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Dynamics of Information Technology Adoption, Quality Management and Organizational Performance

M. Sheik Mohamed and H. Anisa

The research has been undertaken in the knowledge intensive service sectors in India with a sample size of 742. The SEM analysis has been specifically chosen for its ability to perform the Confirmatory Factor Analysis (CFA) and Regression Analysis (RA) simultaneously. Moreover, the constructs have been widely researched and Exploratory Factor Analysis may not be needed as the indicators have a proved reliability and validity scores. SEM uses partial least square technique and provides both the path coefficients and the t-values. While path moding gives the strength of the relationships between the variables the t-tests give the significance of the relationships. The SDMS uses the standard procedure of modeling and simulation which involves the sequential and interrelated steps of problem definition, conceptualization, causal relationship building, development of mathematical equations and stock and flow diagrams, simulation, and policy implementation. Combining SEM and SDMS for causation modeling and empirical validation is the pioneering work undertaken in this research.

Introduction

The IT revolution has made the management literature inundated with articles on the role of IT in the present business scenario, and globalization has put quality management in the forefront. The dynamics between these two have also been studied by quite a good number of researchers (Chooi-Leng, Davies, & Finlay, 2000; Chan & Al-Hawamdeh, 2002; Osborne & Oberski, 2004; Xingxing, 2009; Wolfgang & Jan, 2010, Sánchez & Martínez, 2011; Tarí & Pereira, 2013). IT has not only achieved the required results through enhancing the business performance, but also, ensured the economic, social and environmental sustainability (Nagarajan et al., 2013). So, IT will continue to remain in business as in addition to the performance objectives of the company, it also meets other statutory requirements. The QM on the other hand, has also established itself in both the product and service industries as the market has matured into quality consciousness since the past decade. So, the causal linkage between IT and QM and the

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direct as well as the moderating effect of QM on OP on the overall performance (operational and organizational) will be an interesting as well as an important issue in the present context.

Literature Review

The Role of Information Technology

The role of IT on OP has been the focus in this research when the QM acts as the moderator. A group of researchers have emphasized the role of IT in quality management (QM) environments (Miller, 1996; Aiken et al., 1996; Counsell, 1997; Chooi-Leng et al., 2000; Zha, Li, & Yan, 2013; Boulesnane & Bouzidi, 2013). There are studies which have revealed that the organization can reduce costs, improve product and service quality, enhance dependability, or increase flexibility. There are adequate number of research which speak for and against the role of IT towards organizational performance (Thatcher and Pingry, 2004; Byrd et al., 2006; Lin and Tseng, 2006). While this kind of arguments will continue to remain in the research literature, the important aspect is to identify the role it can play in the present day situation. Following are the main dimensions which have been focused on owing to their relative importance in the service sector (Table 1).

Table 1: The dimensions of IT adoption

Dimension	Meaning	Literature
1. Customer/ Supplier relationship	Using IT to maintain supplier relationship through networking.	Curkovic et al., 2000; Das et al., 2000; Sun, 2000; Kaynak, 2003;Sila and Ebrahimpour, 2005; Yeung et al., 2005.
2. Product service design	Using IT in product/ service design	Ahire and Dreyfus, 2000; Curkovic et al., 2000; Kaynak, 2003; Alonso-Rasgado, Thompson, and Elfstrom, 2004; Baines et al., 2007; Richard, Clayton, Chris J. Backhouse, & Samir Dani, 2012.
3. Employee networking	Apply IT in employee performance enhan-cement; team working; training; involve employees in decision making.	Wilson and Collier, 2000; Sun, 2000; Douglas and Judge, 2001; Kaynak, 2003; Prajogo and Sohal, 2003; Lau et al., 2004; Sila and Ebrahimpour, 2005; Yeung et al., 2005
4. Knowledge creation	Using the IT infrastructure to create knowledge from all the available sources internal and external.	Ahuja, 2000; Lee and Choi, 2003; Vera and Crossan, 2005; Weerawardena, 2003; Cavusgil et al., 2003; Chang and Lee, 2008; Fosfuri and Tribo, 2008; Riera et al., 2009; Huang, 2009;Andreeva and Kianto, 2011; Benton and Magnier-Watanabe, 2011.
5. Enterprise resource planning (ERP)	Using IT tools in the development of ERP and training the staff to make its effective use.	Sun, 2002; Schniederjans & Kim 2003; Kakouris & Polychronopoulos, 2005; Singla & Goyal, 2006; Zach & Munkvold, 2012; Aubert et al., 2013.

Quality Management (QM)

As the objective of this study is to measure the impact of IT on QM, with the purpose to understand how IT supports the various components of QM, the focus therefore is on the quality 'processes' rather than the quality 'performance'. The impact of IT is studied at the level of internal strategy with its effect on the efficiency and effectiveness of organizational structures and processes so as to achieve the corporate objectives (Bakos, 1987). There are various QM models which have evolved over a period of time such as Malcolm Baldrige Quality Award, the European Quality Award, the British Quality Award and the Deming Prize and these models have used different dimensions to measure the processes of QM which includes top management commitment, employee training, teamwork, employee empowerment and participation, coordination between the departments, supplier development, customer feedback, quality data and reporting, process management, product or service design, customer satisfaction, product quality, measurement, quality information system, benchmarking, quality culture, quality citizenship, and business or quality results (Saraph et al., 1989; Lagrosen, 2001; Rampersad 2001; Prajogo, 2005; Ahmed et al., 2005; Sharma & Kodali, 2008; Harrington et al., 2012; Mellat-Parast, 2013). The following dimensions have been considered in this research (Table 2).

Table 2: The dimensions of quality management

Dimension	Meaning	Literature
1. Strategic planning process	Company identifies, analyses, and evaluates the issues and provides solutions strategically, and has a clear process for formulating and documenting the strategic plans.	Garvin, 1991; Kanji and Asher, 1993; Bohan,1995; Ryan, 1996; Tan & Platts, 2005; Linn, 2008; Al-Turki, 2011; Germano & Stretch-Stephenson, 2012.
2. Output quality assurance	Maintaining quality standards, process control operations, continuous improvement programmes, quality assessment, documentation and supplier quality assurance.	Freeman, 1994; Belcher, Place & Conole, 2000; Cheng, 2003; Bush, 2006; Vuori, 2007; Tripathi & Jeevan, 2009; Elassy, 2013.
3. Innovative practices	Work processes are designed to promote innovations and the solutions are implemented to improve service quality on a continual basis.	Fernández, 2001; Blayse & Manley, 2004; Ortt, & van der Duin, 2008; Inauen & Schenker-Wicki, 2011; Jarvenpaa &. & Wernick, 2011; Doloreux & Lord-Tarte, 2013.
4. Human resources utilization	Make information available to the staff all the time, form work teams and quality improving groups, involve staff in quality improvement, provide feedback to staff on performance, provide training and development programmes, recognize staff for their contributions.	Kalkan, 2008; Persson, & Westrup, 2009; Ward, 2009; Simões, Gomes, & Yasin, 2011; Wang, Huang, & Xie, 2012; Alidrisi & Mohamed, 2012.

Overall Performance (OP)

There are several measures of OP of an organization and it varies from tangibles to intangibles and from financial to non-financial measures. However, skimming through the literature, several researchers have identified some key measures of performance of an organization which are given in the Table 3. The organizational performance is the combination of financial and non-financial performance and the operational performance is the performance efficiency of all the processes in the organization.

Table 3: Dimensions of performance of organization

Dimension	Meaning	Literature
1. Financial Performance	Growth of revenue, net profit, return on assets etc., which indicate that the financial position of the company is getting better continuously.	Beaumont et al. (2002), Demirbag et al., (2006), Sila, (2007), Salaheldin (2009), and Hernaus, Bach & Vukšic, 2012.
2. Non-financial Performance	Investments for future growth such as investment in R & D, building competitive profile, market development etc., which are future performance oriented.	Low & Siesfeld (1998), Jarvis, Curran, Kitching, & Lightfoot, 2000; Hussain, 2004; Feng et al., 2006, Hernaus, Bach & Vukšic, 2012.
3. Operational Performance	Good measures for cost and waste reduction, improving delivery performance, enhancing quality etc.	Beaumont et al. (2002), Brah et al. (2002), Demirbag et al. 2006, Sila (2007), and MacBryde, Paton, Grant, & Bayliss, 2012 and Roy & Goswami, 2013.

Problem Statement

The literature is rich in terms of the role IT has played in today's business world. Equally good number of literature endorses the contribution made by QM systems and practices in enhancing the quality of the processes in the organization. Nevertheless, the literature lacks the combined study of IT adoption and quality management on the performance of the organization. So, the problem identified in this research is to develop a causality model to link these three constructs and empirically test the linkages so as to identify the significance of contribution these two exogenous variables can do on the performance of the organization.

Objectives

The objectives of this research include:

- Identifying the dimensions of IT adoption, QM and OP as relevant to knowledge intensive service organizations.
- Develop a metric to measure above research parameters and the overall performance of these organizations and validate the same.
- Develop a hypothetical research model through meta-analysis of literature so as to relate the above mentioned enablers to performance.

- Empirically investigate the significance of the relationship between the strategic enablers and performance and draw implications to the managers for performance enhancement of the organizations.

Research Methodology

The Hypothetical Research Model

The hypothetical research model (Figure 1 & 2) and the hypotheses to be tested for empirically investigating the link between the IT adoption, QM, ORP and ORG are as follows.

Direct influences

H_{1o}: *IT Adoption* has no significant influence on the *strategic planning processes* of the organization.

H_{2o}: *IT Adoption* has no significant influence on the *output quality assurance* of the organization.

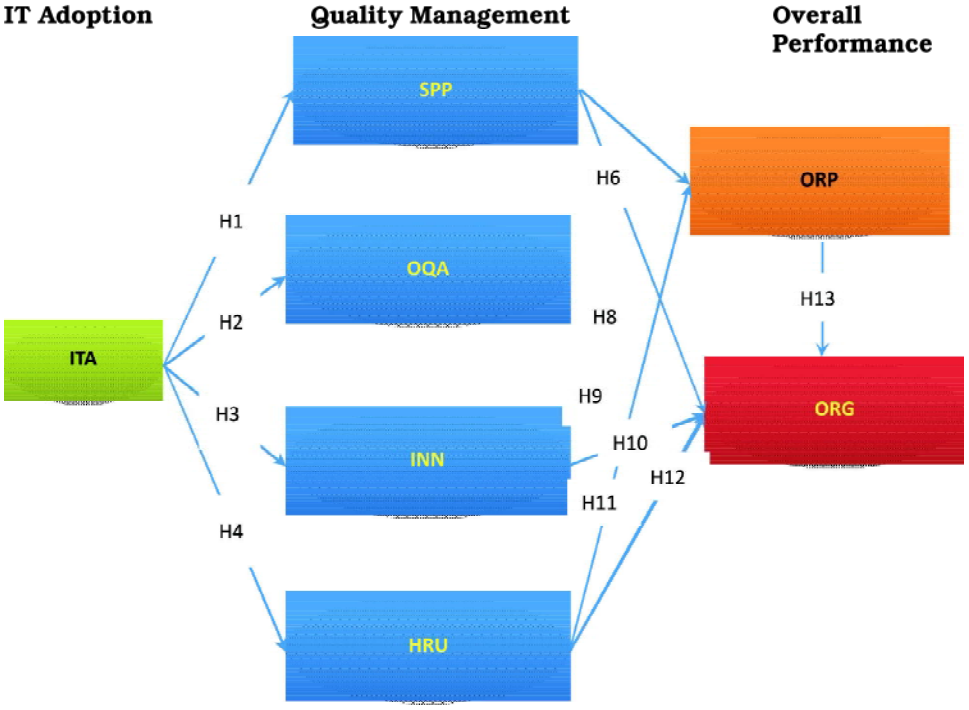

Figure 1a: The Hypothetical Research Model (Direct Influences)

ITA = IT Adoption
OQA = Output Quality Assurance
HRU = Human Resources Utilization
ORG = Organizational Performance
SPP = Strategic Planning Process
INN = Innovative practices
ORP = Operational performance

H_{3o}: *IT Adoption* has no significant influence on the *innovative practices* of the organization.

H_{4o}: *IT Adoption* has no significant influence on the *human resources utilization* of the organization.

H_{5o}: *Strategic planning processes* have no significant influence on the *operational performance* of the organization.

H_{6o}: *Strategic planning processes* have no significant influence on the *organizational performance*.

H_{7o}: *Output quality assurance* has no significant influence on the *operational performance* of the organization.

H_{8o}: *Output quality assurance* has no significant influence on the *organizational performance*.

H_{9o}: *Innovative practices* have no significant influence on the *operational performance* of the organization.

H_{10o}: *Innovative practices* have no significant influence on the *organizational performance*.

H_{11o}: *Human resources utilization* has no significant influence on the *operational performance* of the organization.

H_{12o}: *Human resources utilization* has no significant influence on the *organizational performance* of the organization.

H_{13o}: *Operational performance* has no significant influence on the *organizational performance*.

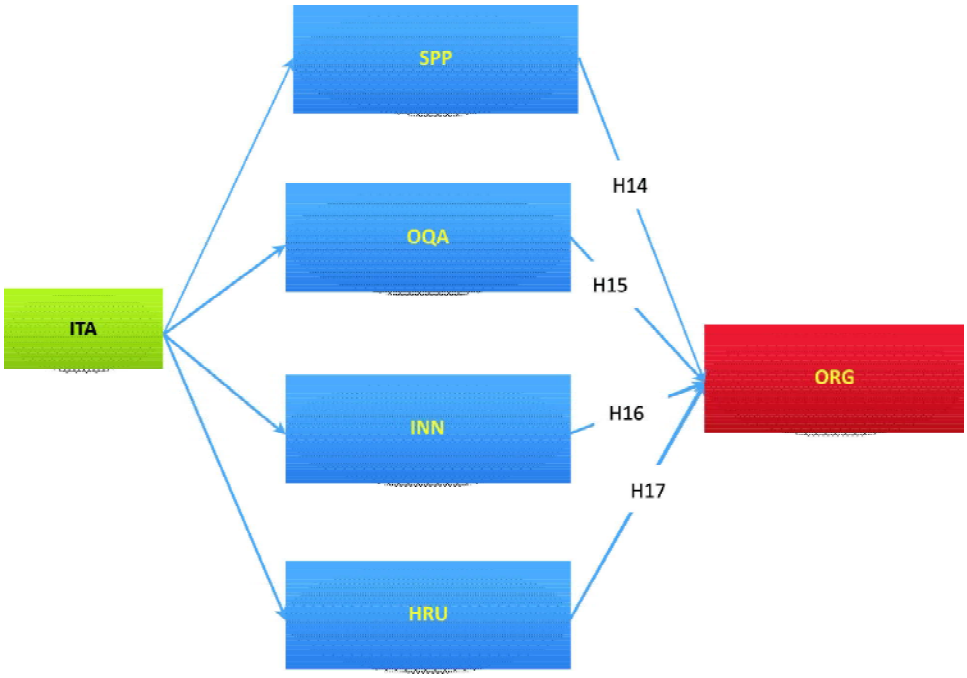

Figure 1b: The Hypothetical Research Model (Moderating Influences)

Moderating influences

H_{14o}: *IT Adoption* has no significant influence on the *organizational performance* through the moderating influence of *strategic planning processes*.

H_{15oa}: *IT Adoption* has no significant influence on the *organizational performance* through the moderating influence of *output quality assurance*.

H_{16a}: *IT Adoption* has no significant influence on the *organizational performance* through the moderating influence of *innovative practices*.

H_{17oa}: *IT Adoption* has no significant influence on the *organizational performance* through the moderating influence of *human resources utilization*.

Survey and Data Collection

Using the survey instrument, data was gathered from the knowledge workers through online survey in the three knowledge intensive service sectors. The pilot study comprised 742 responses with junior executives (62%), mid-level executives (29%), and senior executives (9%) with 56% male and 44% female employees. Experience-wise about 20% had more than 15 years of experience, 40% had 10 to 15 years of experience, 15% had 5 to 10 years of experience and the rest had less than 5 years of experience. So by and large, the respondents were quite competent to respond to the study and give inputs to the study. The original questionnaire comprised 36 items measuring one exogenous dimension and six endogenous dimensions, which was reduced to respond to 25 items through factor reduction. A five points Likert-type scale was used, where 1= Strongly disagree and 5 = Strongly agree. In the data collected there were seven discarded data sheets as entries were incomplete.

Measurement Model

Reliability and Validity

Normality assumption was not violated with an acceptable range of Skewness and Kurtosis statistics (<1.00 and -3 to +3 respectively). Therefore, the maximum likelihood method of estimation was chosen for conducting Structural Equation Modelling (SEM) analysis. To verify the reliability of the latent variables in the model, internal consistency reliability measure, item reliability measure and composite reliability measures were calculated. Table 4 shows the Cronbach's alpha coefficient and the composite reliability result for the final model. The alpha coefficient has the acceptable value ranging from (> 0.7), indicating a moderately high level of internal consistency. The result of item reliability (IR) measured as standardized factor loading (FL) ranged from 0.7 to 0.9. The composite reliability was 0.8 to 0.9 indicating a high reliability score. The results of the convergent validity assessed based on factor loading and composite reliability indicate moderate to high acceptable range of factor loading for all items and good composite reliabilities in general.

To test for discriminant validity, the square root of average variance extracted (AVE) for each construct was compared with the correlation between the construct and the other constructs. Table 5 shows acceptable discriminant validity between each pair of construct, with all AVE square roots greater than the correlation between the constructs. This result can be accepted as very high measures are indicated in all the rest of the methods of reliability and validity.

Table 4: Reliability measures

	AVE	Composite Reliability	R Square	Cronbach's Alpha	Communality	Redundancy
ITA	0.7219	0.9121	0	0.8713	0.7219	0
SPP	0.7298	0.8901	0.5963	0.8149	0.7298	0.4306
OQA	0.6910	0.8701	0.5534	0.7751	0.691	0.3824
INN	0.6178	0.8289	0.4673	0.6904	0.6178	0.286
HRU	0.6627	0.8547	0.4128	0.7440	0.6627	0.2717
ORP	0.6438	0.8440	0.5614	0.7226	0.6438	0.2121
ORG	0.8877	0.8802	0.9116	0.8375	0.551	0.0235

Table 5: AVE Square roots and inter-correlation

	HRU	INN	ITA	OQA	ORG	ORP	SPP
HRU	0.8140	0	0	0	0	0	0
INN	0.7029	0.7860	0	0	0	0	0
ITA	0.6425	0.6836	0.8500	0	0	0	0
OQA	0.6323	0.6586	0.7439	0.8312	0	0	0
ORG	0.7389	0.7354	0.7341	0.7072	0.9422	0	0
ORP	0.6751	0.6735	0.6618	0.623	0.9342	0.8023	0
SPP	0.6293	0.7488	0.7722	0.7548	0.7003	0.6252	0.8543

Alpha level = 0.05

The Structural Model

The hypothesised model was designed to test 17 hypotheses built based on the contemporary research literature. The hypothesised model with path coefficient and the explanatory power (R^2) for each dependent construct is displayed in Figure 2. While path coefficients show the strength of relationship between the two latent variables, the t-values (Figure 3 and Table 6) are indicative of the significance of relationships which enable hypotheses testing.

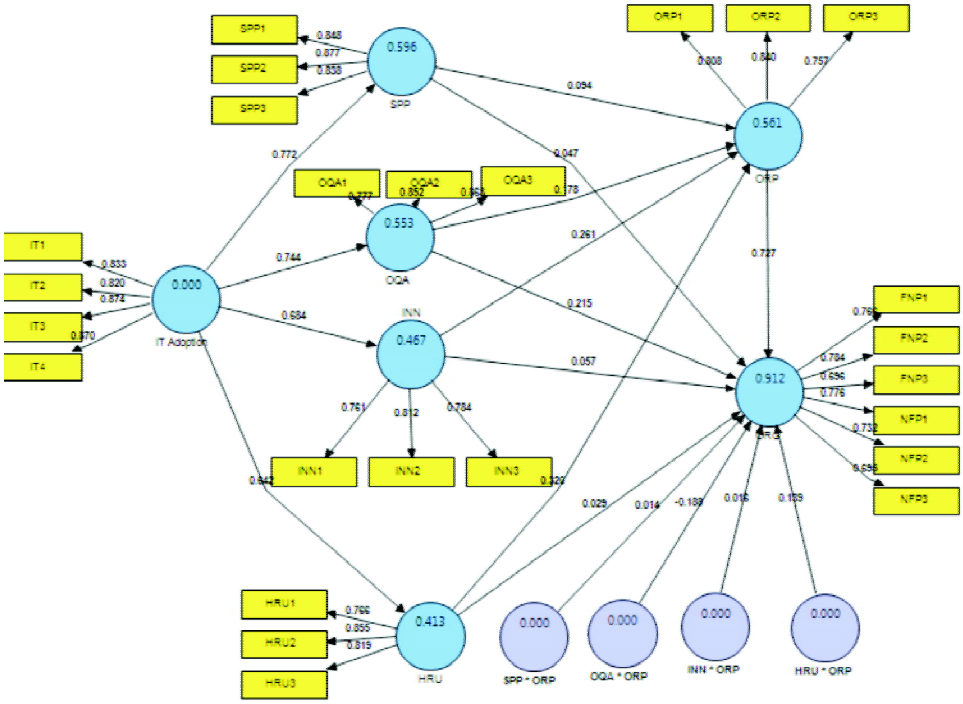

Figure 2: Path coefficients and factor loadings of structural model

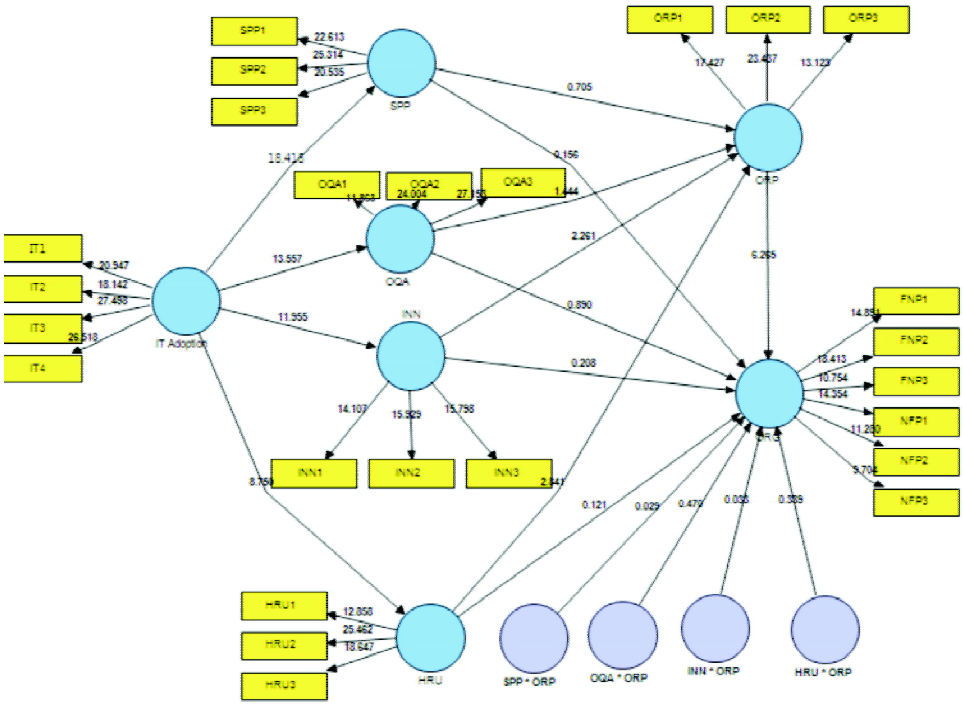

Figure 3: t-values of structural model

Table 6: t-values of the dimensions

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	t Statistics (|O/ STERR|)	Hyp.
ITA -> SPP (H1)	0.7722	0.7758	0.0419	0.0419	18.4183	"*
ITA -> OQA (H2)	0.7439	0.7469	0.0549	0.0549	13.5571	"*
ITA -> INN (H3)	0.6836	0.6884	0.0572	0.0572	11.9551	"*
ITA -> HRU (H4)	0.6425	0.6457	0.0734	0.0734	8.7495	"*
SPP -> ORP (H5)	0.0943	0.0958	0.1338	0.1338	0.7046	x
SPP -> ORG (H6)	0.0472	0.0252	0.3031	0.3031	0.1557	x
OQA -> ORP (H7)	0.1777	0.1709	0.1231	0.1231	1.4436	x
OQA -> ORG (H8)	0.215	0.2081	0.2416	0.2416	0.8896	x
INN -> ORP (H9)	0.2609	0.2718	0.1154	0.1154	2.2609	"*
INN -> ORG (H10)	0.0572	0.1061	0.2746	0.2746	0.2082	x
HRU -> ORP (H11)	0.32	0.3143	0.1126	0.1126	2.8407	"*
HRU -> ORG (H12)	0.0294	-0.0124	0.2425	0.2425	0.1210	x
ORP -> ORG (H13)	0.7268	0.7219	0.116	0.116	6.2647	"*
ITA * SPP -> ORG (H14)	0.014	0.0484	0.4901	0.4901	0.0286	x
ITA*OQA -> ORG (H15)	-0.1881	-0.1708	0.4001	0.4001	0.4702	x
ITA*INN -> ORG (16)	0.0158	-0.0866	0.4765	0.4765	0.0331	x
ITA *HRU -> ORG (H17)	0.1393	0.2111	0.4111	0.4111	0.3388	x

*Alpha level = 0.05; Legend: " = Hypothesis Supported; X = Hypothesis Non-supported.

Following hypotheses stand supported:

H_{1a}: *IT Adoption* has a significant influence on the *strategic planning processes* of the organization.

H_{2a}: *IT Adoption* has significant influence on the *output quality assurance* of the organization.

H_{3a}: *IT Adoption* has significant influence on the *innovative practices* of the organization.

H_{4a}: *IT Adoption* has significant influence on the *human resources utilization* of the organization.

H_{9a}: *Innovative practices* have significant influence on the *operational performance* of the organization.

H_{11a}:*Human resources utilization* has significant influence on the *operational performance* of the organization.

H_{13a}:*Operational performance* has significant influence on the *organizational performance*.

Thus it is evident through hypotheses testing that *IT adoption* has a significant influence on all the four dimensions of *quality management*. Further, *innovative practices* and *human resource utilization* have significant influence on the *operational performance* of the organization. Finally, *operational performance* has significant influence on the *organizational*

performance. The model has about 50 – 60% explanatory power (R^2) which indicates that the model fit is good enough (cut-off 10%). The variables which are supported through hypotheses have 0.6 to 0.8 path coefficient which is an indication of relatively high strength in terms of the relationships.

System Dynamics based Modelling and Simulation

The SD Model Construction

Having established the relationships through hypotheses testing, it was necessary to evaluate the influence of IT adoption on *quality management* dimensions and *operational* and *organizational performance*. To serve this purpose, a System Dynamics (SD) based model using the standard construction procedure by Sterman (2008) was used. The IT adoption rate was the variable of interest which was the dynamic variable of study. The influence was studied on the four dimensions of the quality management practices and the performance of the organization. The stock and flow diagram represents the interdependencies between the variables of study (Figure 4).

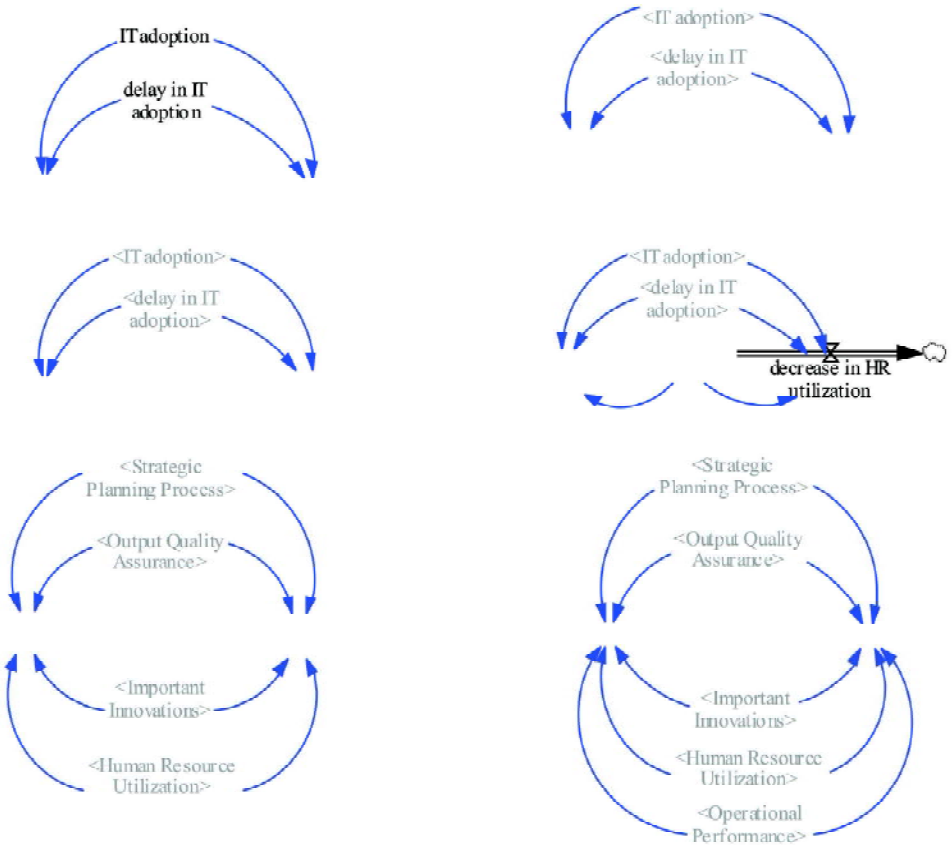

Figure 4: Stock & Flow diagram

The equations used in the SDMS are given below:

Table 7: The regression equations for the operational performance (ORP)

Predictor	Coef	SE Coef	T	P
Constant	1.2921	0.1014	12.75	0.000
ITA	-0.02670	0.02788	-0.96	0.338
SPP	0.06245	0.02253	2.77	0.006
OQA	0.08539	0.01965	4.34	0.000
INN	-0.15676	0.02184	-7.18	0.000
HRU	0.72517	0.02208	32.84	0.000
S = 0.482777 R-Sq = 51.6% R-Sq(adj) = 51.4%				

ORP = 1.29 - 0.0267 ITA + 0.0624 SPP + 0.0854 OQA - 0.157 INN + 0.725 HRU [1]

Table 8: The regression equations for the organizational performance (ORG)

Predictor	Coef	SE Coef	T	P
Constant	1.6576	0.1584	10.46	0.000
ITA	-0.08550	0.05401	-1.58	0.114
SPP	0.05220	0.05562	0.94	0.348
OQA	0.07349	0.03206	2.29	0.022
INN	0.04340	0.03283	1.32	0.187
HRU	0.17181	0.05001	3.44	0.001
ORP	0.34257	0.04374	7.83	0.000
S = 0.498905 R-Sq = 40.7% R-Sq(adj) = 40.2%				

ORG = 1.66 - 0.0855 ITA + 0.0522 SPP + 0.0735 OQA + 0.0434 INN + 0.172 HRU + 0.343 ORP ....[2]

Sensitivity Analysis

Influence of IT adoption on INN

The model was simulated for a period of one year of operation for a base run of 20% IT adoption and the adoption rate was dynamically varied up to 80% in steps of 20% for the *innovative* practices (INN) (Figure 5). The results indicate that the INN increases exponentially with the increase in the IT adoption rate. For 20% of IT adoption rate the system may achieve only about 30% of the performance efficiency of INN over a period of about a year but at 80% adoption rate of IT about 80% of INN efficiency can be achieved in a span of 5 to 6 months.

Influence of IT adoption on HRU

Similar results are seen in case of the influence of IT adoption on *human resources utilization* (HRU), however the rate of increase is relatively lower (Figure 6) in comparison with INN and it justifies the hypothesis testing

results with the relative t-values for the two dimensions. It can be seen that at an IT adoption rate of 20% the system peaks in a year to about 30% of the HRU, whereas, for 80% IT adoption rate an efficiency of 70% can be achieved in 7 months of operation.

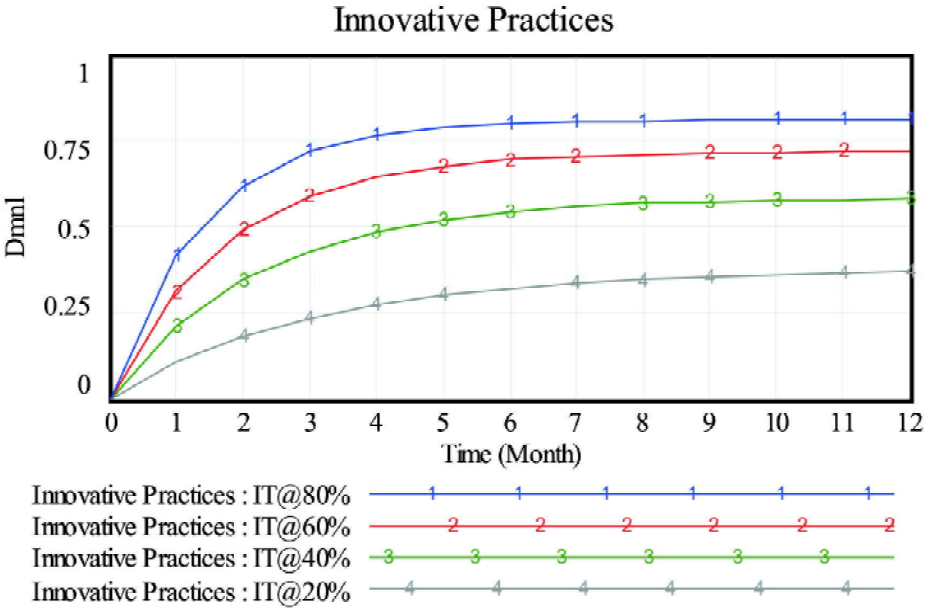

Figure 5: Influence of IT on INN

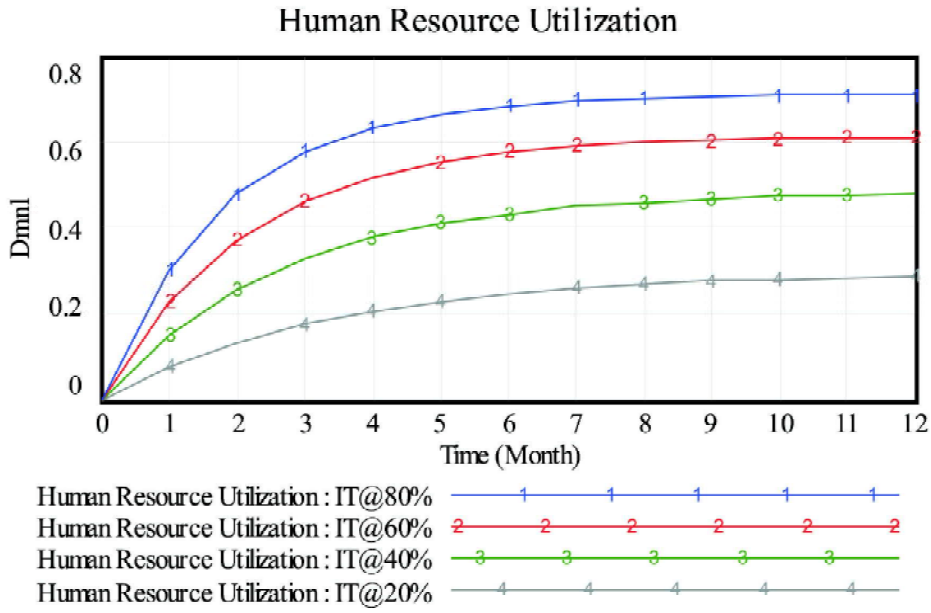

Figure 6: Influence of IT adoption on HRU

Influence of IT adoption on OPR

It can be observed that for an initial period of about a month, IT adoption has no influence on *operational performance* (ORP), because it will take some time for the IT usage to take place in the organization. Then the ORP increases almost exponentially and about 50% of operational efficiency can be achieved in a year with 80% IT adoption rate (Figure 7). It has to be noted that the operational efficiency of the service sector is not only through IT adoption and the QM, so only a part of the operational efficiency is accounted for in this simulation. It is also indicated by the R^2 value in the SEM (about 50 to 60%) and the remaining variance is due to factors extraneous to this research.

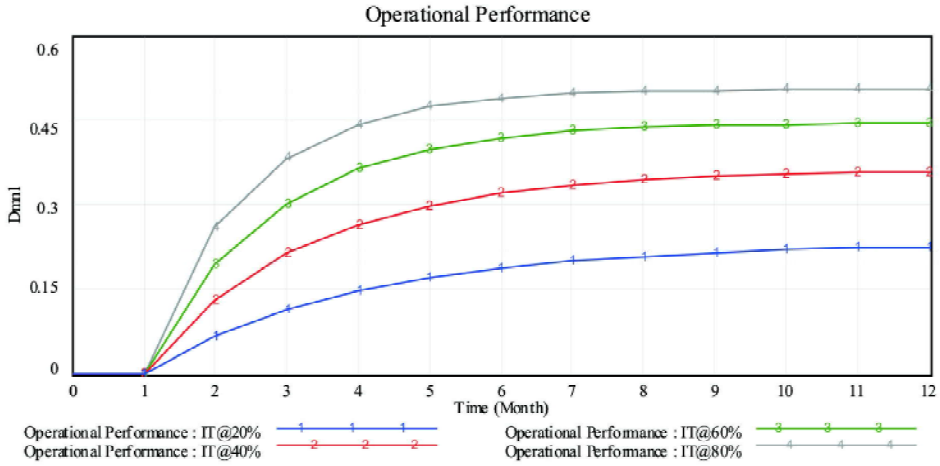

Figure 7: Operational performance at different levels of IT adoption

Influence of IT adoption on ORG

It can be observed that higher the IT adoption rate, the better will be the *organizational performance* (financial performance + non-financial performance). An ORG efficiency of about 20% can be attained in a year by 80% adoption rate of IT (Figure 8). The remainder of ORG is attributed to the extraneous factors as explained before.

Discussions, Implications to the Managers, and Conclusions

The contemporary research is rich in theoretical models on linking the role of IT adoption and Quality Management process with each other or linking them individually to the operational/organizational performance, but the empirical evidence for linking both the constructs to the operational as well as organizational performance was the major research gap. This research has contributed to the body of knowledge in this direction. It is important for the managers of the Indian service sector companies to note that investment in IT is well-justified as it directly contributes to the improvement in the *quality management* processes. However, among the quality management practices only *innovative practices* and the *human resource utilization* contribute to the *operational performance*. Also, this enhancement in

operational performance further contributes to the *organizational performance* (*financial* and *nonfinancial performance*).

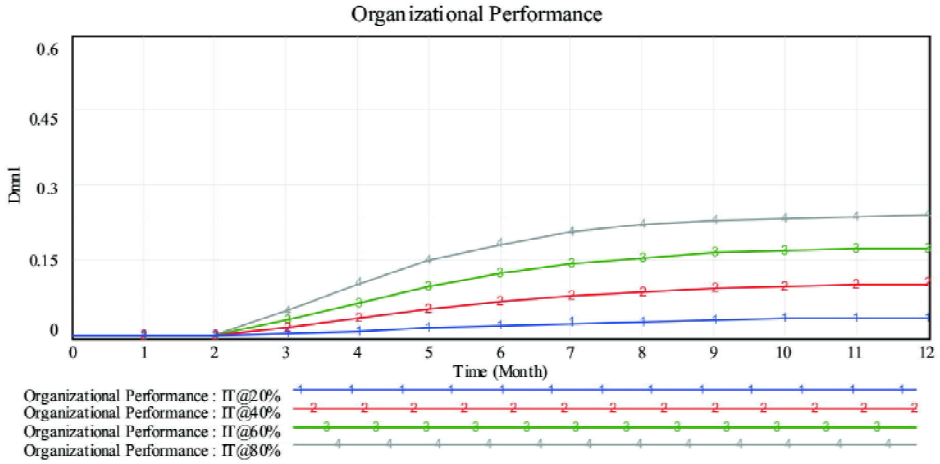

Figure 8: Organizational performance at different levels of IT adoption

The modelling and simulation using SD has corroborated with the hypotheses testing. It has indicated that higher the IT adoption rate better will be the *innovative practices* and *human resource utilization*. Also, the fact that *operational performance* and *organizational performance* increase at a steady rate with the increase in IT adoption has been depicted. However, due to the factors extraneous to this study only about 50% of *operational performance* and 25% of *organizational performance* is accounted for, based on the variables of research interest.

Implications to the Managers

1. The *IT adoption* has been successful in enhancing quality management specifically in terms of the processes of service quality management. There is literature support to prove that quality management has provided competitive advantage to the companies in terms of product differentiation, cost advantage, and superior performance (Minoja, Zollo, & Coda, (2010). So, the managers need to strengthen the IT support in their organization as its role is prominent and it justifies the cost by contributing to the *operational performance*.
2. Innovation is the key driver of business success in today's world, may it be a product or service industry. This fact has been empirically proved through this research. *Innovative practices* have significant influence on the *operational performance* of the organization, which in turn, has a significant influence on the *organizational performance*. Further, the driver to *innovative practices* is IT adoption as indicted through hypothesis testing and SDMS. This revelation is very vital for the strategic decision makers in the service sector. If the service organization needs an edge over its competitor, the most effective way is to promote IT enabled innovative practices in all their processes. Managing organizational knowledge for realizing the corporate objectives is in the forefront of all

knowledge intensive service organizations across the world. This research has revealed that *IT adoption* has this capability of supporting the knowledge management, thus promoting *innovative practices*.

3. *Human resource utilization* has also emerged out as a key dimension which has significant influence on the *operational performance* of the service sectors. This revelation is in alignment with several other research in product and service organizations (Khandekar, & Sharma, 2005; Persson & Westrup, 2009; Ward, 2009; Wang et al., 2012 and Singh, Kodwani & Agrawal, 2013). Transforming an organization into 'Learning Organization' is an attempt post IT revolution and it is not possible without the most appropriate utilization of human resources which has the ability to significantly influence the *operational performance*. So, the managers need to promote innovation, team building, knowledge sharing, and continuous improvement in the human capital of their organizations to enhance their *operational performance*.

To conclude, the revelations of this research can be generalized to a great extent as the sample size was adequate and distributed across the cross section of the knowledge intensive service sectors. The hypotheses testing results and the modelling and simulation based sensitivity analysis have been in alignment with each other. While the hypothesis testing has established the significance of relationship, the modelling and simulation has revealed the variation in the variables of interest for a given variation in the exogenous variable. Future study can focus on linking these constructs to the extraneous variables of this study such as *competitive advantage*. Also, the same study can also be conducted in the product industries.

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Modeling the Affect of Usability of Virtual Opinion Platforms on Customer Satisfaction and Spreading the Positive Word-of-Mouth — An Empirical Study

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The purpose of present study is to measure and model the affect of opinion platforms (a type of electronic word of mouth) on consumers' perceived use of information, satisfaction and word-of-mouth communication behaviour. The universe of study comprised of some cities of Punjab and the National Capital Region (NCR). The sample of 300 respondents was taken for the purpose of study. The study measured the causal relationship among the unobservable or latent constructs (i.e. usability of opinion platforms, obtaining buying related information, learning to consume a product, dissonance reduction) and observable constructs (i.e. satisfaction, positive word-of mouth) by using structural equation modeling (SEM) technique, showing a significant relationship among the constructs of the proposed model. The study leaves an implication for the virtual platform builders so as not only to enhance the usability of platforms and perceived usefulness but also to provide such information, which reduces the dissonance towards the product purchase decisions.

Introduction

In rapid changing technological environment, a number of communication tactics are available for the marketers of the 21st century that involves several new features including mouth-to-mouth promotion that has taken a radical step with social media marketing (Ceil, 2012). Word of mouth is defined as oral, person-to-person communication between a receiver and a communicator whom the receiver perceives as non-commercial regarding a brand, product or service (Arndt, 1967). It is typically characterized as verbal communication (either positive or negative) between groups such as product or service provider, independent experts, family and friends and the actual

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or potential consumer (Helm and Schlei, 1998). In the recent times, Internet is becoming a powerful and unintrusive medium to transmit word-of-mouth, which in turn is a significant and dynamic part of interpersonal online communication (Sun et al., 2006). The advancements in internet technology has extended the consumers' options for gathering unbiased product or service related information from other consumers and provides the opportunity for consumers to share their own consumption–related advice by engaging in electronic word-of-mouth (Henning et al., 2004). Godar (2005) mainly stressed upon three of the technologies being used to spread word-of-mouth communication i.e. virtual opinion platform, discussion forum and blogs.

Virtual opinion platforms have emerged as special internet offerings or internet websites that allow consumers to tap articulations (i.e., opinions, comments, etc.) of other consumers on a great number of merchandise, services, and companies (Thurau and Walsh, 2003; Khammash, 2008). Khammash (2008) also opined that contributions on opinion platforms include both a verbal account of a consumer's experience with a product and a formalized rating of the product, which in turn enhance the usability and reliability of these opinion platforms for the potential consumers. Virtual opinion platform has become a global phenomenon that enables the consumers to read the opinions and experiences of other consumers relating to a wide range of products and services. Some of such opinion platforms are like epinions.com, consumer review.com in North America, ciao.com in United Kingdom, it168.com in China, mouthshut.com in India (Thurau and Walsh, 2003).

While the opinion platforms offers a new and interesting possibility for the consumers to know about the product, it does require that these special websites or the consumer portals be equipped with the attributes of ease of use and the usefulness of information for the readers/consumers. Several researchers have stressed upon these attributes affecting the conduct of potential buyer. Usability of the websites is looked as a determinant factor that induces the consumers to seek information from these sources (Casalo et al., 2008; Thurau and Walsh, 2003). Flavian et al., (2006) opined that in a website, usability reflects the perceived ease of navigating the site or making purchases through the Internet. Perceived ease of use or usability is defined as the extent to which a person believes that using the system will be free of effort (Davis, 1989). Casalo et al., (2008) claimed that perceived usability of a website promotes the user's familiarity with that website which in turn exerts an indirect effort on customer loyalty and positive word-of-mouth through satisfaction.

Perceived ease of website usability further leads to perceived usefulness of the information available on it. Perceived usefulness refers to a degree to which a person believes that using a particular system would enhance his or her positive user-performance relationship (Davis, 1989). Consumers use opinion platforms for making their purchase decisions because they are easy to operate and provide lot of information on vast variety of products and services that helps in changing their buying and communication

behaviour. Davis (1989) also claimed the influence of perceived ease of use over perceived usefulness because the easier the system is to use, the more useful it is. Schiffman et al. (2011) opined that perceived usefulness of the information helps the consumers to learn how a product is to be consumed and what products are available in marketplace. On the similar grounds, Thurau and Walsh (2003) found the relevance of reading customer articulations on opinion platforms as these help the customers to search information in an individualized manner for specific consumption situations such as obtaining buying related information, learning to consume a product, social orientation through information etc. In addition, customers' articulations on the opinion platforms reduce the cognitive dissonance (doubts) of the readers (consumers) after major purchase decisions (Engel et al., 2011). Since virtual opinion platforms offer unbiased information on a vast range of products, they work as appropriate information source for reducing cognitive incongruence after a purchase (Thurau and Walsh, 2003).

Perceived usefulness of opinion platforms in making purchase decisions exerts positive influence on customer satisfaction. Focusing attention on services, Severt (2002) considered satisfaction as an affective customer condition, which results from the overall evaluation of all the aspects that make the customer's relation with the service provider. On the similar grounds, Casalo et al. (2008) opined that customer satisfaction is not the result of a specific transaction, it is a global evaluation of the relationship between the parties. Thus, perceived usability of website and quality of the services being offered by the organisation positively influence the satisfaction level of the consumers (Casalo et al., 2008; Chaniotakis and Lymperopoulos, 2009).

Furthermore, the intensive review of literature proved the affect of satisfaction on consumers' word-of mouth communication behaviour. Bone (1992) claimed that extreme satisfaction and dissatisfaction affect an individual's mood and increase the amount of word-of-mouth (WOM) communication. De Matos and Rossi (2008) also considered word-of-mouth (WOM) activity as an outcome variable of the construct such as satisfaction. Similarly Brown et al. (2005) found that the antecedents of positive word-of-mouth (WOM) in retailing context typically focus on direct effect of consumer's satisfaction and dissatisfaction with previous purchasing experiences. More specific as Casalo et al. (2008) mentioned that the satisfaction from the services that website provided to its customers, play an influential role in spreading positive word-of-mouth for it. Moreover, there are number of studies that explain the effect of satisfaction and dissatisfaction on word-of-mouth communications (Richins 1983; Anderson 1998; Maxham and Netemeyer 2002; Chaniotakis and Lymperopoulos, 2009).

Based upon review of past literature, it can be well hypothesized that usability of the opinion platforms has positive effect on usefulness of information for the customers in obtaining buying related information, learning to consume a product and dissonance reduction. Moreover, usefulness of the information further leads to satisfaction that positively affects the consumers' word-of-mouth communication behaviour for the

website/platform that offers other consumer articulations relating to products and services.

Although the above relationships between usability of websites, usefulness of information, satisfaction and word-of-mouth have been extensively researched in the past, but there is dearth of research in this area that directly measures the relationships in totality among these constructs at the same moment.

Hypotheses of the Study

Based on review of past literature and above discussions relating to web technologies being used by the potential consumers for getting unbiased product or service related information and consumers' satisfaction & word-of-mouth communication behaviour, a conceptual model has been proposed as shown in Figure 1.

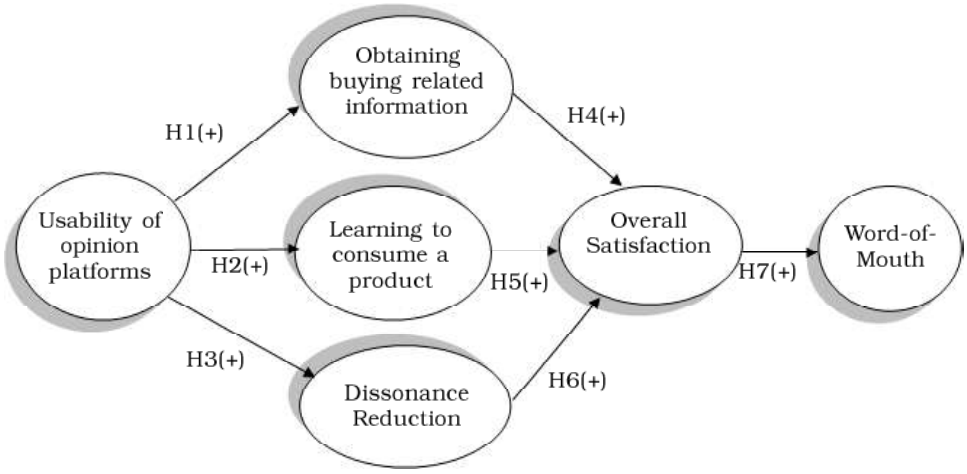

Figure 1: Proposed conceptual model

By considering this proposed model, the following hypotheses were formulated that acted as foundation for the study:

H_1: Usability of the opinion platforms has not got positive relationship with obtaining buying related information by the consumers

H_2: Usability of the opinion platforms has not got positive relationship with consumers learning to use (consume) a product.

H_3: Usability of the opinion platforms has not got positive effect on reducing the cognitive dissonance (doubts) of the readers (consumers) after major purchase decisions.

H_4: Obtaining buying related information by the consumers from the opinion platforms is not positively related to their satisfaction level

H_5: Consumers' learning to consume a product from the opinion platforms is not positively related to their satisfaction level

H_6: Consumers' reduction of dissonance is not positively related to their satisfaction level

H_7: Consumers' overall satisfaction after using opinion platforms is not positively related to their intention to spread positive word-of -mouth for the platform.

Research Methodology

The universe of the study comprised of two major districts of Punjab (Jalandhar and Ludhiana), Union territory of Chandigarh, and NCR (National Capital Region) of India that includes Delhi, Noida, Gurgaon. The reason for selecting these cities as universe of the study was that the respondents in these cities were the true representative of urban elite and aware population of Northern India. A sample of 300 respondents was selected who were net savvy and used internet technology for making purchase decisions. Non-probabilistic convenience sampling technique was adopted for selecting the sample.

Although there are many web platforms (discussion forums, blogs, and opinion platforms), on which unbiased information relating to product or services is available but this study is focused on opinion platform named mouthshut.com. The opinion platform particularly Mouthshut.com was selected for two reasons. First, e-WOM communication articulated on opinion platforms is expected to have greater influence on consumers (Henning et al., 2004). Second, Mlafirenza (2012) reported that Mouthshut.com is an other special interest social networking site with 10,000,000-100,000,000 registered users that helps the potential consumers to make informed shopping decisions by providing consumers reviews on every business or brand right from large corporations to small local businesses or millions of reviews on hundreds of thousands of products (social-networking. findthebest.com).

Proceeding further in this direction, the questionnaire was designed to test the effect of opinion platform. The different constructs that were used in questionnaire had been derived from the intense review of past studies. The questionnaire was pretested on the sample of 45 respondents and then was suitably revised. The revised questionnaire comprised of two parts. First part contained a number of fourteen statements (observed variables), that were used to measure the latent variables such as usability of opinion platforms (4 statements), obtaining buying related information (3 statements), learning to consume a product (3 statements), dissonance reduction (4 statements). In addition to these latent variables (constructs), 'Satisfaction' and 'Word-of-Mouth' were included in the questionnaire as measurement variables to measure the level of overall satisfaction from the opinion platform and intention to spread positive word-of mouth for the opinion platform (mouthshut.com) to others. All the responses for the statements were measured on five-point Likert scale, ranging from *1(strongly agree)* to *5 (strongly disagree).* Second part of questionnaire included demographic profile of the respondents. The details regarding this is as given in Table 1.

Table 1: Demographic profile of the respondents

Variable	Categories	Percent of L sample
Gender	Male	64%
	Female	36%
Age	Below 20	14%
	20-30	36%
	30-40	30%
	Above 40	20%
Education	Above Post Graduates	18%
	Post graduates	26%
	Graduates	36%
	High School	20%
Occupation	Professionals	20%
	Service Class	32%
	Students	28%
	Housewives	20%

With the view to empirically investigate the causal relationship among the unobservable (latent) and observable variables, SEM, a multivariate technique was chosen. The SEM process centres around two steps: validating the measurement model and fitting the structural model. The validation of measurement model is accomplished through confirmatory factor analysis and the estimation of structural model is accomplished through path analysis (Malhotra and Dash, 2011). For conducting analysis, AMOS 18 software was used.

Data Analysis and Results

Measures validation

Content Validity: Scale development was based on the review of most relevant literature on electronic word-of-mouth communication, opinion platforms and satisfaction (Table2). As the content validity is ensured by the degree to which items correctly represent the theoretical content of the construct and it is guaranteed by the in-depth review of literature undertaken (Casalo et al, 2008). Hence, from the same literature review, an initial set of items was also proposed. However, due to the lack of valid scales to measure the effectiveness of opinion platforms on consumers' satisfaction level, it was necessary to adapt the initial scales and modify them as per the need of the study.

Table 2: Content validity

Constructs	Adapted from
Usability of opinion platforms	(Thurau et al, 2004 and Casalo et al,2008)
Obtaining buying related information	(Thurau and Walsh, 2003 and Schiffman et al., 2011))
To learn to consume a product	(Thurau and Walsh, 2003, Sundaram, Mitra and Webster,1998 and Schiffman et al., 2011)
Dissonance Reduction	(Thurau and Walsh, 2003 and Engel et al., 2011)
Satisfaction	(Thurau et al, 2004, Casalo et al, 2008 and Chaniotakis & Lymperopoulos, 2009).
Positive Word-of mouth	(Jakobsen and Skov, 2009, Casalo et al, 2008 and Chaniotakis & Lymperopoulos, 2009)

Confirmatory analysis of dimensionality

A confirmatory factor analysis was performed to confirm the dimensional structure of the scales. The confirmatory factor analysis was conducted by using AMOS. For the assessment of the model, multiple fit indexes are reported.

- The traditional chi-square is reported along with chi square/ degree of freedom i.e. 1.722, which is less than cut off point 5.00 as suggested by Hoyle (1995). The values of Comparative Fit Index (CFI), Tucker- Lewis Index (TLI) and Incremental Fit Index (IFI) were exceeding 0.9 i.e. 0.961, 0.949, 0.961 respectively which indicate a good fit to data (Hoyle, 1995; Fadlelmula, 2011).
- The value of Root Mean Square Error of Approximation (RMSEA) is 0.070, which is less than 0.10, indicating that the model was good fit with data (Fadlelmula, 2011). Moreover, the value of Root Mean Square Residual (RMR) 0.013 below 0.05, the guideline of acceptability indicates a good fit of the model to data (Fadlelmula, 2011).

Reliability and Validity Analysis of Measurement Scales

For the scales reliability analysis, composite reliability was calculated for all the latent variables'measurement scales. Although the Cronbach alpha indicator is the most frequent test to assess reliability but some researchers consider, that it underestimates the reliability so the use of composite reliability has been suggested (Smith, 1974; Joreskog, 1971). In addition to this, construct validity of the scales was assessed by considering two types of criteria: convergent and discriminant validity.

Table 3: Reliability and validity analysis

Latent Variable	Composite Reliability	AVE	MSV	ASV
Usability of opinion platforms	0.893	0.681	0.396	0.264
Obtaining buying related information	0.774	0.533	0.396	0.258
To learn to consume a product	0.779	0.541	0.389	0.241
Dissonance Reduction	0.913	0.729	0..389	0.278

Note: (AVE**:** Average variance extracted; MSV: Maximum-shared variance; ASV: Average shared variance)

Table 3 depicts the value of Composite Reliability (CR) for each construct and this was found to be greater than 0.7, which is the commonly accepted threshold (Nunnally and Berstein, 1994; Malhotra and Dash, 2010). In addition, we used AVE and CR to contrast convergent validity of each construct. Convergent validity measures the extent to which the scale correlates positively with other measures of the same construct (Malhotra and Dash, 2010). They have found that an AVE of 0.5 or more indicates satisfactory convergent validity as it means that the latent construct accounts for 50 percent or more of the variance in observed variables. Besides that, composite reliability of each construct should be more than its AVE. Both of these results are satisfactory as shown in Table 3.

On the other hand, discriminant validity verifies that a determined construct is significantly distinct from other constructs that are not theoretically related to it (Casalo et al, 2008). In order to ensure the discriminant validity, the two conditions that must be fulfilled i.e. MSV<AVE and ASV<AVE and these are very much apparent in the results obtained as depicted in Table 3. It indicates that each construct is significantly distinct from the other constructs.

Structural Model: Path Analysis

After testing reliability and validity of constructs, the path analysis was conducted to test the hypothesized causal relationship among the constructs. Hypothesized paths in the model were tested using AMOS, with maximum likelihood (ML) estimation. Overall fit of the model and the significance of the paths were considered for the model.

- Analysis of the structural model (CMIN/DF=1.905, CFI=0.942, TLI=0.929, IFI=0.943, RMSEA=0.078, RMR=0.023) yielded a reasonable fit to data. The value of CMIN/DF is less than cut off point 5.00 as suggested by Hoyle (1995). The values of CFI, TLI, and IFI are above the accepted guideline of 0.9.
- Additionally, the value of RMSEA is below 0.1 indicates that the model was reasonable consistent with data (www.statswiki.com; Bansal and Voyer, 2000 and Fadlelmula, 2011). The value of RMR below 0.05 is also indicating a good fit of the model to data (Fadlelmula, 2011).

Since, the indicators of the model fit are in the acceptable range, as discussed above, hence the model as shown in the Figure 2 indicating the path loadings(Beta values) of each path i.e. path coefficients is acceptable one.

Evidence for all hypothesized relationships was found at 0.001 and 0.05 level of significance. These relationships are enlisted as below:

- Usability of the opinion platforms has a statistically significant relationship with "obtaining buying related information" by the consumers (Beta Value=0.63, R^2=0.396, p<0.00). Here p value denotes the significance at the 0.001 level.
- Usability of the opinion platforms has a statistically significant relationship with "consumers learning to use (consume) a product" at 0.001 level, with beta value of 0.41 and here R^2 is 0.168.

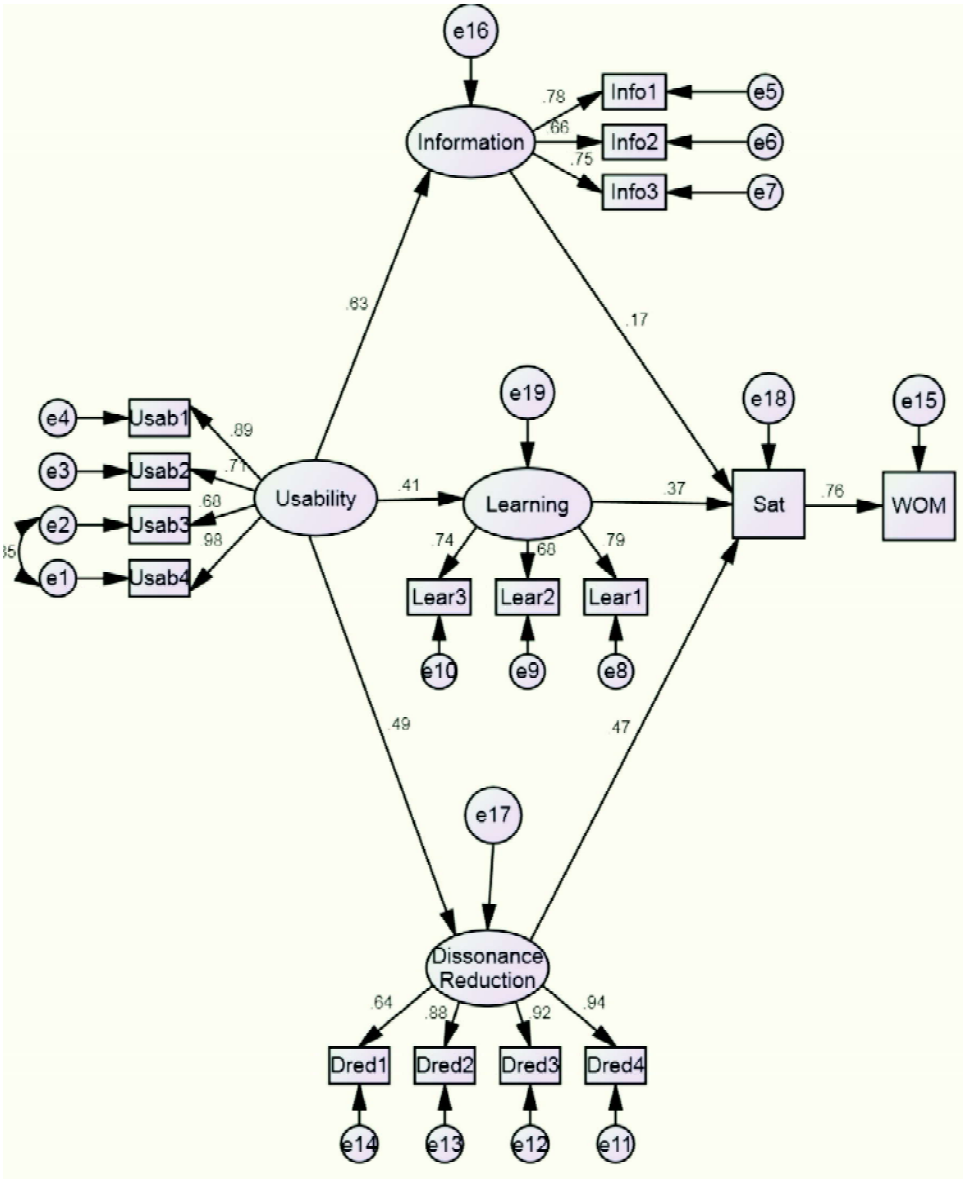

Figure 2. Structural equation model

Note: (Usability: Usability of opinion platform; Information: Obtaining buying related information; Learning: To learn to consume a product; Dissonance Reduction; Sat: Satisfaction; WOM: Word-of-mouth)

- Usability of the opinion platforms has a statistically significant (positive) effect on "reducing the cognitive dissonance" (doubts) of the readers (consumers) after major purchase decisions (Beta Value=0.49, R^2 =0.240, p<0.001).
- Obtaining buying related information by the consumers from the opinion platforms has a statistically significant relationship with their

"satisfaction level" (Beta Value=0.17, R^2=0.029, p<0.05). It means that beta value is significant at 5% level.

- Consumers' learning to consume a product from the opinion platforms has a statistically significant relationship with "satisfaction level". (Beta Value=0.37, R^2= 0.137, p<0.001).
- Consumers' reduction of dissonance has a statistically significant relationship with their "satisfaction level". (Beta Value=0.47, R^2= 0.221, p<0.001).
- Consumers' overall satisfaction after using opinion platforms has a statistically significant relationship with their intention to spread "positive word- of -mouth" for the platform. (Beta Value=0.49, R^2=0.5776, p<0.001).

The above analysis reveals that usability of opinion platforms as an independent variable, explains 39.6% variance in the dependent variable obtaining buying related information, which is greater than the variance explained in other dependent variables like learning to consume a product and dissonance reduction (R^2= 0.168, 0.240 respectively).

As the overall satisfaction level of the consumers is concerned, it is revealed from the analysis that 22.09% variance in "satisfaction level" of the consumers is explained by independent variable "dissonance reduction" which is higher than the variance explained by other two factors i.e. obtaining buying related information and learning to consume a product (R^2 = 0.0289 and 0.1369 respectively).

In addition to this, satisfaction as an antecedent of word-of-mouth contributes lot in spreading positive word of mouth for the opinion platform with R^2 =0.5776. It shows that approximately 58% variance occurring in intention to spread positive word- of- mouth is explained by the independent variable "satisfaction".

Conclusion

The arrival and expansion of the Internet has extended consumers' options for gathering unbiased product related information by engaging in electronic word-of-mouth (eWOM) (Yayli and Bayram, 2012). As while making their purchase decisions, consumers assign more credibility to the opinions of other consumers than any paid commercial media, so the major contribution of this study is to explore the impact of the opinion platforms, one type of eWOM, on consumers' perceived use of information, satisfaction and word-of-mouth communication behaviour.

The present study measured the causal relationship among the unobservable or latent constructs (i.e. usability of opinion platforms, obtaining buying related information, learning to consume a product, dissonance reduction) and observable constructs (i.e. satisfaction, positive word-of mouth) by using structural equation modeling (SEM) technique. The application of confirmatory factor analysis confirmed the dimensional structure of the scales taken from prior studies as the analysis of multiple fit indexes reported

that the model was consistent with data and the scales (constructs) are adequately internally consistent.

Further, the path analysis examined the causal relationship among the constructs of the proposed model. The results of the path analysis revealed that the indicators of the model fit are in the acceptable range and there is significant relationship among the constructs of the proposed model under study.

Furthermore, the results of the study revealed that although the usability of the opinion platform (mouthshut.com) has significant relationship with all the variables but it contributes more towards "obtaining buying related information" in comparison to other dependent variables like "learning to consume a product" and "dissonance reduction". On the other hand, while analysing the contribution of these three variables in "satisfaction level" of the consumers it was found that independent variable "dissonance reduction" explained more variance in "satisfaction" than the other two factors i.e. obtaining buying related information and learning to consume a product. In addition to this, the results also considered the variable "satisfaction" as an antecedent of word-of-mouth (WOM) as it explains maximum variation in the "intentions of the consumers to spread positive word-of-mouth" for the opinion platform.

In nutshell, it can be said that the usability of the opinion platforms in providing the desired information regarding the product may enhance the satisfaction level of the consumers towards the product purchase decisions, which in turn will result in positive word-of-mouth promotion of the platform. However, this desired effect is only possible if the usability and the information provided by the opinion platform leads to dissonance reduction of the consumer towards the product purchase decision. Hence, the platform providers must rebuild their strategies so as not only to enhance the usability of platforms and perceived usefulness of information but also provide such information which reduces the dissonance towards the product purchase decisions.

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A Structural Equation Model (SEM) of Patients' Satisfaction Measurement: Study of Selected Hospitals of Baroda

PARIMAL H. VYAS AND MADHUSUDAN N. PANDYA

An attempt has been made to offer results & findings on Patients' satisfaction/ dissatisfaction measurement that was undertaken using pre-tested structured non-disguised questionnaire based on responses of 500 Patients who were conveniently drawn from amongst selected Government, Private & Trust Hospitals located in the Baroda City of the Gujarat State. The researchers have attempted to critically examine those factors that influence Patients' satisfaction/dissatisfaction with an objective to demonstrate a relationship between the observed variables viz., Medical Services as provided by Medical Professionals, Para-Medical Staff (Nursing & other Supporting Staff), other Services as delivered by the Administrative Staff of the hospitals and also Physical Facilities (Environment) offered by selected hospitals to its patients using Structural Equation Modeling (SEM). The researchers have also put forward results and findings of the research study having decisive implications in offering and improvement in the delivery of medical services to its patients.

Introduction

In the globalized and liberalized business environment, service sector is encountering stiff competition to meet the requirements of the profitable ways of business. It appears that the driving force towards success in service business is the delivery of high quality service. Considering the share of services in India's GDP at factor cost (at current prices) increased from 33.3 per cent during 1950-51 to 56.5 per cent during 2012-13 as per Advanced Estimates (AE). However, in the year 2011-12 and 2012-13, there has also been a deceleration in growth rate of services sector at 8.2 per cent and 6.6 per cent respectively. Hospital service is a term that has been referred with reference to medical and surgical services and the supporting laboratories, equipment and personnel that make up the medical and surgical mission of a hospital or hospital system (www. surgeryencyclopedia.com).

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Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (www.who.int). A hospital is described as an institution which is operated for the medical, surgical and/or obstetrical care of in-patient and it is treated as a hospital by the Central/State Government/Local body/Private and licensed by the appropriate authority (Goyal, 2005). To sustain the positive economic path and to honour the fundamental right of all citizens to adequate health care, the health of all Indian people has to be given the highest priority in public policy which has led to setting up of 'Integrated National Health System' to make provision of universal health insurance, establishment of autonomous organizations to enable accountable and evidence-based good-quality health-care practices, and development of appropriately trained human resources, the restructuring of health governance to make it coordinated and decentralized, and legislation of health entitlement for all Indian people. It aimed at improving of quality of health care coupled with reduction in the out-of-pocket expenditure on health care through a well regulated integration of the private sector within the national health-care system (Reddy, 2011).

Literature Review

The term healthcare has been defined as the prevention, treatment, and management of illness and the preservation of mental and physical well-being through the services offered by the medical and allied health professions (www.thefreedictionary.com). The degree to which the individual regards the health care service or product or the manner in which it is delivered by the provider as useful, effective, or beneficial (www.biology-online.org). There is considerable lack of agreement about the precise meaning of the term patient. It is diversely defined by different experts with different perspectives.

Satisfaction is a person's feelings of pleasure or disappointment resulting from comparing a product's perceived performance or outcome in relation to his or her expectations (Kotler and Kevin, 2006). Ching (2013) found out that interpersonal-based medical service encounters have positive influence on service quality and patient satisfaction. The differences in patients' perceptions for the professional skill and communication attitude of personnel revealed that interpersonal-based medical service directly affects patients' satisfaction and service quality and patients' trust are considered as intervening variables which represents an indirect effect on patients' satisfaction (Ching, 2013).

Terje (2006) examined four dimensions of patient experiences with hospital care in Norwegian hospitals viz., General satisfaction, Satisfaction information, Satisfaction doctor services and Satisfaction concerning Nursing Services and found that highest average scores were related with Nursing Services and lowest for information and higher patient satisfaction is understood as an effect of lower waiting time, which in its turn is an effect of the introduction of activity-based financing.

Ranjeeta (2009) determined the areas and causes of low satisfaction among the patients and suggested methods for improvement in the Government allopathic health facilities of Lucknow district and observed difficulty in accessibility to health facility; waiting time more than 30 min; presence of insufficient signboards, low satisfaction with the examination and consultation.

Tedla and Bineyam (2012) found that the overall satisfaction rate for ART monitoring laboratory services was 85.5 per cent, and Patients were satisfied with measures taken by health care providers to keep confidentiality; ability of the person drawing blood to answer question; waiting time to get blood drawing service, availability of ordered laboratory tests and waiting time to get laboratory result. Mary, Phil and Heather (2001) suggested the introduction of statutory responsibilities of newly established Health Service Boards for quality of care and the establishment of Community Advisory Committees which was meant to ensure that mechanisms are in place for appropriate community and consumer participation at all levels of the health services.

Ahmet and Hasan (2012) concluded that patients' satisfaction in the health service organizations in Trabzon city were respectively affected by managerial services, attention and politeness, cleanliness and hygiene, hospital informing services both directly and indirectly.

Stephen and Sabina (2003) holds that overall service satisfaction is the function of patient satisfaction with physician service, waiting time and nursing service, hierarchically specified according to patients' related expectations. Gina (2012) showed a relationship among interpersonal care, technical care, and global satisfaction. Satisfaction with interpersonal care predicted satisfaction with technical care. Since physician assistants have direct patient contact, this association demonstrated the strength of the physician assistants - patient relationship as an asset to the health care organization.

Bich et., al., (2013) suggested that patients' satisfaction with care influences retention in HIV care and adherence to HAART, which in turn could serve as key determinants of HIV suppression. Kang and Maryam (2003) showed that such tourists tend to expect more of those services that are courteous and informative, and conveyed a feeling of trust and confidence.

Parasuraman, and Berry (1985) developed a model of service quality through an exploratory research in four services categories, such as, Retail Banking, Credit Card, Securities Brokerage, and Product Repair and Maintenance which revealed that the criteria used by consumers in assessing service quality fit in potentially overlapping dimensions. These dimensions were Reliability, Responsiveness, Competence, Access, Courtesy, Communication, Credibility, Security, Understanding/Knowing the Customer, and Tangibles. Joseph and Kristina (2004) described several approaches for implementing quality improvement initiatives to improve patients' satisfaction, which enabled health-care organizations to position themselves for success. Robert (1997) concluded that the strongest and most consistent predictors of satisfaction were older age and better self reported health. Patients'

characteristics associated for more of the variance in satisfaction than did facility characteristics. Older and healthier patients reported greater satisfaction with mental health care services.

Research Methodology

The research design involves using pre-tested structured non-disguised questionnaire that were filled up by total number of 500 Patients sub-divided as 200 Patients from Government Hospitals [GHs], 200 from Trust Hospitals [THs], and 100 Patients from Private Hospitals [PHs] each respectively based on non-probability sampling design with the help of application of convenience sampling method, and they were conveniently drawn from GHs, THs, and PHs located within the Baroda City of the Gujarat State with an objective to evaluate his or her overall experiences. The researchers had also undertaken reliability tests to determine how strongly the attitudes were related to each other and to the composite score, and all dimensions of the structured non-disguised questionnaire used to measure patients' satisfaction/ dissatisfaction were pre-tested and the Cronbach's alpha ranged from 0.695 to 0.894.

Objectives of the Research Study

The key objective of this empirical study was to propose and test a model for measurement of patients' satisfaction/dissatisfaction, and to also demonstrate a relationship between the selected variables that is services as provided by Medical Professionals, Para-Medical Staff (Nursing & other Supporting Staff), as well as services offered by the Administrative Staff of the hospitals, and lastly, Physical Facilities (Environment) offered by a given type of hospital.

The researchers had considered to evaluate selected hospital services which is a small part of medical services, and has been referred herein as synonymous in this empirical research study. The researchers aimed at the measurement of patients' satisfaction/dissatisfaction exclusively of indoor patients only who had availed hospital and or medical services provided to him or her by the selected Government Hospitals [GHs], Private Hospitals [PHs], and Trust Hospitals [THs] located within the Baroda City of the Gujarat State respectively.

Profile of the Selected Patients

A comprehensive profile of selected patients' revealed that out of the total number of 500 patients, 57 per cent were males and 43 per cent were females. 84 per cent of them were married and 16 per cent were unmarried. 86 per cent patients were found as placed in category of below Graduation whereas 14 per cent were having Post-graduates. 31 per cent of them were found in the age group of below 30 years whereas 51 per cent were found as placed in the age group of 30 to 60 years age group, and remaining 18 per cent were aged above 60 years. It was found that educated patients preferred PHs followed by THs and GHs. Preference for hospitals shifted from GHs to THs to PHs with an increase in educational qualifications. Lower income group

patients mainly preferred GHs followed by THs whereas, patients belonging to higher income group mostly preferred PHs followed by THs.

Findings of the Research Study

The key findings and results of applications of chi-square test revealed following.

Hypothesis: 01

The average opinion of selected patients' in the selected type of hospitals (GHs; THs; and PHs), on selected criteria used to measure selected patients' responses for the selection of a given type of hospital (GHs; THs; and PHs) is equal.

The average opinion of selected patients' on various reasons for selection of type of hospitals was found to be uniform in some of the selected criteria viz., past performance of hospital / doctor; overall reputation of hospital; sanitation in the hospital, whereas average opinion of selected patients' was found as different with regard to other selected items.

Hypothesis: 02

The average opinion of selected patients' in the selected type of hospitals (GHs; THs; and PHs) on selected criteria used to measure selected patients' responses for the various medical services provided to him/her by doctors' of the given type of hospital (GHs; THs; and PHs) is equal.

The average opinion of selected patients on various medical services being provided by doctors to them, was found to be different in case of few of the selected criteria viz., impartial attitude of doctors; doctors' work according to patient expectations; doctors' gave individual considerations and maintain confidentiality; doctors' showed respect and support to patients; doctor's ask for patients' permission for performing tests and doctors' honesty in dealing with patients, whereas average opinion of selected patients' was found as uniform with regard to other selected items.

Hypothesis: 03

The average opinion of selected patients' in the selected type of hospitals (GHs; THs; and PHs) on selected criteria used to measure selected patients' responses for the various services provided to him/her by paramedical staff of the given type of hospital (GHs; THs; and PHs) is equal.

The average opinion of selected patients' on various services being provided to them by paramedical staff, was found to be different in some of the selected criteria viz., nurses' knowledge & efficiency; nurses' maintain proper records of patients; good experience of those who perform test on patients; nurses' explain rules regulation in ward; nurses' were kind, gentle & sympathetic; wherein, average opinion of selected patients' was found as uniform with regard to other selected items.

Hypothesis: 04

The average opinion of selected patients' in the selected type of hospitals (GHs; THs; and PHs) on selected criteria used to measure selected patients'

responses for the various services provided to him/her by administrative staff of the given type of hospital (GHs; THs; and PHs) is equal.

The average opinion of selected patients' on various services being provided to them by administrative staff was found to be uniform in some of the selected criteria viz., speed, ease of admission & discharge form hospital; convenient office hours; simple billing procedures, wherein, average opinion of selected patients' was found as different with regard to other selected items.

Hypothesis: 05

The average opinion of selected patients' in the selected type of hospitals (GHs; THs; and PHs) on selected criteria used to measure selected patients' responses for the environment (physical facilities) of the given type of hospital (GHs; THs; and PHs) is equal.

The average opinion of selected patients' on environment (physical facilities) of the hospitals was found to be similar in some of the selected criteria viz., well equipped units; proper sitting & bedding arrangements; sufficient number of dust bins & spittoons; staff neat in appearance; inside & outside noise kept minimum; whereas average opinion of selected patients' was found as different with regard to other selected items.

Overall Satisfaction/Dissatisfaction of Selected Patients

It was found that 94 per cent patients of GHs were found as satisfied followed by 90 per cent patients of PHs and 83 per cent patients of THs respectively. There were patients who were dissatisfied but still possess positive approach to recommend hospital to others included 43 per cent from THs, followed by 22 per cent of PHs, and 16 per cent from GHs respectively. There were also other patients who were satisfied but still possess negative approach to recommend hospital to others included as 16 per cent patients of THs followed by 9 per cent patients of PHs, and 05 per cent patients from GHs respectively.

Selected Patients' Opinion on Medical Services As Provided by Medical Professionals:

For services as provided by medical professionals, patients of THs & PHs were assigned higher median value. It implies that patients' preferred THs & PHs compared to GHs by giving more importance to services provided by medical professionals in THS and PHs.

For para-medical services, patients of THs followed by PHs were assigned higher median value. It meant that patients' preferred THs & PHs as compared to GHs by giving relatively more importance to para-medical services as provided in the THS and PHs.

For Administrative Services patients of THs followed by PHs have assigned higher median value. It revealed that patients' preferred THs and PHs as compared to GHs giving more importance to administrative services provided in THs and PHs.

In consideration of the available physical facilities the patients of THs followed by GHs have assigned higher median value. It was found that patients' preferred THs and GHs compared to PHs by giving more importance to

physical facilities as provided by THs and GHs. The major reason behind importance given by patients of GHs to its physical facilities could be possibly the profile of visitors of GHs might be very poor compared to patients' who visits THs & PHs, and in many cases they might have found even the better environment than their own home.

Structural Equation Model [SEM] for Measurement of Patients' Satisfaction

The researchers have made an attempt to demonstrate the relationship between overall satisfaction and hospital services as provided by PHs, THs, and GHs using Structural Equating Model as follows.

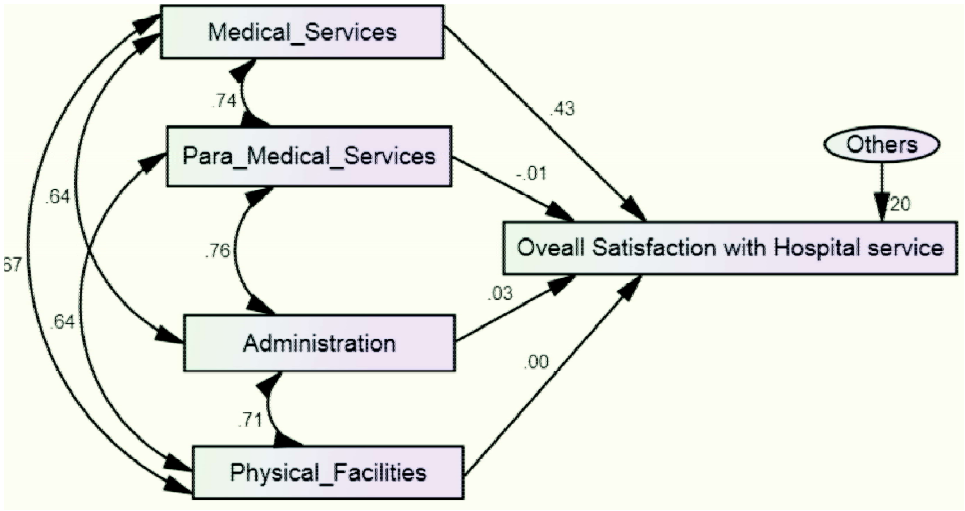

Figure 1: SEM Model Showing Relationship Between Hospital Services Provided to Patients' of Private Hospitals [PHs] and Overall Satisfaction (Patients' of Private Hospitals)

This is a simple regression model where one observed variable, the overall satisfaction with hospital services, is predicted as a linear combination of the other four observed variables, viz., Medical Services, Para-Medical Services, Services provided by Administrative Staff in the hospital and Physical Facilities (Tangibles). As with nearly all empirical data, the prediction will not be perfect. There are some other variables (other than selected four variables) that also assumed to have an effect on overall satisfaction with Hospital Services for which the model assumes '1' as standardized regression weights which specifies that other variables must have a weight of 1 in the prediction of overall satisfaction with hospital services. Each single-headed arrow represents a regression weight. The value shown against two sided arrows (0.64, 0.67, 0.64, 0.74, 0.76, and 0.71 is the correlation between four observed variables, Medical Services, Para Medical Services, Services provided by Administrative staff in the hospital and Physical Facilities (Tangibles). The values shown with single sided arrow (0.43, -0.01, 0.01, and 0.00) are standardized regression weights. The value 0.20 is the squared multiple correlation of overall satisfaction with Hospital

Services and four variables that affect overall satisfaction with Hospital Services. It meant that the selected PHs patients' overall satisfaction with four hospital services is influenced by medical service (0.43) followed by Services provided by Administrative staff in the hospital (0.03). It also suggests that patients' overall satisfaction in PHs is based on quality of medical services. People visit the hospital with an expectation that PHs provide better medical services.

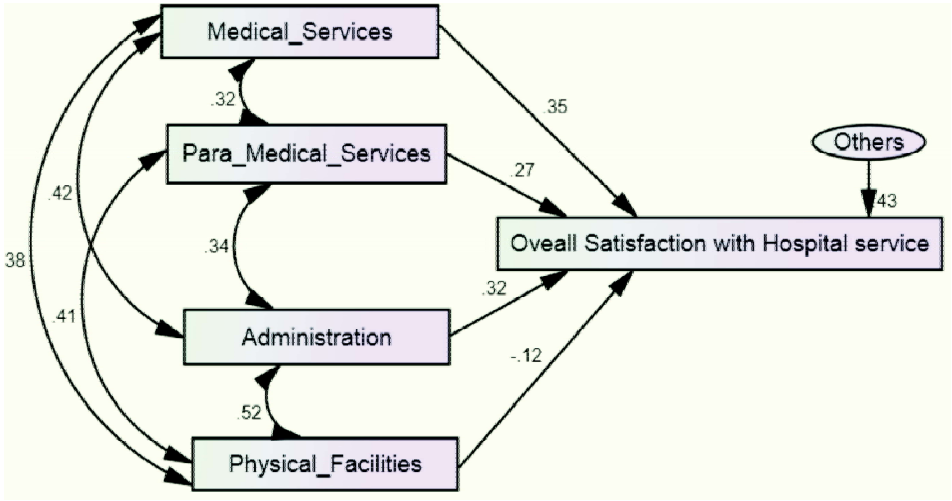

Figure 2: SEM Model Showing Relationship Between Hospital Services Provided to Patients' of Trust Hospitals [THs] and Overall Satisfaction (Patients' Of Trust Hospitals)

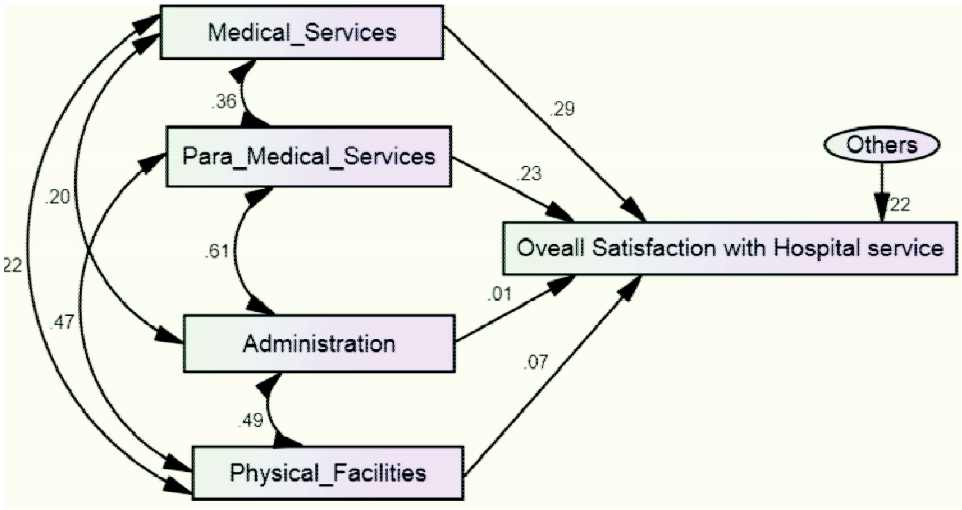

Figure 3: SEM Model Showing Relationship Between Hospital Services Provided to Patients' of Government Hospitals [GHs & Overall Satisfaction] (Patients' of Governemnt Hospitals)

The value shown against two sided arrows (0.42, 0.34, 0.41, 0.32, 0.34, and 0.52) is the correlation between four observed variables, Medical Services, Para Medical Services, Services provided by Administrative Staff in the hospital and Physical Facilities (Tangibles). The values shown with single sided arrow (0.35, 0.32, 0.27, -0.12) are standardized regression weights. The value 0.43 is the squared multiple correlation of overall satisfaction with Hospital Services and four variables that affect overall satisfaction with Hospital Services. It means the selected THs patients' overall satisfaction with four hospital services is influenced by medical service (0.35) followed by Services provided by Administrative Staff in the hospital (0.32), Para-Medical Services (0.27) and Physical Facilities (-0.12).

The value shown against two sided arrows (0.20, 0.22, 0.47, 0.36, 0.61, and 0.49 is the correlation between four observed variables, Medical Services, Para Medical Services, Services provided by Administrative Staff in the hospital and Physical Facilities (Tangibles). The values shown with single sided arrow (0.29, 0.23, 0.07, 0.01 are standardized regression weights. The value 0.22 is the squared multiple correlation of overall satisfaction with Hospital Services and four variables that affect overall satisfaction with Hospital Services. It means the selected GHs patients' overall satisfaction with four hospital services is influenced by Medical Service (0.29) followed by Services provided by Para-Medical services (0.23), Physical Facilities (0.07) and Administrative Staff in the hospital (0.01).

Discussions and Implications of the Research Study

The researchers had attempted to test the patient-centered health services considering selected variables viz., Medical services that is services as provided to the patients by the medical professionals means doctors as well as Para-medical services to be offered provided by administrative staff and physical facilities made available in selected hospitals in order to provide and improve the patients' satisfaction Using Structural Equation Modeling (SEM).

This empirical research study has provided an understanding based on confirmatory evidence to the hospitals that past performance of the hospitals and doctors; overall reputation of hospitals, and sanitation in the hospitals are the major reasons for choosing a particular hospital by the patients so due consideration to these criteria will certainly help the hospitals in attracting the patients to hospitals. It has an important implication in determining future potential of hospital business. Past performance of hospitals and doctors have an impact on quality of service and is an important criterion for potential research for searching innovative ways of delivering hospital services. The overall reputation of a given hospital too carries serious economic implications on business which shall include survival, profitability growth, and future plan.

In terms of Medical Services of the hospitals, the research study received confirmatory evidence which provided an understanding to the hospitals in determining implications of medical services on business. Impartial attitude of doctors carries an impact on reputation or goodwill of business through maintaining transparency by doctors while serving patients. If doctors' does

not work according to patients' expectations, it will have an adverse impact on quality of services provided to patients or on health of a patient, so the doctors should consider the expectations of patients but not at the cost of quality of medical treatment or hospital services. Giving individual considerations and maintaining confidentiality, and also showing respect and support to patients by doctors carries an impact on psychological satisfaction of patients, and it creates an environment of ethical behaviour in the hospitals. Further, doctors' may develop a bond with the patients to improve their satisfaction.

If the doctors do not ask for patients' permission for performing test on the patients, and if doctors do not show honesty in dealing with patients, doctors' may invite legal complications for hospitals and will affect reputation of the hospitals.

In terms of Para-Medical Services of the hospitals, the research study provided confirmatory evidence, which provided an understanding to the hospitals in determining implications of Para-Medical Services on business. Knowledge and efficiency of nursing staff, and the habit of maintaining good records of patients by nurses and other para-medical staff will certainly help the hospitals in improving patients' satisfaction and reputation of hospitals. If nurses of the hospitals take due care in explaining rules, regulations in the wards and remains kind, gentle and sympathetic with the patients, the patients' will carry the good impression of hospital in society and will result into a positive word of mouth for the hospital.

In terms of Administrative Services of the hospitals, the research study provided confirmatory evidence, which provides an understanding to the hospitals in determining implications of Administrative Services on business. The speed, ease of admission and discharge from hospital; convenient office hours, and simple billing procedures would provide the comfort to the patients during their hospitalization. So, due recognition to these administrative procedures will help the hospitals in creating a comfortable environment to its patients and shall also provide mental peace to the patients.

In terms of Environment (Physical Facilities) and Tangible Criteria of the hospitals, the research study provided confirmatory evidence, which provided an understanding to the hospitals in determining implications of environment and tangible facilities on business. The selected criteria, viz., well-equipped units; proper sitting and bedding arrangement; sufficient number of dust bins and spittoons; staff neat in appearance, and inside outside noise in the hospital kept minimum, will add to the comfort of patients and affect positively the patients' intention to visit the hospital in future.

The researchers attempted to test the patient-centered hospital services offered by the selected PHS, THs, and GHs hospitals in order to deliver and improve the patients' satisfaction using SEM has showed that a unit increases in Medical services leads increase in overall satisfaction by 0.43 in PHs, 0.35 in THs and 0.29 units in GHs respectively. It implies that services provided by doctors play crucial role in satisfying patients irrespective of the type of hospital.

A unit increase in Para-medical services results into increased overall satisfaction of patients by 0.27 units in THs and 0.23 units in GHs. But, study showed that such increase does not affect much satisfaction in case of the PHS as the key reason for the selection of the PHs is better medical treatment. and patients take it as implied one that the PHs provide better Para-Medical and other services and patients pay more to it compared to charges of the THs & GHs respectively.

A unit increase in improved Administrative Services leads to increase in 0.32 unit increase in overall satisfaction in THs. In case of PHS & GHS, such increase does not affect patients' satisfaction much because in general the administration in GHs is based on bureaucratic policy framework of ruling Government and any change needs changes in Government Policies for hospitals takes much longer time. The objective of PHs is to operate the hospital with minimum expenditure as it affects their level of profitability, and therefore, they always run the hospital with only minimum administrative services required. The study also revealed that physical facilities in the all the three type of hospitals that is PHs, THS, and GHs does not affect much to patients' satisfaction which implies the fundamental reason for visiting any hospital is to get cure from diseases, and it has become evident from this research study that better medical services only can result into an increase in patients' overall satisfaction in the PHs, THS, and GHs respectively.

Conclusion

It was found that the quality of the medical service positively influences patients' satisfaction and better medical services shall result into positive influence on patients' satisfaction.

From a marketing view, hospital administrators should focus on different patients' segments and respond to their needs, in order to increase service quality of hospital services, and hence the overall patients' satisfaction. With the difference in scale, resources, technology, costs, etc., the hospitals are expected to consider and evaluate its own strengths and weaknesses, and shall employ efforts to upgrade their outdoor patients' and indoor patients' service quality of hospital services by making effective use of its resources. And, hospitals with better facilities and well reputation are usually the first choice of patients and the most important factor in the selection of a given type of hospital.

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Role of Commerce Education in Entrepreneurship for Sustainable Inclusive Growth: A Case Study of National Institute for Entrepreneurship and Small Business Development

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Entrepreneurship has been considered as backbone of inclusive and sustainable growth of any country. It is well understood and recognized that the entrepreneurs can be nurtured through appropriate interventions in the form of hands-on commerce education programmes. The present study assessed the role of hands-on commerce education programmes offered by National Institute for Entrepreneurship and Small Business Development (NIESBUD) on Project Planning, Financial Literacy, Import Export Documentation and other related work based skills of the budding entrepreneurs. Primary data was collected from 350 NIESBUD trainees. The results of the analysis would enable the NIESBUD to further recognize the entrepreneurs' needs and preferences for better entrepreneur's satisfaction which ultimately leads to inclusive and sustainable growth.

Introduction

Most of the countries of world including developed countries face a major challenge i.e. youth employment. It is evident from various researchers in case of underdeveloped and developing countries the rate of unemployed youth is increasing rapidly. To address this challenge, the policy makers of most of the countries have increasingly recognized entrepreneurship as a key driver for sustainable inclusive economic development. Entrepreneurship is an employment strategy that can lead to sustainable and inclusive economic growth. Entrepreneurship provides people the potential to generate employment not only for themselves but also for others (United Nations, 2013),

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India is not an exception. Rather, in India the concept of entrepreneurship play a crucial role in the overall economic and social growth of the country. It is estimated that 60 percent of Indian population still residing in villages and employment opportunities can be created easily through appropriate interventions in the form of practical commerce education training programmes and the major advantage of the sector is its employment potential at low capital cost.

In the recent years, the entrepreneurship sector at rural and urban level has consistently registered higher growth rate with the support of government liberalized policies along with IT revolution but only few are making use of the opportunities emerging from the evolving scenario. However, a large segment of the population, particularly in the industrially backward regions/ rural areas generally lags behind in taking advantage of these opportunities because of lack of knowledge and skills related to commercial aspects of entrepreneurship. Therefore, there is a need to provide hands-on commerce education covering Project Planning, Financial Literacy, Import Export Documentation and other related issues for skills development to such people in order to encourage mainstream them in the ongoing process of economic growth. (MSME Annual Report, 2007-08)

Review of Literature

Sustainable and inclusive development is only possible if talents are identified properly fed with modern knowledge of relevant commerce, science and technology. It is well recognized that a country might remain backward not because of lack of resources or dearth of capital but because of lack of entrepreneurial talents or talent existing in that society and It is also realized that the presence of resources and favorable government policies cannot automatically contribute for economic development. It is the entrepreneurial skills of the people, which can transform the economy of that region. Both the quantity and quality of entrepreneurial skills are of utmost significance for achieving the goal of economic development.. (Prakash and Seema, 2013).

By recognizing this issue, NIESBUD has initiated various hands-on commerce education incubation programmes throughout the country. The prime objective of these programmes is to promote, support and sustain entrepreneurship. NIESBUD is acting as change agents by transforming unemployed youth into budding entrepreneurs. Such type of hands-on commerce education develops planning, financial literacy, and problem-solving and decision-making abilities. (Sundarapandian and Vidya, 2011)

The positive significant correlation between entrepreneurship and inclusive growth has already been established by various researchers. Improving the skills base has led to increased opportunities for entrepreneurship (Fogarty, 1973). Geller (2002), depicted that methodological approach can influence the performance of government organisations providing entrepreneurship services. Study on formulation of entrepreneurship (Desai, 1999, Donnely et. al. 1990, Kirschoff and Phillips 1989, Keeble et. al. 1990, Audretsch and Fritsch 1991), Entrepreneurial Pedagogy (Jones-Evans et. al. 2000, Fiet 2001, Garavan et. al. 1997, Smallbone 1990, Croy and Hegarty 2004, Boyle

2000, Kautz 2001, Smith et. al. 1997; Mayfield et. al. 1997) and role of networks (Van and Harvey, 1998, Krugman, 1991, North and Smallbone 2000) etc. has been conducted but research related to role of hands-on commerce education in entrepreneurship for sustainable inclusive growth entrepreneurial has been neglected so far. India needs to create 1- 1.5 crore (10-15 million) jobs per year for the next decade to provide gainful employment to its young population. Accelerating entrepreneurship and business creation is crucial for such large-scale employment generation. (Raghu, 2012).

Objectives

- To analyze the impact of hands-on commerce education incubation programmes on entrepreneurship.
- To examine the correlation between hands-on commerce education incubation programmes and entrepreneurship.

Research Methodology

Research Design : The present study was descriptive in nature. A cross-sectional research, consisting of a sample of the population of interest, has been undertaken. The survey was carried out under natural (un-manipulated) field conditions.

Data Sources : Both primary and secondary data was used. Primary data was collected through appropriate questionnaires from 250 trainees of selected hands-on commerce education incubation programmes viz. Finance for Non-Finance Executives, Import Export Documentation, Project Planning, Product Identification & Marketing Strategies, and Cost Effectiveness in Economic Downturn organized by NIESBUD up to September 2013.

Sampling Technique : Quota sampling technique has been used to obtain the responses from the respondents. Respondents were selected at the time of registration and after completion of the selected training programmes. A total of 250 trainees were surveyed for the present study.

Data Analysis Approach : In the present study, responses from respondents were coded and tabulated in PASW 18. For analyzing the data, both simple (average, percentage, weighted average and mean score etc.) and advanced statistical tools (Standard Deviation, Bi-variant Correlation, one way Anova, Post hoc, and Paired Sample t-Test) were used. The test was conducted at 95 per cent confidence level (or 5 per cent level of significance). A seven point Likert scale (strongly disagree (1) to strongly agree (7)) was used. The selected scales shall be pre-tested in order to reduce the chances of go errors as well as drop errors.

Analysis and Discussion

Out of 250 responses received, of which 190 (76.0%) were males and 60 (24.0%) were females; 115 (46.0%) surveyed trainees belong to 25-45yrs, 75 (30.0%) belong to >45yrs, and 60 (24.0%) belong to <25yrs age group; 135 (54.0%) of the surveyed trainees belong to unemployed youth, 60 (24.0%) were retired, and 55 (22.0%) were housewife's; 150 (60.0%) surveyed trainees

belong to 10000 – 30000 household income, 75 (30.0%) belong to 30001 – 50000 household income, and 25 (10.0%) belong to >50001 household income group; 200 (80.0%) of surveyed trainees were residents of urban area, and 50 (20.0%) were residents of rural area; 225 (90.0%) surveyed trainees were under graduates, and 25(10.0%) were post graduates.

To verify and analyze the impact of hands-on commerce education incubation programmes on entrepreneurship, Mean variance, one way Analysis of Variance (ANOVA), Post hoc analysis and paired sample t-Test were applied. Trainees response regarding attitude towards entrepreneurship were compared, both before and after attending hands-on commerce education incubation programmes conducted by NIESBUD. Mean value of statements related to attitude towards entrepreneurship (two statements) was taken as dependent variable and selected hands-on commerce education incubation programmes were taken as independent variable. A significance value of less than 0.05 indicated that significant relationship existed between the variables under study. For further analysis, Post hoc analysis was used. Wherever Post hoc analysis could not be applied the analysis was done on the basis of mean scores.

Attitude Towards Entrepreneurship Before Experiencing Hands-on Commerce Education Incubation Programmes

Table 1: Attitude towards entrepreneurship before experiencing hands-on commerce education incubation programmes

Name of Hands-on Commerce Education Programme	Mean	Std. Dev	Std. Error	Min.	Max.
Finance for Non-Finance Executives	3.08	.708	.045	2	6
Import Export Documentation	4.31	.501	.072	4	5
Project Planning	4.21	.602	.094	4	5
Product Identification & Marketing Strategies	3.60	.496	.078	3	4
Cost Effectiveness in Economic Downturn	3.63	.489	.075	3	4
Total	3.44	.794	.039	2	6

In the case of attitude towards entrepreneurship, the overall mean value of selected programmes was 3.44 (Table 1). The mean value of Finance for Non-Finance Executives was 3.08, Import Export Documentation was 4.31, Project Planning was 4.21, Product Identification & Marketing Strategies was 3.60, and Cost Effectiveness in Economic Downturn was 3.63. Meaning thereby that the trainees response were on lower side related to attitude towards entrepreneurship. For further analysis one way ANOVA was used (Table 2).

Table 2: ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	95.270	4	23.817	58.123	.000
Within Groups	171.697	245	.410		
Total	266.966	249			

Significance value of 0.000 indicated that there was a significant relation between attitude towards entrepreneurship and selected training programmes. Post hoc analysis and mean attitude towards entrepreneurship score v/s selected training programmes clearly revealed that trainees of Import Export Documentation were having high mean score hence were more positive towards entrepreneurship (Table 1).

Attitude Towards Entrepreneurship Level After Experiencing Hands-On Commerce Education Incubation Programmes

Table 3: Attitude towards entrepreneurship after experiencing hands-on commerce education incubation programmes

Name of Hands-on Commerce Education Programme	Mean	Std.	Std.	Min.	Max.
Finance for Non-Finance Executives	5.46	.456	.029	5	7
Import Export Documentation	5.13	.726	.105	4	6
Project Planning	5.32	.687	.107	5	6
Product Identification & Marketing Strategies	4.60	.744	.118	4	6
Cost Effectiveness in Economic Downturn	4.59	.366	.056	4	5
Total	5.24	.636	.031	4	7

In the case of attitude towards entrepreneurship Table 3 clearly revealed that after attending hands-on commerce education incubation programmes, the overall mean value of selected respondents related to attitude towards entrepreneurship had increased from 3.44 to 5.24. The mean value of Finance for Non-Finance Executives had increased from 3.08 to 5.46, Import Export Documentation from 4.31 to 5.13, Project Planning from 4.21to 5.32, Product Identification & Marketing Strategies from 3.60 to 4.60, and Cost Effectiveness in Economic Downturn had increased from 3.63 to 4.59. One way ANOVA was used to reveal further details of level of influence of hands-on commerce education incubation programmes on attitude towards entrepreneurship (Table 3).

Table 4: ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	47.937	4	11.984	40.813	.000
Within Groups	123.035	419	.294		
Total	170.971	423			

Significance value of 0.000 (Table 4) indicated significant relations between attitude towards entrepreneurship and selected training programmes. Post hoc analysis and mean attitude towards entrepreneurship score v/s selected training programmes clearly revealed that now trainees of Finance for Non-Finance Executives (by replacing Import Export Documentation) had a high mean score and hence were more positive towards entrepreneurship, after experiencing hands-on commerce education incubation programmes.

Table 5: Multiple comparisons

(I) Name of Hands-on Commerce Education Programme	(J) Name Of Hands-On Commerce Education Programme	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Finance for Non-Finance Executives	Import Export Documentation	-1.23	.101	.000	-1.43	-1.03
	Project Planning	-1.12	.108	.000	-1.34	-.91
	Product Identification & Marketing Strategies	-.52	.109	.000	-.73	-.30
	Cost Effectiveness In Economic Downturn	-.54	.106	.000	-.75	-.34
Import Export Documentation Company	Finance For Non-Finance Executives	1.23	.101	.000	1.03	1.43
	Project Planning	.11	.136	.440	-.16	.37
	Product Identification & Marketing Strategies	.71	.137	.000	.44	.98
	Cost Effectiveness In Economic Downturn	.68	.134	.000	.42	.95
Project Planning	Finance For Non-Finance Executives	1.12	.108	.000	.91	1.34
	Import Export Documentation	-.11	.136	.440	-.37	.16
	Product Identification & Marketing Strategies	.61	.142	.000	.33	.89
	Cost Effectiveness In Economic Downturn	.58	.140	.000	.30	.85
Product Identification and Marketing Strategies	Finance For Non-Finance Executives	.52	.109	.000	.30	.73
	Import Export Documentation	-.71	.137	.000	-.98	-.44
	Project Planning	-.61	.142	.000	-.89	-.33
	Cost Effectiveness In Economic Downturn	-.03	.141	.843	-.30	.25
Cost Effectiveness in Economic Downturn	Finance For Non-Finance Executives	.54	.106	.000	.34	.75
	Import Export Documentation	-.68	.134	.000	-.95	-.42
	Project Planning	-.58	.140	.000	-.85	-.30
	Product Identification & Marketing Strategies	.03	.141	.843	-.25	.30

* The mean difference is significant at the .05 level.

Dependent Variable: Attitude Towards Entrepreneurship Before Experiencing Hands-on Commerce Education Incubation Programmes

Table 6: Multiple Comparisons

(I) Name of Hands-on Commerce Education Programme	(J) Name of Hands-On Commerce Education Programme	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Finance for Non-Finance Executives	Import Export Documentation	.34	.085	.000	.17	.51
	Project Planning	.15	.091	.107	-.03	.33
	Product Identification & Marketing Strategies	.86	.092	.000	.68	1.05
	Cost Effectiveness In Economic Downturn	.87	.089	.000	.70	1.05
Import Export Documentation Company	Finance For Non-Finance Executives	-.34	.085	.000	-.51	-.17
	Project Planning	-.19	.115	.096	-.42	.03
	Product Identification & Marketing Strategies	.53	.116	.000	.30	.75
	Cost Effectiveness In Economic Downturn	.53	.114	.000	.31	.76
Project Planning	Finance For Non-Finance Executives	-.15	.091	.107	-.33	.03
	Import Export Documentation	.19	.115	.096	-.03	.42
	Product Identification & Marketing Strategies	.72	.120	.000	.48	.95
	Cost Effectiveness In Economic Downturn	.72	.118	.000	.49	.96
Product Identification and Marketing Strategies	Finance For Non-Finance Executives	-.86	.092	.000	-1.05	-.68
	Import Export Documentation	-.53	.116	.000	-.75	-.30
	Project Planning	-.72	.120	.000	-.95	-.48
	Cost Effectiveness In Economic Downturn	.01	.119	.953	-.23	.24
Cost Effectiveness in Economic Downturn	Finance For Non-Finance Executives	-.87	.089	.000	-1.05	-.70
	Import Export Documentation	-.53	.114	.000	-.76	-.31
	Project Planning	-.72	.118	.000	-.96	-.49
	Product Identification & Marketing Strategies	-.01	.119	.953	-.24	.23

* The mean difference is significant at the .05 level.

Dependent Variable: Attitude Towards Entrepreneurship After Experiencing Hands-On Commerce Education Incubation Programmes

Table 7: Paired samples t-test statistics (overall service quality)

		Mean	N	Std. Deviation	Std.Error Mean
Pair 1	Attitude towards entrepreneurship before attending hands-on commerce education incubation programmes	3.44	424	.794	.039
	Attitude towards entrepreneurship after attending hands-on commerce education incubation programmes	5.24	424	.636	.031

Table 8: Paired samples t-test (overall service quality)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Dev	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Attitude Towards Entrepreneurship Before attending Hands-On Commerce Education Incubation Programmes - Attitude Towards Entrepreneurship After Attending Hands-On Commerce Education Incubation Programmes	-1.81	.907	.044	-1.89	-1.72	-41.005	423	.000

It was clear from the above data interpretation and analysis that hands-on commerce education incubation programmes had significant influence on attitude towards entrepreneurship. To support the above findings two-related-samples (paired sample) t-test was also applied by the researcher on the overall results to confirm the findings of the above analysis i.e. there was a significant influence of hands-on commerce education incubation programmes on the attitude towards entrepreneurship. The Paired-Samples t-test procedure compared the means of two variables that represented the same group at different times (e.g. before and after an event) or related groups (e.g., husbands and wives). In the present study, trainees attitude towards entrepreneurship were tested twice i.e. once before attending hands-on commerce education incubation programmes and the other after attending hands-on commerce education incubation programmes.

The significance value (.000) of Paired Samples t-test (attitude towards entrepreneurship) clearly indicated that there was a significant difference between the selected variables. Also, the confidence interval for the mean difference did not contain zero, this also indicated that the difference was significant. So the above discussion strongly confirmed that there was a significant positive influence of hands-on commerce education incubation programmes on attitude towards entrepreneurship.

Correlation between hands-on commerce education incubation programmes and entrepreneurship

Bivariate correlations had been done on the responses of trainees on statements regarding hands-on commerce education incubation programmes and entrepreneurship. In the first case i.e. before attending hands-on commerce education incubation programmes, it was observed that no significant correlations existed between both the variables (Table 9).

Table 9: Bivariate correlations : before experiencing hands-on commerce education incubation programmes v/s attitude towards entrepreneurship

		Before experiencing hands-on commerce education incubation programmes	Attitude Towards Entrepreneurship
Before experiencing hands-on commerce education incubation programmes	Pearson Correlation	1	-.063
	Sig. (2-tailed)	.	.195
Attitude Towards Entrepreneurship	Pearson Correlation	-.063	1
	Sig. (2-tailed)	.195	

Table 10: Bivariate correlations : after experiencing hands-on commerce education incubation programmes v/s repurchase intention

		After experiencing hands-on commerce education incubation programmes	Attitude Towards Entrepreneurship
After experiencing hands-on commerce education incubation programmes	Pearson Correlation	1	-.386**
	Sig. (2-tailed)	.	.000
Attitude Towards Entrepreneurship	Pearson Correlation	-.386**	1
	Sig. (2-tailed)	.000	.

** Correlation is significant at the 0.01 level (2-tailed).

Interestingly in the second case i.e. after attending hands-on commerce education incubation programmes, it was observed that there were significant correlations existing between both the variables (Table 10). This result clearly depicted the correlation between hands-on commerce education incubation programmes and attitude towards entrepreneurship. Meaning thereby that significant linear correlation existed between hands-on commerce education incubation programmes and attitude towards entrepreneurship.

Conclusion

While Comparing variable before and after attending hands-on commerce education incubation programmes organized by NIESBUD, it was revealed, inter-alia, that there was significant improvement in attitude towards entrepreneurship after attending hands-on commerce education incubation programmes. Further, this was clearly depicted that significant linear correlation existed between hands-on commerce education incubation programmes and attitude towards entrepreneurship.

The findings of this study can provide a basis to policies maker to promote activity based learning as a part of Indian education system for encouraging entrepreneurship to achieve sustainable inclusive growth.

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Impact of Competition on Decision making of Indian Retail Consumers

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Indian consumers are very much price sensitive and pretended to get the extra benefit from the retailers, so retailers need to compete with each other in such a way to impulse the decision of the consumer to shop from them. This research paper tries to study whether the Indian consumers are really affected by the competitive policies of the retailers and the extent to which modern retail has entered into their shopping lives.

Introduction

Consumers constantly make decisions regarding choice, purchase, and use of product or services. These decisions are of great importance not only for consumer but also for marketing strategy makers or policy makers. It can be studied by the use of *the consumer information processing model* which includes: Problem recognition; Information search; Evaluation and selection of alternatives; Decision implementation; and Post-purchase evaluation.

Another widely-used model in marketing that attempts to explain consumer decision making process is called the *hierarchy of effects model*. The Hierarchy of effects (HOE) model begins with the state where a consumer has no awareness about the brand (unaware) then develops awareness triggered by external stimuli, such as advertising message or "word of mouth." As he/she obtains and processes more information, the consumer develops more specific knowledge about the brand. The knowledge, then, is used as basis to form a liking (or disliking), leading to a preference of brand(s) relative to the others.

The HOE model is quite similar to the consumer information processing model because it also assumes that people are cognitively driven, thinking information processors. Controversy exists, of course, as to whether that is necessarily true. Some may claim that they often form liking and preference (emotional response or *feeling*) toward brands before developing cognitive judgment (knowledge or *thinking*) on them. Others argue that people form preference and knowledge simultaneously. Although each argument has

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its own support, the general model (cognition first, preference second) seems to be valid especially in relatively complex – or *high-involvement* – decision making situations (e.g., cars, computers), providing a conceptual framework for thinking about the sequence of events which begins from the initial awareness to the final action.

Consumer decision is very much taken after collection of information and producer has the advertisement as the media to compete with each other and providing information to the consumer. The attitude of the consumer towards the brand ad also affects the consumer decision making. The attitude may be favourable or unfavourable. So, it can be defined as a predisposition to respond in a favourable or unfavourable manner to a particular advertising stimulus during a particular exposure occasion (Lutz, 1985). After Mitchell and Olsen (1981) and Shimp (1981) introduced the importance of the Attitude towards advertisement (Aad) construct, research on the causal relationships among Aad and other measures of advertising effectiveness become a main study stream (Brown & Stayman, 1992). In the causal relationship, Aad usually acts a moderator, and it influences on brand attitude (Ab) and intention to purchase the brand (purchase intention, PI). Based on conceptual and empirical research on Aad, four alternative models of attitude toward the ad are postulated (Mackenzie, Lutz, & Belch, 1986).

The four alternative models of advertising attitude explain how antecedent variables related to advertising outcomes are mediated by attitude toward advertising. These models are named as the affect transfer model, dual mediation model, reciprocal mediation model, and independent influences hypotheses but all these models ignore competition while studying the attitude of consumers and their decision making.

Review of Literature

Daniel and Miguel (2005) revealed that the amount of competition in a market positively influences the competitive conduct of firms in that market. Lefa (2003) confirmed the dual-mediation model that in addition to a direct affect, ad cognition also has an indirect influence on brand attitude through brand cognition but also included the competing ads and competing brands. His results strongly disagree the competing ads and brands affect focal ad and focal brand. Wiley et al (1996) found out four most frequently mentioned attributes which are: competitive prices, fast service, nutritious food, friendly service and also found people demanding cleanliness which emerges as the most frequent rating for a retail outlet. The conceptual framework explains that purchase is influenced by purchase intention (PI) which is again influenced by previous purchase (PrP). Alternatives are perfect substitutes since selection of one alternative precludes the possibility of selecting another.

Research Methodology

Sample size

Questionnaire was distributed to 600 consumers through online method and interview method of which, 347 responses turned to be useful for the

analysis of the study.

Sources of data

The study is based on both primary and secondary data. The primary data has been collected by a self-structured questionnaire through online method and interview method whereas secondary data has been collected from books, manuals, journals and internet. Convenience sampling technique method has been used to collect the data.

Objectives of the Study

1. To examine the effect of pricing of the product on the consumer decision making.
2. To study the impact of factors among various variables of competitive policies affecting consumer decision making.
3. To evaluate the impact of services offered by the retailers on the decision of the consumers.
4. To evaluate the impact of advertisement made by the retailers on the decision of the consumers.

Hypotheses

1. Prices and sales offer have insignificant effect on consumer decision making.
2. Services have insignificant effect on consumer decision making.
3. Advertisement has insignificant effect on consumer decision making.

Analysis

The data under the study is highly reliable, as the value of Cronbach's Alpha is 0.871. To determine the adequacy of the data KMO measure of sampling adequacy has been calculated. The value of KMO in between 0.5 to 1.00 shows the higher suitability or adequateness of the factor analysis. The generated score of KMO was .721, reasonably supporting the appropriateness of using factor analysis.

The sum of the squared factor loadings for all factors for a given variable (row) is the variance in that variable accounted for by all the factors, and this is called the communality. The communality measures the percent of variance in a given variable explained by all the factors jointly and may be interpreted as the reliability of the indicator. The factor solution should explain at least half of each original variable's variance, so the communality value for each variable should be 0.50 or higher. In this study, maximum of the variables used have a communality higher than 0.50.

Those components whose Eigen value is more than 1, has been taken into consideration for the further study. So, from Table 1 it can be concluded that, there are three factors which studies the 64% (approx) of the total variance of the given variables.

Table 1: Factor loadings

Factors	Variables	Factor Loadings	Variance %
Prices and sales offers	Do you shop during such shopping festivals?	.781	25.580
	Do you visit competing retailers to check on their prices?	.553	
	Do you compare prices before making a purchase?	.548	
	Festive Season Discount	.614	
	Specific Day Discount	.585	
Services	Does the services offered by the other retail store affects your visit to the retail stores	.839	19.849
Advertisement	Do you check retailers' ads for prices?	.811	18.463
	Do you visit such stores which offer low price products as per these ads?	.601	

After running factor analysis, we have been able to find out Eigen values for each dimension and factor loadings which indicates that it is quite appropriate to proceed with the regression analysis.

Hypotheses will be tested by multiple linear regression models for which the regression equation will be as follows:

$$Y= \alpha+\beta_1+\beta_2+\beta_3+e$$

where,

Y= consumer choice to opt a retail store

α= constant term

β_1= Price and sales offer

β_2= Services

β_3= Advertisement

e= error term

Regression has been employed by using factor scores.

Table 2: Model summary for regression analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.550[a]	.303	.288	.571	2.180

The Table 2 shows that R^2 = 0.303 and the value of adjusted R^2 = 0.288 which explains that the model explains 28.8% of variance due to the independent variables under the study. The value of Durbin-Watson is 2.18 which shows that there is no autocolation.

Table 3: Anova for regression analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.227	3	6.742	20.689	.000[a]
	Residual	46.603	343	.326		
	Total	66.830	346			

F-value of the model is found to be significant which shows the suitability of the model and explains that the model is significant in explaining the variation in dependent variable.

Table 4: Coefficients of regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.034	.047		43.199	.000
	Prices and sales offer	.102	.047	.150	2.151	.033
	Services	.228	.047	.337	4.823	.000
	Advertisement	.276	.047	.408	5.846	.000

From Table 4, the effect of these three factors can be studied on the consumer decision making in retail industry. All the three factors considered to be effective while determining the consumer decision. Prices and sales offer ($\beta = 0.102$), Services ($\beta = 0.228$) and advertisement ($\beta = 0.276$) with the significance level of 5%.

Amongst these three factors, advertisement is the most effecting factor affecting consumer decision with the standardized β of 0.408 followed by the services of retail stores with the standardized β of 0.337. The least affecting factor affecting a consumer decision is the prices and sales offer of the retailers with the standardized β of 0.150.

From the above, the hypothesis can be formulated that there is no association between the customers check the retailer advertisement and the customers visiting the retailers on the basis of these advertisements. With the help of factor analysis, the three hypotheses which were formulated and have been tested with the help of regression analysis and the result of regression shows the following results:

Hypotheses	Sig.	Hypotheses result
Prices and sales offer have insignificant effect on consumer decision making.	.033	Rejected
Services have insignificant effect on consumer decision making.	.000	Rejected
Advertisement has insignificant effect on consumer decision making.	.000	Rejected

All the hypotheses formulated have been rejected, as the p-value of every hypothesis is less than 0.05. So, all the factors under the study i.e. prices

and sales offer, services of the retail stores and the advertisement of the retail stores have significant effect on consumer decision making while choosing a retail store.

Table 5: Chi-Square test

	Do you check retailers' ads for prices?]	[Do you visit such stores which offer low price products as per these ads?]
Chi-Square	97.000[a]	83.503[a]
Df	3	3
Asymp. Sig.	.000	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 36.8.

From the above, we reject the null hypothesis that there is no association between consumer checking the retailers' ad and visit to the retailers according to the ads.

Conclusion

From the factor analysis, three factors have been identified as affecting the consumer decision making in this competitive world which are: prices and sales offer, services and advertisement. From this factor extraction, it can be concluded that the dual mediation model (explains that the attitude towards an advertisement can affect brand attitude either through believability or liking and these responses in turn, may positively affect the consumer intention to purchase) holds good in Indian retail industry too.

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Consumer Perception towards Online Shopping over Traditional Mode of Shopping: A Case Study of Guwahati City

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In the past decade, the way people shop has dramatically changed. Besides shopping at physical stores, with the aid of information and communication technologies (ICT), consumers are able to shop via the Internet. This new type of shopping mode, coming in different names like e-shopping, online shopping, network shopping, Internet shopping, or Web-based shopping, featuring in freeing consumers from having to personally visit physical stores, is anticipated to greatly change people's everyday lives. This study attempts to find out the perception of consumers towards online shopping over traditional shopping in Guwahati city. It also highlights various factors which a consumer analyses before making a purchase online. It also throws light into the various products which a consumer prefers to purchase offline.

Introduction

Internet has totally changed the way consumers shop and buy goods and services, and has rapidly evolved into a global phenomenon. Internet is being used by many with the aim of cutting marketing costs, which in turn reduces the prices of their products and services in order to stay ahead in highly competitive markets. Companies also use the Internet to convey, communicate and disseminate information, to sell the product, to take feedback and also to conduct satisfaction surveys with customers. Consumers use the Internet not only to buy the product online, but also to compare prices, product features and after sale service facilities that they will receive if they purchase products and services from a particular store. There is no doubt about the fact that online shopping in India is in its growing stage. However more and more people are gaining confidence about purchasing products and services online. Initially, the customer base for online shopping activities was the rich class with a lot of purchasing capacity. However, now, with the passage of time, more and more people are switching

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over to make purchases online, thus getting a massive change in the online shopping scenario. The invention of the internet has created a new pattern of the traditional way people shop. Customers are no longer tied to the opening hours or specific locations; it may become active virtually at any time and any place to purchase products and services. Purchasing behavior in online shops can be fundamentally different from the traditional environment.

Objectives of the Study

The study has been carried out keeping into account the following objectives:

1. To find out the perception of customers using traditional/ conventional and online shopping mode.
2. To analyze the various factors affecting the frequency of using internet for shopping.
3. To explore which shopping mode is preferred by the respondents and what are the reasons behind it.
4. To study the competitive pressure amongst traditional and online shopping in relation to various products.

Methodology

The research design adopted in the study is both descriptive as well as exploratory mainly aimed at fact-finding. Primary as well as secondary data were used in the study. Primary data was collected with the help of a structured questionnaire and telephonic interview and secondary data was collected by referring to various journals and books. Judgment, convenience and snowball sampling techniques were used to select the respondent units. Total sample size of the study was 136 .The sampling unit consist of those respondents who are aware of online shopping. Questionnaire method was used for collection of primary data. Questionnaire was constructed taking into account the research objectives. It consists of both close ended as well as open-ended questions. The number of questions was kept limited and the questions were framed on the principles of simplicity and understandability. The data collected were analyzed with the help of SPSS software. Cross tabulation, regression analysis and t-test were used for analyzing the data.

Limitations

The study is not free from limitations and loopholes. Some of the problems confronted and limitations of the study are stated are:

(i) The sample constitutes of those respondents only who are using online shopping; (ii) The sample consists of 136 respondents only which is not sufficient to generalize the findings; (iii) The study has been completed within a short span of time; (iv) Respondents were reluctant in responding some of the questions which were important for the study.

Hypotheses

The following null hypotheses are formed based on the objectives.

H_{01}: The various demographic characteristics of the respondents (sex, occupation, age and monthly income) and their frequency of using internet to purchase article is not significant.

Ho_2: The frequency of using internet to get the information about product, prior to any purchase, daily use of internet and the frequency of using internet to purchase article is not significant.

H_{03}: The importance of various factors (delivery time, reputation of the company, guarantees and warranties, privacy of information, a good description about the product, security and price of the product) on the frequency of the internet to purchase article is not significant.

H_{04}: There is no significant difference between amount spent on online purchase and off line purchase on a single purchase.

H_{05}: The preference of the respondents on shopping of various items (grocery, fast food, books, furniture, clothes, cinema/concert/ theaters tickets, travel tickets and electronics) through online and in retail store is not significant.

H_{06}: The various factors (time and cost saving, 24X7 access, risk and difficulty involved, availability of good range of product and description, post sales dissonance) leading towards the perception of customers for online shopping is not significant.

Analysis and Interpretation

Out of the total 136 number of respondents 61 were male and 75 were female. Out of the total 58 number of students 28 were male and 30 were female which comprises 58 students and 78 service holders respectively.

Out of the total 58 students, 51 of them are not engaged in any type of occupation and 31 of them are engaged in service with income less than Rs.15000. Similarly, only 6 students have monthly income ranging between Rs. 15000 to Rs. 25000. 6 of them earns an income between Rs.15000 to Rs. 25000, 6 of them earns between Rs.25000 to Rs 35000, 20 of them earns between Rs.35000 to Rs. 45000 and 7 earns above Rs.45000 respectively.

It is to be noted that the value of t-statistic can not be calculated for preference of respondents on grocery items as standard deviation is 0 as the researcher found that all the respondents prefer retail stores over online shopping for grocery items. Table 1 shows respondents' preference of various items which they purchase through both online as well as offline shopping modes. The table clearly shows that for purchasing fast food, cosmetics, furniture, clothes, or concert cinema tickets, travel tickets and electronic goods most of the respondents prefer traditional mode as we see that the buying habit of the respondents (online and offline modes) with respect to the above stated items is significant.

Table 1: One-sample test

	Test Value = 0					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
preference of respondents on fast food item	52.473	135	.000	1.801	1.73	1.87
preference of respondents on cosmetic item	53.446	135	.000	1.809	1.74	1.88
preference of respondents on books	35.404	135	.000	1.522	1.44	1.61
preference of respondents on furniture	90.386	135	.000	1.934	1.89	1.98
preference of respondents on clothes	39.336	135	.000	1.632	1.55	1.71
preference of respondents on cinema/concert/ theatre tickets	36.477	135	.000	1.559	1.47	1.64
preference of respondents on travel tickets	47.790	135	.000	1.074	1.03	1.12
preference of respondents on electronic goods	42.531	135	.000	1.691	1.61	1.77

Source: Field survey

Table 2: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.258(a)	.066	.038	.958

Predictors: (Constant), monthly income of the respondents, sex of the respondents, age of the respondents, occupation of the respondents.

Table 3: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.048	.337		6.079	.000
	sex of the respondents	.367	.167	.188	2.200	.030
	occupation of the respondents	.076	.146	.078	.525	.601*
	age of the respondents	.058	.139	.056	.419	.676*
	monthly income of the respondents	.030	.097	.050	.312	.756*

Dependent Variable: frequency of using internet to purchase articles
Source: Field survey

The correlation between various demographic characteristics under study and the frequency of the respondents using internet to purchase articles is 0.258 and only 6.6% of the variance in frequency of the respondents using internet to purchase articles is explained by the four demographic characteristics under study. Again, when the researcher looks at the influence of various demographic characteristics on the buying habit of the respondents over internet individually, it has been found that while the occupation, age and monthly income is insignificant but gender of the respondent is significant.

Table 4: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	.451(a)	.203	.185	.881

Predictors: (Constant), frequency of using internet for product information, frequency of using internet prior to purchase, frequency of using internet daily

Table 5: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
2	(Constant)	2.624	.381		6.894	.000
	frequency of using internet prior to purchase	.391	.079	.391	4.963	.000
	frequency of using internet daily	-.163	.060	-.220	-2.731	.007
	frequency of using internet for product information	-.144	.076	-.152	-1.896	.060*

Dependent Variable: frequency of using internet to purchase articles
Source: Field survey

Here, the researcher conducts a regression analysis taking the frequency of surfing internet by the respondents for i) product information, ii) before making any purchase of goods and iii) every day use as predictors and the online buying habit of the respondents as dependent variable. It has been found that the correlation between the three predictors and the dependent variable comes out as 0.451 and 20.3% of the variance of the dependent variable is explained by the three predictors. Again, while looking at the individual influence of the three predictors on the dependent variable it has been found that the frequency of using internet prior to any purchase by the respondents have most influence on the online buying habit of the respondents. Also, while the frequency of using internet prior to any purchase and the frequency of using internet daily with the online buying habit of the respondents is significant but the frequency of using internet for product information and online buying habit of the respondents is not significant.

Table 6: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3	.490(a)	.241	.196	.766

Predictors: (Constant), importance of price, importance of guarantee & warrantee, importance of privacy of information, importance of reputation of company, importance of delivery time, importance of good description of product, importance of security

Table 7: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
3	(Constant)	4.352	.470		9.250	.000
	importance of delivery time	-.673	.140	-.625	-4.803	.000
	importance of reputation of company	.249	.094	.295	2.642	.009
	importance of guarantee & warrantee	-.025	.101	-.029	-.246	.806*
	importance of privacy of information	.288	.114	.299	2.528	.013
	importance of good description of product	.398	.178	.361	2.240	.027
	importance of security	-.221	.183	-.212	-1.207	.230*
	importance of price	-.298	.120	-.286	-2.483	.014

Dependent Variable: frequency of using internet to purchase articles
Source: Field Survey

A regression analysis was conducted by taking the various important factors revolving in the mind of the consumers (price, guarantee and warrantee, privacy, reputation of the company, delivery time, security etc.) as predictors and the frequency of online buying habits of the respondents as dependent variable. It has been found that the correlation between the various predictors and dependent variable comes out at 0.490 and 24.1% of the variance of the dependent variable are explained by the various predictors under study. Again, except the importance of guarantee and warrantee and security all other predictor and online buying of the respondents are significant. While looking at the individual influence it has found that out of those predictors under study, the importance of good description of the product have most influence on the buying habit of the consumers followed by the predictors importance of privacy of information and importance of reputation of company.

Table 8: Paired samples statistics

		Mean	N	Std. Deviation	Std. Error Mean	t	Sig2 tailed
Pair 1	amount spend on online purchase on a single purchase	2.59	127	.830	.074	-24.091	.000
	amount spend on offline purchase on a single purchase	4.68	127	.628	.056		

Source: Field Survey

It has been found that in the concerned research area the difference between the amount spent on online shopping mode on a single purchase (mean=4.68) is significant and conclude that as compared to online purchase people are ready to spend more money on offline mode on a single purchase. Hence, it can be said that till now people are not willing to spend their money on expensive item on online items.

Table 9: Paired samples statistics

		Mean	N	Std. Deviation	Std. Error Mean	t	Sig2 tailed
Pair 1	frequency of using internet for shopping	3.46	136	1.003	.086	-2.968	.004
	shopping on internet save time	3.79	136	.920	.079		
Pair 2	frequency of using internet for shopping	3.46	136	1.003	.086	-6.435	.000
	shopping can be done at any time	4.18	136	.937	.080		
Pair 3	frequency of using internet for shopping	3.46	136	1.003	.086	-.473	.637*
	shopping online is more difficult	3.51	136	.996	.085		
Pair 4	frequency of using internet for shopping	3.47	132	1.015	.088	3.789	.000
	prefer traditional shopping over online shopping	3.03	132	.907	.079		
Pair 5	frequency of using internet for shopping	3.46	136	1.003	.086	6.202	.000
	shopping online is risky	2.73	136	.954	.082		
Pair 6	frequency of using internet for shopping	3.49	133	.989	.086	2.885	.005
	online shopping will supersede traditional mode	3.13	133	1.111	.096		
Pair 7	frequency of using internet for shopping	3.46	136	1.003	.086	-2.521	.013
	online shopping is less costly	3.76	136	1.078	.092		

Contd...

Pair 8	frequency of using internet for shopping	3.46	136	1.003	.086	2.215	.028
	online shopping need more time	3.18	136	1.056	.091		
Pair 9	frequency of using internet for shopping	3.46	136	1.003	.086	-5.821	.000
	good range of product available on internet	4.14	136	.862	.074		
Pair 10	frequency of using internet for shoppingsufficient description of product & services available	3.46	3.26	136	136	1.003	1.068 .086 .092 1.638 .104*
Pair 11	frequency of using internet for shopping	3.46	136	1.003	.086	9.318	.000
	online shopping is as secure as offline shopping	2.52	136	.943	.081		
Pair 12	frequency of using internet for shopping	3.51	133	.942	.082	1.003	.318*
	respondent will get frustrated if they dissatisfied with purchase	3.37	133	1.209	.105		

Source: Field Survey

The researcher used paired t- test to look at the frequency of using internet for online shopping with the various advantages and disadvantages of online shopping. Each of the advantages and disadvantages of online shopping under study are being paired with the frequency of using internet by the respondent for online shopping. The extreme right column of the table shows insignificant values denoted by an asterisk (*) i.e.; 0.637, 0.104 and 0.318 and the remaining values are significant.

Recommendations

Following are the recommendations from the study conducted:

1. Online marketers need to develop confidence in the mind of the customers related to quality and quantity of the products.
2. It should concentrate on word of mouth promotion.
3. Online shopping is mostly concentrated in urban areas as well as among educated mass having access to internet. As majority of our population stays in rural areas so the e-marketers as well as the government need to make some appropriate policies to reach the rural masses.
4. Most of the existing e-customers are hesitant to provide their personal details as well as bank details while purchasing online. So, the e-marketers need to make some policy modification so that the risk factor present in online shopping gets condensed.
5. The e-marketers are recommended to reduce the delivery time by opening franchisees and appointing agents in various places so that the purchaser gets immediate delivery of the products.

Conclusion

Although the online shopping saves time and it provides discounts or products at low prices, it has been observed that still people do not prefer online products most especially in case of expensive goods. Lot of marketing efforts need to be done in this aspect. There is a psychological behavior or cognitive thinking of the people that they always want to feel, touch and see the products before they purchase in case of grocery, fast food and expensive items. But they never hesitate to shop online any sort of tickets because it is more convenient for them than standing and waiting in a queue. Many people buy books online because there is least chance of damage and pilferage. The study was conducted on those existing customers who go for online mode of shopping but their perception towards online shopping was not so favorable.

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Product Factors of Online Marketing in Tamilnadu

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The online marketing is rapidly changing the nature of markets and marketing. By creating new marketing opportunities, it requires the units to re-shape segmentation and positioning strategies, and the marketing-mix. In this study, the element of marketing mix namely, the product was studied. Each element was analysed on the basis of the categories that influenced the effectiveness of online marketing.

Introduction

Online marketing is an emerging area and poses many question Popular as well as scholarly literature is full of the emerging opportunities and challenges because of the advent of the Internet and the World Wide Web . The present study is confined to the online marketing activities of the consumer durables in Tamil Nadu. E-business is broader in nature and includes many more aspects of the business. Online marketing focuses mainly on selling. But this study analyses the commercial applications of the Internet from the point of view of marketers. This study focuses mainly on the business-to-consumer(B2C) segment. The economic magnitude of B2B transactions is estimated to be substantially higher than that of B2C transactions. However, this study focuses only on B2C contexts while the rest of the segments do not come under its jurisdiction.

Objectives of the Study

- To study the profile of online marketing in Tamil Nadu.
- To examine and analyse the performance of online marketers with reference to electronics, textile and jewellery.
- To suggest measures for improving online marketing in Tamil Nadu

Hypotheses

1. The study units with branches and without branches do not influence online marketing.

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2. Sale of products like electronics, textile and jewellery through online was not effective.
3. Product factors like demand, sources and brand loyalty do not influence online marketing.

Methodology

This is an exploratory research conducted on the companies who transact electronically on products like textile, jewellery and consumer electronics. The study is characterized by flexibility and informality as very little knowledge is available about the problem. For this study non-probability sampling method was used where the chance of any particular unit in the population selected was unknown. The companies in TamilNadu selling their products through online are many in number in Coimbatore and Chennai. So the study area was confined only to Chennai. The companies selected for the study were confined from the point of view of their products like textile, jewellery and electronics.

Sources of Data

The study was done with the analysis based on both primary and secondary data. Primary data pertaining to demographic and socio-economic characteristics of the companies and their attributes, opinions, awareness and knowledge in the field of online marketing were obtained through survey technique. Structured questionnaire with direct, open-end, close-end and multiple choice questions was prepared and appended to the chosen respondents who sold goods online. Secondary data which helped to execute the study were collected through various sources.

Analysis

Product Factors

The frequency tables explain the sources determining the demand fluctuation like historical sales data, consumer surveys, desk research; justification of the demand through the quality of the product, expansion of market, consumer satisfaction; modifications made in the product like addition of new products, changes in existing product or elimination of the old product; choices available on the website; product availability, information about the non – availability; web brand loyalty derived by the quality, consumer service, lowest price, speedy transactions; level of web brand loyalty; extension of product demand through online marketing; reason for contacting the consumers to maintain better relationship between the buyer and the seller, awareness of festive offers and maximum exposure etc., were explained.

Cross tabulation was done with the stratums like nature of units classified as with branches and without branches; different products sold by the company like electronics, jewellery and textile. This was followed by categorical regression and neural classification analysis.

Table 1: Relationship between product factors vs effectiveness of online marketing for the units with branches

Independent Variable	Standardized Coefficients		df	F	Sig.
	Beta	Std. Error			
Sources of Information to determine demand fluctuation (X_1)	-.222	.113	2	3.892	.032
Justification of Product demand (X_2)	.349	.145	2	5.808	.008
Modifications made to existing product line (X_3)	-.335	.117	2	8.165	.002
Choices available on website for product (X_4)	-.306	.103	2	8.762	.001
Availability of product (X_5)	.581	.148	2	15.511	.000
Information about the non-availability of products (X_6)	-.342	.116	2	8.621	.001
Derivation of Web Brand Loyalty of the product (X_7)	.247	.119	3	4.311	.012
Level of Web Brand loyalty (X_8)	.437	.115	3	14.554	.000
Frequency of doing demand forecasting (X_9)	.245	.103	3	5.668	.004
Extension of product demand through online marketing (X_{10})	-.472	.108	4	19.009	.000
Reason for contacting the consumers (X_{11})	-.311	.098	2	10.028	.000

Dependent Variable : Effectiveness of Online Marketing

Multiple R =0.858 F value = 3.008 df (27,29) Pvalue < 0.01R Square = 0.737

$$\hat{Y} = -0.222X_1+0.349X_2-0.335X_3-0.306X_4+0.581X_5-$$
$$0.342X_6+0.247X_7+0.437X_8+0.245X_9-0.472X_{10}-0.311X_{11}$$

where $\hat{Y}$ is the estimated effectiveness of Online Marketing

The above equation describes that the independent variable such as availability of the product (.581), level of web brand loyalty (.437), justification of product demand (.349), derivation of web brand loyalty of the product (.247) and frequency of demand forecasting (.245) had achieved greater heights and increased the effectiveness of online marketing.

The result of F test revealed that the calculated significance of the regression co-efficient of the independent variables like sources of information to determine demand fluctuation, derivation of web brand loyalty were valid at 1 per cent level. The multiple R found to be 0.858 revealed that there exists relationship of 85.8 per cent between effectiveness of online marketing and the product factors in online marketing. The R^2 of 0.737 confirmed that, the explanatory variable explained only 73.7 per cent variations in the effectiveness of online marketing (Table 1).

Finally, the F test shows that the explained variation was highly significant at 1 per cent level. The beta value of availability of the product was followed by level of web brand loyalty, justification of product demand, derivation of web brand loyalty of the product and frequency of doing demand forecasting were highly significant at 1 per cent level. Other variables like extension of product demand through online marketing (47.2%), information about the non- availability of products (34.2%), modification made to the existing product line (33.5%), reason for contacting the consumers (31.1%) and choices available on the website (30.6%) showed a negative contribution which decreased the effectiveness of online marketing.

Table 2: Relationship between product factors vs effectiveness of online marketing for the units without branches

Independent Variable	Standardized Coefficients		df	F	Sig.
	Beta	Std. Error			
Sources of Information to determine demand fluctuation (X_1)	-.329	.071	2	21.628	.000
Justification of Product demand (X_2)	-.166	.075	2	4.957	.009
Modifications made to existing product line (X_3)	-.154	.069	2	5.017	.008
Choices available on website for product (X_4)	-.262	.075	2	12.186	.000
Availability of product (X_5)	-.199	.070	3	8.060	.000
Information about the non-availability of products (X_6)	.066	.071	2	.878	.418
Derivation of Web Brand Loyalty of the product (X_7)	-.265	.073	3	13.127	.000
Level of Web Brand loyalty (X_8)	.178	.070	4	6.389	.000
Frequency of doing demand forecasting (X_9)	.185	.074	3	6.307	.001
Extension of product demand through online marketing (X_{10})	.264	.073	4	12.946	.000
Reason for contacting the consumers (X_{11})	-.048	.071	2	.467	.628

Dependent Variable: Effectiveness of Online Marketing

Multiple R = 0.664 F value = 3.340 do (29,123) Pvalue < .01R Square = 0.441

$$\hat{Y} = -0.329X_1 - 0.166X_2 - 0.154X_3 - 0.262X_4 - 0.199X_5 + 0.066X_6 - 0.265X_7 + 0.178X_8 + 0.185X_9 + 0.264X_{10} - 0.048X_{11}$$

where $\hat{Y}$ is the estimated effectiveness of Online Marketing

The above equation describes that the independent variable such as extension of product demand through online marketing (.264), frequency of demand forecasting (.185) and level of web brand loyalty (.178), had achieved greater heights and increased the effectiveness of online marketing.

The result of F test revealed that the calculated significance of the regression co-efficient of the independent variables like, information about the non–availability of products and reason for contacting the consumers were not valid at 1 per cent level. The multiple R found to be 0.664 revealed that there exists relationship of 66.4 per cent between effectiveness of online marketing and the product factors in online marketing. The R^2 of 0.441 confirmed that, the explanatory variable explained only 44.1 per cent variations in the effectiveness of online marketing (Table 2).

Finally, the F test showed that the explained variation was highly significant at 1 per cent level. The beta value of extension of product demand through online marketing was followed by frequency of doing demand forecasting, level of web brand loyalty which were highly significant at 1 per cent level. Other variables like choices available on the website (26.2%), modifications made to the existing product line (15.4%), and reason for contacting the consumers (4.8%) showed a negative contribution and decreased the effectiveness of online marketing.

Table 3: Relationship between product factors vs effectiveness of online marketing for the units selling electronics

Independent Variable	Standardized Coefficients		df	F	Sig.
	Beta	Std. Error			
Sources of Information to determine demand fluctuation (X_1)	.400	.097	2	16.892	.000
Justification of Product demand (X_2)	.292	.103	2	8.011	.002
Modifications made to existing product line (X_3)	-.300	.103	2	8.453	.001
Choices available on website for product(X_4)	-.234	.102	2	5.293	.011
Availability of product (X_5)	.612	.115	3	28.452	.000
Information about the non-availability of products (X_6)	.265	.104	2	6.479	.005
Derivation of Web Brand Loyalty of the product (X_7)	-.296	.129	3	5.295	.005
Level of web brand loyalty (X_8)	-.380	.097	3	15.317	.000
Frequency of doing demand forecasting (X_9)	.073	.101	2	.517	.602
Extension of product demand through online marketing (X_{10})	.458	.106	4	18.614	.000
Reason for contacting the consumers (X_{11})	-.339	.109	2	9.676	.001

Dependent Variable : Effectiveness of Online Marketing

Multiple R =0.888 F value = 3.850 df (27,28) Pvalue < 0.01R Square = 0.788

$$\hat{Y} = +0.400X_1+0.292X_2-0.300X_3-0.234X_4+0.612X_{5+}$$
$$0.265X_{6-}0.296X_{7-}0.380X_8+0.073X_{9+}0.458X_{10}-0.339X_{11}$$

where $\hat{Y}$ is the estimated effectiveness of Online Marketing

The above equation describes that the independent variable such as availability of the product (.612), sources of information to determine demand fluctuation (.400), extension of product demand through online marketing (.458), justification of product demand (.292) and information about the non-availability of products (.265) had achieved greater heights and increased the effectiveness of online marketing.

The result of F test revealed that the calculated significance of the regression co-efficient of the independent variables like frequency of doing demand forecasting was not valid at 1 per cent level. The multiple R found to be 0.888 revealed that there exists relationship of 88.8 per cent between effectiveness of online marketing and the product factors in online marketing. The R^2 of 0.788 confirmed that, the explanatory variable explained only 78.8 per cent variations in the effectiveness of online marketing (Table 3).

Finally, the F test showed that the explained variation was highly significant at 1 per cent level. The beta value of availability of the product was followed by extension of product demand through online marketing, sources of information to determine demand fluctuation, justification of product demand etc., were highly significant at 1 per cent level. Other variables like reason for contacting the consumers (33.9%), modifications made to the existing product line (30%) and choices available on the website (23.4%) showed a negative contribution which decreased the effectiveness of online marketing.

The above equation describes that the independent variable such as level of web brand loyalty (.498), non – availability of products (.260), frequency of demand forecasting and extension of product demand through online marketing at (.256) had achieved greater heights and increased the effectiveness of online marketing.

The result of F test revealed that the calculated significance of the regression co-efficient of the independent variables like sources of information to determine demand fluctuation and justification of product demand were not valid at 1 per cent level. The multiple R found to be 0.685 revealed that there exists relationship of 68.5 per cent between effectiveness of online marketing and the product factors in online marketing. The R^2 of 0.469 confirmed that, the explanatory variable explained only 46.9 per cent variations in the effectiveness of online marketing (Table 4).

Finally, the F test showed that the explained variation was highly significant at 1 per cent level. The beta value of level of brand loyalty was followed by, information about the non-availability of products , and frequency of doing demand forecasting etc., were highly significant at 1 per cent level. Other variables like modifications made to the existing product line (26.9%), availability of products (23.5%), reason for contacting the consumers (20.2%) and choices available on the website (19.3%) showed a negative contribution which decreased the effectiveness of online marketing.

Table 4: Relationship between product factors vs effectiveness of online marketing for the units selling textile

Independent Variable	Standardized Coefficients		df	F	Sig.
	Beta	Std. Error			
Sources of Information to determine demand fluctuation (X_1)	-.048	.095	2	.253	.778
Justification of Product demand (X_2)	-.141	.115	2	1.504	.229
Modifications made to existing product line (X_3)	-.269	.114	2	5.516	.006
Choices available on website for product (X_4)	-.193	.093	2	4.289	.017
Availability of product (X_5)	-.235	.100	3	5.501	.002
Information about the non-availability of products (X_6)	.260	.099	2	6.953	.002
Derivation of Web Brand Loyalty of the product (X_7)	-.434	.105	3	17.000	.000
Level of web brand loyalty (X_8)	.498	.095	4	27.443	.000
Frequency of doing demand forecasting (X_9)	.256	.095	3	7.212	.000
Extension of product demand through online marketing (X_{10})	.256	.094	4	7.383	.000
Reason for contacting the consumers (X_{11})	-.202	.098	2	4.298	.017

Dependent Variable : Effectiveness of Online Marketing

Multiple R =0.685 F value = 2.128 df (29,70) Pvalue < 0.01R Square = 0.469

$$\hat{Y} = -0.048X_1 - 0.141X_2 - 0.269X_3 - 0.193X_4 - 0.235X_5 + 0.260X_6 - 0.434X_7 + 0.498X_8 + 0.256X_9 + 0.256X_{10} - 0.202X_{11}$$

where $\hat{Y}$ is the estimated effectiveness of Online Marketing

The above equation describes that the independent variable such as derivation of web brand loyalty of the product (.788) frequency of demand forecasting (.533) and choices available on the website (.326), level of web brand loyalty (.278) and modifications made to the existing product line (.274) had achieved greater heights and increased the effectiveness of online marketing.

The result of F test revealed that the calculated significance of the regression co-efficient of the independent variables like justification of product demand and information about the non – availability of products were not valid at 1 per cent level. The multiple R found to be 0.916 revealed that there exists relationship of 91.6 per cent between effectiveness of online marketing and the product factors in online marketing. The R^2 of 0.840 confirmed

that, the explanatory variable explained only 84 per cent variations in the effectiveness of online marketing (Table 5).

Table 5: Relationship between product factors vs effectiveness of online marketing for the units selling jewellery

Independent Variable	Standardized Coefficients		df	F	Sig.
	Beta	Std. Error			
Sources of Information to determine demand fluctuation (X_1)	-.563	.125	2	20.371	.000
Justification of Product demand (X_2)	-.142	.136	2	1.096	.350
Modifications made to existing product line (X_3)	.274	.097	2	8.078	.002
Choices available on website for product (X_4)	.326	.111	2	8.602	.001
Availability of product (X_5)	-.575	.245	2	5.490	.011
Information about the non-availability of products (X_6)	.139	.101	2	1.893	.172
Derivation of Web Brand Loyalty of the product (X_7)	.788	.136	3	33.684	.000
Level of web brand loyalty (X_8)	.278	.118	4	5.527	.002
Frequency of doing demand forecasting (X_9)	.533	.123	3	18.783	.000
Extension of product demand through online marketing (X_{10})	-.429	.200	4	4.593	.006
Reason for contacting the consumers (X_{11})	-.767	.210	2	13.328	.000

Dependent Variable : Effectiveness of Online Marketing

Multiple R =0.916 F value = 4.680 df (28,25) Pvalue < 0.01R Square = 0.840

$$\hat{Y} = -0.563X_1 - 0.142X_2 + 0.274X_3 + 0.326X_4 - 0.575X_5 + 0.139X_6 + 0.788X_7 + 0.278X_8 + 0.533X_9 - 0.429X_{10} - 0.767X_{11}$$

where $\hat{Y}$ is the estimated effectiveness of Online Marketing

Finally, the F test showed that the explained variation was highly significant at 1 per cent level. The beta value of derivation of web brand loyalty of the product was followed by frequency of doing demand forecasting, choices available on the website etc., were highly significant at 1 per cent level. Other variables like reason for contacting the consumers (76.7%), availability of product (57.5%) and extension of product demand through online marketing (42.9%), showed a negative contribution which decreased the effectiveness of online marketing.

Table 6: Neural classification analysis of product factors

Determinants	Weights	Rank
Sources of Information to determine demand fluctuation	4.324	X
Justification of Product demand	13.243	III
Modifications made to existing product line	12.162	IV
Choices available on website for product	6.757	VII
Availability of product	4.054	XI
Information about the non-availability of products	7.027	VI
Derivation of Web Brand Loyalty of the product	6.486	VIII
Level of Web Brand loyalty	13.514	II
Frequency of doing demand forecasting	8.649	V
Extension of product demand through online marketing	17.297	I
Reason for contacting the consumers	6.486	IX

Dependent variable: Effectiveness of online marketing

Table 6 explains the neural classification analysis of the determinants to the effectiveness of online marketing. The determinants were ranked according to the weights achieved. Extension of product demand through online marketing was ranked first (17.297) followed by level of web brand loyalty in the second rank (13.514), justification of product demand as third (13.243) and modifications made to existing product line as fourth (12.162) and others respectively.

The table illustrates that there exists a non – linear relationship between the dependent and independent variables with 23 hidden layers and correct classification rate at 86.19 per cent with reference to the estimated sequential algorithm.

Findings

1. The sample units with branches were influenced by the product factors. Among the eleven factors five were favourable like availability of the product (58%), which tends to reject the research hypothesis, level of web brand loyalty (44%), justification of demand (35%) etc., others like extension of product demand (47%), information about the non-availability of the product and modification made in the existing product line (34%) etc., were unfavourable for online marketing.
2. Product factors were favourable to a certain extent for the units without branches like extension of product demand (26%), demand forecasting (19%) and level of web brand loyalty (18%), which tends to reject the research hypothesis. Whereas, demand determination (33%), web brand loyalty (27%), choices available on the website (26%) etc, were unfavourable in the online marketing of consumer durables in Tamil Nadu.
3. Study units selling electronics online obtained favourable contribution from the product factors like availability of the product (61%), extension

of product demand (46%), demand determination (40%) etc., towards online marketing. Thus results in rejecting the research hypothesis. Level of web brand loyalty (38%), reason for contacting the consumer (34%) etc. were unfavourable for online marketing

4. Product factors like level of web brand loyalty (50%), extension of product demand (27%) etc., contributed favourably for the units selling textile through online marketing, Thus results in rejecting the research hypothesis. But, most of the product factors like web brand loyalty (43%), modifications made in the existing product line (27%) etc., were unfavourable for online marketing.
5. Study units selling jewellery online were influenced by the product factors like web brand loyalty (79%), demand forecasting (53%), choices available on he website (33%) etc., contributed favourably, which results in rejecting the research hypothesis whereas others like reason for contacting the consumers (77%), availability of the product (58%), demand determination (56%) etc., contributed unfavourably towards the effectiveness of online marketing.

Suggestions

Quality of the product should help the online units to become loyal towards the brand. They should concentrate on consumer satisfaction. As there are drastic changes in the fashion and technology, the study units should add new products which matches the taste and preference of their consumers. The products sold online should be made available to the consumers always. The online units should take necessary steps to inform their consumers about the non-availability of the products immediately and should enhance speedy transactions and demand forecasting.

Conclusion

Online marketing represents a major transformation of the business and marketing landscape. A new environment is emerging wherein it will be imperative for the study units to adopt and hold a point to view if, their organization are to survive and prosper. The online marketing is rapidly changing the nature of markets and marketing. By creating new marketing opportunities, it requires the units to re-shape segmentation and positioning strategies, and the marketing-mix. In this study, the element of marketing mix namely, the product was studied. Each element was analysed on the basis of the categories that influenced the effectiveness of online marketing. However, just setting a website is not enough. Unless and until, their websites are user-friendly and have interactive feature, the units would not be able to exploit the potential of the online marketing. They need to constantly update their websites, regularly add value content and promptly respond to consumer's mails, in order to woo and retain the consumers.

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Employees' Perspective of Information Technology Adoption in Indian Banking Sector: A Comparative Study

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This research is an effort to see whether e-banking has any impact on the employment needs and operational performance of public and private sector banks. The present paper studies the impact of e-banking on operational performance taking into consideration the comparative analysis of public and private sector banks. With the introduction of core banking solution, electronic fund transfer, real times gross settlement system and electronic clearing services, there is a major change in the methods of performing their duties and improvement in the productivity and operations.

Introduction

The last decade has witnessed a drastic change in the economic and banking environment all over the world. With the economic and financial sector reforms introduced in the country since early 1990s, the operating environment for banks in India has also undergone a rapid change. To survive in this competition, the information and communication technology significantly contributed to the exponential growth and profit of financial institutions worldwide. Technology is the key to move towards providing integrated banking services to customers. Indian banks have been late starter in the adoption of technology for automation of processes and the integrated banking services. But with the global adoption of technology, Indian banking is also at the threshold of paradigm shift due to the latest changes. This evolution has transformed the way banks deliver their services using technologies and electronic modes. Now banks can reach their customers anywhere, anytime; and customers are able to get instant access to their accounts from any corner of the globe anytime. With increasing competition the customers are also becoming more demanding. To meet customers' expectations banks will have to offer wide range of services like ATM's, telephone banking, mobile banking etc. by upgrading their branches. The

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key to attract and retain the customers lies in efficient customer service including customized and value added products to meet various needs of individual customers as well as to meet the diverse needs of customers.

Literature Review

Many studies have been conducted at the national and international level to study the impact of e-banking on operational performance, productivity and profitability of banks. Idowu, *et.al* (2002) highlighted that information technology is rapidly changing the banking industry. The study revealed that IT had appreciable effects on bank productivity, cashiers work, banking transaction, bank patronage, bank service delivery, customers' services. Singh and Chatwal (2002) described that technology has provided customers new ways of delivering the products. Bank began to look e-banking as a mean to replace traditional banking. As customers became more sophisticated it become imperative for banks to consider the use of technology to respond to their continuously changing requirement. Gurau (2002) analyzed the situation of online banking in Romania and the appropriate strategies for successful implementation and development of online banking services in the Romanian context. The author revealed that successful introduction of e-banking services proved to be a complex operation which requires the harmonization of all interacting elements of economic and financial system. Aki (2002) highlighted the impact of management of technology in banking. The researcher evaluated that new technologies cannot replace the branch network as a means of collecting local customer information and satisfying their needs but it can support new methods of service provision and analyze codified information. Arora (2003) made an attempt to prove that technology had a definitive role in facilitating transactions in banking sector and the impact of technology had resulted the introduction of new products and services by various banks in India. The author discussed various initiatives taken by the banks to manage transformation and these initiatives had brought customers the much demanded convenience of anywhere, anytime banking. Paul (2006) discussed the role of technology and scope of remote channels ,their implication, strength, weakness, opportunity and threat in banking sector The researcher found that with the introduction of RTGS, NDS, CFMS safety, security, efficiency and soundness in payment system has increased.

Objectives

The specific objectives of the paper are to study the impact of e-banking on workload of employees, to know employees perception on convenience and security, to have an insight about the employees' perception on modes of e-payment.

Research Methodolgy

Sampling and Data Analysis

The study is mainly based on the primary data collected from the employees working in the banking sector of Punjab region confined to five districts, viz.

Ludhiana, Patiala, Jalandhar, Bathinda and Mohali with the help of a well drafted pre-tested questionnaire. Sample of 100 employees was drawn from seven banks in all, four from the public sector and three from the private sector. These banks include State Bank of India, Punjab National Bank, Canara Bank, Bank of Baroda, HDFC Bank, ICICI Bank and AXIS bank. A specifically designed questionnaire was used as tool, and bank employees were requested to fill it during office hours. Different branches from different regions were selected for the purpose. At least five employees from every branch were requested to fill the questionnaire. The respondents were selected among the people working at different levels like executive manager, assistant manager, relationship manager, branch manager, officer, cashier, clerk, front desk executive. Some of the employees refused to respond due to lack of time especially from the private sector banks. Descriptive analysis was used to present the profile of respondent. It includes average, frequency and percentage of data value for each of the variables etc. t-test was used to study the level of significance for services between the public and private sector banks. SPSS 17 versions is used to analyze the required data. Table 1 indicates the demographic profile of employees working in various public and private sector banks.

Table 1: Socio-economic profile of employees

Socio-economic Indicators	Frequency	Cummulative Percentage
Gender		
Male	66	66
Female	34	34
Total	100	100
Age		
Below 30 yrs.	43	43
30-40 yrs.	35	78
40-50 yrs.	20	98
50-60 yrs.	2	100
Total	100	
Educational Qualification		
Matric and Undergraduate	2	2
Graduate	23	25
Post-graduate	49	74
Professional Degree	26	100
Total	100	
Experience		
Below 5 yrs.	40	40
5-10 yrs.	32	72
10-15 yrs.	13	85
15-20 yrs.	15	100
Total	100	
Position		
Executive Manager	15	15

Contd...

Assistant Manager	15	30
Branch Manager	13	43
Clerk	22	65
Cashier	17	82
Front Desk Executive	10	92
Senior Officer	8	100
Total	100	

t-test was applied to compute the difference between public and private sector in different parameters like e-banking impact on workload of employees, personal development and relations, processing of transaction, Convenience and Security, Employees' Perception on Core Banking Solution. This test helps to signify the statistical difference between different variables and the scope of further improvement through their mean values.

Table 2: Sector-wise Employees' perception on workload

Statements	Public	Private	t-value	p-value
Increase in no. of Hours	3.90	4.02	-0.713	0.477
Increase in Decision Making Process	3.74	3.66	0.545	0.587
Division of Work	3.70	3.84	-0.693	0.493
Increase in Productivity	4.02	4.12	-0.536	0.594
Increase in Knowledge	3.98	4.12	-0.816	0.416
Reduction in Processing Time	3.72	3.62	0.990	0.890
Team Performance	3.60	3.62	-0.100	0.920
Minimization of Cost	3.60	3.50	0.450	0.653

* Values are significant at 5 % level

Table 2 shows no statistical difference in any of the statement between two sectors regarding the workload of employees in public and private sector banks. However the mean score of private sector banks are higher than the public sector in five out of eight statements. Insignificant difference implies that e-banking has equal effect on the workload of employees in both the sectors.

Table 3: Sector-wise Employees' perception on personal development and relations

Statements	Public	Private	t-value	p-value
HR Policies of the Bank	3.68	3.56	0.566	0.572
Environment after E-banking	3.86	3.56	1.621	0.108
Training to Employees	3.72	3.54	0.969	0.334
Knowledge up Gradation	3.54	3.60	-0.291	0.771
Relationship between Employee and customer	3.62	3.58	0.205	0.883
Relationship between Employee and Employee	3.64	3.62	0.098	0.922
Guidance to Customer	3.64	3.48	0.819	0.414
Promptness in Providing Service	3.70	3.90	-0.902	0.369

** Values are significant at 5 % level

Table 3 represents knowledge enhancement and improvement in the relationship with customers after e-banking adoption. Employees of both the sectors perceive that e-banking has upgraded their knowledge, relationships and promptness in providing the service. Regarding HR policies (3.68), environment (3.86), training to employees (3.72), relationship (3.62) and guidance to customers (3.64); public sector employees are more satisfied with e-banking adoption. This implies that public sector banks are fastly adopting the modes of e-banking. Further public sector banks are also giving excellent training to its employees to achieve all the efficiencies.

Table 4: Sector-wise Employees' perception on processing of transaction

Statements	Public	Private	t-value	p-value
Time Taken in Transaction Now	3.66	3.96	-1.342	0.182
Responding Queries of the Customer	3.56	4.02	-2.161	0.003**
Complexity in Transactions	3.30	2.96	1.579	0.115
Time Taken in Making of Draft	3.94	3.80	0.603	0.547
Availability of Staff at Counter	3.52	3.82	-5.306	0.000**
Banking Hours	3.60	3.58	4.38	0.000**
Knowledge of Staff about Banks Products	3.74	4.35	-2.416	0.017**

* *Values are significant at 5 % level

Table 4 displays the data regarding the processing of transactions in both public and private sector banks. Regarding the processing of transaction, statistical difference was found in four out of seven statements. Private sector banks are more responsible and quick in responding the queries of customers (4.02) than public sector banks (3.56). As regard the knowledge of staff about bank products(4.55); private sector banks are highly satisfied with their knowledge up-gradation and perceive that e-banking has reduced the availability of staff at counter(3.82) and has reduced the banking hours to the large extent.

Table 5: Sector-wise Employees' perception on convenience and security

Statements	Public	Private	t-value	p-value
Ease of Use	3.80	4.66	-3.524	0.000**
Reduction in Monotony of Work	3.70	4.28	-3.185	0.001**
Security and Privacy	3.88	3.80	0.402	0.688
Increase in Trust	3.80	3.68	0.645	0.520
Reduction of Risk	4.12	3.58	2.878	0.004**
Job Losses	2.88	2.88	0.000	1.000
Reduced Interaction with People	3.63	3.50	0.463	0.644

** Values are significant at 5 % level

Table 5 depicts that as per employee perception in three out of seven statements, statistical difference found to be significant at 5% level. Private sector employees perceive that e-banking services are easy to use (4.66)

and has also reduced the monotony (4.28). However, public sector banks have high mean score with regard to reduction of risk in transaction (4.12) after e-banking adoption. Regarding the job losses and interaction with the people, trust and privacy, there seems to be no statistical difference in public and private sector banks.

Table 6: Sector-wise Employees' perception on core banking solution

Statements	Public	Private	t-value	p-value
Facilitate Centralized Data Base	4.18	3.68	-5.069	0.000**
Online Real- time Data Availability	3.78	3.58	-0.909	0.365
Any Branch Banking	4.06	3.80	-1.38	0.168
Facilitative Launch of New Products	3.96	4.08	0.616	0.539
Shifting of Time Consuming Activities to Data Centre	3.74	3.80	0.239	0.811
High Load on Concentrated Branches	3.52	3.62	0.425	0.671

* *Values are significant at 5 % level

Table 6 reveals that the difference between item number 2,3,4,5,6 under core banking solution is insignificant. The difference was significant at 5% level only in one dimension namely 'facilitating the centralized data base' and public sector employees seems to have more agreed upon it (4.18) in comparison to private sector banks (3.68). In the all other dimensions, there seems to be no statistical difference.

Table 7: Sector-wise Employees' perception on electronic data interchange

Statements	Public	Private	t-value	p-value
Reduces Inventory Holdings	3.92	3.88	0.200	0.842
Reduces Mailing Costs	3.74	3.78	-0.197	0.844
Automatic Reconciliation of Remittance	3.74	3.78	-0.214	0.831
Less Reliance on Human Interpretation	3.82	3.74	0.408	0.684
Enables Paperless Transaction	3.92	4.60	-2.999	0.003**

*** Values are significant at 5 % level*

Table 7 carries the data showing EDI impact on both public and private sector banks. E-banking has facilitated centralized data base and ensured the interchanging of data electronically which has ensured reduction of paper transaction, mailing cost, less reliance on human interpretation etc. The difference was significant in one variable in EDI that is e-banking has 'ensured paperless transaction' and private sector banks employees are strongly agreed upon it (4.60). The employees in public sector perceived that EDI has reduced the reliability on human interpretation (3.82) as every single and small activity is done through computer based terminals.

Table 8: Sector-wise Employees' perception on real time gross settlement system

Statements	Public	Private	t-value	p-value
Processing and Settlement on Real Time	4.02	3.72	1.442	0.152
Payment are Settled Transaction by Transaction	3.88	3.60	1.452	0.149

Contd...

Eliminated Settlement Risk	3.84	3.58	1.261	0.210
Immediate Finality of Transaction	3.88	3.68	1.010	0.315
Settlement on FIFO Basis and Priority Wise	3.30	3.52	-0.947	0.346
Immediate Credit and Transparent Pricing	3.60	4.40	-3.305	0.001**

** Values are significant at 5 % level

Table 8 depicts that as per the employees' perception both the public and private sector banks are performing well as far as real time gross settlement system is concerned. It has improved the operational performance of the banks to a large extent. The statistical difference was significant only in one statement related to the immediate credit and transparent pricing. Private sector banks are having greater transparency in the pricing as well as settlement and transfer of credit in the transactions.

Table 9: Sector-wise Employees' perception on benefits of E-banking

Statements	Public	Private	t-value	p-value
Increase in Employee Productivity	4.08	4.16	-0.431	0.667
Increase in Branch Productivity	3.98	4.10	-0.713	0.477
Increase in Bank Productivity	3.78	4.08	-1.623	0.107
Up-to date Information	4.00	4.08	-0.370	0.712
Innovation in Products and Services	3.72	3.80	-0.366	0.715
Rush of Customers in Bank	3.40	3.58	-0.697	0.487

** Values are significant at 5 % level

The data pertaining to the benefits of e-banking and their impact on the overall working of both public and private sector banks has been presented in Table 9. Employee productivity has increased more in private sector banks (4.16) than in public sector banks (4.08). Branch productivity (4.10) is also high in private sector banks. The impact of e-banking on the overall bank productivity (4.08), up-to-date information (4.08), innovation in products and services (3.80), and rush of customers in the banks (3.58); private sector banks has been greater than that of the public sector banks. This shows that operational performance of private sector banks has improved a lot through electronic banking and public sector banks lag behind in this regard.

The above tables highlighted the perception of employees regarding the strategic and operational value of electronic banking and its impact on their working conditions and performance of the banks has been studied. It has been observed that both public and private sector banks are providing electronic banking services to their customers under the guidelines of the Reserve Bank of India and to retain their customers in the competitive financial market. The employees also believe that these services are essential for the survival and growth of banking sector. So, it is mandatory to provide such services, and employees also feel comfortable in this e-banking environment. This perception is supported by the fact that a large number of employees gave supportive and positive response regarding e-banking usage in their respective banks and its impact on banks efficiency and productivity.

Findings of the Study

- The study made a comparative analysis to measure the operational performance between public and private sector banks. t-test was applied to calculate the difference between different variables and the scope of further improvement through their mean values.
- Regarding the impact of E-banking on workload of employees, there is no statistical difference in any of the statement between two sectors. However the mean score of private sector bank is higher than the public sector in five out of eight statements. As far as the personal development of employees and knowledge enhancement is concerned, again, no significant difference was found in any dimension.
- Employees of both the sectors perceive that e-banking has upgraded their knowledge, relationships and promptness in providing the service. Regarding HR policies, environment, training to employees, relationship and guidance to customers, public sector employees are more satisfied according to their mean score.
- A difference between public and private sector banks with regards to processing of transactions has been studied**.** Statistical difference was found in four out of seven statements. As regard the knowledge of staff about bank products, private sector banks are highly satisfied with it and perceive that e-banking has reduced the availability of staff at counter
- The results for convenience and security dimension show a significant difference in three out of seven statements. Private sector employees perceive that e-banking services are easy to use and has also reduced the monotony. Public sector banks has high mean score with regard to reduction of risk. Regarding the job losses and interaction with the people, trust and privacy, their seems to be no difference.
- As regards the core banking solution is concerned**,** the difference was significant at 5% level in the dimension facilitating the centralized data base and public sector employees seems to have more agreed upon it.
- The difference was significant in one variable of electronic data interchange that is 'e-banking has ensured paperless transaction' and private sector banks employees are strongly agreed upon it. The employees in public sector also feel that it has reduced the reliability on human assets as every single and small activity is done through computer based terminals.

Conclusion

From an operational perspective, the study indicates that banks have realized significant benefits with e-banking. Firstly, e-banking lowers the transaction per cost, thus, contributing to the cost cut and helpful in making the cost cutting policies. Secondly, e-banking offers a lot of services to customers like debit cards, credit cards, EFT, fund transfer, bill payment, etc. Revenue generated from such services is termed as value addition and

profit generated for the banks. Thirdly, launching of more products like internet, ATM, mobile banking, etc. has improved the quality of service and increased the transactions in banks. It has been due to these benefits that banks are opting e-banking services at a large scale. The customers demand more and more new e-banking services, making it difficult for the banks to come up to their expectations. But with the co-operation, adoption and fast learning process of the employees, e-banking has revolutionized the system as it is easily adaptable, more responsive and has become more customer-oriented which, in turn, has improved the operational performance and productivity of the banks.

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Dynamics of Trading Volume and Stocks Return: An Empirical Study based on CNX Nifty of National Stock Exchange

PRIYA GUPTA, MANIK LAKHANI AND KANHAIYA SINGH

Return-volume relationships are of common interest as they may unearth dependencies that can form the basis of profitable trading strategies, and this has implications for market efficiency.This research paper intends to study the relationship between stock returns and their trading volume and to test the causality effects. It focuses on the 50 stocks of CNX Nifty which is a value-weighted stock index of National Stock Exchange of India. Three proxies of trading volume namely, numbers of transactions, total traded quantity (volume) and total rupee value of the traded quantity (turnover) have been taken and the asymmetry in the relationship of returns and volume is tested through regression. The study also tries to find the best proxy for volume through granger causality. The results indicate that there is asymmetry in the relation between returns and volume and the best proxy of the volume is the turnover or the value of shares traded.

Introduction

In financial market, it is important to understand the relationship between price and volume as it helps in understanding the competing theories of dissemination of information flow and improving the construction of test and its validity in to the market as argued by Karpoff (1986, 1987). First, the empirical relation between returns and volume helps discriminate between competing theories on how information is disseminated in financial markets. Second, the return volume relationship is critical in assessing the distribution of returns themselves. Third, a better understanding of the statistical structure of volume and return can help explain technical analysis. The price-volume relation can also be used to validate two well-known Wall Street adages: (i) volume is relatively heavy in bull markets and light in bear markets, and (ii) it takes volume to make prices move.

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The CNX Nifty, also called the Nifty 50 or simply the Nifty, is a stock market index and benchmark index for Indian equity market and is owned and managed by India Index Services and Products Ltd. (IISL), which is a joint venture between NSE and CRISIL (Credit Rating and Information Services of India Ltd).

IISL is India's first specialized company focused upon the index as a core product. IISL has marketing and licensing agreement with Standard & Poor's for co-branding equity indices. 'CNX' in its name stands for 'CRISIL NSE Index'.

The CNX Nifty stocks represent about 67.27% of the free float market capitalization of the stocks listed at National Stock Exchange (NSE) as on September 30, 2012.

The CNX Nifty index is a free float market capitalization weighted index. It is calculated by taking the equity's price and multiplying it by the number of shares readily available in the market. Instead of using all of the shares outstanding like the full-market capitalization method, the free-float method excludes locked-in shares such as those held by promoters and governments. The free-float method is seen as a better way of calculating market capitalization because it provides a more accurate reflection of market movements. When using a free-float methodology, the resulting market capitalization is smaller than what would result from a full-market capitalization method.The index was initially calculated on full market capitalization methodology. From June 26, 2009, the computation was changed to free float methodology. The base period for the CNX Nifty index is November 3, 1995, which marked the completion of one year of operations of NSE's Capital Market Segment. The base value of the index has been set at 1000 with a base capital of Rs 2.06 trillion.

Review of Literature

According to Karpoff (1986), price-volume relationship is important as it helps in understanding the dissemination of flow of information into the market. Using a vector auto-regression analysis on weekly data, we present a strong evidence of bi-directional relationship between volume and price change.There have been extensive empirical studies which support the positive relationship between price and volume.Crouch (1970) studied the relationship between daily trading volume and daily absolute changes of market index and individual stocks and found positive correlation between them. Harris (1987) used the number of transactions as a measure of volume and found a positive correlation between changes in volume and changes in squared returns for individual NYSE stocks.Hiemstra and Jones (1994) analyzed the bidirectional causality between trading volume and returns and found support for positive bidirectional causality between them for NYSE while Bhagat and Bhatiya, 1996 found strong one-directional causality from price to trading volume. Moosa and Al-Loughani (1995) examined the dynamic relationship between price and volume for four Asian stock markets excluding India and found a strong evidence for bi-directional causality for Malaysia,

Singapore, and Thailand.Similar attention has also been given to the relationship between volatility and trading volume of a security. Many studies report the existence of ARCH effects in the time series of returns. Trading volume is usually considered as a proxy of information flow into the market. Any unexpected information affects both volatility and volume and so volatility and volume are expected to be positively related. Otavio and Bernardus (2006) investigated empirical relationship between returns and volatility and trading volume on Brazilian stock market and came out with a dynamic relationship between return volatility and trading volume. They also found that return volatility contains information about upcoming trading volume and vice versa. Darrat, Rahman and Zhong (2001) examined the correlation and lead-lag relationship between trading volume and volatility for all stocks in Dow Jones Industrial Average(DJIA). They used 5-minute intraday data and measured return volatility by using EGARCH model and found evidence of lead-lag relations between volume and volatility in DJIA stocks which is in accordance with the sequential information arrival hypothesis.Guillerm, Roni, Gideon, Jiang (2000) analyzed the relation between daily volume and first-order return autocorrelation for individual stocks listed on NYSE and AMEX and found that the cross-sectional variation in the relation between volume and return autocorrelation is related to the extent of informed trading in the manner consistent with the theoretical prediction.Joseph, Harrison and Jeremy (1999) analyzed the determinants of asymmetries in stock returns and developed a cross-sectional series of regression specifications and attempted to forecast the skewness in the daily returns of individual stocks. They found that negative skewness is more pronounced in the stocks that have experienced an increase in trading volume relative to trend over the past six months and positive returns over the prior thirty-six months.Brajesh and Priyanka() carried out an empirical study examining the relationship between returns and trading volume and volatility. They found that the number of transactions is a better proxy of information than the number of shares traded (volume) and value of shares traded (turnover).

Objectives of the Study

The objectives of the study are:

i) To test the asymmetry in the relationship of stock returns and all three measures of volume for the 50 companies in the CNX Nifty Index.

ii) To find the best proxy of volume from the three measures of volume taken namely, number of trades (transactions), volume (number of shares traded) and turnover (value of shares traded).

Research Methodology

Data Collection and Analysis tools

The daily data of adjusted prices and all three measures of volume of all 50 companies of Nifty 50 are collected from Capital market database. The data period is from March 2000 till Feb 2013.

1) Companies which are listed after March 2001, their data period is taken from the listing date till February 2013. Daily returns of all 50 companies are calculated. Descriptive statistics like Average, Skewness and Kurtosis of returns are calculated for each company. These descriptive statistics are calculated for each measure of volume also, namely number of trades, volume of trades and total value of trades.

   ARCH is Auto Regressive Conditional Heteroscedasticity which explains that the effect of the variable's own lags of the overall effect on the variable. Heteroscedasticity means that the residuals from the regression analysis are not equal and it can be improved by introducing autoregressive terms. This also explains the effect that returns in time series plots often show that "large changes tend to be followed by large changes, and small changes tend to be followed by small changes" which is known as Volatility Clustering.

   Correlation statistics are then calculated between all three measures of volume for each company. The three measures of volume are then standardized* for further analysis. All the above work is done in MS Excel.

   By standardizing a series, that series is converted to a series which has a mean of 0 and standard deviation of 1. This is done by the following formula-

$$Z = \frac{X - \bar{X}}{\sigma}$$

   This will help in an easy comparison of the different measures of volume and will reduce the units of measurement as the number of trades and volume are in numbers while the turnover is in money terms (Rs. Thousand).

2. Stationarity of simple returns and the standardized measures of volume is tested through Augmented Dickey Fuller test (ADF test) in E Views. All the series are not stationary. A stationary time series is one whose statistical properties such as mean, variance, autocorrelation, etc. are all constant over time. The classical regression model i.e. ordinary least square (OLS) requires that the dependent and independent variables in a regression be stationary in order to avoid the problem of what Granger and Newbold (1974) called 'spurious regression' characterized by a high R^2, significant t-statistics but results that are without economic meaning. A stationary series is relatively easy to predict: we simply predict that its statistical properties will be the same in the future as they have been in the past. Another reason for trying to make stationary a time series is to be able to obtain meaningful sample statistics such as means, variances, and correlations with other variables. Such statistics are useful as descriptors of future behavior only if the series is stationary. For example, if the series is consistently increasing over time, the sample mean and variance will grow with the size of the sample,

and they will always underestimate the mean and variance in future periods. So, if the mean and variance of a series are not well-defined, then neither is its correlation with other variables.A series is made stationary through a Unit Root Test. This is done by estimating the following OLS equations-

$$\Delta y_t = \alpha + \gamma y_{(t-i)} + \theta t + \sum_{i=2}^{\rho} \beta_i \Delta y_{t-i} + \varepsilon_t$$

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$$\Delta y_t = \gamma y_{(t-i)} + \sum_{i=2}^{\rho} \beta_i \Delta y_{t-i} + \varepsilon_t$$

The first equation includes both a drift term and a deterministic trend; the second excludes the deterministic trend; and the third does not contain an intercept or a trend term. In all three equations, the parameter of interest is γ. Here, null hypothesis is that $\gamma = 0$ i.e. there is a unit root (the series is non-stationary) while the alternate being that there is no unit root (the series is stationary).

3. The relationship between trading volume and returns and their asymmetric nature is investigated from the following OLS equation-

$$V_t = \alpha + \beta_1 |r_t| + \beta_2 D_t |r_t|$$

Where, V_t is the standardized trading volume at time t, r_t is the return at time t and D_t=1 when r<0 and D_t=0 when r>=0. The parameter β_1 measures the relationship between returns and volume irrespective of the direction of return. The parameter β_2 measures the asymmetry in the relationship. A statistically significant value of β_2 will indicate that the relation between return and trading volume for negative returns is smaller than for positive returns. So, for each company there are three OLS equations for each measure of volume.

Statistical Significance

The level of significance is taken to be 5%. Under the null hypothesis, it is assumed that the OLS estimators are not significant while the alternate hypothesis being that the OLS estimators are significant. So, if the probability of an estimator is more than 0.05, it would imply that the OLS estimators are insignificant.

To find the best proxy of volume, the causality effects are tested between returns and volume through granger causality between returns and each measure of volume for each company. The number of lags is chosen on the basis of Schwarz Information Criterion (SIC) through E Views. This measure is chosen as it is seen to be the best for large sample size (Zahid Asghar, Irum Abid). AIC and FPE are better for sample sizes less than 60.

Granger Causality

A time series X is said to Granger-cause Y if it can be shown, usually through a series of t-tests and F-tests on lagged values of X (and with lagged values of Y also included), that those X values provide statistically significant information about future values of Y. It is based on the philosophy that if event A happens before event B, then it is possible that A is causing B. In other words, events in the past can cause events to happen today, future events cannot.

It is estimated using the following equations-

$$y_t = \beta_{10} + \sum_{i=1}^{\rho} \beta_{1i} y_{t-1} + \sum_{j=1}^{\rho} \beta_{1.p+j} x_{t-1} + e_{1t} \quad (1)$$

$$X_t = B_{2.0} + \sum_{i=i}^{\rho} B_{2.i} y_{t-1} + \sum_{j=1}^{\rho} B_{2.p+j} X_{t-i} + e_{2t} \quad (2)$$

There can exist bi-directional causality between x and y, uni-directional causality from x to y or from y to x or there can be no causality. The null hypothesis in this case is that 'x does not granger cause y' against the alternate of 'x granger cause y.'The significance level is taken to be 5% again.

Findings

After calculating the returns of all the companies and their descriptive statistics, it is found that only in case of 8 companies, the distribution of returns in negatively skewed although the skewness statistics are not very large. Rest 42 companies have their returns distribution as positively skewed which means there is more probability of having positive returns and is inconsistent with the results of Kumar and Singh because of their assumption of lognormal distribution of the returns. The negative skewness is only for ACC ltd., Bajaj Auto Ltd., Cairn India, Cipla, HCL Technologies, Infosys, JP Associates and Tata Steel.

In case of only three companies i.e. Ambuja Cements Ltd., Maruti Suzuki, and Sesa Goa, the kurtosis is less than 3 meaning the distribution of returns is platykurtic. Rest all companies have a leptokurtic distribution of returns. Leptokurtic distributions have fat tails implying there is an ARCH effect in the distribution of returns. It is also shown through the Durbin Watson statistic.

For the number of trades, the kurtosis value is below 3 for Axis Bank and Tata Steel, implying Platykurtic distribution. While for HDFC, JP Associates and Kotak Mahindra Bank, the distribution of number of trades are near normally distributed.

For the turnover (total value of trades) the kurtosis is less than 3 only for Tata Steel, implying platykurtic distribution. Rest all companies have kurtosis greater than 3. It implies that turnover is more volatile as it is only in one company that these are normally distributed.

For the volume (number of shares traded), only in case of JP Associates, the kurtosis is less than 3 while for Tata Steel and State Bank of India, the kurtosis is around 3 meaning the volumes are more or less normally distributed (mesokurtic). For every other company, the kurtosis value is very high meaning the distributions are Leptokurtic with flat tails.

None of the companies have their volumes negatively skewed; all companies have their distribution of volume, no. of trades and turnover positively skewed.

The Unit Root test of the simple returns and the modulus of simple returns indicate that the returns are stationary at level [Integrated of order 0 i.e. I(0)]. As discussed in the methodology, ADF test is used to test the stationarity of the above variables. As discussed in the previous section, the volumes measures are standardized for further analysis. Even after standardizing the measures of volume, all measures for each company are not stationary at level. The following companies are non-stationary at level but stationary at first difference i.e. they are integrated of order 1 [I(1)].

Table 1: Standardized trades, turnover and volume

Standardized Trades	Standardized Turnover	Standardized Volume
Axis Bank	Coal India	Coal India
Coal India	DLF Ltd.	IDFC
HDFC Ltd.	HDFC Bank	Maruti Suzuki
NTPC Ltd.	Power Grid	NTPC Ltd.
Power Grid		Power Grid

Recalling the earlier mentioned OLS Regression-

$$V_t = \alpha + \beta_1 1 r_t 1 + \beta_2 D_t 1 r_t 1$$

Where, V_t is the standardized trading volume at time t, r_t is the return at time t and D_t=1 when r<0 and D_t=0 when r>=0. The parameter β_1 measures the relationship between returns and volume irrespective of the direction of return. The parameter β_2 measures the asymmetry in the relationship. A statistically significant value of β_2 will indicate that the relation between return and trading volume for negative returns is smaller than for positive returns.

Analyzing company wise, the results indicate thatfor 28% of the companies (14 companies), dummy variables for each measure of volume are insignificant out of which Lupin Ltd. is one such company where all the variables i.e. constant, β_1 and dummy for each measure of volume are insignificant. In 18% of the companies (9 companies), only one dummy is significant. In 30% of the companies (15 companies), all dummies are significant while in 24% of the companies (12 companies), only two dummies are significant. So, overall in 54% of the companies 2 or more dummies are significant while for 46% of the companies, the dummy variable is not significant.

Out of the significant coefficients' of dummies, 18 out of 23 for number of trades, 27 out of 29for turnover and 23 out of 26 for volume have negative coefficients. So, overall 87% of the significant dummies have negative

coefficients of β_2. Only for Bharti Airtel Ltd., HDFC Ltd., Infosys Technologies, Reliance Industries Ltd. and Siemens Ltd. have their all significant coefficients positive. This shows that only for these companies, there is no asymmetry in the relationship of different proxies of volume and returns.

Table 2: Trades, turnover and volume

Particulars	Number of Trades	Turnover	Volume
Insignificant dummies	27	21	24
Significant dummies	23	29	26
Negative coefficient	18	27	23
Positive coefficient	5	2	3

Analyzing variable wise,the dummy for the number of trades is significant for 46% of the companies (23 companies) while the dummies for the volume and the turnover are significant for 52% and 58% of the companies respectively. Overall, the dummies are significant for 52% of the companies combined. The difference of 2% lies because of different ways of analyzing the results.

The coefficient β_1 which measures the relationship of volume and returns irrespective of the direction of returns is positive for all the companies and all the proxies. The coefficients are significant in 47 out of 50 for number of trades, 47 out of 50 for turnover and 48 out of 50 for volume.

Also, the Durbin Watson statistic is much less than two for most of the companies signifying the presence of ARCH effect in the relation of returns and volumes.

The results of Granger Causality indicate mixed results.The results differ if we select the default number of lags and if we select the lags chosen on the basis of Schwarz Information Criterion.

On the basis of the default lags (2), while analyzing the results company wise, it is found that for 5 companies (Bajaj Auto, HDFC Ltd., ICICI Bank, Reliance Industries, Sun Pharma), there does not exist any causality between volumes and the returns while there exists bi-directional causality between returns and volumes for 9 companies. It is evident in 24 companies that the returns cause volumes (only those companies are selected where returns are causing volumes for atleast two proxies of volume) while it is only for 3 companies that the volumes are causing returns. So, overall the results indicate that in 66% of the companies (24+9=33 companies), returns are causing volume and in 24% of the companies, volumes are causing returns (3+9=12 companies).

Analyzing variable wise, simple returns cause number of trades in 68% of the companies while in 30% of the companies, number of trades cause simple returns. In 80% of the companies, simple returns cause turnover and in 52% of the companies, turnover cause simple returns. Simple returns cause volume in 66% of the companies, volume cause simple returns in 44% of the companies.

On the basis of lags specified by SIC, while analyzing the results company wise, it is found that for 4 companies (Bajaj Auto Ltd., HDFC Ltd., Reliance Industries, and Sun Pharma), there does not exist any causality between volumes and the returns while there exists bi-directional causality between returns and volumes for 8 companies. It is evident in 21 companies that the returns cause volumes (only those companies are selected where returns are causing volumes for atleast two proxies of volume) while it is only for 8 companies that the volumes are causing returns. So, overall the results indicate that in 58% of the companies (21+8=29 companies), returns are causing volume and in 32% of the companies, volumes are causing returns (8+8=16 companies).

Analyzing variable wise, simple returns cause the number of trades in 54% of the companies while in 38% of the companies, number of trades cause simple returns. Simple returns cause volume in 54% of the companies, volume cause simple returns in 42% of the companies. In 78% of the companies, simple returns cause turnover and in 44% of the companies, turnover cause simple returns.

The Table 3 compares the results of the granger causality for both the categories of lags variable wise. The values show that percentage of the effects out of the total 50 companies.

Table 3: Comparisons of causality

Category	Simple returns cause stand trades	Stand trades cause simple returns	Simple returns cause stand turnover	Stand turnover cause simple returns	Simple returns cause stand volume	Stand volume cause simple returns
Default Lags	68%	30%	80%	52%	66%	44%
Specified Lags	54%	38%	78%	44%	54%	42%

The results are better in the case of default lags but even after comparing both the results, it is clear that turnover cause returns in more companies than trades or volume does. Also, simple returns cause turnover in almost 80% of the companies while simple returns cause trades and volume in around 60% of the companies.

Conclusion

From the results of the regression analysis and granger causality, it is imperative that there is an asymmetry in the relationship of returns and different proxies of volume. It indicates that the relation between returns and different proxies of volume for negative returns is smaller than for positive returns.Although the volume is high in both bull and bear markets but the volume in bull market is more than in bear market. From the results of the granger causality, it is inferred that simple returns cause the different proxies of volume mostly which is inconsistent with the study of Brajesh and Priyanka. For both the considerations of lag length, it can be concluded that the best proxy of volume is the total turnover or the value of shares traded

in the market. This study can further be improved by applying ARCH/GARCH models and improving the results of the regression analysis.

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