *Journal of Electronic Commerce Research*, 10(2).
- Taylor, S., & Todd, P. (1995). Assessing IT usage: The Role of Prior Experience. *MIS Quarterly*, 561-570.
- Taylor, S., & Todd, P. A. (1995). Understanding Information Technology Usage: A Test of Competing Models. *Information Systems Research*, 6(2), 144-176.
- Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46(2), 186-204.
- Venkatesh, V., & Morris, M. G. (2000). Why Don't Men Ever Stop to Ask for Directions? Gender, Social Influence, and their Role in Technology Acceptance and Usage Behavior. *MIS Quarterly*, 115-139.
- Wu, K., Zhao, Y., Zhu, Q., Tan, X., & Zheng, H. (2011). A Meta-Analysis of the Impact of Trust on Technology Acceptance Model: Investigation of Moderating Influence of Subject and Context Type. *International Journal of Information Management*, 31(6), 572-581.
- Wu, L., & Chen, J. L. (2005). An Extension of Trust and TAM Model with TPB in the Initial Adoption of On-line Tax: An Empirical Study. *International Journal of Human-Computer Studies*, 62(6), 784-808.
- Xie, Q., Song, W., Peng, X., & Shabbir, M. (2017). Predictors for E-government Adoption: Integrating TAM, TPB, Trust and Perceived Risk. *The Electronic Library*, 35(1), 2-20.
- Yoo, B., & Donthu, N. (2001). Developing A Scale to Measure the Perceived Quality of An Internet Shopping Site (SITEQUAL). *Quarterly Journal of Electronic Commerce*, 2(1), 31-45.
- Zeithaml, V. A. (2000). Service Quality, Profitability, and the Economic Worth of Customers: What We Know and What We Need to Learn. *Journal of the Academy of Marketing Science*, 28(1), 67-85.



Role of Customer Satisfaction & Trust in Increasing the Repurchase Intent of Prepaid Mobile Subscribers in India

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Abstract

The Indian mobile telecommunication services market is a very dynamic market nowadays due to tremendous growth over the past few years. Competition among existing players has also increased as the telecom companies are now focusing on both retaining the existing customer base as well as persuading the new-comers by attracting them through introductory offers and pricing policies. The prime target of this paper is to analyze the customer's repurchase intentions with the help of the antecedents such as Satisfaction & Trust in the case of Indian prepaid mobile subscribers. The present paper focuses on the means or the factors that increase the repurchase likeliness of the prepaid mobile subscribers. Fuzzy AHP technique is used as the framework to analyze different brand-related, emotional components and individual-related factors that contribute towards the choice of a prepaid mobile service by the customers. The outcome of this research paper can be used by cellular service providers to formulate their branding strategy, their marketing strategy and customer retention strategy.

Keywords: Customer Satisfaction, Prepaid Mobile Services, Repurchase Intention, Trust

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Introduction

The Indian telecom industry is among the fastest growing sector paralleled by the ever-increasing competition. This is evident from the fact that India ranks second in the world for its telecom network with a jaw dropping subscriber base of 1193.72 million as of November 2018 ('Telecom Industry in India', 2019). The stiff market competitiveness is the outcome of the innovative strategies that are being developed every now and then by the telecom operators with an aim to identify, target and retain the profitable customers by putting before them a plethora of enticing services to choose from so as to gain customer loyalty towards the service providers. The constant efforts of mobile network operators in this direction have led to the telecom penetration rate rising abruptly from 18.23% in FY '07 to 92.84% in FY '18 ('Telecom Industry in India', 2019).

India also ranks second from the top in internet subscriber base which was recorded 560.01 million at the end of September 2018 ('Telecom Industry in India', 2019). There has been a noticeable surge in the revenues of the Indian telcos. The gross revenue of Indian telecom industry has taken a leap from US \$32.05 Billion in FY '08 to US \$39.49 Billion in FY '18. It stood at Rs. 1,16,228 Crore (US \$16.56 Billion) between April-September 2018 ('Telecom Industry in India', 2019). Affordable smartphones and lower cellular data rates are sure to drive further the growth in Indian telecom sector.

The four major opportunities that can be capitalized today by the telecom operators include, the three pronged National Digital Communications Policy of 2018 floated by the Indian Government – to develop and establish a secured digital communications framework, ensure connectivity of untapped areas, propel and create suitable environment to attract investments, create jobs and support innovation-led start-ups in the telecom sector; the population of rural India; emergence of the latest trends in the telecom sector like Green Telecom, Internet of Things (IoT) etc. and lastly the most acclaimed Digital India Programme of the Indian Government to connect diverse sectors like healthcare, retail etc. through the internet ('Telecom Industry in India', 2019).

Literature Review

The theoretical background which includes the vital concepts employed in the preparation of this work has been discussed below.

Customer Satisfaction

Much has been discussed in the marketing literature regarding business success with strong emphasis on the factor – Customer Satisfaction. According to (Kandampully & Suhartanto, 2000) and (Kim et al., 2004)

increment in purchaser's contentment standards signify better financial standing and feasibility of the business venture as the factor reduces the defection tendencies in a customer along with price elasticity and transaction costs, there is an improvement in customer loyalty and promotion through positive word-of-mouth and all of this bolsters the company's reputation at the end. According to (Anderson et al., 1997) and (Banker et al., 2000) purchaser contentment is commonly considered as a post-consumption assessment activity and is quite often used internally to evaluate the company's performance in the market, to perform resource allocation function, to align strategic goals and initiatives and it also assists in the modelling of an effective employee compensation scheme.

According to (Anderson et al., 2004) Customer Satisfaction externally acts as a signaler for the customers, potential customers, competitors, investors and policy makers.

Trust

According to (Selnes, 1998) the telecom services are continuous in nature and the customer-operator relationship plays a significant role in key future decisions to be taken by the customer after availing the telecom service. Thus, Trust is an essential outcome of Customer Satisfaction.

According to (Ganesan, 1994) the buyer-seller relationship is moderated by Trust which is the key influencer and gets linked with the factor satisfaction with the passage of time.

According to (Ranaweera & Prabhu, 2003) Satisfaction levels of a customer and the trust shown are closely associated with customer loyalty and repurchase intent.

Service Quality

According to (Akbar & Parvez, 2022) Services Quality is defined as the rationale of gaps between service competence and service expected or being received currently by the customer. It is the degree up to which the actual service standards match with customer's expectations.

According to (Sabir et al., 2022) most of the researches have drawn the conclusion that greater the services offered by the telecom companies as per customer's true needs, greater will be the level of satisfaction perceived by the customer and vice versa.

Customer Service & Complaint Redressal

According to (Kim et al., 2004) Customer Care is all about customer assistance systems and processes, complaint handling and responsiveness and is strictly concerned with the speed, ease and user friendliness of complaint reporting and recording systems to ensure better customer support and lessen the customer grievances towards the organization.

Research Framework

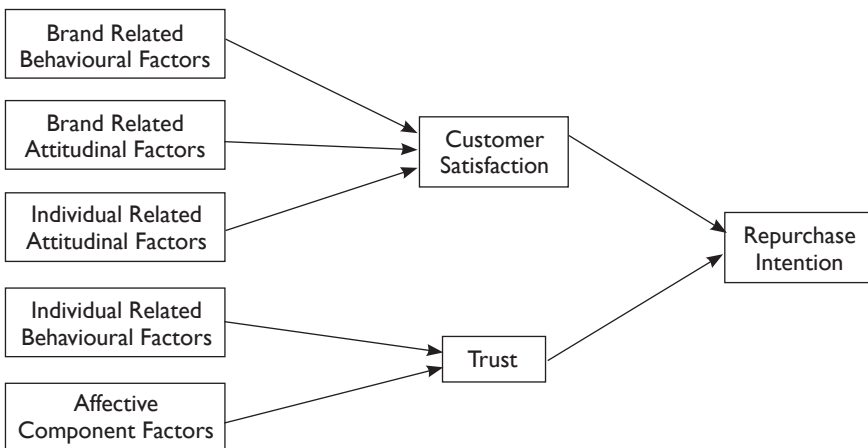
The theoretical construct for this research consists of three major underpinnings, namely – *Customer Satisfaction*, *Trust* & *Repurchase Intention*, that are considered for studying the behaviour of Prepaid Mobile Subscribers in India. They are discussed below:

Customer Satisfaction

Customer Satisfaction has played a pivotal role in determining the relationship between a company and its customers. Satisfaction assessment by a customer is based on customer's encounters and experiences while being associated with a particular brand. Basically, satisfaction is nothing but the overall post-purchase evaluation and affective feedback by consumers based on their product or service purchase experience. Satisfaction also assists in forecasting values of behavioural variables relating to a customer, like intentions pertaining to a repurchase decision, recommendations and after-purchase loyalty considerations etc (Homburg & Giering, 2000).

The radicalized developments in prepaid mobile services market in the recent years has led to the telecom industry witnessing cut-throat competition among themselves, with the telecom operators offering a bouquet of fairly enticing services to grab the attention of new customers while retaining the existing ones (Anderson, 1998). The main focus of telecom operators, these days, is to deliver a higher degree of customer satisfaction and to lower the defection intentions or brand switching of customers owing to capable offerings that are presented before them by the competitors present in the market.

Figure-1: Theoretical Framework of the Study



The Customer Satisfaction has three antecedents, that are analyzed during the course of this research. They are- '*Brand Related Behavioural Factors*', '*Brand Related Attitudinal Factors*', & '*Individual Related Behavioural Factors*'. '*Brand Related Behavioural Factors*' comprise of the factors that make a customer judge and compare the performance of a brand under consideration with its opposites. These factors are basically fundamental and tangible in nature. '*Brand Related Attitudinal Factors*' comprise of attitudinal components such as customer's attitudes and brand preferences, present requirements and their commitments to make a purchase. '*Individual Related Behavioural Factors*' comprise of the factors such as customer expectations from the telecom operator and specific individual experiences that have drawn strong liking in the minds of customers.

The variables contributing to '*Brand Related Behavioural Factors*' are:

- SIM card rates
- Billing
- Ease of documentation process
- Innovation
- Validity
- Network Coverage
- Quality of Service

The variables contributing to '*Brand Related Attitudinal Factors*' are:

- Perceived Brand Image of the Company
- Diverse nature of Value-Added Services

The variables contributing to '*Individual Related Behavioural Factors*' are:

- Customer Care
- Complaint handling, redressal & responsiveness of Company

Trust

Trust is the assurance that a customer expects from a firm that he or she will be served for the wants. It is the faith and confidence extended by the customer in the brand that drives trust. It includes an expectancy that the company will prove its word and honour the customer's faith. Trust supports a customer to believe in the actions taken by him or her with regard to the current purchase decisions and choice of services made. Customer's attitude and emotional attachment play a pivotal role for a customer to place and showcase his or her trust towards a particular brand. Customer's attitude is the degree to which a customer appraises a brand's products and services favourably or unfavourably ('A study of the various factors

affecting the Consumer Behavior towards Telecom Service Providers in Haryana – International e-journal of Commerce and Management’, 2022). The day-to-day experiences of a customer availing a particular facility of a specific brand induces positive or negative feelings in him or her and this shapes the customer’s attitude towards the brand. Thus, customer’s attitude and emotional elements play a decisive role in trust building and propensity development of a customer towards a specific brand. This tendency, when fully developed, contributes to the creation of the urge in the customer for a repurchase decision. There are two antecedents of Trust, which are namely- ‘*Individual Related Attitudinal Factor*’ & ‘*Affective Component Factor*’. ‘*Individual Related Attitudinal Factors*’ comprise of individual requirements based on which the customers evaluate each brand. These requirements vary significantly from customer to customer. ‘*Affective Component Factor*’ considers all the factors that have paved the way for the development of a strong attachment between customers and their brands.

The variables that contribute towards ‘*Individual Related Attitudinal Factor*’ are:

- Perceived Usefulness of Brand

The variables that contribute towards ‘*Affective Component Factor*’ are:

- Customer’s Loyalty
- Behaviour of frontline employees with customers
- Long-term relationship measures taken by the brand

Repurchase Intention

Consumer Repurchase Intention covers all the aspects that make the consumer realize the relevance of the brand he or she is relying upon for availing products or services. It enthruses the customers to make repeatable purchases from the same brand in future. The repurchase behaviour shown by the customers are the after-effects of customer satisfaction, customer loyalty, perceived usefulness and trust (‘A study of the various factors affecting the Consumer Behavior towards Telecom Service Providers in Haryana – International e-journal of Commerce and Management’, 2022). Firms make efforts for customer retention and loyalty and these efforts get acknowledged by the customer in the form of a repurchase action. Customer propensity towards a particular brand indicates the brand’s positive behaviour towards its customers which gets validated in the form of a repurchase action by the customer. All the behavioural factors, attitudinal responses, brand related as well as individualistic parameters and affective component factors have a combined role in the repurchase decision made by a customer. Thus, repurchase intent is like a strong substitute and measure of customer satisfaction.

Research Methodology

Fuzzy Analytic Hierarchy Process (Fuzzy AHP)

The paradigm shift from other decision-making tools to AHP has been found to be more precise and less time consuming. AHP does not include complex mathematical approaches and hence it becomes convenient for a person to understand and make use of it easily.

Fuzzy Pair Wise Comparison

The evaluation is done as soon as the data is taken down from the respondents or stakeholders, namely, internal employees, customers, retailers etc. and every aspect is noted and calculated. Each individual detail of the data at every single level is compared to the data available for the next level. Fuzzy Pair-wise analysis and comparison is conducted by using fuzzy linguistic variables and terms and ranges from 1-10 as indicated by fuzzy numbers in the triangular format in the following tables.

Table-1

Repurchase Intention	AHP Mark	TFN	Reciprocal of The TFN
Extremely Agreed	9	(8.5, 9, 9)	(1/9, 1/9, 1/8)
Strongly to Extremely agreed	8	(7, 8, 9)	(1/9, 1/8, 1/7)
Very Strongly Agreed	7	(6.5, 7, 8)	(1/8, 1/7, 1/6)
Strongly to Very Strongly agreed	6	(5, 6.5, 7)	(1/7, 1/6, 1/5)
Strongly Agreed	5	(4.5, 5, 6)	(1/6, 1/5, 1/4)
Moderately To Strongly agreed	4	(3, 4, 5)	(1/5, 1/4, 1/3)
Moderately Agreed	3	(2.5, 3, 4)	(1/4, 1/3, 1/2)
Equally To Moderately agreed	2	(1, 2, 3)	(1/3, 1/2, 1)
Equally Agreed	1	(1, 1, 1)	(1, 1, 1)

Table-2: Customer Satisfaction

Criteria	Brand Related Behavioural Factors			Brand Related Attitudinal Factors			Individual Related Behavioural Factors		
	M	B	A	M	B	A	M	B	A
SIM card rates	0.362	0.354	0.349	0.199	0.246	0.266	0.439	0.400	0.385
Billing	0.271	0.297	0.306	0.490	0.427	0.401	0.239	0.276	0.293
Ease of documentation process	0.403	0.380	0.370	0.242	0.246	0.288	0.356	0.347	0.342
Innovation	0.713	0.474	0.444	0.117	0.441	0.264	0.169	0.281	0.293
Validity	0.355	0.340	0.343	0.529	0.330	0.412	0.117	0.219	0.245
Network Coverage	0.339	0.340	0.343	0.331	0.430	0.329	0.331	0.330	0.389
Quality of Service	0.426	0.356	0.355	0.574	0.306	0.400	0.000	0.214	0.244
Perceived Brand Image	0.580	0.387	0.356	0.210	0.367	0.317	0.210	0.321	0.317
Diverse nature of Value-Added Services	0.713	0.496	0.449	0.000	0.243	0.246	0.210	0.345	0.302
Customer Care	0.415	0.386	0.371	0.386	0.259	0.359	0.198	0.259	0.270
Complaint handling, redressal & responsiveness	0.625	0.477	0.434	0.117	0.244	0.267	0.259	0.304	0.299

Table-3: Trust

Criteria	Individual Related Attitudinal Factors			Affective Component Factors		
	M	B	A	M	B	A
Perceived Usefulness of Brand	0.655	0.439	0.455	0.123	0.246	0.275
Customer's Loyalty	0.423	0.390	0.445	0.198	0.274	0.263
Behaviour of Frontline Employees with Customers	0.300	0.289	0.408	0.280	0.479	0.265
Long-term Relationship Measures Taken by the Brand	0.556	0.453	0.402	0.155	0.333	0.292

Results and Discussions

The results are computed and reported below.

Criteria	Customer Satisfaction And Trust								
	Brand Related Behavioural And Attitudinal Factors			Individual Related Behavioural And Attitudinal Factors			Affective Component Factors		
Weight Mass	0.38	0.36	0.35	0.36	0.35	0.37	0.19	0.33	0.27
Defuzzied Mass	0.36			0.36			0.27		

Brand related behavioural & attitudinal factors have got the maximum score of 0.36 on overall criteria for *Customer Satisfaction and Trust*.

Similarly, *Individual related behavioural and attitudinal factors* have also performed well on overall criteria and have attained the score of 0.36 for *Customer Satisfaction and Trust*.

Hence, *Brand related behavioural & attitudinal factors* as well as *Individual related behavioural and attitudinal factors* are an appropriate choice.

Conclusion

The multiple criterion approach has been used above for studying how the customer's priorities gets influenced while making a proper selection decision regarding choice of a telecom service from a series of telecom operators prevailing in the market. The antecedents and repercussions of *Customer Satisfaction and Trust*, in the context of prepaid mobile subscribers in India, and their combined effect on modifying or increasing the *Repurchase Intent* of the existing consumer base is the primary objective of the study. The telecom sector is rapidly facing intense competition due to the growth that it has received in the past few years due to which it becomes very necessary to get insights on the customer's perception towards the changing telecom market climate. This research work shows that *Brand related behavioural and attitudinal factors* like SIM Card rates, billing, innovation, network coverage, quality of service and service validity along with brand image perceived and value-added services bestowed by the

service providers impacts heavily on customer satisfaction and loyalty. Similarly, from among the factors studied in the context of telecom sector, the *Individual related behavioural and attitudinal factors* like perceived brand usefulness, customer care, complaint redressal and responsiveness standards maintained and exercised by the telecos too are found to influence the consumer's present and future buying decisions.

References

- A Study of the Various Factors Affecting the Consumer Behavior Towards Telecom Service Providers in Haryana. *International e-journal of Commerce and Management*. (2022). Retrieved 21 January 2022, from <http://www.iejcm.co.vu/vishal-garg>.
- Akbar, M., & Parvez, N. (2022). Impact of Service Quality, Trust, and Customer Satisfaction on Customers Loyalty. *Assumptionjournal.au.edu*. Retrieved 21 January 2022, from <http://www.assumptionjournal.au.edu/index.php/abacjournal/article/view/526>.
- Anderson, E. (1998). Customer Satisfaction and Word of Mouth. *Journal of Service Research*, 1(1), 5-17. <https://doi.org/10.1177/109467059800100102>.
- Anderson, E., Fornell, C., & Mazvancheryl, S. (2004). Customer Satisfaction and Shareholder Value. *Journal of Marketing*, 68(4), 172-185. <https://doi.org/10.1509/jmkg.68.4.172.42723>.
- Anderson, E., Fornell, C., & Rust, R. (1997). Customer Satisfaction, Productivity, and Profitability: Differences Between Goods and Services. *Marketing Science*, 16(2), 129-145. <https://doi.org/10.1287/mksc.16.2.129>.
- Banker, R., Potter, G., & Srinivasan, D. (2000). An Empirical Investigation of an Incentive Plan that Includes Nonfinancial Performance Measures. *The Accounting Review*, 75(1), 65-92. <https://doi.org/10.2308/accr.2000.75.1.65>.
- Eajournals.org. (2022). Retrieved 21 January 2022, from <http://www.eajournals.org/wp-content/uploads/An-Empirical-Study-of-Factors-Affecting-Customer-Loyalty-of-Telecommunication-Industry-in-the-Kingdom-of-Saudi-Arabia.pdf>.
- Ganesan, S. (1994). Determinants of Long-Term Orientation in Buyer-Seller Relationships. *Journal of Marketing*, 58(2), 1. <https://doi.org/10.2307/1252265>.
- Homburg, C., & Giering, A. (2000). Personal Characteristics As Moderators of the Relationship Between Customer Satisfaction and Loyalty? An Empirical Analysis. *Psychology and Marketing*, 18(1), 43-66. [https://doi.org/10.1002/1520-6793\(200101\)18:1<43::aid-mar3>3.0.co;2-i](https://doi.org/10.1002/1520-6793(200101)18:1<43::aid-mar3>3.0.co;2-i).
- Ipedr.com. (2022). Retrieved 21 January 2022, from <http://www.ipedr.com/vol11/5-R00009.pdf>.
- Kandampully, J., & Suhartanto, D. (2000). Customer Loyalty in the Hotel Industry: The Role of Customer Satisfaction and Image. *International*

- Journal of Contemporary Hospitality Management*, 12(6), 346-351. <https://doi.org/10.1108/09596110010342559>.
- Kim, M., Park, M., & Jeong, D. (2004). The Effects of Customer Satisfaction and Switching Barrier on Customer Loyalty in Korean Mobile Telecommunication Services. *Telecommunications Policy*, 28(2), 145-159. <https://doi.org/10.1016/j.telpol.2003.12.003>.
- Ranaweera, C., & Prabhu, J. (2003). On the Relative Importance of Customer Satisfaction and Trust As Determinants of Customer Retention and Positive Word of Mouth. *Journal of Targeting, Measurement and Analysis for Marketing*, 12(1), 82-90. <https://doi.org/10.1057/palgrave.jt.5740100>.
- Sabir, R., Irfan, Sarwar, Sarwar, & Akhtar. (2022). The Impact of Service Quality, Customer Satisfaction and Loyalty Programs on Customer's Loyalty: An Evidence from Telecommunication Sector. Ideas.repec.org. Retrieved 21 January 2022, from <https://ideas.repec.org/a/asi/joabsj/v3y2013i11p306-314id4111.html>.
- Selnes, F. (1998). Antecedents and Consequences of Trust and Satisfaction in Buyer-Seller Relationships. *European Journal of Marketing*, 32(3/4), 305-322. <https://doi.org/10.1108/03090569810204580>.
- Telecom Industry in India. Ibef.org. (2019). Retrieved 21 January 2022, from <http://www.ibef.org/>



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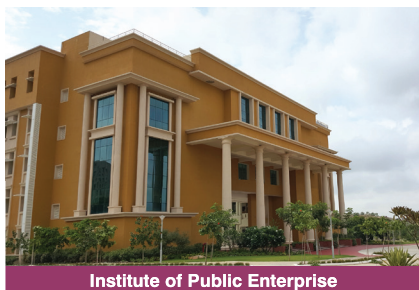
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