

DIAS Technology Review

The International Journal for Business & IT

Vol. 17 No. 1

#33

www.dias.ac.in



April 2020 – September 2020

ARTICLES

- 8 Exploring User Acceptance and Intention Towards App Based Cab Aggregators Using Integrated TAM and TPB Model**
Ms. Pragya Jayaswal, Dr. N. Malati
- 17 Inflated Self-Assessments and Metacognitive Ability: A Demonstration of the Kruger-Dunning Effect Among Knowledge Workers**
Dr. Shilpa Jain, Ms. Bhavna Bajaj
- 26 Study of Employee Engagement in Manufacturing Sector in NCR in Selected Industries**
Dr. Harsh Vardhan Kothari, Ms. Tanya Chatwal,
Dr. Pratiksha Tiwari
- 42 Effect of Trump's Win on Specific Sector with Reference to Indian Stock Market**
Ms. Neetu Chadha, Ms. Ruchika Choudhary
- 48 The Financial Implications of Decisions Related to Choice of Contracting Techniques and the Influence on Contractor Performance**
Dr. Anand Krishnamoorthy
- 56 Gap Analysis on EDI Implementation in Cargo Sector and Cargo Clearance Procedures at Indian Airports: Issues and Challenges**
Dr. Reena Sethi
-
- DOCTORAL ABSTRACT**
- 72 A Study of Engagement, Protean Career Orientation and Turnover Intentions of Faculty Teaching in Professional and Technical Institutions**
Dr. Khushboo Raina



Study of Employee Engagement in Manufacturing.....Pg. 26

DELHI INSTITUTE OF ADVANCED STUDIES

'A' Grade Institute, Approved by AICTE and Affiliated with GGS Indraprastha University, Delhi

(An ISO 9001:2015 Certified Institute)

PLOT NO.6, SECTOR 25, ROHINI, DELHI 110085

Tel.: 011-27932742/27934011/27934400, www.dias.ac.in, dias@dias.ac.in



DIAS Technology Review

The International Journal for Business & IT

Listed In

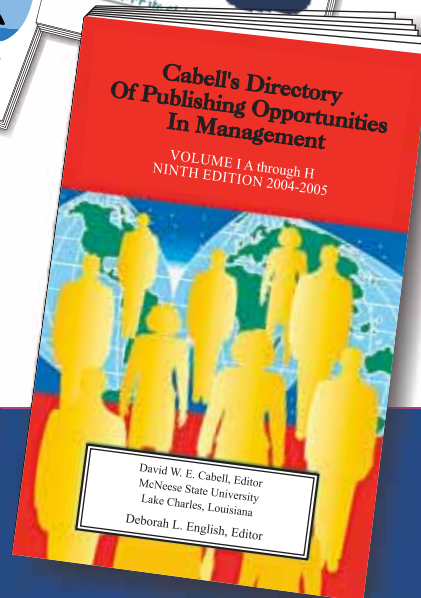
10th Edition of
CABELL'S DIRECTORY, U.S.A.

&



SOCIAL SCIENCE RESEARCH NETWORK

Accessible at : www.ssrn.com



STATEMENT ABOUT OWNERSHIP AND OTHER PARTICULARS OF THE JOURNAL

Printed, Published and Edited by Shri Sanjay Sachdeva, on behalf of Delhi Institute of Advanced Studies, Plot No.6, Sector-25, Rohini, Delhi-110085 and Printed at Swan Press, B-71, Naraina Industrial Area, Phase-II, New Delhi-110028.

Copyright 2004 © by Delhi Institute of Advanced Studies. All rights reserved.

Journal of "DIAS Technology Review – The International Journal for Business and IT", its editor, publisher, editorial board and Delhi Institute of Advanced Studies disclaim responsibility and liability for any statement of facts and opinion, originality of contents and of any copyright violations by the authors and any unintentional printing/publishing error.

The Editorial Board invites original, unpublished contributions in the form of Articles, Case Studies, Research Papers, Book-Reviews and Doctoral Abstracts.

DIAS Technology Review

The International Journal for Business & IT

Editorial Board

PATRON

Shri S.K. Sachdeva
Chairman
Delhi Institute of Advanced Studies

CHIEF EDITOR

Dr. S.N. Maheshwari
Professor Emeritus & Academic Director
Delhi Institute of Advanced Studies

EDITOR

Shri Sanjay Sachdeva
Director
Sachdeva Public School

ASSOCIATE EDITOR

Dr. Suneel K. Maheshwari
Professor, Accounting
Eberly College of Business and IT,
Indiana University of Pennsylvania, USA

JOINT EDITOR

Dr. N. Malati
Professor & Director
Delhi Institute of Advanced Studies, India

ASSISTANT EDITOR

Dr. Anju Batra
Assistant Professor, Management
Delhi Institute of Advanced Studies, India

MEMBERS

Prof. T.N. Kapoor
Professor Emeritus, University Business
School, Panjab University, India

Dr. Rajendar K. Garg
Professor, Marketing,
Eberly College of Business and IT,
Indiana University of Pennsylvania, USA

Dr. Uday Tate
Professor of Marketing
Marshall University, USA

Dr. Avinandan (Avi) Mukherjee
Dean
Lewis College of Business
Marshall University, USA

Dr. Angappa "Guna" Gunasekaran
Dean, Business & Public Administration,
California State University, USA

Dr. Anand Krishnamoorthy
Associate Professor, Economics &
Finance, Sorrell College of Business, USA

Dr. Michael Newsome
Dean, Curriculum and Assessment,
Economics & Finance Institute,
USA

Dr. Rakesh K. Agrawal
Director,
Brahma Management Services Pvt Ltd.
Varanasi, India

Dr. Atul Gupta
Professor, Management,
School of Business and Economics,
University of Lynchburg College, USA

Dr. Jagdish Pathak
Professor, Accounting Systems,
University of Windsor
Canada

Dr. Rakesh Gupta
Senior Lecturer
Accounting, Finance & Economics,
Griffith Business School,
Griffith University, Australia

Dr. P. Raj Devasagayam
Dean, School of Business
State University of New York, USA

Dr. Chong W. Kim
Ex-Dean and Professor,
Management, Marshall University,
USA

Dr. Gin Chong
Professor, Department of Accounting,
Finance & MIS, College of Business,
Prairie View, USA

Dr. Arun K. Somani
Chair & Professor, Department of
Electrical and Computer Engineering,
Iowa State University, USA

Dr. Ibrahim J. Affaneh
Chairman, Deptt. of Finance & Legal
Studies, Indiana University of
Pennsylvania, USA

A BI-ANNUAL JOURNAL OF DELHI INSTITUTE OF ADVANCED STUDIES

Plot No.6, Sector 25, Rohini, Delhi 110 085
Website: <http://www.dias.ac.in>, dias@dias.ac.in

DIAS Technology Review

The International Journal for Business & IT

INDEX

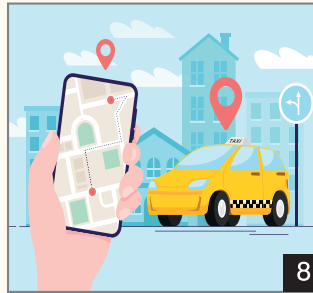
APRIL 2020 – SEPTEMBER 2020

ARTICLES

8 Exploring User Acceptance and Intention Towards App based Cab Aggregators Using Integrated TAM and TPB Model

Ms. Pragya Jayaswal, Dr. N. Malati

Authors have analyzed the key factors which influence the acceptance and intention of passengers using new technology of application-based cab aggregators (ABCA) services.



8

17 Inflated Self-assessments and Metacognitive Ability: A Demonstration of the Kruger-Dunning Effect Among Knowledge Workers

Dr. Shilpa Jain, Ms. Bhavna Bajaj

The authors in this paper have discussed the Kruger-Dunning effect in the workplace performance of knowledge workers. It also focused on its relationship with metacognitive ability



17

26 Study of Employee Engagement in Manufacturing Sector in NCR in Selected Industries

Dr. Harsh Vardhan Kothari, Ms. Tanya Chatwal, Dr. Pratiksha Tiwari

The aim of the paper is to study empowerment, organizational climate and self-efficacy as predictors of employee engagement across manufacturing sector in NCR of Delhi in India



26

42 Effect of Trump's Win on Specific Sector with reference to Indian Stock Market

Ms. Neetu Chadha, Ms. Ruchika Choudhary

The authors have observed the volatility of Indian Stock Market particularly IT, Energy and Pharmaceuticals sector stock returns caused due to Trump's win.



42

48 The Financial Implications of Decisions Related to Choice of Contracting Techniques and the Influence on Contractor Performance

Dr. Anand Krishnamoorthy

The paper focuses on the public organizations' reliance on private contractors to provide services. It also highlighted the various contracting techniques used to hire a private



48

contractor for delivery of residential refuse collection

56 Gap Analysis on EDI Implementation in Cargo Sector and Cargo Clearance Procedures at Indian Airports: Issues and Challenges

Dr. Reena Sethi

This paper highlights various obstacles in successful execution of EDI in Indian cargo sector and recommends some vital policy mediations.

DOCTORAL ABSTRACT

72 Study of Engagement, Protean Career Orientation and Turnover Intentions of Faculty Teaching in Professional and Technical Institutions

Dr. Khusboo Raina

The author has studied the principles of protean career orientation in order to manage the intentions of faculty and to attain faculty engagement in various professional and technical institutions.

From The Editor's Desk

We are elated to present to our readers the 33rd Issue of DIAS Technology Review.

Traditional business archetype is undergoing a metamorphosis due to digital technology and smart phone usage all across the world, today. Online services are being replaced by a number of offline activities to increase the comfort as well as expectations of the customers. Modern commuters are opting for the 'sharing economy system of cab services' through internet, for the ease of their travel experiences. In the research article **Exploring User Acceptance and Intention towards App based Cab Aggregators Using Integrated TAM and TPB Model**, authors have studied some key behavioral factors, which influence the passengers' acceptance & intention of using ABCA services.

Behavioral psychology is the foundation of meta-cognitive ability, which determines the performance of employees in modern workplaces. The factors like individual learning, motivation, critical thinking and decision making are the facilitators of efficiency and good performance of employees. The study **Inflated Self-assessments and Meta-cognitive Ability: A demonstration of the Kruger-Dunning Effect Among Knowledge Workers**, uncovers the links between Meta cognitive ability, self-assessment and overall work performance by providing evidence of presence of the Kruger – Dunning effect in the performance of knowledge workers.

Organizational performance is the outcome of employee engagement also. The psychological empowerment derived through feeling of meaningfulness of work and feeling of creating impact on work, leads to 'Employee Engagement'. In the research article **Study of Employee Engagement in Manufacturing Sector in NCR in Selected Industries**, authors have tried to explore the relationship between empowerment, organizational climate and self-efficacy as predictors of employee engagement across manufacturing sector in National Capital Region of India.

In the age of globalization, any economic or political event taking place in one country makes short term as well as long-term impact on the stock markets of other countries. Authors in their research article, **Effect of Trump's Win on Specific Sectors with Reference to Indian Stock Market** have investigated the impact of Trump's win on Indian Stock market, especially in Energy sector, IT sector and Pharma sector through event window methodology.

Public agencies worldwide face the dilemma of whether to provide services in-house or out source to the private contractors, while making decisions of contracting for local level services. In the study, **The Financial Implications of Decisions Related to Choice of Contracting Techniques and the Influence on Contractor Performance**, the author juxtaposes the public policy implications of whether the U.S. jurisdiction in question should provide needed services themselves or out source to private contractors, which again are applicable to other countries as well as their respective local jurisdictions.

In the current wave of globalization International trade and logistics sector are on a high-growth trajectory; as Electronic Data Interchange method has enabled a speedy inter organizational exchange of business documentation. EDI implementation is in 'Customs and Custodian' position for Export/Import operations through cargo management system established by airport operators. In the article **Gap Analysis on EDI Implementation in Cargo Sector and Cargo Clearance Procedure at Indian Airports: Current Challenges**, the author focuses on obstacles in successful execution of EDI in Indian cargo sector and recommends some vital policy mediations.

In the Doctoral Abstract **A Study of Engagement, Protean Career Orientation and Turnover Intentions of Faculty Teaching in Professional and Technical Institutions**, the author has tried to establish the dimensionality of Faculty Engagement by exploring its factors, development of the scale and its validation; and further confirming the dimensions of Protean Career Orientation and Turnover Intentions scales. This study is very useful for regulatory bodies, apex institution managing the universities in India, administration, faculty and students.

In our effort of knowledge propagation and sharing amongst our august readers, we are sure that this new edition of DIAS Technology Review will be fascinating and enlightening as usual.



Regards,

Dr. Anju Batra

ABOUT THE CONTRIBUTORS



Ms. Pragya Jayaswal

Ms. Pragya Jayaswal has taught as an Assistant Professor at Delhi Institute of Advanced Studies (DIAS). She holds a master's degree in Business Administration from Guru Gobind Singh Indraprastha University and is an alumna of English Literature Department, Indraprastha College for Women, University of Delhi. She has qualified UGC-NET-JRF in Management. Her areas of research interests are Consumer Psychology and Technology & Innovation. She has authored and presented papers at various National and International Conferences and has won five outstanding research awards at recognized Universities and Colleges.

E-mail: Pragyajayaswal1@gmail.com



Dr. N. Malati

Dr. N. Malati is currently working as Professor and Director at Delhi Institute of Advanced Studies, NAAC 'A' Grade Institute, affiliated to GGSIP University. She has over 20 years of teaching and research experience and one-year corporate experience. She is a Doctorate from University of Rajasthan, Jaipur and MBA from Andhra University, Andhra Pradesh. Her areas of specialization in teaching and research are Marketing Management and Human Resource Management. She has more than three dozen research articles in National and International Journals of repute to her credit. She has presented papers, delivered lectures and chaired sessions in Conferences/Seminars. She has developed academic content for CBSE Vocational Education and has successfully completed the Research Project sponsored by Indian Council for Social Sciences Research, Delhi.

E-mail: malati_nvs@yahoo.com



Dr. Shilpa Jain

Dr. Shilpa Jain is an Assistant Professor at University School of Management Studies, Guru Gobind Singh Indraprastha University, Delhi, India. She has a M.Sc. in Applied Psychology and Ph.D in organizational behavior. She has 18 years of research experience and more than 13 years of teaching experience. She has more than 80 papers published in journals and conference proceedings of national and international repute.

E-mail: shilpajainusms@gmail.com



Ms. Bhavna Bajaj

Bhavna Bajaj is a management researcher, consultant and faculty. She is a NET (Management) qualified professional with 7 years of university teaching experience. She has worked with several public and private universities where she has taught subjects in Marketing, HR and Entrepreneurship. She has also been an active T&D consultant with SMEs. She has also delivered more than 500 hours of managerial training to executive from PSUs like Oriental Insurance Co. and MNCs like HDFC Ergo Ltd over the last 13 years of her career. Currently, she is a research scholar (PhD) at the GGSIPU and has published papers in National and International Journals, and participated in several conferences during the course of her doctoral work.

E-mail: Bhavnabajaj16@gmail.com



Dr. Harsh Vardhan Kothari

Dr. Harsh Vardhan Kothari, Professor at DIAS, Delhi, he has done Master of Management Studies (BITS, Pilani), Ph.D. (ICFAI University, Dehradun), and is fellow in field of Entrepreneurship with NEN, Bangalore. He has specialization in HR, Operations, Entrepreneurship, and Strategy. He has 28 years' experience in Manufacturing Industry and 15 years in Academics. He is certified mentor of Entrepreneurs, HR Consultant, and Leadership Trainer.

E-mail: harshkothari76@gmail.com



Ms. Tanya Chatwal

Ms. Tanya Chatwal holds an M.Com Degree from University of Delhi. She has done her Honors in Bachelors of Commerce from Jesus and Mary College, University of Delhi. She has also qualified UGC JRF and UGC NET in Commerce. She has worked in one of the most prestigious Big Four Companies Deloitte & Touche for a couple of years.

E-mail: tanyachatwal08@gmail.com

Dr. Pratiksha Tiwari is currently working as Sr. Assistant Professor in the Department of Computer Applications at Delhi Institute of Advanced Studies. She is NET qualified and holds Ph.D. degree in Statistics from Maharshi Dayanand University, Rohtak, Haryana, India. Her areas of specialization in teaching and research are Fuzzy information theory, Quantitative Methods, Operations Research and Business Research. She has 17 years of teaching experience and coordinating Research and Consultancy Committee at DIAS. She has presented papers in National and International conferences/seminars and has published papers in various refereed SCOPUS indexed journals.

E-mail: parth12003@yahoo.co.in



Dr. Pratiksha Tiwari

Ms. Neetu Chadha is currently working as Assistant Professor in the Department of Management at Delhi Institute of Advanced Studies. She is NET qualified and holds M. Phil. Degree in finance from Kurukshetra University Kurukshetra. Her areas of specialization are Financial Markets and Behavioural Finance. She has 13 years of teaching experience. She has presented various papers in National and International conferences/seminars. She has published various papers in different International and National referred journals and also Co–Authored (C.B.S.E) Class XII and XI Accounting books.

E-mail: neetu.mhn@yahoo.com



Ms. Neetu Chadha

Ruchika Choudhary has done her Graduation from Lady Shri Ram College for Women and has perused M.Com from Sri Ram College of Commerce. She has a Corporate experience of about 1.5 years as a Research Associate at S&P Global Market Intelligence. From the last one year, she is working as an Assistant Professor at Delhi Institute of Advanced Studies, Delhi. She is also currently pursuing her PhD in Commerce and her area of interest is Finance & Accounts.

E-mail: Choudharyruchika17@gmail.com



Ms. Ruchika Choudhary

Dr. Anand Krishnamoorthy is Associate Professor of Finance at Troy University. He has been with Troy since August 1999. Dr. Krishnamoorthy spent his first two years at the University in their Pacific Region teaching Graduate Business Courses at Military Installations in Japan, S. Korea and Guam. He then spent the next decade teaching Graduate Business Courses at Military and Civilian locations in Virginia, Maryland and North Carolina. Since 2014, he has taught Undergraduate and Graduate Finance courses exclusively for Troy Online, the University's Distance Learning Division. In addition, he has also taught Graduate and Undergraduate courses in Vietnam, Thailand, Taiwan, UAE, Saudi Arabia and Germany. Dr. Krishnamoorthy's research interests include Exchange Rate exposure, Governmental Finance and Public Policy among other areas. He currently resides in the Washington, DC Metropolitan area.

E-mail: akrishnamoorthy@troy.edu



Dr. Anand Krishnamoorthy

Reena Sethi is currently working as Professor at Delhi Institute of Advanced Studies, affiliated to GGSIP University. She is a doctorate from FMS, Delhi and MBA from Swinburne University of Technology, Australia. She has a research experience in the areas of E-Governance, Cargo matters, Virology and Pediatrics. She has work experience in the Govt of India as Director, Ministry of Civil Aviation, Deputy chief and Financial Advisor in Airports economic authority of India. She is a Subject winner in Management and Innovation. She has a diploma in creative writing in English.

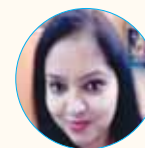
E-mail: reena@dias.ac.in



Dr. Reena Sethi

Dr. Khushboo Raina is currently working as an Assistant Professor at Delhi Institute of Advanced Studies, Delhi. She has completed her Ph.D from University School of Management studies, GGSIPU in the Human Resource Management and Higher Education. She has more than 6 years of research and teaching experience. She has contributed more than 30 papers published in Journal and Conference Proceedings of National and International repute and one edited book.

E-mail: khushboo0803@gmail.com



Dr. Khushboo Raina

Exploring User Acceptance and Intention towards App based Cab Aggregators using Integrated TAM and TPB Model

*Ms. Pragya Jayaswal

**Dr. N. Malati



ABSTRACT

Rapid internet penetration and increasing smartphone usage in India and the world has changed the consumer behaviour and has altered traditional business paradigms. Online services have replaced a number of traditional offline activities today. The acceptance of digital technology has by far changed the needs and expectations of consumers in today's competitive scenario. One of such major change is the birth of the sharing economy, which is defined as "an economic system in which assets or services are shared between private individuals, either free or for a fee, typically by means of the internet" (Oxford dictionaries, 2016). Application Based Cab Aggregators (ABCA) aggregates cabs for the ease of customers by providing cabs at their destination for rates set by the service. Some of the key players in this new emerging market in India are Uber India Technology Private Limited, ANI Technologies Private Limited, Meru Cab Company Pvt. Ltd., Carzonrent (India) Pvt. Ltd, Zoomcar India Private Ltd, Saavari, Fast Track Call Cab Private Limited.

Given the rising success of the sharing economy in the digital age, this research work studies the key factors which influences the passenger's acceptance and intention of using this new technology of ABCA services by developing an integrated model of Theory of Planned Behaviour and The Technology Acceptance Model.

The outcomes of the study showed that the commuters have a positive attitude towards the ABCA services and the attitude towards ABCA should be a strong predictor for the intention to use the services. The results also indicated that perceived ease of use and perceived usefulness positively influence the attitude towards ABCA services. Perceived behavioural control was found to have a positive influence on the intention to use the services whereas subjective norm had no effect on the intention to use the services.

Keywords: Technology Acceptance Model (TAM); The Theory of Planned Behaviour (TPB); ABCA; Sharing Economy.

* Assistant Professor Delhi, Institute of Advanced Studies Rohini, Delhi

**Professor, Delhi Institute of Advanced Studies Rohini, Delhi

INTRODUCTION

Taxis are an important transportation mode alternative which is used across the world. Taxis are preferred over other modes of transportation in India and other developed countries primarily because of inadequate public transportation system.

Several factors such as increasing demands from the corporate sectors, increase in income, changing lifestyles of ever-increasing middle class especially in Tier I & Tier II cities, and government's failure in addressing the demand-supply requirement of citizens has been instrumental to the emergence of a contemporary model of taxi aggregation industry.

The growing traffic troubles are also fuelling the growth of cab aggregators and bike taxis in India. A report by India Brand Equity Foundation (IBEF) states that currently Indian roads carry close to 90 percent of the passenger traffic and 65 percent of the freight.

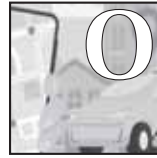
In the recent past, Indian taxi industry has seen a paradigm shift from the traditional way of booking taxis to online taxi booking. Today, everyone is equipped with smartphones, laptops, tablets, and are connected with seamless internet connection. The expectation that everything should be available with just a click at their comfort is also increasing.

According to Statista, the number of smartphone users in India is predicted to reach the figure of 340 million and could even reach 468 million by 2020. In India, an estimated figure of 320.57 million accessed internet using their smartphones in 2017 and this figure is estimated to reach a whopping number of 462.26 million in 2020 as reported by Statista. Citizens are looking for a one-stop easy solution to the problem of transportation and therefore they are switching to the cab aggregators. These numbers as mentioned above supports the fact that more and more people in future will prefer using their mobiles to book cabs online.

Further, we function in the age of sharing economy which defines the concept of "sharing" human as well as physical resources for the convenience and benefit of the socio-economic ecosystem. The concept of shared economy is gaining popularity in India. Thus, the online segment of cab aggregators is increasing the volume of business. The increasing internet and smartphone penetration are catering to the growth of the shared concept.

Statista in their study states that the revenue generated from the Ride Sharing segment amounts to US\$371m in 2018 in India and it is expected to show an annual growth rate (CAGR 2018-2022) of 19.6%, resulting in a market volume of US\$761m by 2022. The user penetration in 2018 is approximately 2.5% and is expected to reach 3.9% by 2022.

Though, online taxi booking is at a very nascent stage, but it is growing at a very fast pace. Young entrepreneurs are finding this as a golden opportunity and are formulating new models in synchronization with the latest technology to attract the masses. People are looking for booking convenience through apps or websites, in addition to providing other add-on features for a hassle-free travel experience.



VERVIEW OF INDIAN TAXI AGGREGATION INDUSTRY

An aggregator is an entity or an individual who gathers and classifies things into different subsets on the basis of the similarities in their characteristics.

Application Based Cab Aggregators (ABCA) aggregates cabs for the convenience of customers by providing cabs at their convenience for rates which are set by the service provider. Cab aggregators do not own vehicles but they act as a link between the riders and the drivers using GPS/GPRS. ABCA through their real-time data help riders to locate the driver, shows the number of drivers in the nearby area and also informs the wait time for the closest driver, all through their apps.

ABCA appeals to masses because of their cheap fares, safety, easy booking, proficient staff, vehicle tracking, GPS enabled vehicles, accessibility and this builds trust and confidence of the passengers.

The rise of the Cab aggregation industry has made it very simple for the passengers to book their rides and at the same time it has provided start-ups and young entrepreneurs, a good business model to invest in.

The ABCA players started entering into this sector from 2000, but it saw an initial boom in 2010 with the launch of Ola and Taxi. Soon, in 2013 the world leader in Cab Aggregation industry Uber entered India. The market is facing good competition as players try to better their services every day by providing attractive offers, free rides and whopping discounts. ABCA's also provide several personalized options to the riders in choosing their rides including the option of cab sharing which appeals to the passengers who want to share the expense of their rides with the others.

Delhi is the world's fastest growing city. With Delhi's rapid development and growth, there is a substantial increasing pressure on improving its transportation infrastructure. The public transport in Delhi is inadequate in terms of safety and approachability. There is a constant complaint for haggling for fares and taxi /auto drivers denying rides to the passengers. This was seen as a huge opportunity by the private players who took advantage of Delhi's market for app-based cab services. With the increasing population due to urbanization in Delhi, people want easy options for commuting. Online cab booking services are increasing at a rapid pace in Delhi and in other metropolitan cities because the professionals, tourists and the young are seeking for faster and hassle-free transport system and they don't mind paying a little extra for these services. The current study tries to identify the factors affecting the choice of ABCA in Delhi and NCR.



LITERATURE REVIEW

Erasmus, Rothmann & van Eeden (2015), acclaim that the most common models used to depict the linkages between the factors of beliefs, attitudes and the usage of new technology, are the Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1975) the Theory of Planned Behavior (TPB)

(Ajzen, 1985; Ajzen and Madden, 1986) the diffusion of innovations (Rogers, 1995) and the technology acceptance model (TAM) (Davis, 1986).

Fishbein and Ajzen in 1975 proposed TPB. According to the TPB model, attitude towards the behavior, subjective norm and perceived control determines the intentions to perform certain behaviours. (Ajzen 2005). Similarly, Davis (1989) studied the Technology Acceptance Model in which the perceived ease of use and perceived usefulness affects the attitude towards a new technological invention, and then effects behavioural intention to use it.

Chen et al., (2017) undertook an empirical study on WeChat, which is China's one of the most popular mobile social network. Factors from social and mobile perspective were incorporated into the conventional TAM and thus a new TAM model was developed.

Lule et al., (2012) applied Technology Acceptance Model to examine the factors that influence the adoption of Mobile-banking in Kenya and took the special case of MKesho, an M-banking application in Kenya. From their study, it was revealed that Perceived Usefulness, Perceived Self Efficacy, Perceived Credibility and Perceived Ease of Use are the key factors that influences customers' attitude towards Mobile-banking.

Various studies showed that neither TAM nor TPB were found to provide a complete explanation of behavior (Taylor & Todd, 1995; Venkatesh et al., 2003) since factors that influence consumers' adoption of a new technology can vary as it depends on the target consumer, type of technology, and context. Dishaw & Strong (1999) in their study suggested that an integrated model formed out of TPB and TAM may provide more explanatory power than any of these models used alone.

Lien et al., (2019) studied the factors influencing air travellers' intentions to adopt fast air travel services using the integrated TAM and TPB model. It was found that benefits of air travel services positively and significantly influence perceived ease of use, perceived behavioural control and perceived usefulness. Perceived usefulness was found to predicts the attitude of air travellers and intentions to use fast air services for travel. Perceived behavioural control was found to positively influence intentions to adopt these services.

Hassan et al., (2018) in their study examined the factors that affect the adoption of the growing concept of internet banking in Pakistan using the integrated TAM and TPB model. Through the results, it was confirmed that the integrated TAM and TPB frameworks is fit to be used for predicting the adoption of internet banking by customers.

Safeena et al., (2013) from their study on online banking adoption found that some of the important determinants of online banking adoption are perceived ease of use, perceived usefulness, attitude, subjective norm and perceived behavioural control. Integrated TAM and TPB model were used to analyse that all these factors have an important effect on attitude.

Gamal et al., (2010) established an integrated research model using TPB and TAM models to understand intention to use e-procurement technology. The findings highlights that

intention to use e-procurement technology majorly depends on user's attitude and also influenced by perceived usefulness and subjective norm.

Lee et al., (2009) proposed the use of integrated model combining technology acceptance model (TAM) and theory of planned behavior (TPB) model to explain customers' intention to use online banking. It was revealed that the intention to use online, primarily e banking is affected by the financial and privacy risk. It is also positively affected by attitude, perceived benefit and also by perceived usefulness.

Chen et al. (2007), studied the motorists' intention of ETC adoption by combining both Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB). Data was collected from highway drivers who had not installed on-board units for ETC service in Taiwan. It was found that perceived ease of use, system attributes and perceived usefulness is shown to effect motorists' attitude towards ETC service adoption positively. This study also disclosed that perceived behavioural control, attitude and subjective norm positively influence the intention to adopt ETC system.

The current study employed, a research framework integrating constructs derived from both TAM and TPB is proposed.

In the context of ABCA service adoption, TPB suggests that a passenger is more willing to adopt ABCA service if he or she has a more positive attitude towards using ABCA (Attitude), also, the passenger wants to comply with other important people's opinions on the use of ABCA (Subjective Norm), and has the requisite resources, skills, or opportunities of using this new technology of ABCA services (Perceived Behavioural Control).

In additions, the constructs of TAM are used in this study, which defines that perceived usefulness and perceived ease of use, will positively influence passengers' attitude towards ABCA service. Furthermore, perceived usefulness directly effects attitude towards the ABCA services, and perceived ease of use directly effects perceived usefulness of ABCA services. The proposed model is presented in Figure 3 and the hypotheses are derived in the next section.

The current study proposes to study these parameters in the context of ABCA services.



OBJECTIVE:

To measure user acceptance and intention towards the services of App Based Cab Aggregators (ABCA)

(H1): Perceived ease of use of the ABCA services has a positive and significant impact on perceived usefulness of the ABCA services

(H2): Perceived ease of use of the ABCA services has a positive and significant impact on the attitude towards the ABCA services.

(H3): Perceived usefulness of the ABCA services has a positive and significant impact on the attitude towards the ABCA services.

(H4): Perceived usefulness of the ABCA services has a positive and significant impact on the intention to use the ABCA services.

(H5): Attitude towards the ABCA services has a positive and significant impact on the intention to use the ABCA services.

(H6): Subjective norm towards the ABCA services has a positive and significant impact on the intention to use the ABCA services.

(H7): Perceived behavioural control towards the ABCA services has a positive and significant impact on the intention to use the ABCA services.

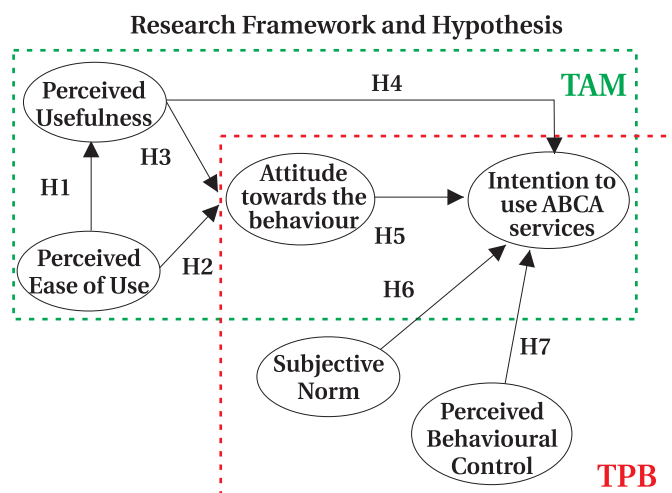


Figure 1: Research Framework (Adapted from Chen et al., (2007))



RESEARCH METHOD

Questionnaire Design

Francis et al., (2004) developed a step by step guide about the construction of a TPB questionnaire was adopted in the paper. In addition to the framework given by Francis et al., (2004), several existing questionnaires containing TPB, (Promtosh&Sajedul, 2011; Jesse, 2015) TAM, (Delikan, 2010) and a combination of both models (Chen et al., 2007) were used for the development of the questionnaire. The constructs of the questionnaire will be

based on the integrated model from TPB and TAM (Figure 15). All the five constructs, perceived usefulness, perceived ease of use, attitude, subjective norm, and perceived behavioural control were covered in the questionnaire. Also, the questionnaire will include demographic information and questions pertaining to ABCA trends. Table 1. summarizes the sources that were used for reference in the development of present constructs

Research Design

The research design used for this study is Exploratory and Descriptive. The sample size is 240 and the sampling area is Delhi NCR. The technique used for drawing sample from population is convenience sampling. A questionnaire was administered with a five-point Likert's scale, with 'strongly agree' rated as 5 and 'strongly disagree' rated as 1. The collected data was coded in the SPSS 21. Exploratory Factor analysis was used for analysis. A simple linear regression analysis was conducted separately for each of the seven hypotheses to test the relationships between the dependent and independent variables. In addition, a correlation matrix was depicted to show all relationships within the model.



ANALYSIS

Out of 240 responses, 39.6% of respondents were aged 26-40, followed by 32.1% were aged 41-60 and 28.3% belonged to 18-25 years of age group. 52.9% were male and remaining were females. Majority of the respondents (45%) were Salaried (Private Sector) whereas 24.2% were students. 50.4% of the respondents earned monthly income more than 25,000. 55.4% of the respondents were single. 53.8% owned a personal vehicle. 50% started using App based cab services in past few years whereas 31.7% started using these services in last one year. When asked about the frequency of using cabs, 42.1% reported to use cabs at least once a week. Around half of the total respondents preferred Ola as their cab service provider, followed by Uber, which is preferred by 38.3% of the respondents. Majority preferred Shared cabs (58.8%) over Personal cabs. Next, 58.3% of the respondents rated their experience of using App-based Car Service Providers as excellent. 77.9% of the respondents said that they will recommend App-based cab services to their family and friends.

Table 1: Questionnaire Design and Factor Loadings

Construct	Items	Factor Loading	Source	Internal Reliability*
Perceived Ease of Use	ABCA has a user-friendly interface	.873	Bhattacharjee, 2000; Chen et al., 2007	.915
	Learning to use the Taxi-hailing app on mobile phone was easy for me.	.835		
	The payment process of ABCA is effortless	.820		
	Rating of an ABCA's driver after the ride is easy	.817		
	It is easy for me to use the ABCA's application	.781		
	It is easy to get accustomed to ABCA	.703		
	ABCA interface helps me in tracking the cab.	.677		

Construct	Items	Factor Loading	Source	Internal Reliability*
Perceived Usefulness	Using ABCA helps me get better service.	.913	Moore and Benbasat, 1991; Chen et al., 2007	.969
	ABCA improves my travel convenience.	.896		
	It is easier to get a taxi using ABCA than picking up a cruising cab.	.881		
	Using ABCA enables me to reach my destination faster	.867		
	Using ABCA is beneficial for me in financial terms	.827		
Perceived Behavioural Control	I trust ABCA's screening of the drivers	.766	Taylor and Todd, 1995; Chen et al., 2007	.922
	I have the resources to use ABCA services	.761		
	I have the knowledge to use ABCA services	.757		
	I have the ability to use ABCA services	.747		
	I feel secure connecting my credit card to the ABCA services	.722		
	I trust the rating system of ABCA	.654		
Subjective Norm	It is important for me what my close friends think about ABCA	.901	Taylor and Todd, 1995; Chen et al., 2007	.910
	The public opinion about ABCA in general is positive	.890		
	It is important for me what the public thinks about ABCA	.854		
	The media attention ABCA receives affects my willingness to use the service	.793		
	My close friends think I should use ABCA	.864		
Attitude	Using the taxi-hailing app is a pleasant experience for me.	.843	Taylor and Todd, 1995; Chen et al., 2007	.959
	I have a generally favourable attitude towards using taxi hailing app.	.749		
	Overall, I enjoyed using taxi-hailing app.	.689		
	I feel using taxi-hailing apps is a wise choice.	.642		
Intention	I would consider using ABCA when having a night out	.688	Yu et al., 2005; Chen et al., 2007	.877
	I would consider using the ABCA services the next time I need a taxi	.654		
	I would consider using ABCA when visiting a new city	.624		

Exploratory Factor Analysis

To test the reliability of various constructs of the questionnaire, the Cronbach alpha (equivalent to the average of all the split half correlation coefficients) was used. It was found to be 0.930 which implies that the data is consistent in nature and can be relied upon.

Exploratory factor analysis was applied using SPSS V 21. For this, pool of 30 items were subjected to exploratory factor analysis. It reduced items to six factors. Kaiser- Meyer-Olkin measure of sampling adequacy came out to be 0.844, which is above 0.65 (the acceptable level). The factor analysis generated six components with eigenvalues above 1 with total variance explained being 76.188%. The varimax rotation clubbed the items into six components as shown in Table 1.

Correlation Analysis

The Pearson correlation coefficients measures the strength of the linear association between two variables and the values lie between -1 and 1 (Anderson et al., 2013). After conducting the Reliability Analysis, the correlation analysis was conducted to discover the relationships between the six factors and to investigate the hypotheses of the research model. Cohen (1988), posits that a correlation coefficient between 0.10 – 0.29 signifies a small correlation, 0.30 – 0.49 is seen as a medium correlation, and 0.50 – 1.00 as a large correlation.

Table 2 depicts the correlation analysis. The table above shows that the correlations between Perceived Usefulness, Perceived Ease of Use, Intention and Attitude are positive whereas the correlation between Subjective Norm and Perceived Behavioural Control was found to be negative.

and Hypothesis 3 are supported.

Next, H4, H5, H6 and H7 posited that Perceived usefulness, Attitude, Subjective norm and Perceived behavioural control respectively has a positive and significant impact on the intention to use the ABCA services. The standardised coefficients(β) shows that Perceived Behavioural Control ($\beta = 0.385$) have larger impact than Attitude ($\beta = 0.361$) and Perceived Usefulness ($\beta = 0.100$) on Intention to use ABCA services. Also, the Sig value indicates that both predictors had a significant and positive impact on Intention scores at the 0.001 level.

The subjective norm ($\beta = 0.039$) which is referred to as perceived social demand to execute a particular behaviour was found to have positive but insignificant impact on

Table 2: Correlation Analysis

		Subjective Norm	Perceived Usefulness	Perceived Ease of Use	Perceived Behavioural Control	Intention	Attitude
Subjective Norm	Pearson Correlation	1	.002	.014	-.002	.077	.108
Perceived Usefulness	Pearson Correlation	.002	1	.346**	.588**	.495**	.466**
Perceived Ease of Use	Pearson Correlation	.014	.346**	1	.480**	.397**	.306**
Perceived Behavioural Control	Pearson Correlation	-.002	.588**	.480**	1	.650**	.570**
Intention	Pearson Correlation	.077	.495**	.397**	.650**	1	.631**
Attitude	Pearson Correlation	.108	.466**	.306**	.570**	.631**	1

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

Regression Analysis

To further enhance these findings, a regression analysis was also conducted. Table 3 summarises the result of regression shows below:

H1 posited that perceived ease of use of the ABCA services has a positive and significant impact on perceived usefulness of the ABCA services. It can be concluded from Table 3 that Perceived Ease of Use (PEU) ($\beta = 0.346$) had a positive and significant effect on Perceived Usefulness of ABCA services (PU). Thus, hypothesis 1 is supported.

H2 proposed that Perceived Ease of Use of the ABCA services has a positive and significant impact on the attitude towards the ABCA services and H3 proposed that Perceived usefulness of the ABCA services has a positive and significant impact on the attitude towards the ABCA services. The standardised coefficients(β) shows that Perceived Usefulness ($\beta = 0.410$) have larger impact than the Perceived Ease of Use ($\beta = 0.164$) on Attitude towards ABCA services. Also, the Sig value indicates that both predictors had a significant and positive impact on Attitude scores at the 0.001 level. Thus, Hypothesis 2

Intention to use ABCA services. There is a weak relationship between subjective norms and intentions because of which inconsistencies in the significance of subjective norms is often reported.. Sheppard et al. (1988) and Van den Putte's (1991) meta-analyses of the TRA found that the subjective norm component was the weakest predictor of intentions (Godin & Kok, 1996). Therefore, several authors have removed subjective norms from analysis (e.g. Sparks, Shepherd, Wieringa, & Zimmermanns, 1995). Armitage & Conner (2001) in their meta-analysis also supported the view that subjective norm is one of the weakest components of the TPB model which relates to intention. Many researchers such as Trafimow & Finlay (1996) and Cialdini and Trost (1998) have also discussed the relatively weaker impact of subjective norm in TPB.

Eckhardt (2009) defines subjective norms as related to the individual's perception of social pressure from others who are important to them (e.g. family, friends, colleagues, and others) to behave (or not) in a certain manner and their motivation to comply with those people's views. Sedikides (1993) mentioned that the subjective norm was more relevant to the individuals who could access the collective self in a prominent

Table 3: Summary of Hypothesis Testing

Hypothesis	Specifications	Results
H1	Perceived ease of use of the ABCA services has a positive and significant impact on perceived usefulness of the ABCA services	Supported ($\beta = 0.346, p < 0.001$)
H2	Perceived ease of use of the ABCA services has a positive and significant impact on the attitude towards the ABCA services.	Supported ($\beta = 0.164, p < 0.001$)
H3	Perceived usefulness of the ABCA services has a positive and significant impact on the attitude towards the ABCA services.	Supported ($\beta = 0.410, p < 0.001$)
H4	Perceived usefulness of the ABCA services has a positive and significant impact on the intention to use the ABCA services.	Supported ($\beta = 0.100, p < 0.001$)
H5	Attitude towards the ABCA services has a positive and significant impact on the intention to use the ABCA services.	Supported ($\beta = 0.361, p < 0.001$)
H6	Subjective norm towards the ABCA services has a positive and significant impact on the intention to use the ABCA services.	Rejected ($\beta = 0.039, p < 0.001$)
H7	Perceived behavioural control towards the ABCA services has a positive and significant impact on the intention to use the ABCA services.	Supported ($\beta = 0.385, p < 0.001$)

manner. The collective self is dependent upon interpersonal bonds to others which are obtained from common and from some sort of symbolic identification with a group. The author of TPB model, IcekAjzen (1991), explains this with the fact that intentions are heavily influenced by personal factors, such as attitudes and perceived behavioural control. According to Ajzen (2002), questions have an injunctive quality but the responses have low variability because important others are supposed to approve desirable behaviours and dislike undesirable behaviours. Ravis and Sheeran (2003) distinguished between injunctive and descriptive norms as separate sources of motivation, with the subjective norm's component of the theory of planned behaviour being injunctive social norms, since it relates to the opinion of significant others, and descriptive norms referring to perceptions of significant others' own attitudes and behaviour in the domain. Further research will reveal the extent of influence of injunctive and descriptive norm to enable us to understand which of these norms is influencing the subjective norm taken up in the study.

In order to validate these results, step-wise regression was also applied. Table shows the result of step-wise regression.

Result of Step-wise regression validates the results derived earlier i.e. Perceived Behavioral Control and Attitude have highest impact on Intention to use the ABCA services.



CONCLUSION

This study on App Based Cab Aggregators added to the theory of behavioural research by using an integrated model of TPB and TAM. The model used is inspired by the study conducted by Chen et al., (2007), has been applied in the context of App Based Cab Aggregators. To the knowledge of the authors, such a study has not been conducted before, which adds valuable insights to behavioural theory related to technology-based services of the digital age. The results showed that attitude towards the use of the ABCA services was the most important predictor for the intention to use them and that the subjective norm had the lowest influence, contrary to the existing theory, the results of the present study show that consumers are less influenced by the subjective norm than expected, which makes it a subject for further investigation.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.650 ^a	.422	.420	.5916671955 19454	.422	171.806	1	235	.000
2	.723 ^b	.523	.519	.538716918 316546	.101	49.466	1	234	.000
a. Predictors: (Constant), PBC									
b. Predictors: (Constant), PBC, A									



IMPLICATIONS

The outcomes of this study offer wide range of implications for managers as well as for governmental policy makers. Insights from this study can be useful to App Based Cab

Aggregators as they can optimize their marketing efforts according to the most important factors that influence the intention of consumers to use online cab services. To increase users' acceptance level, product managers and developers should be able to identify a wide range of user's preferences, attitudes and intentions towards the usage of ABCA. They should be able to integrate these factors into the development process.

The outcomes of the study showed that the commuters have a positive attitude towards the ABCA services and that the attitude towards ABCA is a strong predictor for the intention to use the services.

Furthermore, the results suggest that perceived ease of use and perceived usefulness positively influence the attitude towards ABCA services. Hence, the service providers ought to focus on communicating the easy handling of Cab Aggregator's mobile application as well as the various benefits of services to the users.

Perceived behavioural control also positively influences the intention to use ABCA services significantly, offering the possibility for ABCAs to showcase the control and safety features of their services. It was found that the subjective norm is shown to have no effect on the intention to use the ABCA services.

Companies within the sharing economy/digital service providers and governmental agencies could use the research framework to conduct their own studies to examine the attitudes, perceptions, and intentions of their clients. The framework could be used to investigate the opinions of individuals towards certain areas to improve strategic decisionmaking. Also, organizations can design longitudinal studies to examine the impact of changes in the service offerings in relation to the intentions of consumers to use their services.



FUTURE RESEARCH

The execution of this study offers various possibilities for future research. Future researchers could conduct a similar investigation in other settings, for example, by including different countries and cultures. A comparative study between different ABCA's can be conducted to get deeper insights on the consumer intention to use these services. Besides the model which was used in the present study, other models which predict the behaviour of consumers could be used for future studies. Future research could also be conducted in the form of a longitudinal study. In addition, an exploratory approach could be used to examine the topic from a broader perspective. This integrated model of TPB and TAM can be used by researchers to investigate other services of the sharing economy, or it can also be used in the framework of new emerging technology-based services.

REFERENCES

- i. Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50(2), 179-211.
- ii. Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In *Action control* (pp. 11-39). Springer, Berlin, Heidelberg.
- iii. Ajzen, I. (1987). Attitudes, traits, and actions: Dispositional prediction of behavior in personality and social psychology. In *Advances in experimental social psychology* (Vol. 20, pp. 1-63). Academic Press.
- iv. Ajzen, I. (2005). *Attitudes, personality, and behavior*. McGraw-Hill Education (UK).
- v. Ajz
- vi. en, I. (2011). The theory of planned behaviour: reactions and reflections.
- vii. Azen, I., & Madden, T. (1986). Prediction of goal directed behaviour: Attitudes, intentions and perceived behavioural control.
- viii. Bhattacharjee, A. (2000). Acceptance of e-commerce services: the case of electronic brokerages. *IEEE Transactions on systems, man, and cybernetics-Part A: Systems and humans*, 30(4), 411-420.
- ix. Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity and compliance. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (pp. 151-192). Boston: McGraw-Hill.
- x. Chen, C. D., Fan, Y. W., & Farn, C. K. (2007). Predicting electronic toll collection service adoption: An integration of the technology acceptance model and the theory of planned behavior. *Transportation Research Part C: Emerging Technologies*, 15(5), 300-311.
- xi. Chen, H., Rong, W., Ma, X., Qu, Y., & Xiong, Z. (2017). An extended technology acceptance model for mobile social gaming service popularity analysis. *Mobile Information Systems*, 2017.
- xii. Davis, F. D. (1985). *A technology acceptance model for empirically testing new end-user information systems: Theory and results* (Doctoral dissertation, Massachusetts Institute of Technology).
- xiii. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.
- xiv. Erasmus, E., Rothmann, S., & Van Eeden, C. (2015). A structural model of technology acceptance. *SA Journal of Industrial Psychology*, 41(1), 01-12.
- xv. Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*.
- xvi. Fisher, J. D., & Fisher, W. A. (1992). Changing AIDS-risk behavior. *Psychological bulletin*, 111(3), 455.
- xvii. Francis, J., Eccles, M. P., Johnston, M., Walker, A. E., Grimshaw, J. M., Foy, R., ... & Bonetti, D. (2004). Constructing questionnaires based on the theory of planned behaviour: A manual for health services researchers.
- xviii. Gamal Aboelmagd, M. (2010). Predicting e-procurement adoption in a developing country: an empirical integration of technology acceptance model and theory of planned behaviour. *Industrial Management & Data Systems*, 110(3), 392-414.

xix. Godin, G., &Kok, G. (1996). The theory of planned behavior: a review of its applications to health-related behaviors. *American journal of health promotion*, 11(2), 87-98.

xx. M. U., Iqbal, A., & Iqbal, Z. (2018). Factors affecting the adoption of internet banking in Pakistan: an integration of technology acceptance model and theory of planned behaviour. *International Journal of Business Information Systems*, 28(3), 342-370.

xxi. Jaiswal, M. P. Draft Policy Recommendations for Application Based Cab Aggregators (ABCA) in India.

xxii. Lee, M. C. (2009). Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit. *Electronic commerce research and applications*, 8(3), 130-141.

xxiii. Lien, C. H., Hsu, M. K., Shang, J. Z., & Wang, S. W. (2019). Self-service technology adoption by air passengers: a case study of fast air travel services in Taiwan. *The Service Industries Journal*, 1-25.

xxiv. Lule, I., Omwansa, T. K., &Waema, T. M. (2012). Application of technology acceptance model (TAM) in m-banking adoption in Kenya. *International Journal of Computing & ICT Research*, 6(1), perceived behavioral control. *Journal of experimental social psychology*, 22(5), 453-474.

xxv. Processes, 50, 179-211. Ajzen, I. (2012). Martin Fishbein's Legacy: The Reasoned Action Approach. *The ANNALS Of The American Academy Of Political And Social Science*, 640(1), p. 11-27.

xxvi. Rogers, E. (1995) *Diffusion of Innovations*. New York, NY: Free Press

xxvii. Safeena, R., Date, H., Hundewale, N., &Kammani, A. (2013). Combination of TAM and TPB in Internet banking adoption. *International Journal of Computer Theory and Engineering*, 5(1), 146.

xxviii. Sheppard, B. H., Hartwick, J., &Warshaw, P. R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of consumer research*, 15(3), 325-343.

xxix. Sparks, P., Shepherd, R., Wieringa, N., &Zimmermanns, N. (1995). Perceived behavioural control, unrealistic optimism and dietary change: An exploratory study. *Appetite*, 24(3), 243-255.

xxx. Trafimow, D., & Finlay, K. A. (1996). The importance of subjective norms for a minority of people: Between-subjects and within subjects analyses. *Personality and Social Psychology Bulletin*, 22, 820-828.

xxxi. Van den Putte, B. (1991). 20 years of the theory of reasoned action of Fishbein and Ajzen: A meta-analysis. *Unpublished manuscript, University of Amsterdam*.

xxxii. Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information systems research*, 11(4), 342-365.

xxxiii. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478.

Inflated Self-assessments and Metacognitive Ability: A Demonstration of the Kruger-Dunning Effect among Knowledge Workers

*Dr. Shilpa Jain

**Ms. Bhavna Bajaj



ABSTRACT

Meta cognitive Ability impacts many determinants of individual performance including learning, motivation, critical thinking and decision making. Low Meta cognitive ability has been suggested as the cause of inaccurate self-assessment among poor performers. The study uncovers the links between Meta cognitive ability, self-assessment and overall work performance. This study provides evidence of presence of the Kruger – Dunning effect in the workplace performance of knowledge workers. It also lays the foundation for studying meta-cognitive ability as a predictor of performance in modern workplaces. The study further makes a case for range bound interpretation of scores on self-report instruments measuring meta-cognitive ability.

*Assistant Professor, USMS, GGSIPU, Delhi, India

**Research Scholar, USMS, GGSIPU, Delhi, India

INTRODUCTION

Modern firms have to operate in a knowledge economy where the firm performance is heavily dependent upon its employees' ability to extract value from knowledge. Such work was termed as "knowledge work" by Drucker in 1960s, and in the intervening decades knowledge work has evolved from being seen as a job characteristic to being seen as a continuum along which work for most employees may vary (Kelloway & Barling, 2000).

As raw information becomes easily accessible, the modern knowledge workers must have the capacity to build upon his existing knowledge, and take mental leaps (Trauth, 2000). Effective performers are now expected to adapt to dynamic business environment by learning new tasks, procedures and technologies (Pulakos, Arad, Donovan & Plamondon, 2000).

In workplace environments, which are essentially high learner control environments (since professionals themselves have to decide what they wish to learn, when and how) the ability to engage in metacognitive activity has been demonstrated as a critical success factor (Schmidt & Ford, 2003).

Metacognitive ability is the ability of knowing, or being acutely aware of one's cognitive state with the ability to complete a given task (Sigler & Tallent-Runnels, 2006). Metacognitive ability allows people to monitor their progress, identify gaps in understanding and plan their strategy accordingly. Schraw (1998) has stated that metacognitive ability is "multidimensional, domain independent and distinct from general intelligence- which helps to compensate for deficits in general intelligence and even prior knowledge during problem solving".

Dunning, Johnson, Erlinger, and Kruger (2003) postulated that, it is due to a lack of metacognitive ability that creates a "dual burden" on unaccomplished performers who, because they suffer from metacognitive deficits, are both unskilled and unaware of their own lack of skills. In context of the modern workplace, the Kruger – Dunning effect implies that professionals with low metacognitive ability would hold overtly favorable views about their skills, seeks out fewer opportunities to learn, and consequently performs poorly at knowledge work. The effect has been widely demonstrated by various researchers, and, low metacognitive ability has been suggested as the cause of inaccurate self assessment among poor performers. However, the links between metacognitive ability, self assessment and overall work performance have been not yet specifically demonstrated. This study attempts to empirically demonstrate the Kruger – Dunning effect in the workplace performance of knowledge workers, and its relationship with metacognitive ability.

Further, it seems important to study metacognitive ability as a predictor of workplace performance at this juncture, since Metacognition has now been linked to a host of abilities which are critical for success in today's environment such as intellectual skills (Veenman, Kok, & Bolte, 2004), problem solving (Lee & Teo, 2011), critical thinking (Choy & Cheah, 2009; Magno, 2010) and motivation (Sungur & Senler, 2009). The study, thus, also lays a foundation for an exploration of how metacognitive ability impacts employee performance.

Metacognition

Metacognition as a concept has foundations in cognitive psychology (Hart, 1965; Peters 2007), in cognitive development psychology (Piaget, 1950; Steinbach, 2008), and in social development psychology (Vygotsky, 1962; Tsai, 2001). Flavell (1979) believed that metacognition is learners' own knowledge and cognition about cognitive phenomena' (p. 906). Brown (1978) defined metacognition as awareness that organization has of thinking processes used in planned learning and problem solving situations. Swanson (1990) defines metacognition as individuals' awareness of their ability to monitor, regulate and control their own activities concerning learning. Schraw (1998) sees Metacognition as skills that are multidimensional, domain independent and distinct from general intelligence. He asserts that metacognitive skills also helps to compensate for deficits in general intelligence, and even prior knowledge during problem solving. Veenman, Kok and Bolte (2004) found that metacognition is not domain specific.

Researchers accept that metacognition is composed of two separate, yet interrelated elements – Knowledge and Regulation (Schraw & Denison, 1994). Metacognitive Knowledge is knowledge about oneself as a learner and factors affecting cognition which have been defined as self-appraisal (Paris & Winograd, 1990) and epistemological understanding (Kuhn & Dean, 2004). Metacognitive knowledge is further subdivided into declarative (Schraw, Crippen, & Hartley, 2006), procedural (Kuhn & Dean, 2004) and conditional knowledge (Schraw et al., 2006). Regulation of cognition includes controlling of one's cognitive processes. Paris and Winograd (1990) refer to this component as cognitive self-management (p. 18). The five subcomponents of regulation that have been identified by researchers are: Planning, Information Management, Comprehension Monitoring, Debugging, and Evaluation (Paris & Winograd, 1990; Schraw & Moshman, 1995; Whitebread et al., 2009)

Metacognition at workplace

Since Metacognition has been recognized as the master that coordinates smooth operation of all other cognitive processes (Hacker, Dunlosky & Grassr, 2009) has also gained tremendous importance in today's workplaces which rely heavily on the cognitive abilities of its workers. Ford, Kraiger and Merritt (2010) have posited that employees having high metacognitive awareness can match task requirements and skills required in a better way. Greene (2003) asserts that metacognition assists in high speed decision making. Burke and Hutchins (2007) suggest that metacognitive abilities acts as substitutes for a supportive work environment as far as transference of learning is concerned. Dierdoff and Ellington (2012) have shown that people with strong metacognitive abilities are better able to collaborate better and make decisions more efficiently. Metacognitive abilities of managers has been shown to impact their capacity to engage in informal learning (Enos, Kehrhahn & Bell, 2003) and self-managed learning (Gravill, Comepeau & Marcolin, 2002); take better decisions (Bartha & Carroll, 2007); cope with conflict (Dawson, 2008) and approach mindfulness (Wells, 2005). Not only, Metacognition has been seen to impact important

determinants of an individual's performance at work as listed above, but it is also seen as an important factor affecting group performance. Metacognition has been noted as a key component affecting cooperation (Nonose, Kano & Furuta, 2014), collaboration (Frith, 2012), collective group intelligence (Woolley, Chabris, Pentland, Hashmi & Malone, 2010) team learning (McCarthy, 2008), team effectiveness (Entin & Entin, 2000) and cross cultural collaboration (Chua, Morris & Mor, 2012). Researchers have been able to demonstrate that metacognitive abilities are significantly related to individual performance (Oh, 2016) and overall firm performance (Rhodes, Lok, & Sadeghinejad, 2016).

Kruger – Dunning Effect

It is critically important for self-assessments to be accurate (Brown & Harris 2014; Panadero et al. 2016) when the learner is expected to take charge of his or her learning as in the case in workplace environments. If the self-assessment is inaccurate, this leads to errors in the next steps of the learning process (Brown & Harris 2014). The Kruger – Dunning effect suggests that poor performers are unable to make accurate self assessments regarding their own expertise. The Kruger – Dunning effect, is thus, a cognitive bias that leads people to overestimate their expertise in a particular domain. This effect is more prominently seen among poor performers in that domain who are unable to accurately judge the limits of their knowledge and expertise.

Researchers have demonstrated that the effect is not limited to the intellectual tasks in a controlled environment (Ehrlinger, Johnson, Banner, Dunning, & Kruger, 2008); or it cannot be explained by the mere desire to save face (Ehrlinger et al., 2008) or as a statistical artefact (Kruger & Dunning, 2003) and cannot be overcome by offering incentives for more accurate self-assessment (Ehrlinger et al., 2008). A summary of the work of Kruger–Dunning concludes that “...*incompetent individuals have more difficulty recognizing their true level of ability than do more competent individuals and that a lack of metacognitive skills may underlie this deficiency*” (Kruger & Dunning, 1999, pg. 31).

The effect has been demonstrated among professionals in various domains including college students (Alicke et al., 1995; Everson & Tobias, 1998; Kruger & Dunning, 1999), medical lab technicians (Haun, Zeringue, Leach, & Foley, 2000) and clerks (Edwards, Kellner, Siström, & Magyari, 2003). In a study conducted by Hodges, Regehr, and Martin (2001) among medical students conducting a clinical interview, they found that the worst performers rated themselves much more positively than their instructors did. In a study conducted in the workplace computing setting, (Gibbs, Moore, Steel & McKinnon, 2017) researchers have confirmed the presence of the Kruger Dunning effect and commented that this misinterpreting skill level can pose challenges for both the employees and the employers.

Knowledge Work

Cooperation and cognitive work are the hallmarks of modern workplaces, where most of the employees are engaged in knowledge work - that is work which involves cognitive effort to extract value from knowledge. While Peter Drucker is believed to have pioneered the concept of knowledge work in 1960s, the exact definition of knowledge work has undergone

an evolution from being a job characteristic to a continuum along which work for most employees may vary (Kelloway & Barling, 2000). As raw information becomes easily accessible, a successful knowledge worker must have the capacity to build upon his existing knowledge, and take mental leaps (Trauth, 2000). Choi and Varney (1995) argues that knowledge workers include all people who are well educated, performs non-routine work, and are required to think and make decisions, and such people includes academics, doctors, lawyers, engineers, and scientists. Knowledge work is fundamentally intangible, and only outcomes and behaviours can be observed. The modern worker thus needs to have an accurate assessment of his or her performance on cognitive tasks and this assessment can have far reaching implications for performance at workplace.

Employee Performance measurement

Performance can be seen as criterion measures (Borman & Motowidlo, 1997; Conway 1999; Viswesvaran 1993). Across a number of studies, employees' perceptions of their job performance correlate only weakly with their actual performance whereas, the perceptions of peers and supervisors correlates roughly .62 with their actual performance (Harris & Schaubroeck, 1988). The most prevalent method of evaluation at the workplace is supervisor ratings which is subjective evaluations, usually by the supervisors (on pre-defined criteria). Supervisor ratings have been demonstrated as reliable predictors of performance (Davis, Ford is, Van Harrison, Thorpe & Perrier, L., 2006) especially as compared to self-assessments which is comparatively inaccurate. This inaccuracy of self assessment has been explained through various factors, including deficits in metacognitive abilities (Kruger & Dunning, 1999).



OBJECTIVE

In today's environment, effective performers need to meet ever changing job requirements by learning new tasks, technologies, procedures, and roles (Pulakos, Arad, Donovan & Plamondon, 2000). As such, it is important for them to recognize the limits of their own knowledge and skill at any given point in time, and seek learning opportunities accordingly. If knowledge workers too are impeded a lack of awareness regarding their own skills, it is bound to affect their performance adversely. The first objective of this research is to look for evidence of the Kruger – Dunning effect among knowledge workers. Further, the research seeks to find empirical evidence of the role that metacognitive ability plays in creating the Kruger – Dunning effect at the workplace.

This study also lays the groundwork for examining the specific relationship between metacognitive ability and individual performance among knowledge workers which has not been explored especially in the Indian context, even though Metacognition is a recognized factor affecting several key behaviours that impact the workplace performance.



RESEARCH METHODOLOGY

Participants

The study focused on knowledge workers. Reich (1991) clarified that knowledge

workers are involved in tasks such as research, product design, marketing, advertising, financing, searching and contracting (Blackler, 1995, pp.1027). Their tasks may include non-knowledge work; but are largely made up of knowledge assignments. Since knowledge workers work in an environment where Metacognitive ability is used to understand one's own task vis - a - vis others and task performed by others while working in teams and in groups. So, this study only considered the knowledge workers working at various managerial levels in various organizations as explained in the sample below.



AMPLE

Researchers have contacted professionals working in various knowledge based profiles across twenty organizations to explain the purpose of the research. Purposive sampling was used to choose these twenty organizations in order to maintain diversity of knowledge worker's profile. These organizations included Advertising firms, IT Organizations, Business Consulting Firms, Public Sector Undertakings, Logistic Firms and Chartered Accountancy Firms. With the consent of the competent authorities in each organization, list of managerial level employees (Knowledge worker) was taken and every fifth knowledge worker was chosen using systematic sampling technique. A total of 205 questionnaires were circulated individually and the mentor feedback for each knowledge worker was taken from the immediate reporting boss. Out of 205, one hundred and seventy six (176) complete responses in terms of knowledge worker response and mentor feedback was received which was further subjected to analysis. The respondents profile of the completed responses are as 52% respondents were males, 48% were females. 41% respondents had been working for less than 5 years; 23% had been working for 6-10 years; 11% had been working for 11-20 years; and 35% had been working for more than 20 years at the time of participating in the research. 72% of the respondents were employed in Private companies while 28% were employed in PSUs. 62% of the respondents were graduates, 33% were post graduates and 5% had doctoral degrees. Respondents were involved in profiles such as Advertising (11%); Sales (21%); Design (8%); IT (23%); Business consulting (15%); Logistics (12%); Chartered Accountancy (7%) and Training (3%).



MEASURES USED

Metacognitive Ability

Metacognitive Awareness Inventory for work (Lather, Jain & Bajaj, 2018) was used for measuring metacognitive ability among adult workers. The MAIW (Lather, Jain & Bajaj, 2018) is an adaptation of the MAI (Schraw & Denison, 1994) suited for the Indian knowledge workers. The inventory contains 52 items and follows the two component model of Metacognition as proposed in the original inventory. MAIW has a composite reliability score of .902 and acceptable validity scores (AVE > .05).

Employee Performance

The performance evaluation schedule (PES) (Lather & Jain, 2008) measures employee performance on thirteen criteria. These thirteen performance criteria are Productivity, Fast

Delivery, Error Less Delivery, Discipline, Punctuality, Leadership Qualities, Initiative, Innovation, Knowledge Base, Being a team player, Ready to do Attitude, Crisis Handling, and Going beyond the assigned job. The Cronbach Alpha of the scale is .719 and split half reliability coefficient is 0.722.



RESEARCH PROCESS

The questionnaire was divided into three parts. Part 1 contained 52 items of the Metacognitive Awareness Inventory – Work (MAIW) (Lather, Jain & Bajaj, 2018). Part 2 of the questionnaire contained the Performance Evaluation Schedule (Lather & Jain, 2008). Part 1 and 2 were to be filled to by the respondents themselves. Part 3 of the questionnaire also contained the performance evaluation schedule (PES) (Lather & Jain, 2008) but part 3 of the questionnaire had to be filled in by the respondents' respective mentors. This dual assessment of an individual's performance, once by self and once by the respective mentor was built into the research questionnaire because people with low metacognitive abilities tend to hold overly favorable views of their abilities in many social and intellectual domains (Kruger & Dunning, 1999), which would have impacted their responses on the MAIW which is a self-report inventory that has been used to measure Metacognitive ability of the participants in this research.



RESULTS

Metacognitive ability (MC) has been measured through MAIW, which is a self-report inventory. MC scores are calculated as a sum of the scores on each of 52 items of the inventory. Work Performance has been measured through PES. The score for work performance was calculated by adding the scores on each of the 13 parameters of PES. The scores given by the respondent in the self-appraisal (EPA_S) and the scores given by the respective mentor to each respondent (EPA_M) were examined separately.

We have analysed the inter-rater agreement of the performance scores on PES by the self and the mentor. This inter-rater agreement was examined using weighted Kappa statistic (Kw). Kw is used for measuring agreement between two raters in case of ordered categorical variables, when providing for degrees of agreement/ disagreement. Kw is fully chance corrected, and its value ranges from 0 to 1, with 1 implying complete agreement. The value of Kw was seen to be .44 showing only moderate correlation between performance assessments made by respondents themselves and the assessments made by their respective mentors. This indicated that respondents' own evaluation of their performance was different from their mentor's evaluation of their performance.

As the next step, the relationship between self-appraisal scores and Metacognition scores were analyzed using Pearson's correlation. A correlation of .455 was found between performance scores given by self (EPA_S_Total) and Metacognitive Ability Scores (MC). Thereafter, performance scores given by the respective mentors (EPA_M_Total) and metacognitive ability scores (MC) were analyzed. A correlation of .188 was found between EPA_M_Total scores and MC scores using Pearson's correlation. (See Table 1)

Table 1 : Showing Correlations between Performance Evaluation by Self, Performance Evaluation by Mentor and Metacognitive Ability Score

		EP_Self_Total	EP_Mentor_Total	MC_Total
EP_Self_Total	Pearson Correlation	1	.505**	.455**
	Sig. (2-tailed)		.000	.000
	N	176	176	176
EP_Mentor_Total	Pearson Correlation	.505**	1	.188*
	Sig. (2-tailed)	.000		.013
	N	176	176	176
MC_Total	Pearson Correlation	.455**	.188*	1
	Sig. (2-tailed)	.000	.013	
	N	176	176	176
**. Correlation is significant at the 0.01 level (2-tailed).				
*. Correlation is significant at the 0.05 level (2-tailed).				

Employee performance as reported by the respondent themselves was, thus, seen to correlate positively and significantly with the Metacognitive Ability. However, there was only a very low positive correlation between performance scores given by the mentor (EPA_M) and the respondent's metacognitive ability score (MC). This discrepancy called for further examination. When we compare correlation between mentor reported performance scores and MC scores to the correlation seen between self-report MC scores and self-report performance scores, we see that it decreases sharply. This decrease when viewed together with the result found that there is only moderate agreement among the two raters which indicates the presence of the Kruger – Dunning effect.

The Kruger – Dunning effect suggests that the unskilled tend to overestimate their own performance because they lack metacognitive ability to evaluate themselves accurately. In view of the Kruger – Dunning effect, we went on to examine if the discrepancy in performance evaluation can be explained by their metacognitive ability. We examined the respondents' self-report scores on MAIW. The MAIW asks respondents to self-report the frequency with which they engage in metacognitive behaviours. Respondents who have low metacognitive ability would likely judge themselves to be engaging in such behaviours more frequently than they actually do. Further, the Kruger – Dunning effect predicts that it is the low performers who evaluate their performance on cognitive tasks as being better than it actually is. This tendency to overestimate their skills would also reflect in an exaggerated self-appraisal of their workplace performance. So, it was likely that that respondents who have misjudged their performance, would have also misreported their own metacognitive behaviours.

We wanted to examine if people with inflated reporting of metacognitive behaviours were also likely to rate their performance more favourably as compared to their mentors as predicted by the Kruger – Dunning effect. So, we then compared Self and Mentor Performance scores for each respondent (EPA_S - EPA_M). On the basis of difference between EPA_S and EPA_M scores, respondents fell into one of

five categories –

- (a) mentor rating higher than self
 - (b) same self and mentor rating
 - (c) self-rating 1 step higher than mentor
 - (d) self-rating 2 step higher than mentor
 - (e) self-rating 3 step higher than mentor
- The categories and their mean MC scores are given below

Table 2: Showing Mean Metacognitive Ability Scores according to the Self and Mentor Rating Categories

Category	Mean Metacognitive Ability Score (Self-Assessment)
Mentor rating higher than self	156.65
Same self and mentor rating	163.11
Self rating 1 step higher than mentor	168.13
Self rating 2 step higher than mentor	170.33
Self rating 3 step higher than mentor	191.0

It is evident that the self-report MC scores are increasing in tandem with the tendency to have inflated assessments about one's performance (Figure 1)

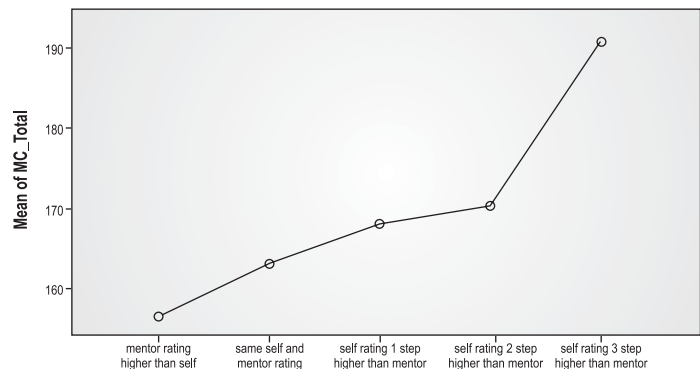


Figure 1: Showing the Mean Scores on Metacognitive Ability as reported by self on Different Categories of Mentor and Self Assessment of Performance

Notably, respondents whose self-rating of their performance was 3 steps higher than their mentor's rating (i.e. they saw themselves as either "High" or "Very High" performers whereas their mentors saw them as either "Very Low" or "Low" performers) had a self-report MC score of 191, which is steeply high in comparison to the scores of employees in the other three categories. The tendency to overestimate the frequency of engagement in metacognitive behaviours is therefore most evident in employees who are poor performers. These are the set of respondents who rate their own performance as "High" or "Very high" while their mentors see them as "Low" or "Very Low" performers. This result provides further empirical proof for the Kruger – Dunning effect demonstrating that the low performers have an inflated assessment of their performance, and are unable to evaluate their cognitive behavior accurately. The results also show that low performers report engaging in metacognitive behaviors with a much higher frequency as compared to the frequency reported by Very High, High or Average performers. This inflation indicates a deficiency in the ability to accurately evaluate their cognitive processes among low performers. And as such, it is the unskilled that are unaware of their lack of skill.

To understand the role metacognitive ability plays in work performance, we divided the respondents into 5 categories based on the performance evaluations given by their respective mentors. These categories were- Very Low, Low, Average, High and Very High performers. There were only two respondents who had been classified as Very Low performers by their respective mentors, so we analyzed only the remaining four categories.

We analyzed if there is any significant difference in the MC scores of the respondents in the four categories using ANOVA. The test was significant, indicating that at least one of the four groups varied significantly from the others on their mean MC scores (Table 3).

Table 3: Showing Analysis of Variance on Metacognitive Ability Scores of respondents falling in Four Categories According to their Performance Evaluation by Mentors.

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	11688.862	2	5844.431	13.920	.000
Within Groups	72634.388	173	419.852		
Total	84323.250	175			

In order to investigate the pair-wise difference, the Duncan test for pair wise comparison which adjusts for multiple comparisons was used. The results showed that there was no significant difference in the mean MC scores of Average, High and Very High performers. However, there was a significant difference in the mean MC scores of Low Performers when compared to the other three groups. Interestingly, respondents who were rated as "Low Performers" by their mentors had the highest scores on the self-report inventory measuring Metacognition (Table 4).

Further assessment of the means and standard deviations of the metacognitive ability scores (M= 164, SD= 21) show that the individuals falling in the category where the difference in self and mentor ratings is 3 steps report engaging in

Table 4: Showing Pair-Wise comparison on the Mean Scores of Metacognitive Ability of Respondents falling in Four Categories According to their Performance Evaluation by Mentors.

EP_Mentor_Cat	N	Subset for alpha=0.05	
		1	2
Average EP	39	156.46	
High EP	61	165.21	165.21
very High EP	72	166.58	166.58
Low EP	4		178.00
Sig.		.264	.157

metacognitive behaviours with a much higher frequency (M = 191 > 185 (164(M) + 21(SD))) such that their MC scores are higher than one standard deviation from the mean scores on the scale. This indicates that the individuals who are assessing themselves correctly are likely to have scores lying within the + 1 standard deviation from the mean scores (164 (Mean) +21 (SD)) on MAIW. Respondents having inflated assessment of their own metacognitive ability have MC scores that lie above one standard deviation of the mean scores on MAIW. These results indicate a need for range bound interpretation of metacognitive ability scores on self report inventories.



DISCUSSION & CONCLUSION

We are in an era where most employees are expected to engage in knowledge work, and their capacity to learn and re-learn is of critical importance to their work performance. Modern day employees who are expected to continually adapt to fast changing business environment need to be aware of

what do they know and how do they learn. As such, accurate self-assessment and metacognitive ability is likely to play an important role in overall workplace performance. Measuring metacognitive ability on a large scale presents a unique challenge. While self-report inventories are an accepted method for measuring metacognitive ability when dealing with large number of respondents, it presents a conundrum. The very nature of self-report inventories is such that they ask the respondents to report the frequency with which a respondent engages in metacognitive behaviours. In itself, this presents a paradox, because people who have low metacognitive ability are unable to evaluate their own cognitive processes, and are most likely to misreport their cognitive behaviours in a self-report instrument such as MAIW. This phenomenon, that the unskilled suffer from a dual

burden, first of the lack of skill, and second the incapability to evaluate their own performance correctly as was first articulated by Kruger & Dunning in 1999.

Our results showed support for Kruger- Dunning effect in case of knowledge workers, and we saw that people who were categorized as “low performers” by their mentors rated themselves as either “high” or “very high” performers. The results supported the Kruger Dunning hypothesis that the unskilled are likely to evaluate their performance as better than it is. Further, our results also showed that these “low performers” tend to over – report the frequency with which they engage in metacognitive behaviors. Once again, this inaccurate evaluation of one's cognitive processes points to low metacognitive ability among poor performers” as predicted by the Kruger Dunning effect.



MANAGERIAL IMPLICATIONS

The paper provided evidence that the poor performers among knowledge workers tend to have an inflated assessment of their

performance at work and of their own metacognitive behaviours. As such, our results support the Kruger - Dunning effect at the workplace.

Also, the paper makes a case for range bound interpretations of self report instruments measuring metacognitive ability.

The results of the study suggest that low performers at the workplace may benefit from metacognitive skills' training which will strengthen their ability to evaluate their own cognitive behaviours accurately.



LIMITATIONS

The study included a small sample (N=176). Organizational and managerial factors affecting the discrepancy in performance assessment were not considered during analysis.

REFERENCES

- i. Alicke, M. D., Klotz, M. L., Breitenbecher, D. L., Yurak, T. J., & Vredenburg, D. S. (1995). *Personal contact, individuation, and the better-than-average effect*. *Journal of Personality and Social Psychology*, 68, 804–825.
- ii. Bartha, K., & Carroll, M. (2007). *Metacognitive training aids decision making*. *Australian Journal of Psychology*, 59, 64–69.
- iii. Blackler, F. (1995). *Knowledge, knowledge work and organizations: an overview and interpretation*. *Organization Studies* 16(6), 1020.
- iv. Borman, W. C., & Motowidlo, S. J. (1997). *Task performance and contextual performance: The meaning for personnel selection research*. *Human Performance*, 10, 99–109
- v. Brown, A. L. (1978). *Knowing When, Where and How to Remember: A Problem of metacognition*, In R. Glaser (Ed.). *Advances in Instructional Psychology* (pp. 77–165). Hillsdale, NJ: Lawrence Erlbaum.
- vi. Brown, G. T., & Harris, L. R. (2014). *The future of self-assessment in classroom Practice: Reframing self-assessment as a core competency*. *Frontline Learning Research*, 2 (1), 22-30
- vii. Burke, L., Hutchins, H. (2007). *Training Transfer: An Integrative Literature Review*. *Human Resource Development Review*, 6(3), 263–296.
- viii. Choi, T.Y. and Varney, G.H. (1995), “Rethinking knowledge workers: where have all the workers gone?”, *Organization Development Journal*, 13(2), pp. 41-50
- ix. Choy, S. C., & Cheah, P. K. (2009). *Teacher perceptions of critical thinking among students and its influence on higher education*. *International Journal of Teaching and Learning in Higher Education*, 20(2), 198–206
- x. Chua, R. Y., Morris, M. W., & Mor, S. (2012). *Collaborating across cultures: Cultural metacognition and affect-based trust in creative collaboration*. *Organizational Behaviour and human decision processes*, 118(2), 116–131.
- xi. Conway, J. M. (1999). *Distinguishing contextual performance from task performance for managerial jobs*. *Journal of Applied Psychology*, 84(1), 3.
- xii. Davis, D. A., Mazmanian, P. E., Fordis, M., Van Harrison, R., Thorpe K. E., & Perrier, L. (2006). *Accuracy of physician self-assessment compared with observed measures of competence*. *The Journal of the American Medicine Association*, 296, 1094-1102
- xiii. Dawson, T. L. (2008). *Metacognition and learning in adulthood (Prepared in response to tasking from ODNI/CHCO/IC Leadership Development Office, Developmental Testing Service, LLC)* Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.483.6043&rep=rep1&>
- xiv. Dierdorff, E. C. & Ellington, J. K. (2012). *Members Matter in Team Training: Multilevel and Longitudinal Relationships between Goal Orientation, Self-Regulation, and Team Outcomes*. *Personnel Psychology*, 65(3), 661-703.
- xv. Drucker, P. E. (1999). *Knowledge-worker productivity: The biggest challenge*. *California Management Review*, 41(2), 79-94.
- xvi. Dunning, D., Johnson, K., Ehrlinger, J., and Kruger, J. (2003) *Why people fail to recognize their own incompetence*. *Current Directions in Psychological Science* 12(3), 83-87.
- xvii. Edwards, R. K., Kellner, K. R., Siström, C. L., & Magyari, E. J. (2003). *Medical student self-assessment of performance on an obstetrics and gynecology clerkship*. *American journal of obstetrics and gynecology*, 188(4), 1078-1082.
- xviii. Enos, M. D., Kehrnhahn, M. T., & Bell, A. (2003). *Informal learning and the transfer of learning: How managers develop proficiency*. *Human Resource Development Quarterly*, 14(4), 369–387
- xix. Entin, E. & Entin, E. (2000). *Communication Overhead: Assessing team situation awareness in simulated military missions*. *Proceedings of the International Ergonomics Association*, 73-76
- xx. Ehrlinger, J., Johnson, K., Banner, M., Dunning, D., & Kruger, J. (2008). *Why the unskilled are unaware: Further explorations of (absent) self-insight among the incompetent*. *Organizational Behaviour And Human Decision Processes*, 105(1), 98-121.
- xxi. Everson, H. T., & Tobias, S. (1998). *The ability to estimate knowledge and performance in college: A Metacognitive Analysis*. *Instructional Science*, 26, 65–79
- xxii. Flavell, J. H. (1979). *Metacognitive and Cognitive Monitoring: A New Area of Cognitive- Developmental Inquiry*. *American Psychologist*, 34, 906–911

- xxiii. Ford, K., Kraiger, K., & Merritt, S.M. (2010). *An updated review of the multidimensionality of training outcomes: New directions for training evaluation research*. In S.W. Kozlowski & E. Salas (Eds.), *Learning, training, and development in organizations* (pp. 135–165). New York: Taylor & Francis
- xxiv. Frith, C. D. (2012). *The role of metacognition in human social interactions*. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 367(1599), 2213–2223.
- xxv. Gibbs, S., Moore, K., Steel, G., & McKinnon, A. (2017). *The Dunning-Kruger effect in a workplace computing setting*. *Computers in Human Behavior*, 72, 589–595.
- xxvi. Gravill, J., Compeau, D., & Marcolin, B. (2002). *Metacognition and IT: The influence of self-efficacy and self-awareness*. *AMCIS 2002 Proceedings*, 147.
- xxvii. Greene, J.O. (2003). *Models of adult communication skill acquisition: Practice and the course of performance improvement*. In J.O. Greene & B.R. Bureson (Eds.), *Handbook of Communication and Social Interaction Skills* (pp. 51–91). Mahwah, NJ: Lawrence Erlbaum.
- xxviii. ,D.J., Dunlosky, J., & Graesser, A.C. (Eds.) (2009). *Handbook of Metacognition In Education*. New York, NY: Routledge.
- xxix. Harris, M. M., & Schaubroeck, J. (1988). *A meta-analysis of self-supervisor, self-peer, and peer-supervisor ratings*. *Personnel Psychology*, 41(1), 43–62.
- xxx. Hart, J. T. 1965. *Memory and the feeling of knowing experience*. *Journal of Educational Psychology* 56, 208–216.
- xxxi. Haun, D.E., Zeringue, A., Leach, A., & Foley, A. (2000). *Assessing the competence of specimen-processing personnel*. *Laboratory Medicine*, 31, 633–637
- xxxii. Hodges, B., Regehr, G., & Martin, D. (2001). *Difficulties in recognizing one's own incompetence: Novice physicians who are unskilled and un-aware of it*. *Academic Medicine*, 76, S87–S89
- xxxiii. Kelloway, E. K., & Barling, J. (2000). *Knowledge work as organizational behaviour*. *International Journal Of Management Reviews*, 2(3), 287–304.
- xxxiv. Kruger, J., & Dunning, D. (1999). *Unskilled and unaware of it: how difficulties in recognizing one's own incompetence lead to inflated self-assessments*. *Journal of personality and social psychology*, 77(6), 1121.
- xxxv. Kuhn, D. & Dean, D. (2004). *A bridge between cognitive psychology and educational practice*. *Theory into Practice*, 43(4), 268–273.
- xxxvi. Lee, C. B., & Teo, T. (2011). *Shifting pre-service teachers' metacognition through problem solving*. *Asia-Pacific Education Researcher*, 20(3), 570–578.
- xxxvii. Lather A., Jain S (2008) . *Performance Evaluation Schedule (Unpublished)*
- xxxviii. Lather A., Jain S, & Bajaj B. (2018) *Metacognition Awareness Inventory: Adaptation for Indian Working Professionals*. *Journal of the Indian Academy of Applied Psychology*, 44(2), In print
- xxxix. Magno, C. (2010). *The role of metacognitive skills in developing critical thinking*. *Metacognition and Learning*, 5(2), 137–156.
- xl. McCarthy, A., & Garavan, T. N. (2008). *Team learning and metacognition: A neglected area of HRD research and practice*. *Advances in Developing Human Resources*, 10(4), 509–524.
- xli. Nonose, K., Kanno, T., & Furuta, K. (2014). *Effects of metacognition in cooperation on team behaviors*. *Cognition, Technology, Work*, 16(3), 349–358.
- xlii. Oh, H. K. (2016). *Impact Of Metacognitive Ability On Learning Achievement And Skill Performance In Nursing Simulation Learning*. *Advanced Science And Technology Letters*, 128, 83–88.)
- i. Panadero, E., Brown, G. T. L., & Strijbos, J. (2016). *The future of student self- assessment: A review of known unknowns and potential directions*, *Educational Psychology Review*, 28(4)
- xliii. Paris, S. G. & Winogard, P (1990). "How Metacognition can Promote Academic Learning and Instruction". In B. E Jones and L. Idol (Eds.). *Dimensions of Thinking and Cognitive Instruction* (pp. 15–51). Hillsdale, NJ: Lawrence Erlbaum.
- xliv. Peters, E. E. (2007). *The Effect of Nature of Science Metacognitive Prompts on Science Students' Content and Nature of Science Knowledge, Metacognition, and Self-Regulatory Efficacy* (Doctoral Dissertation), Graduate Faculty of George Mason University, Fairfax, VA
- xlv. Piaget, J. (1950). *The psychology of intelligence*. London, UK: Routledge and Kegan Paul.
- xlvi. Pulakos, E. D., Arad, S., Donovan, M. A., & Plamondon, K. E. (2000). *Adaptability in the workplace: Development of a taxonomy of adaptive performance*. *Journal of Applied Psychology*, 85, 612–624.
- xlvii. Rhodes, J., Lok, P., & Sadeghinejad, Z. (2016). *The Impact of Metacognitive Knowledge and Experience on Top Management Team Diversity and Small to Medium Enterprises Performance*. *World Academy of Science, Engineering and Technology, International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*, 10(8), 2842–2846
- xlviii. Reich, R. (1991). *The work of nations: Preparing ourselves for 21st-century capitalism*. London: Simon and Schuster
- xliv. Schmidt, A. M., & Ford, J. K. (2003). *Learning within a learner control training environment: The interactive effects of goal orientation and metacognitive instruction on learning outcomes*. *Personnel Psychology*, 56(2), 405–429.
- l. Schraw, G. (1998). *Promoting general metacognitive awareness*. *Instructional science*, 26(1-2), 113–125.
- li. Schraw, G. & Denison, R. S. (1994). *Assessing metacognitive awareness*. *Contemporary Educational Psychology*, 19, 460–475.
- lii. Schraw, G. & Moshman, D. (1995). *Metacognitive theories*. *Educational Psychology Review*, 7(4), 351–371.
- liii. Schraw, G., Crippen., K. J., & Hartley, K. (2006). *Promoting Self-Regulation in Science Education: Meatacognition as Part of a Broader Perspective on Learning*. *Research in Science Education* 36(1-2), 111–139.
- liiv. Sigler EA, Tallent-Runnels MK (2006). *Examining the validity of scores from an instrument designed to measure metacognition of problem solving*. *The Journal of General Psychology*; 133, 257–276.
- liv. Sungur, S. & Senler, B. (2009). *An analysis of Turkish high school students' metacognition and motivation*. *Educational Research and Evaluation*, 15(1), 45–62.
- lvi. Steinbach, J. C. (2008). *The Effect of Metacognitive Strategy Instuction on Writing*. (Doctoral Dissertation). The Graduate School of University of Kentucky, Lexington, KY:
- lvii. Swanson, H. L. (1990). *Influence of Metacognitive Knowledge and Aptitude on Problem Solving*. *Journal of Educational Psychology*, 82(2), 306–667.
- lviii. Trauth, E.M. (2000). *The Culture of an Information Economy: Influences and Impacts in the Republic of Ireland*, Kluwer, Dordrecht

- lix. Tsai, C. (2001). *A Review and Discussion of Epistemological Commitments, Metacognition, and Critical Thinking with Suggestion on Their Enhancement in Internet-Assisted Chemistry Classrooms*. *Journal of Chemical Education*, 78(7), 970-974.
- lx. Viswesvaran, C. (1993). *Modeling job performance: Is there a general factor?* IowaUniviowaCity.
- lxi. Vygotsky, L. (1962). *Studies in communication. Thought and language* (E. Hanfmann&G.Vakar, Eds.). Cambridge, MA, US: MIT Press
- lxii. Wells, A. (2005). *Detached mindfulness in cognitive therapy: A metacognitive analysis and ten techniques*. *Journal of Rational-Emotive and Cognitive-Behavior Therapy*, 23(4), 337-355
- lxiii. Whitebread, D., Coltman, P., Pasternak, D. P., Sangster, C., Grau, V., Bingham, S., Almeqdad, Q., &Demetriou, D. (2009). *The development of two observational tools for assessing metacognition and self-regulated learning in young children*. *Metacognition and Learning*, 4(1), 63-85.
- lxiv. Woolley, A. W., Chabris, C. F., Pentland, A., Hashmi, N., & Malone, T. W. (2010). *Evidence for a collective intelligence factor in the performance of human groups*. *Science*, 330(6004), 686-688.
- lxv. Veenman, M.V.J., Kok, R., &Blote, A.W. (2004). *The Relation between Intellectual and Metacognitive Skills in Early Adolescence*. *Instructional Science*,

Study of Employee Engagement in Manufacturing Sector in NCR in Selected Industries

*Dr. Harsh Vardhan Kothari

**Ms. Tanya Chatwal

***Dr. Pratiksha Tiwari

ABSTRACT

Academicians have observed that employee engagement is an important determinant for long-term success of a business organization. Despite the significant academic interest in empowerment, organizational climate, self-efficacy and employee engagement, there is a relative shortage of academic literature examining the impacts of empowerment, organizational climate, and self-efficacy on employee engagement in the Indian context. In this context, current study strived to render deep insights into the relationships among these constructs in Indian context in Manufacturing Companies. The main objective of the research was to study empowerment, organizational climate and self-efficacy as predictors of employee engagement across Manufacturing Sector in an integrated model. Population for this study consisted of employees working in Manufacturing Sector in National Capital Region of India. The National Capital Region of India comprises of Delhi, Gurgaon, Noida, Greater Noida, and Ghaziabad. It was established through this descriptive research study that psychological empowerment derived through feeling of meaningfulness of work and feeling of creating impact on work lead to Employee Engagement. The other influential factor which leads to employee engagement is Leadership Empowerment of employees.

Key Words: employee engagement, empowerment, organizational climate, self- efficacy, psychological empowerment, leadership empowerment.

*Professor, Delhi Institute of Advanced Studies, Delhi, India

**Assistant Professor, Delhi Institute of Advanced Studies, Delhi, India

***Assistant Professor, Delhi Institute of Advanced Studies, Delhi, India





INTRODUCTION

Employees are an indispensable part for the successful functioning of a business organization. They contribute largely to the success of the organization. It has been observed in past studies that employee dissatisfaction leads to high labour turnover ratio and this needs serious attention. Therefore, it becomes imperative for the top management to satisfy all their employees and keep them highly engaged giving them a sense of belongingness by providing them with ample trainings and opportunities for growth.

Employee engagement is defined in various ways. In simple words, it can be understood as the extent to which employees are happy and passionate about their jobs and feel satisfied that their efforts are being appreciated and rewarded satisfactorily. Highly engaged employees feel that they are an important part of the organization. For having engaged employees, it is necessary that employees should believe that they are doing meaningful and impactful work. Employee engagement can be achieved by creating a congenial working environment in business organizations wherein employees feel highly motivated, produce results that match with the targets and wish to continue in the organization in the long run.

Employee engagement bears a direct influence on the employee's commitment, dedication, loyalty, faithfulness and retention. An engaged and motivated employee generally performs according to the expectations from him/her and stays focused and dedicated and is highly instrumental in achieving the goals of the organization. In return, the business organization benefits from the loyalty and high productivity of its employees and less attrition rate.

Dimensions of Employee Engagement

Vigor, Dedication, and Absorption

Schaufeli & Salanova (2007) said engagement involves high levels of energy and identification with one's work, they stated engagement as "a positive, fulfilling, work-related state of mind characterized by vigor, dedication, and absorption".

Vigor:

Shirom (2003) defined vigor as the feeling of physical strength, affecting energy, and cognitive liveliness.

Dedication-

Dedication is having a positive attachment to the larger organizational body and readiness to make use of energy in support of the organization, to feel pride as an organizational member, and to have personal identification with the organization (Macey & Schneider 2008).

Absorption:

Kahn (1992) explained on the concept of engagement that a true psychological presence at work goes beyond simple task motivation. Absorption is a psychological state in which individuals feel completely absorbed in their activity (Csikszentmihalyi, 2000).

Psychological Dimension of Engagement (Kahn, 1990, 1992)

Psychological Presence

Kahn (1990, 1992) argued that engagement culminates from a state called psychological presence--a state in which the authentic, true facets of the self can be fully expressed.

Meaningfulness of Work:

According to Kahn (1990) when employees experience a sense of meaning in their work, this presence or engagement is more likely to ensue. For studying antecedents of meaningfulness of work, Rich et al. (2010) through their study found out that value congruence presumably represents the extent to which the job seems significant.

Psychological Safety:

Engagement surfaces when employees feel that problems or hard times are either unlikely or manageable. (Kahn, 1990).

Psychological Availability:

Core self evaluations represent confidence, increasing the likelihood that individuals feel willing and prepared to spend themselves into the role, called availability (Rich et al., 2010).

The Job Demands-Resources Dimension

According to the job demands-resources model job demands, like high levels of pressure, undue expectations and conflicting requirements, may also lead to unbearable stress leading to burnout. (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004).

Opposite to above job resources, including autonomy, support, and feedback, can all foster engagement as well as help to get rid of the adverse consequences of undue job demands (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004). Supervisor support, appreciation, information, job control, climate and innovation, the various resources were also associated to engagement (Bakker & Demerouti, 2007).

The following constructs are described in detail in literature as determinants of employee engagement:

Self-efficacy

Self-Efficacy can be understood as the conviction of a person in his/her own abilities. It is a popular term in the field of psychology. It is the belief of a person in oneself that helps him/her in facing all the challenges in a task and succeed in it. In simple words, self-efficacy reflects a person's self-worth. Various studies have shown that it is one of the important determinants for employee engagement in business organizations.

Psychological Empowerment

Psychological Empowerment is a psychological feeling. It reflects how happy an employee of an organization feels with the organization. The psychological approach focuses on intrinsic motivation rather than on managerial practices used to increase individuals' levels of power. Psychological

empowerment, in this instance, depends on the creation of conditions appropriate for heightening motivation for task accomplishment through the development of a strong sense of personal efficacy. Psychological empowerment is found to be one of the most important determinants of Employee Engagement in many Research Studies. Psychological Empowerment consists of meaningfulness of work, self efficacy, impact created by one's working, and self determination of work by the person's ownself.

Leadership Empowerment

Leadership Empowerment can be defined by the redistribution, or devolution, of decision-making power to those who do not currently have it and gives employees the power to do the job their positions demands. It is about providing some form of leadership to employees in a business organization by giving the employees participatory roles. Overall, it creates a positive conducive working environment in an organization which directly and positively affects the engagement of employees.

Organizational Climate

Organizational Climate, also known as corporate climate, is a set of attributes which decide the working conditions in a business organization. It plays an important role in the working of the organization. It decides how the business organization deals with its employees and other stakeholders. In simple words, organizational climate is the internal environment of the organization in which it operates. A good organizational climate lifts up the motivation level of employees. Though, it is internal to the organization, it helps the organization to face the challenges of the external environment.



LITERATURE REVIEW

From the above discussion we found that the constructs of self efficacy, Psychological Empowerment, Leadership Empowerment, and Organizational Climate encompasses concepts of Psychological Presence, Meaningfulness of Work, Psychological Safety, Psychological Availability, and The Job Demands-Resources Dimensions of Employee Engagement.

Therefore, further Literature review was carried on four important factors in determining employee engagement is as following:

Employee Engagement

Evolution of Concept of Employee Engagement

Kahn (1990) said the Employee Engagement as "the harnessing of organization members' selves to their work roles; in engagement, people work and express themselves bodily, mentally, and emotionally during their role performances".

Employee engagement as defined by Maslach et al. (2001) have proposed that engagement can be characterized by energy, involvement and efficacy. Luthans & Peterson (2002) and Schaufeli et al. (2002) explained employee engagement as

"a constructive fulfilling, work related state of mind that is categorized by vigor, dedication and absorption". Hewitt Associates (2004) put it as an attitude which shapes the employees desire to act as ambassadors of the organization, stay in the organization and stretch beyond expected by the organization. Robinson et al. (2004), defined "engagement as a positive reflection towards the organizational goals and values.

Macey & Schneider (2008) distinguished three broad conceptualizations of employee engagement, namely: state, trait and behavioral engagement. They proposed that engagement is sometimes defined on the basis of what it 'is' (psychological state), while on other occasions on the basis of the behaviors it produces, and sometimes as a disposition or attitude towards one's work (trait). Sarkar (2011) stated that employee engagement helps to gauge and determine the extent and type of association an employee has with the organization. Another way of looking at employee engagement is a combination of both individual and organizational engagement Sakes (2006), states that demonstrating varying degrees of engagement is a way for individuals to pay back their organization for the economic and socio-emotional resources they receive from it.

Further discussion about nature of Employee Engagement:

According to Wagner & Harter, 2006; Kahn, 1990, highly engaged employees develop a strong connection- both psychological and emotional- with the business organization.

Sakes (2006) emphasize on the importance of employee engagement and states the various degrees of engaging employees to fulfill their social, economic, psychological and economic wishes.

Shuck & Wollard (2010) defined employee engagement as a means and tool for achieving the stated organizational goals. They stated the importance of achieving the right behavioural and emotional mindset of employees to motivate them to work hard in order to achieve organizational goals.

Srivastava & Madan (2018) studied employee engagement in Indian Context and emphasized on the importance of engaging employees more by empowering them so that there are less labour turnover intentions amongst employees.

Self-Efficacy

Self-Efficacy reflects conviction of an employee in his or her own abilities. It portrays that an employee has a self-belief that he or she can perform well in difficult situations or tasks and achieve organizational goals (Schwarzer & Jerusalem, 1995).

Self-efficacy results from the acquisition of cognitive, social, physical skills or linguistic, through personal and/or vicarious experience (Bandura, 1982). Individuals synthesize and evaluate this information about their task abilities and make decisions about choice of action, level of effort and duration of persistence for subsequent task activities (Bandura and Cervone, 1986).

Efficacy beliefs also helps to determine how much effort people will expend on an activity, how long they will persevere

when they deal with the obstacles and how resilient they will be in the face of unfavourable situations (Schunk, 1981; Schunk, Hanson, & Cox, 1987; Schunk & Hanson, 1985).

Bandura (2000) had provided three specific approaches to develop self-efficacies, which he calls 1) guided mastery: which includes guided skill perfection and transfer back to job, 2) cognitive mastery modelling: that is about learning thinking skills and how to apply them and able to arrive at solutions to problems and make effective decisions, 3) development of self-discipline competencies like self-motivation, and self-management.

Self Efficacy and Employee Engagement:

According to Judge et al. (2004) Individuals who perceive themselves positively are more likely to pursue roles that align to their values are called as, self-concordance, and promotes intrinsic motivation and which in turn leads to Employee Engagement. Bakker et al. (2008) findings were that self-efficacy and optimism makes a unique contribution to explain the variance in work engagement over time and found out that personal resources have a stronger impact on the work engagement than other job resources. The positive influences of self-efficacy have been well documented and strong empirical support exists for the effects of self-efficacy on Employee Engagement and in turn the performance.

Pati & Kumar (2010) studied Self Efficacy impact on Employee Engagement and found out that positive correlation exists between the two. In this study, two dimensions were studied in depth-Perceived Organizational Support (POS) and Occupational Self Efficacy (OSE). It was observed that Perceived Organizational Support (POS) had a moderate impact on the dedication levels of the employees while Occupational Self Efficacy (OSE) had a moderate impact on the vigor and absorption of employees. Employees feel dedicated towards work with Perceived Organizational Support (POS) and they believe that they are worthy of achieving organizational goals with Occupational Self-Efficacy.

Self-efficacy is an important variable which determines an individual's willingness to embrace and welcome learning, change and development (Bandura 1997, Bandura & Locke 2003).

Chaudhary et al. (2012) conducted research on HRD Climate and Occupational Self-efficacy as the predictors of Employee Engagement on managers from the Manufacturing & Service Business Organizations in India. It was found that occupational self-efficacy has a direct impact on employee engagement. Further, it was observed that the climate for developing Human Resource has a moderate impact on employee engagement.

Various research studies done on employee engagement reflect that self-efficacy is an important determinant and predictor of work engagement (Harju et al., 2016). Further it has been observed that high self-efficacy is instrumental in forming perceptions about the social context at the workplace in a positive manner, thus enhancing employee engagement at work (Harju et al., 2016).

Employee Empowerment

Employee Empowerment is studied in two different perspectives: (i) Leadership Empowerment (also known as Structural Empowerment) and (ii) Psychological Empowerment.

Leadership Empowerment lays emphasis on the management practices and leadership position in business organizations while the Psychological Empowerment concentrates on the psychological strength of employees in business organizations.

Psychological Empowerment

Psychological Empowerment infers to the perceptions of employees of their mental strength to cope up with the difficulties and the adverse circumstances (Thomas & Velthouse, 1990).

Kahn (1992) reflected on the importance of psychological availability. Psychological availability is the willingness of an employee to engage in a task at a moment. It is the confidence level of an employee in his/her own capabilities that he/she feels ready to engage in any work or task.

It can also be defined as an individual's level of intrinsic motivation in regard to their role (Spreitzer, 1995).

Evolution of Psychological Empowerment

In the literature initially, the concept of empowerment was part of concept of power. Empowerment is defined as having power in the organization (Burke, 1986). Empowerment was subsequently viewed as a relational construct (Conger and Kanungo, 1988; 1989). Conger and Kanungo (1988) developed this view point; they equated empowerment with a sense of self-efficacy. Thomas and Velthouse (1990) expand on Conger and Kanungo's (1988) framework in a cognitive model of task empowerment by suggesting improvements. They specified a conceptualization of empowerment; self-efficacy is supplemented with three additional cognitive variables (called task assessments) that improve the intrinsic motivation of the individuals.

Thomas and Velthouse's (1990) model depicted empowerment as based in four cognitions, or "task assessments", that affected a person's intrinsic motivation for the job one is doing. Elements of the work environment affected these task assessments, which in turn affected whether the individual acted in the empowered manner. These four psychological dimensions of empowerment were impact, competence, meaningfulness, and choice. According to Thomas and Velthouse (1990), impact is "the scale to which behavior is seen as making a difference in terms of accomplishing the purpose of the task"; competence is "the measure to which a person can perform task activities skillfully when he or she tries"; meaningfulness "involves the individual's inherent caring about a given task"; and choice "involves causal responsibility for a person's actions".

Spreitzer (1995) built upon Thomas and Velthouse's (1990) model and defined meaning as "the value of a work goal or purpose, judged in relation to an individual's own ideals or

standards", competence as "an individual's conviction in his or her capacity to perform activities with skillfulness, self-determination (referred to as "choice" by Thomas and Velthouse) as reflected in "to do work as per one's own way in the beginning and continuance of work behaviours and processes" and ' impact as "the degree to which an individual can influence strategic, administrative or operating outcomes at work"

Psychological Empowerment and Employee Engagement, Leadership Empowerment and Psychological Empowerment, the other similar constructs, and role of Psychological Empowerment:

According to Thomas and Velthouse (1990) the various results of psychological empowerment are initiative, energy, action, determination and toughness.

Onyishiet al. (2012) conducted a research by linking organizational trust with employee engagement and what role psychological empowerment plays in determining employee engagement. The findings were both "organizational trust" as well as "psychological empowerment" have direct and positive impact on employee engagement. Also, psychological empowerment determines how employees perceive organizational trust. Employees with higher psychological empowerment and organizational trust will showcase higher levels of employee engagement.

Quiñonesa et al. (2013) studied about whether job resources affect work engagement via psychological empowerment. The study established that psychological empowerment mediates the associations between job resources namely (psychological task autonomy, skill utilization, and social support) and work engagement. The study also established that well being at work depends on psychological empowerment, core self-evaluations and emotional intelligence apart from Psy Cap variables (i.e., optimism, efficacy, hope, and resilience).

Rayan et al. (2018) found that empowering leadership and psychological empowerment are positively correlated. If an organization wants managers to feel psychologically empowered, then they need to give managers more authority. At the same time, leadership empowerment has a direct impact on work engagement which is improved with psychological empowerment.

Leadership Empowerment

Leadership Empowerment is about giving employees the power to do the job that their positions demand. The following is discussion of various dimensions of Leadership Empowerment.

According to Johnson (1994), leadership empowerment behaviour creates an environment that promotes success, because employees are empowered through greater responsibility, decision-making authority, feedback, and information as well as motivation, support and encouragement.

According to Konczak et al. (2000), leadership empowerment behavior includes six dimensions: accountability for

outcomes, delegation of authority, self-directed decision making, information sharing, coaching for innovative performance, and skill development. Delegation of authority involves that the leader grant power to the subordinates. Coaching for performance is related to behaviour that supports calculated risk-taking and new ideas and that provides performance feedback to employees, treating their mistakes and losses as opportunities to learn from it (Konczak et al., 2000). A supportive leader is a leader who provides positive feedback, displays concerns for employees' feelings, and needs and encourages employees to voice their concerns, who solves their work-related problems and develops employees' skills and their interest in their work (May et al., 2004; Ryan & Deci, 2001).

Various facets of Leadership Empowerment and its relation with Employee Engagement, Psychological Empowerment, job satisfaction, and other related literature survey:

Seibert et al. (2011) stated the importance of empowerment of leadership driven by the delegation of decision-making power.

Van Schalkwyk et al. (2010) researched on job insecurity, leadership empowerment behavior, employee engagement and intentions of employees to quit organizations in a petrochemical laboratory. It was observed that job security had only little impact on employee engagement and employee dissatisfaction, however, leadership empowerment was a big determinant for employee engagement and job satisfaction.

Zhang & Bartol (2010) stated that the leaders differentiate between subordinates, by giving them different powers, and enabling them to do different tasks.

Amundsen & Martinsen (2015) in their study found that Empowering Leadership have positive relationship to self-leadership and psychological empowerment, job satisfaction, work effort, creativity, and performance. The two Empowering Leadership dimensions are power sharing and motivational support.

Saad et al. (2018) researched on the influence of Leadership style, Personality attributes and Employee Communication on Employee Engagement and concluded that the employees occupying higher positions were more engaged and committed towards work than those at the lower positions.

Organizational Climate

Organizational Climate is a concept that reflects how employee perceives their working environment which influences and motivates them. It can be defined as the psychological atmosphere for employees. It plays an important role in determining the level of motivation and commitment amongst employees.

Organizational Climate at the work place having characteristics of Supportive management involves giving employees greater control over their work efforts and how they achieve their job goals (Brown and Leigh, 1996). Supportive management may indicate that managers trust their employees and have confidence in employees' abilities to carry out their jobs and should potentially create pleasurable

emotional state resulting from the appraisal of one's job as achieving or facilitating the achievement of one's job values (Locke, 1969).

According to James et al. (1990) and Brown and Leigh (1996), perceptions of the organizational environment take on personal meaning for employees, in which a cognitive depiction of the characteristics of the environment is interpreted in terms of the individual's values. According to Gilson & James (2002), climate reflects employees' perceptions of and emotional responses to, the characteristics of the work environment.

Guzzo & Noonan (1994) found that Organizations' policies and practices (e.g. HR practices), that define the functional aspect of the organizational structure and directly influences the effectiveness of four structural empowerment dimensions namely opportunity, support, resources and information

Locke (1969) stated that Supportive management indicate that managers trust their employees and have confidence in employees' abilities to do their jobs and potentially create a pleasurable emotional state by the appraisal of one's job as for the achievement of one's job values.

Brown & Leigh (1996) stated that supportive management as a major characteristic of employees' psychological safety in the workplace and found that supportive management gives employees greater control over their efforts for doing work and the way they achieve their job goals.

Organizational Climate relations with Employee Engagement and other positive attitudes.

Singh (2000) found that, if boss supports front line employees, they perceived their roles to be less stressful and their fatigue from work is reduced, and their performance as well as perceived commitment levels were increased. Thoits (1995) stated that in service organization settings, a supportive environment would build commitment, reduce turnover intentions and increase performance

Sarangi & Srivastava (2012) studied the impact of Organizational Culture and Communication on Employee Engagement in Indian Private Banks and observed that organizational culture and employee engagement as well as organizational communication and employee engagement are significantly correlated.

Shuck & Reio (2014) conducted a research study on the Human Resource Development Practices and employee engagement and examined its connection with employee turnover intentions. It was observed that good Human Resource Development practices have a positive impact on employee engagement and are negatively correlated with employee turnover intentions.

Ladyshevsky & Taplin (2018) conducted a study on the relationship between Organizational Learning Culture, and Self-Efficacy. The Manager as Coach and Workload on Employee Work Engagement has observed that positive managerial role and skills leads to a congenial working climate in the organization leading to better employee engagement.

Research Gap:

The literature review was carried to know about role of various constructs which impact Employee Engagement. It was found, that in literature, the all four constructs - Self Efficacy, Psychological Empowerment, Leadership Empowerment, and Organization Climate have impact on Employee Engagement severally, and also in combination of two or more of the above constructs, therefore all four were selected. The previous studies neither covered entire NCR nor breadth of the Companies and therefore, the need of the study was felt. Also, none of previous studies took into account the combination of these four constructs to find the impact on employee engagement.



RESEARCH METHODOLOGY

Objectives of Study

The research has investigated the determinants of Employee Engagement. Based on literature review discussed above, more specifically, the objectives of the study are:

1. To Study predictors of Employee Engagement.
2. To examine the role of Self Efficacy in enhancing Employee Engagement.
3. To study various facets of Employee Empowerment and their role in Employee Engagement.
4. To study whether Organizational Climate leads to Employee Engagement.

Hypothesis of the Study:

The following hypothesis were formulated:

- H1: Self-Efficacy has positive effect on Employee Engagement
- H2: Psychological Empowerment has positive effect on Employee Engagement
- H3: Leadership Empowerment has positive effect on Employee Engagement
- H4: Organizational Climate has positive effect on Employee Engagement



SCOPE OF THE STUDY

This study concentrates on four factors - Self-Efficacy, Psychological Empowerment, Leadership Empowerment and Organizational Climate as determinants of Employee Engagement. The study will be based on selected Manufacturing Companies in NCR region.



RESEARCH DESIGN

The study is a descriptive study to establish relationship between identified factors and employee engagement. The present study is based on both primary and secondary data. The area of present study is National Capital Region. A

structured questionnaire was formulated and circulated amongst respondents through online methods of data collection and data was collected on the same. The collected data was classified, tabulated and grouped under various heads for the purpose of interpretation. For analysis of data, Exploratory Factor Analysis and Regression analysis were employed through SPSS.

The scales selected are all standard scales and found to be widely used with internal consistency and high Cronbach's alpha result. To check the applicability of scale in local environment, Exploratory Factor Analysis was done. All the questions were asked in relation to work environment.

Methodology to collect Data

This study targets Executives working in Manufacturing Companies in National Capital Region (NCR). Population of the current study consists of employees working in selected Manufacturing Companies. We have considered criteria of annual turnover of 1000 crores or above INR and having more than 1000 employees. We selected across various segments including Cement, Power, Pharma, Agriculture, Sugar, Retail, Apparel, Auto, Engineering, FMCG, Hotel, Mining, Oil and Gas, Power Distribution, Electronics, Water and waste treatment, Water Supply, and related industries in the segment of manufacturing Industry. The information about the Companies was taken from trade directory "Business Directory for Delhi-NCR/ Noida/ Gurgaon/ Ghaziabad". The data was collected with twin objectives, the first objective was that well-established companies should be included in the data and the second objective was to include as many sectors as possible so that study reflects views across breadth of Industries. The companies were selected on the basis of judgmental sampling.

No. of samples collected

The study collected 240 samples and after cleaning the data (cases with missing responses and cases which were seen to either have repeatedly same answers or similar response patterns throughout the questionnaire were deleted), 231 were retained.

The study is a descriptive study to establish a cause and effect relationship between identified factors and employee engagement. The present study is based on both primary and secondary data. The area of present study is National Capital Region. A structured questionnaire was framed and circulated among the respondents through online methods of data collection and then data was collected through the same. The collected data were classified, tabulated and grouped under various heads for the purpose of interpretation. To learn more about relevant factors for study, exploratory factor analysis was used which was followed by regression analysis to establish the relationship between dependent variable and independent variables.

Questionnaire- No. of items and Scale used

Questionnaire had 10 questions on Employee Engagement and 12 questions on Psychological Empowerment on 1 to 5 Likert's scale; 14 questions on Leadership Empowerment and 11 questions on Organizational Climate with 1 to 7 Likert's

scale; and 10 questions on self-efficacy on 1 to 4 Likert's scale. The total numbers of questions are 57.

The Research Instrument for scales

All selected scales are standard scales and are found to be widely used with internal consistency and high Cronbach's alpha result.

Employee Engagement

Utrecht Work Engagement Scale (UWES) developed by Schaufeli et al. (2002) is found to be widely used with internal consistency and high Cronbach's alpha result. The scale consisted of three dimensions; absorption (3 items); vigor (3 items); and dedication (4 items).

Psychological empowerment

Psychological empowerment has been measured by Spreitzer's (1995) instrument. It was intended to assess the degree to which employee feel empowered on the job. This 12-item questionnaire measures Psychological empowerment (PE) through four dimensions: meaning, competence, self-determination, and impact.

Leadership Empowerment Behavior

The Leader Empowering Behavior Questionnaire (LEBQ) developed by Konczak et al. (2000) has been used to measure leadership empowerment Behavior. The scale measures 6 dimensions of leadership empowerment behavior: the delegation of authority, the emphasis on accountability for outcomes, self-directed decision-making, information sharing, skills development, and coaching for innovative performance. It consists of 14 items.

General Self Efficacy

The Scale devised by Schwarzer & Jerusalem in year 1995 was used for measuring General Self Efficacy. It is a 10 item Scale and was created to assess a general sense of perceived self-efficacy.

Organizational Climate

The scale consisted of 12 items from Organizational Climate Questionnaire devised by Litwin & Stringer in year 1968. The items consisted of dimensions of Orientation (Clearly defined role), Supervision (Extent to which employees experience Support), Communication (Free Sharing of Information), and Reward (Feeling of being fairly rewarded). It consisted of 11 items.



DATA ANALYSIS, FINDINGS, AND DISCUSSION

Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis (EFA) is a statistical tool for establishing a relationship among inter-related variables and groups them under some common factor.

It is a technique in which dimensions are considerably reduced and fewer new dimensions are created (Rietveld & Van Hout 1993). It offers better understanding of the data such

that the output can be used in the consequent analysis as well (Rietveld & Van Hout 1993). All the factors identified through literature review are subjected to exploratory factor analysis. Separate exploratory factor analysis for employee engagement, Psychological empowerment, Leader Empowering Behavior, Organizational Climate and Self-Efficacy was performed and results are as follows:

The Kaiser- Meyer-Olkin measure of sampling adequacy came out to be above .65 (the acceptable level) for all the factors. This shows that the items selected for the questionnaire are appropriate. The chi- square value of Bartlett's Test of

Sphericity was found to be significant for all the factors which means that the factor analysis is acceptable. Each exploratory factor analysis generated single/two factors for all the components with eigen-values above 1. Total variance explained for items are ranging between 56.423% for self-efficacy to 75.039% for Psychological Empowerment. The Varimax rotation clubbed the items as factors. One or two factors were determined on the basis of exploratory factor analysis and named afterwards on the basis of their factor loadings. Cronbach's Alpha values for all identified factors are shown in Table1.

Table 1: Summary of Exploratory Factor Analysis

	Items	Factor Loading	Cronbach's Alpha
KMO= 0.661, Total Variance Explained=63.825%			
Employee engagement(E)	E23	0.842	0.716
	E24	0.781	
	E35	0.772	
KMO=0.639, Total Variance Explained= 75.039%			
Psychological empowerment- Psychological Meaningfulness(PE_1)	PE31	.893	0.718
	PE33	.865	
Psychological empowerment- Psychological Impact (PE_2)	PE12	.854	0.61
	PE11	.826	
KMO= .935, Total Variance Explained= 66.263%			
Leader Empowering Behavior(LE)	LE12	.8630	.953
	LE41	.860	
	LE63	.847	
	LE13	.843	
	LE33	.842	
	LE51	.836	
	LE52	.824	
	LE32	.815	
	LE42	.786	
	LE53	.784	
	LE11	.775	
	LE21	.673	
KMO= 0.888, Total Variance Explained= 65.171%			
Organizational Climate(OC)	OC13	.8620	.892
	OC33	.825	
	OC23	.804	
	OC12	.800	
	OC11	.783	
	OC32	.767	
KMO= 0.763, Total Variance Explained= 56.423%			
Self-Efficacy	SE9	.774	0.742
	SE10	.761	
	SE8	.761	
	SE4	.707	

Items identified through exploratory factor analysis to formulate scale for Employee Engagement, Psychological Empowerment, Leader Empowering Behavior, Organizational Climate and Self-Efficacy summated an averaged Likert scale which was used for correlation and regression analysis.

Correlation and Regression Analysis

Correlation is a tool to measure the strength of linear relationship between two or more variables and it always lies between -1 and 1. The degree of the correlation coefficient indicates the strength of the association. Higher the value of correlation coefficient stronger the relationships (Taylor, 1990). Correlation analysis amongst identified variables is depicted in Table 2. However, if the two variables are related it means that when one changes by a certain amount the other changes on an average by a certain amount. If y represents the dependent variable and x the independent variable, this relationship is described as the regression of y on x. Regression Analysis is a statistical and research technique which is quantitative in nature. It is usually used in cases where there is a need to study and analyze various variables, where there is a dependent variable and one or more independent variables.

The basic standard form of a regression analysis includes unknown parameters (β), independent variables (X), and the dependent variable (Y).

Regression model, basically, specifies the relation of dependent variable (Y) to a function combination of independent variables (X) and unknown parameters (β) $Y \approx f(X, \beta)$

Regression Analysis

Using the SPSS program kit in the case of multiple regression depicts the following results:

Both tolerance and VIF values given in Table 3 depicts no multi collinearity issues in independent variables/ predictors. On the basis of un-standardized coefficients of regression following regression equation can be obtained:

Employee Engagement

$$= 1 \times 10^{-13} + 0.180PE_1 + 0.570 PE_2 + 0.244 LE - 0.056 OC - 0.016 SE$$

Following table 4 represent estimation of standard deviation for the model. Coefficient determination R square indicates

Table2 : Correlation Analysis

Correlations		E	PE_1	PE_2	PE_	OC	SE
E	Pearson Correlation	1	.258**	.595**	.238**	.172**	.167*
	Sig. (2-tailed)		.000	.000	.000	.009	.011
	N	231	231	231	231	231	231
PE_1	Pearson Correlation	.258**	1	.187**	.184**	.243**	.184**
	Sig. (2-tailed)	.000		.004	.005	.000	.005
	N	231	231	231	231	231	231
PE_2	Pearson Correlation	.595**	.187**	1	.034	-.013	.145*
	Sig. (2-tailed)	.000	.004		.606	.846	.028
	N	231	231	231	231	231	231
LE_	Pearson Correlation	.238**	.184**	.034	1	.839**	.402**
	Sig. (2-tailed)	.000	.005	.606		.000	.000
	N	231	231	231	231	231	231
OC	Pearson Correlation	.172**	.243**	-.013	.839**	1	.409**
	Sig. (2-tailed)	.009	.000	.846	.000		.000
	N	231	231	231	231	231	231
SE	Pearson Correlation	.167*	.184**	.145*	.402**	.409**	1
	Sig. (2-tailed)	.011	.005	.028	.000	.000	
	N	231	231	231	231	231	231

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

* . Correlation is significant at the 0.05 level (2-tailed).

Table 3: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.000E-	013	.051		.000	1.000	
PE_1	.180	.053	.180	3.395	.001	.931	1.074
PE_2	.570	.052	.570	10.948	.000	.969	1.032
LE	.244	.095	.244	2.571	.011	.290	3.443

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
OC	-.056	.097	-.056	-.575	.566	.278	3.592
SE	-.016	.057	-.016	-.279	.781	.796	1.257

a. Dependent Variable: E

40.9% of the total variance is explained by all the five predictors. In order to test the null hypothesis, it can be ascertained that the value of the calculated F is 31.78 (as given in Table 5) for the variance generated by the regression. The critical value of F, at the significance level of 0.05 with 5 degrees of freedom at numerator and 225 at denominator is 2.25417507. By comparing the values of F, it results that it is compulsory to accept the alternative hypothesis, meaning that not all regression coefficients are equal to zero. This means that a significant influence of multiple regression models occurs over the dependent variables. The issue that arises now is to know which regression coefficients may be zero and which may not. It is imposed therefore to achieve an individual evaluation of the regression coefficients. It is compulsory to make an assessment of the realization of a statistical test for each under the conditions where the null hypothesis state different from zero Turóczy & Marian(2012).

2.571 for LE, -0.572 for OC and -0.279 for SE per employee. In order to define the decision rule concerning the null hypothesis, the calculated t values will be compared with the critical value of t at a significance level of 0.05 or significance value is compared with 0.05. The results are:

The level of significance indicated by the test .001, .000, .011 respectively for PE_1, PE_2 and LE is lower than the chosen level of significance of 0.05. Therefore, the null hypothesis is rejected for all the three predictors and it is accepted that regression coefficient is different from zero. Further for LE and OC the significance values are .566 and .781 respectively. This implies that null hypothesis is accepted, and regression coefficient is equal to zero for OC and SE.

Therefore, it is considered that two of the variables: OC and SE are not significant predictors for the dependent variable:

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.640 ^a	.409	.396	.77707499	.409	31.178	5	225	.000

a. Predictors: (Constant), SE, PE_2, PE_1, LEA, OC
Following table represent

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	94.135	5	18.827	31.178	.000 ^b
Residual	135.865	225	.604		
Total	230.000	230			

a. Dependent Variable: E

b. Predictors: (Constant), SE, PE_2, PE_1, LEA, OC

The test used is the Student test, respectively t with n-(k+1) degrees of freedom (Turóczy & Marian, 2012). For each of the five variables, from the SPSS results, we get the calculated t values (Table 3). These are: 3.395 for PE_1, 10.948 for PE_2,

employee engagement. In this case the regression model will no longer contain these variables. If we make the determinations for the new regression model, the results will be:

In this case coefficient of determination R square is 41.4% (Table 6). ANOVA Table 7 depicts a significant influence of multiple regression model occurs over the employee engagement. Again, we need to know which regression coefficients may be zero and which not. For this reason, an individual evaluation of the regression coefficients is given in Table 8 which clearly indicated that all the predictors are significant and regression coefficients for all PE_1, PE_2 and LE are different from zero. A new regression equation can be presented as:

$$\text{Employee Engagement} = -0.898 + 0.114PE^1 + 0.547 PE^2 + 0.199 LE$$

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.643 ^a	.414	.406	.77236	.414	53.387	3	227	.000

a. Predictors: (Constant), LE, PE_2, PE_1

Table 7: ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	94.135	5	18.827	31.178	.000 ^b
Residual	135.865	225	.604		
Total	230.000	230			

a. Dependent Variable: E

b. Predictors: (Constant), LE_, PE_2, PE_1

Table 8: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-.898	.551		-1.629	.105		
PE_1	.114	.052	.116	2.213	.028	.934	1.071
PE_2	.547	.050	.566	10.946	.000	.965	1.036
LE_	.199	.052	.197	3.812	.000	.966	1.035

a. Dependent Variable: E



CONCLUSIONS AND IMPLICATION OF STUDY

The study identified through literature has four constructs: Psychological Empowerment, Leadership Empowerment, Self-Efficacy, and Organizational Climate which are among the most influential determinants of Employee Engagement, the Study by Sarkar (2011) on Employee Engagement at Manufacturing Industries established the same. The study identified many more factors contributing to the employee engagement such as Top Management, Managers, Coworkers, Intrinsic Motivation, Resources, Career Opportunities, Training and Development, Benefits, HR Policies, Recognition, Physical Work Environment, and provision of an environment without interference. In the model, Psychological Meaningfulness-Psychologically feeling Meaningfulness of work, Psychological Impact-feeling of creating impact of work, Leadership Empowerment, Self-Efficacy, and Organizational Climate are five constructs as determinants of Employee Engagement. The model was significant, and we found that 40.9% of total variance is being explained through the model. Meaningfulness and Impact are components of Psychological Empowerment. Further, through individual evaluation of regression coefficients, it was found that Meaningfulness of work, Impact on work and Leadership Empowerment in combination are able to explain 41.4% of total variance on

Employee Engagement. Mgbeke (2007) supports this observation and in his study, he established that employee empowerment is an effective instrument to increase administrative efficacy in Nigeria.

Thus, the study established conclusive relationship between Employee Engagement and Psychological empowerment; Psychological Empowerment in the study is derived through meaningfulness of work and the impact one is able to create on work. The study also establishes relationship between Employee Engagement and Leadership empowerment derived through delegation of authority, accountability, self-directed decision making, information sharing, skill development and coaching for innovative performance.

The study suggests that Managers/ Supervisors should confide in their employees by providing meaningful work and also empower them, so that they are able to create an impact on work given to them. Additionally, managers should delegate authority, reckon accountability, encourage self-directed decision making, ensure free flow of information, focus on skill development by organizing regular training and development sessions and challenging employees to come up with innovative ideas. They should mentor their employees in developing competencies relating to work and also encourage, guide, and facilitate for innovative performance.

REFERENCES

- i. Amundsen, S., & Martinsen, Ø. L. (2015). Linking empowering leadership to job satisfaction, work effort, and creativity: The role of self-leadership and psychological empowerment. *Journal of Leadership & Organizational Studies*, 22(3), 304-323.
- ii. Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of managerial psychology*, 22(3), 309-328.
- iii. Bakker, A. B., Schaufeli, W. B., Leiter, M. P., & Taris, T. W. "Work engagement: An emerging concept in occupational health psychology". *Work & Stress*. 22(2008):187-200.
- iv. Bandura, A. "Self-efficacy in human agency". *American Psychologist*. 37.2 (1982):122-147.
- v. Bandura, A. and Cervone, D. "Differential engagement of self-reactive influences in cognitive motivation". *Organizational Behavior and Human Decision Processes*. 38(1986):92-113.

vi. Bandura, A. (1997). The anatomy of stages of change. *American journal of health promotion: AJHP*, 12(1), 8.

vii. Bandura, A. Exercise of human agency through collective efficacy. *Current Directions in Psychological Science*. (2000):75-78

viii. Bandura, A., & Locke, E. A. (2003). Negative self-efficacy and goal effects revisited. *Journal of applied psychology*, 88(1), 87.

ix. Brown, S.P.& Leigh, T.W “A new look at psychological climate and its relationship to job involvement, effort, and performance”. *Journal of Applied Psychology*. 8.4(1996): 358-68.

x. Burke, W. Leadership as empowering others. In S. shrivastava (Ed.). *Executive Power*. (1986).

xi. Chaudhary, R., Rangnekar, S., &Barua, M. K. (2012). HRD climate, occupational self-efficacy and work engagement: A study from India. *The Psychologist-Manager Journal*, 15(2), 86-105.

xii. Conger, J. Kanungo, R. “The empowerment process: Integrating theory and practice”. *The Academy of Management Review*. 13.3 (1988):639-652.

xiii. Csikszentmihalyi, M. “Beyond Boredom and Anxiety”, San Francisco: Jossey-Bass. (2000).

xiv. Gilson, C. and James, L.R. “The cross-level effects of culture and climate in human service teams”. *Journal of Organizational Behavior*. 23(2002): 767-94

xv. Guzzo, R and Noonan K . “Human Resource Practices as Communications and the Psychological contract” . *Human Resource Management*. 33(1994):447-462.

xvi. Harju, L. K., Hakanen, J. J., & Schaufeli, W. B. (2016). Can job crafting reduce job boredom and increase work engagement? A three-year cross-lagged panel study. *Journal of Vocational Behavior*, 95, 11-20.

xvii. Hewitt Associates (2004), “Report on Engaged Employees Drive Improved Business Performance and Return”, Accessed on November 2018 available at http://www.aon.com/human-capital-consulting/other_aonhewitt_sites.jsp.

xviii. James, L.R., L.A. James and A.K. Ashe, “The Meaning of Organizations. In: *Organizational Culture and Climate*, Schneider”, B. (Ed.). Jossey-Bass, San Francisco.1990:40-84.

xix. Johnson, P.R. “Brains, Heart and courage: Keys to empowerment and self-directed leadership”. *Journal of Managerial Psychology*. 9.2(1994):17-21.

xx. Judge, T. A., Van Vianen, A. E. M., & De Pater, I. E. “Emotional stability, core self-evaluations, and job outcomes: a review of the evidence and an agenda for future research”. *Human Performance*. 17(2004):327-347

xxi. Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of management journal*, 33(4), 692-724

xxii. Kahn, W. A. (1992). To be fully there: Psychological presence at work. *Human relations*, 45(4), 321-349.

xxiii. Konczak, L. J., Stelly, D. J., & Trusty, M. L. (2000). Defining and measuring empowering leader behaviors: Development of an upward feedback instrument. *Educational and Psychological measurement*, 60(2), 301-313.

xxiv. Ladyshevsky, R. K., & Taplin, R. (2018). The interplay between organisational learning culture, the manager as coach, self-efficacy and workload on employee work engagement. *International Journal of Evidence Based Coaching and Mentoring*, 16(2), 3.

xxv. Litwin, G. H., & Stringer, R. A. (1968). Motivation and organizational climate.

xxvi. Judge, T. A., Van Vianen, A. E. M., & De Pater, I. E. “Emotional stability, core self-evaluations, and job outcomes: a review of the evidence and an agenda for future research”. *Human Performance*. 17(2004):327-347

xxvii. Locke, E.A. “What is job satisfaction?” *Organizational Behavior and Human Performance*. 4(1969):309-36

xxviii. Luthans, F., & Peterson, S. J. (2002). Employee engagement and manager self-efficacy. *Journal of management development*, 21(5), 376-387.

xxix. Macey, W. H., Schneider, B. “The meaning of employee engagement”. *Industrial and Organizational Psychology*. 1.1(2008):3-30.

xxx. Maslach, C., Schaufeli, W. B., & Leiter, M. P. “Job burnout”. *Annual Review of Psychology*. 52.1(2001):397- 422.

xxxi. May, D., Gilson, R., & Harter, L. “The psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work”. *Journal of Occupational and Organizational Psychology*. 77.1(2004):11-37.

xxxii. Mgbeke, D. M. (2007). Employee empowerment as an effective tool to increase administrative efficacy in the Local Government Area of Umunneochi, Nigeria (Doctoral dissertation, Walden University).

xxxiii. Onyishi, I. E., Ugwu, F. O., & Ogbonne, I. P. (2012). Empowering employees for change oriented behaviours: The contribution of psychological empowerment to taking charge at work. *Eur J Soc Sci*, 27, 301-308.

xxxiv. Pati, S. P., & Kumar, P (2010). Employee engagement: Role of self-efficacy, organizational support & supervisor support. *Indian Journal of Industrial Relations*, 126-137.

xxxv. Quiñones, M., Van den Broeck, A., & De Witte, H. (2013). Do job resources affect work engagement via psychological empowerment? A mediation analysis. *Revista de Psicología del Trabajo y de las Organizaciones*, 29(3), 127-134.

xxxvi. Rayan, Adel & Sebaie, Ahmed & A. Ahmed, Nagwa. (2018). “The Mediating Role of Psychological Empowerment in the Relationship between the Empowering Leadership Behavior and Work Engagement: A Study Applied on the Cement Sector in Upper Egypt”. *International Journal of Business and Management*, 13(12):18,18-30.

xxxvii. Rich B., Lepine J.A., and Crawford E.R. “Job engagement: antecedents and effects on job performance”. *Academy of Management Journal*. 53.3(2010):617-635.

xxxviii. Rietveld, T., & Hout, R. (1993). *Statistical techniques for the study of language and language behaviour*. Berlin: Mouton de Gruyter.

xxxix. Robinson D., Perryman S., and Hayday, S. *The Drivers of Employee Engagement*, Brighton, Sussex: Institute of Employment Studies (IES) Research report. (2004).

xl. Ryan, R.M., & Deci, E.L. “On happiness and human potentials: A review of research on hedonic and eudaimonic well-being”. *Annual Review of Psychology*. 52(2001):141-166.

xli. Saad, Z. M., Sudin, S., & Shamsuddin, N. (2018). The Influence of Leadership Style, Personality Attributes and Employee Communication on Employee Engagement. *Global Business and Management Research*, 10(3), 743.

xl. Sakes, G., Nikalaidis, L. A., & Mankad, S. (2006). Glucagon-like peptide-1 infusion improves left ventricular ejection fraction and functional status in patients with chronic heart failure. *J Cardiac Fail*, 12(9), 694.

xl.iii. Sarangi, S., & Srivastava, R. K. (2012). Impact of organizational culture and communication on employee engagement: An investigation of Indian private banks. *South Asian journal of management*, 19(3), 18.

xliv. Sarkar, S. (2011). A study on employee engagement at manufacturing industries. *Global management review*, 5(3).

xlv. Schaufeli, W.B., Salanova, M., Gonzalez-Roma, V., Bakker, A. B. "The measurement of engagement and burnout: a two sample confirmatory factor analytic approach". *Journal of Happiness Studies*. 3.1(2002):71-92.

xlvi. Schaufeli, W. & Salanova, M. (2007). Work engagement. An emerging psychological concept and its implications for organizations. *Research in social issues in management (volume 5): Managing social and ethical issues in organizations*. 135-177.

xlvii. Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi sample study. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 25(3), 293-315.

xlviii. Schwarzer, R., & Jerusalem, M. (1995). Generalized self-efficacy scale. *Measures in health psychology: A user's portfolio. Causal and control beliefs*, 1(1), 35-37.

xlx. Seibert, S. E., Wang, G., & Courtright, S. H. (2011). Antecedents and consequences of psychological and team empowerment in organizations: A meta-analytic review. *Journal of applied psychology*, 96(5), 981.

i. Shirom, A. "Feeling vigorous at work? The construct of vigor and the study of positive affect in organizations". In D. Ganster & P. L. Perrewe (Eds.), *Research in organizational stress and well-being* Greenwich, CT: JAI Press. 3(2003):135-165.

ii. Schunk, D. H. "Modeling and attribution effects on children's achievement: A self-efficacy analysis". *Journal of Educational Psychology*. 73.1(1981):93-105.

iii. Schunk, D. H., and Hanson, A. R. "Peer models: Influence on children's self-efficacy and achievement". *Journal of Educational Psychology*. 77.3(1985):313-322.

liii. Schunk, D. H., Hanson, A. R., and Cox, P. D. "Peer-model attributes and children's achievement behaviors". *Journal of Educational Psychology*. 79.1(1987):54-61.

liv. Shuck, B., & Reio Jr, T. G. (2014). Employee engagement and well-being: A moderation model and implications for practice. *Journal of Leadership & Organizational Studies*, 21(1), 43-58.

lv. Shuck, B., & Wollard, K. (2010). Employee engagement and HRD: A seminal review of the foundations. *Human resource development review*, 9(1), 89-110.

lvi. Singh, J. "Performance productivity and quality of frontline employees in service organizations". *Journal of Marketing*. 64 (2000):15-34

lvii. Spreitzer, G.M. "Psychological empowerment in the workplace: dimensions, measurement and validation". *Academy of Management Journal*. 38.5 (1995b): 1442-65.

lviii. Srivastava, S., & Madan, P. (2018). A Measure for Employee Empowerment in Indian Work Setting. *Indian Journal of Industrial Relations*, 54(2).

lix. Taylor, R. (1990). Interpretation of the correlation coefficient: a basic review. *Journal of diagnostic medical sonography*, 6(1), 35-39.

lx. Thoits, P. "Stress, coping, and social support processes: where are we? What next?" *Journal of Health and Social Behavior*. 36(1995):53-79.

lxi. Thomas, K. W., & Velthouse, B. A. (1990). Cognitive elements of empowerment: An "interpretive" model of intrinsic task motivation. *Academy of management review*, 15(4), 666-681.

lxii. Turóczy, Z., & Marian, L. (2012). Multiple regression analysis of performance indicators in the ceramic industry. *Procedia Economics and Finance*, 3, 509-514.

lxiii. Van Schalkwyk, S., Du Toit, D. H., Bothma, A. S., & Rothmann, S. (2010). Job insecurity, leadership empowerment behaviour, employee engagement and intention to leave in a petrochemical laboratory. *SA Journal of Human Resource Management*, 8(1), 7.

lxiv. Wagner, R., & Harter, J. K. (2006). 12: The elements of great managing (Vol. 978, No. 1-59992). Simon and Schuster.

lxv. Zhang, X., & Bartol, K. M. (2010). Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement. *Academy of management journal*, 53(1), 107-128.

APPENDIX
Questionnaire

Instructions: Answer the following questions by encircling the number on the questionnaire that best represents your answer. Please make sure that you answer all questions. There is no right or wrong answer to the question, your answers should reflect your true feeling.

1. Please indicate the strength of agreement or disagreement to the following statements on a 5 point scale (1 = strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, 5 = strongly agree).

1.	At my work, I feel bursting with energy E12	1	2	3	4	5			2
2.	At my job, I feel strong and vigorous E13	1	2	3	4	5			2
3.	At my work I always keep trying even when things do not go well E16	1	2	3	4	5			2
4.	I find the work that I do full of meaning and purpose E21	1	2	3	4	5			
5.	I am enthusiastic about my job E22	1	2	3	4	5			
6.	My job inspires me E23	1	2	3	4	5			

STUDY OF EMPLOYEE ENGAGEMENT IN MANUFACTURING SECTOR IN NCR IN SELECTED INDUSTRIES

7.	I am proud for the work that I doE24	1	2	3	4	5			
8.	I am immersed in my work E34	1	2	3	4	5			
9.	I get carried away when I am working E35	1	2	3	4	5			
10.	I feel totally attached with my job E36	1	2	3	4	5			
		1	2	3	4	5			
11.	The work I do is very important to me PE11	1	2	3	4	5			
12.	My job activities are personally meaningful to me PE12	1	2	3	4	5			
13.	The work I do is meaningful to me PE13	1	2	3	4	5			
14.	I have significant autonomy in determining how I do my job PE21	1	2	3	4	5			
15.	I can decide on my own how to go about doing my work P22	1	2	3	4	5			
16.	I have considerable opportunity for independence and freedom in how I do my job P23	1	2	3	4	5			
17.	My impact on what happens in my department is large P31	1	2	3	4	5			
18.	I have a great deal of control over what happens in my department P32	1	2	3	4	5			
19.	I have significant influence over what happens in my department P33	1	2	3	4	5			
20.	I am confident about my ability to do my job P41	1	2	3	4	5			
21.	I am self-assured about my capabilities to perform my work activities P42	1	2	3	4	5			
22.	I have mastered the skills necessary for my job P43	1	2	3	4	5			

Please indicate the strength of agreement or disagreement to the following statements on a 7 point scale (1 = strongly disagree, 2= disagree, 3= somewhat disagree, 4= neither agree nor disagree, 5= somewhat agree, 6= agree, 7 = strongly agree).

23.	My manager gives me the authority I need to make decisions that improve work processes and procedures L11	1	2	3	4	5	6	7	
24.	My manager gives me the authority to make changes necessary to improve things L12	1	2	3	4	5	6	7	
25.	My manager delegates authority to me that is equal to the level of responsibility that I am assigned L13	1	2	3	4	5	6	7	
26.	My manager holds me accountable for the work I am assigned LE 21	1	2	3	4	5	6	7	
27.	I am held accountable for performance and results LE22	1	2	3	4	5	6	7	
28.	My manager relies on me to make my own decisions about issues that affect how work gets done LE 32	1	2	3	4	5	6	7	
29.	My manager encourages me to develop my own solutions to problems I encounter in my workLE33	1	2	3	4	5	6	7	
30.	My manager shares information that I need to ensure high quality results LE 41	1	2	3	4	5	6	7	
31.	My manager provides me with the information I need to meet customers' needs LE42	1	2	3	4	5	6	7	
32.	My manager encourages me to use systematic problem-solving methodsLE51	1	2	3	4	5	6	7	

STUDY OF EMPLOYEE ENGAGEMENT IN MANUFACTURING SECTOR IN NCR IN SELECTED INDUSTRIES

33.	My manager provides me with frequent opportunities to develop new skills LE52	1	2	3	4	5	6	7	
34.	My manager ensures that continuous learning and skill development are priorities in our department. LE53	1	2	3	4	5	6	7	
35.	My manager is willing to risk mistakes on my part if, over the long term, I will learn and develop as a result of the experience LE61	1	2	3	4	5	6	7	
36.	My manager focuses on corrective action rather than placing blame when I make a mistake LE63	1	2	3	4	5	6	7	

Please respond truly about yourself, no answer is right indicate your or wrong, 1=Not at all true, 2=Hardly true, 3=Moderately true, 4= Exactly True

37.	I can always manage to solve difficult problems if I try hard enough SE31	1	2	3	4				
38.	If someone opposes me, I can find the means and ways to get what I want SE32	1	2	3	4				
39.	It is easy for me to stick to my aims and accomplish my goals SE33	1	2	3	4				
40.	I am confident that I could deal efficiently with unexpected events SE34	1	2	3	4				
41.	Thanks to my resourcefulness, I know how to handle unforeseen situations SE35	1	2	3	4				
42.	I can solve most problems if I invest the necessary effort SE36	1	2	3	4				
43.	I can remain calm when facing difficulties because I can rely on my coping abilities SE37	1	2	3	4				
44.	When I am confronted with a problem, I can usually find several solutions SE38	1	2	3	4				
45.	If I am in trouble, I can usually think of a solution SE39	1	2	3	4				
46.	I can usually handle whatever comes my way SE 40	1	2	3	4				

4. Please indicate the strength of agreement or disagreement to the following statements on a 7 point scale (1 = strongly disagree, 2= disagree, 3= somewhat disagree, 4= neither agree nor disagree, 5= somewhat agree, 6= agree, 7 = strongly agree):.

47.	I have clear defined goals and objectives for my job OC11	1	2	3	4	5	6	7	
48.	I have got flexibility in solving problems OC12	1	2	3	4	5	6	7	
49.	Organization helps me to achieve my individual goals OC 13	1	2	3	4	5	6	7	
50.	I get support from my supervisor OC21	1	2	3	4	5	6	7	
51.	Proper Supervision and Directions are received OC23	1	2	3	4	5	6	7	
52.	In my organization there is free sharing of information among employees for carrying out work OC31	1	2		3	4	5	6	7
53.	In my organization, there is communication for future directions OC32	1	2	3	4	5	6	7	
54.	In my organization there is free sharing of information between management and employees for carrying out work OC33	1	2	3	4	5	6	7	
55.	There is fair and uniform salary structure in my organization OC41	1	2	3	4	5	6	7	
56.	There are fair promotional policies in my organization OC42	1	2	3	4	5	6	7	
57.	Rewards are given on basis of achievement in my organization OC43	1	2	3	4	5	6	7	

Effect of Trump's Win on Specific Sector with Reference to Indian Stock Market

*Ms. Neetu Chadha,

**Ms. Ruchika Choudhary



ABSTRACT

Donald Trump's Victory as the US President leads to significant influence on the Indo-US ties. As expected this event will have both short term and long-term implications on the Indian economy. This study is aimed at exploring the impact of Trump's win on Indian Stock market, especially Energy, IT, and Pharma sectors. The present study utilizes two-way approach for studying the actual impact of the event on Indian Economy. Event window methodology has been adopted to analyze the effect of Trump's win on Indian stock market for pre, during and post trump win periods surrounding 60 days around the event day. Generalized Auto regressive Conditional Heteroskedastic (GARCH) model is used for testing volatility among the specific selected sectors and the overall Indian stock market. Results clearly proved that there is a significant impact of Trump's win on Indian stock market and specific sectors.

Keywords: Trump, Return, Nifty 50, Nifty Energy, Nifty IT, Nifty Pharma

* Assistant Professor Delhi Institute of Advanced Studies, Delhi, India

** Assistant Professor Delhi Institute of Advanced Studies, Delhi, India

INTRODUCTION

India is the world's fastest growing major economy and is one of the most profitable markets in emerging economies for foreign investors. Any major economic or political change happening across the globe would impact the Indian stock market. One such major change which impact the stock market of India is the victory of Donald Trump.

Trump's presidency began on January 20, 2017 when he was elected as the 45th President of United States. This announcement had a significant impact on the Indo-US relations as US is India's vital trading partner and moreover it is India's second largest supplier of defense equipment. It impacted India in multiple ways. There are both positive and negative aspects of the news. It is anticipated that this news will weaken the Indian rupee against dollar as well as the Indian stock market.

Every major announcement and events whether economic or political impacts the different economies of the world. The impact of such events can be seen on the daily movements of stock returns causing less to high volatility on returns of various sectors.

This paper emphasizes on the impact of Trump's victory on Indo-US ties and its effect on the different sectors. Considering the Energy sector, Trump's promise to make US Energy self-sufficient will in turn open more business opportunities for Indian Oil Companies. As far as IT sector is concerned, Trump railed against outsourcing which in turn would have a negative impact on the Indian IT industries as they get a major chunk of their revenue from US. With the immigration rules Trump wants to woo Indians students and entrepreneurs to the United States but criticizes Indian IT industries which used H-1B non-immigrant visa for importing cheap labor from India and thereby denying jobs to Americans and lastly Trump's commitment to scrap Obamacare would have a serious impact on Indian pharmaceutical industry as pharmaceutical comprises of India's second largest exports to the US. India supplies around 40% of the medicines to US. The US Department of Justice (DoJ) carried out an investigation to curb the price cartelization by pharma companies which comprised of two Indian companies as well namely Sun Pharmaceutical Industries and Dr. Reddy's Laboratories. This will lead to a pressure on the cartels formed by such companies and which will pressurize the pricing power enjoyed by pharma companies. In this paper an attempt is made to focus on three major sectors getting affected namely, IT, Energy and Pharma and the volatility caused on the stock return of these various sectors due to Trump's victory.



OBJECTIVE

The study aims to examine the Indian stock market reactions specifically the returns before and after the Trump's victory. Study also focuses on analyzing the volatility of Indian Stock market particularly IT, Energy and Pharmaceutical sector stock returns, caused due to Trump's win and his continuously changing policies towards the international trade.



DATA AND METHODOLOGY

The research was conducted using secondary data related to daily closing prices of Nifty 50 and three sectoral indices namely Nifty Energy, Nifty Pharma, and Nifty IT for three years from January 2016 to December 2018. The data was taken from NSE website.

In this paper two approaches were used to test the stock price responses to Trump's Victory. In the first approach an event window of 61 days for Nifty 50 was constructed taking 30 days prior to Trump win i.e. -30 to -1 and 30 days post the Trump win i.e. +1 to +30 and the date when Trump's presidency begun as the event day or day 0. For constructing event window of total 61 days, returns were computed from the closing price of each sector index by calculating the change in value of each sector index from its previous day value. Average Abnormal Returns, Cumulative Average Abnormal Returns & t-values were computed to check the significance of abnormal returns.

The second approach focused upon forecasting and checking the volatility in the overall stock market. Volatility is a term for the fluctuations or changes in the stock values from their mean values. The CNX Nifty was taken as a dependent variable and three sectoral indices returns were taken as independent variables and returns from these indices will be analyzed using GARCH (1,1) Model for forecasting volatility caused due to Trump win.



LITERATURE REVIEW

Arya Kumar (2018) reviewed the effect of demonetization on the Indian stock market and identified, which all sectors were affected more even after completion of a year by using adjusted closing price and the period considered for analysis was 1st August 2016- 10th February 2017, i.e. three months before and after the demonetization. By applying run test, non-randomness in the share prices on Sensex and Nifty respectively was examined. Whereas sector analysis showed a mixed result that few showed randomness while few didn't. According to the Paired Samples Test demonetization had a significant effect on prices of Sensex. Also, except PSU Bank all the sectors present in Nifty were affected. But surprisingly it was observed that demonetization helped to increase the share value of few sectors like oil and gas and financial services while the share value of FMCG and auto were reduced. This study concluded that there is a significant impact of demonetization on stock market.

Maithili S Naik and Y V Reddy (2018) explored the impact of implementation of VIX on the stock market in India by employing the standard GARCH (1,1) model. Daily data from January 2000 to August 2016 has been used in this study and the period has been divided into pre-IVIX introduction period and the post-IVIX introduction period. The results indicate that there is a decline in the volatility of the spot market post introduction of IVIX which indicates improvement in the speed and quality of information by reason of IVIX introduction.

Ritika Jain (2017) examined the impact of demonetization on the stock prices of Indian banks listed on NSE by employing

event study analysis and regression. The event comprised of 60 days and four event windows were tested. The price movements were tracked for both the private sector and public sector using event study methodology and regression. A positive return was witnessed in the case of public sector banks post demonetization for a short period only, returns being strongest in the first few days. Whereas no such observation was seen in case of private sector banks.

Sathyararayanan, S., & Gargesh, S. (2016) examined the Impact of BREXIT Referendum on Indian benchmark indices Sensex and Nifty 50. They ascertained Abnormal returns (AR) and student t test to test the significance. Brexit referendum has an impact on Sensex on the event day only as none of the Abnormal Return (AR) were statistically significant at 5% other than the event day (0) and on day 12. By applying historical volatility (standard deviation) and GARCH (1,1) from 24-06-2015 to 19-07-2016, they found out that historical volatility in both Sensex and Nifty were not statistically significant and ARCH and GARCH showed no effect after the Brexit referendum for Sensex where GARCH effect was found before the referendum. Likewise, in case of Nifty fifty before the referendum there was a GARCH effect while neither ARCH nor GARCH effect after the referendum. This signifies the robustness of the Indian economy while there may be short term volatility in stock market and currency.

Wan SallhaYusoff, et al (2015) investigated the daily stock returns of the public sector companies associated with Taib from October 2, 2013 to March 5, 2014. Short-run event methodology was used to study the effects of Taib's resignation news on the stock market. An actual and pre-event windows were constructed based upon four main events of interest such as Rumours of Taib Mahmud retirement, Resignation and retirement of Taib Mahmud as CM, Nomination to Balingan seat and BN won to recognize whether investors earned abnormal returns owing to these announcements. It was found that the mean average returns

after the event day was positive whereas on the actual event day mean average return turns out to be negative. The average return was lower for company's stock after the announcement of bad news. Based on efficient market hypothesis, the study concluded that there is an inefficient market, as in the short run political events, investors are able to predict and earn abnormal returns in politically connected companies upon the announcement of surprising political news.

Rafaqet Ali and Muhammad Afzal (2012) reviewed the impact of global financial crisis on the Indian stock market and the stock market of Pakistan. To conduct the research a daily data for a period from January 01, 2003 to August 31, 2010 of KSE-100 and BSE-100 was analyzed. Through EGARCH model volatility was checked. The result concluded that the Indian stock market was more affected by the global financial crisis than Pakistan stock markets.

Neetu Mehndiratta & Shuchi Gupta (2010) observed the stock market reaction to dividend information by adopting an event study methodology to study information efficiency. They took the data of 15 most actively traded companies in the year 2009 which consists of the dates on which the board announces dividend, daily adjusted closing prices and CNX, S&P, NIFTY index of ordinary share prices. Abnormal return, average abnormal return and cumulative average abnormal return was computed to examine the incidence of market efficiency. The study concluded that an investor can gain significant value post event day but not prior or on the day of the event.



ANALYSIS AND RESULTS

Table 1 shows the Average Abnormal Returns, Cumulative Average Abnormal Returns & t-values of Abnormal returns. Above table has been constructed taking 30 days pre and 30 days post the event day i.e. Trump's win as President of US. Average Abnormal Returns were computed by taking the

Table 1: Average Abnormal Returns, Cumulative Average Abnormal Returns & t-values

Days	AAR	CAAR	t-Value	Days	AAR	CAAR	t-Value
-30	0.7104115	0.710412	11.326106	0	-.4801652	-0.0417488	-7.6552834
-29	0.0169892	0.7274012	0.2708597	1	-.0547046	-0.0964535	-0.8721572
-28	0.2819505	1.0093517	4.4951423	2	-.3515055	-0.447959	-5.6040593
-27	0.6071265	1.6164782	9.6794308	3	-0.100749	-0.548708	-1.6062434
-26	-.0306885	1.5857897	-.4892675	4	0.0763908	-0.4723172	1.2178996
-25	-0.576489	1.0093007	-.1909768	5	0.2088767	-0.2634405	3.3301252
-24	0.3523855	1.3616861	5.618089	6	-.8453176	-1.1087581	-13.476916
-23	0.0338187	1.3955048	0.5391718	7	-.4457551	-2.5545132	-23.049704
-22	-.3600754	1.0354295	-5.740689	8	0.4063849	-2.1481283	6.4790036
-21	-.4683288	0.5671007	-.4665754	9	0.8480226	-1.3001057	13.520041
-20	-.6737244	-.1066237	-0.741203	10	0.444841	-0.8552647	7.0921101
-19	-0.419516	-.5261398	-.6883529	11	0.2639706	-0.5912941	4.2084882
-18	-.5847251	-.1108648	-9.322284	12	-.2107137	-0.8020079	-3.3594133

Days	AAR	CAAR	t-Value	Days	AAR	CAAR	t-Value
-17	0.4944604	-0.6164045	7.883192	13	0.4367152	-0.3652927	6.962559
-16	0.6777472	0.0613427	10.805338	14	0.3665419	0.0012492	5.8437851
-15	0.2677321	0.3290748	4.2684588	15	-0.0896162	-0.088367	-1.4287534
-14	0.4891403	0.8182151	7.798374	16	0.0934171	0.00505	1.48935
-13	0.4581039	1.276319	7.3035602	17	-0.3338803	-0.3288303	-5.3230611
-12	0.1963411	1.4726602	3.1302709	18	0.0919111	-0.2369192	1.4653405
-11	-0.2689478	1.2037124	-0.2878408	19	0.6726003	0.4356811	10.723281
-10	-0.3949534	0.808759	-0.2967502	20	1.1855697	1.6212508	18.901564
-9	0.146821	0.95558	2.340771	21	0.1831921	1.8044429	2.9206361
-8	-0.3689605	0.5866195	-0.8823454	22	0.5929031	2.397346	9.4526661
-7	-0.2223773	0.3642421	-0.5453667	23	-0.0138917	2.3834544	-0.2214749
-6	1.1446223	1.5088645	18.248738	24	0.6244358	3.0078902	9.9553934
-5	-0.561412	0.9474525	-0.9506037	25	-0.2543789	2.7535113	-4.0555685
-4	-0.3947354	0.552717	-0.2932752	26	-0.3052477	2.4482636	-4.8665701
-3	-0.3864531	0.166264	-0.1612294	27	0.250187	2.6984506	3.9887372
-2	-0.1207569	0.045507	-0.9252305	28	0.1093057	2.8077564	1.7426638
-1	0.3929093	0.4384163	6.2641614	29	0.5266038	3.3343602	8.3956555
0	-0.4801652	-0.0417488	-0.6552834	30	0.2347211	3.5690812	3.7421629

average of the abnormal returns of IT, Energy and Pharma Sectors. For calculating Abnormal returns of each sector, their expected returns were deducted from their actual daily returns. The Average Abnormal Returns appeared to be more negative prior to the event day as compared to period after the beginning of Trump's presidency. A negative incidence of Average Abnormal Returns was noticed continuously for 10 day pre event, event day and 3 days post event. Cumulative

Average Abnormal Returns at the end of the event window is not close to zero that shows the inefficiencies of the stock market which proves that Trump's selection as President of US has an impact on the Indian stock market. The t- values in the entire event window days shown in table 1 are significant at 5% level of significance except only 5 days in the event window of 61 days which indicates existence of abnormal returns and displays that the returns does not follow the random walk.

Table 2: Descriptive Statistics

	Nifty 50 Return	Nifty Energy Returns	Nifty It Returns	Nifty Pharm a Returns
Mean	0.000453	0.000754	0.000398	0.000326
Median	0.000624	0.001248	0.00034	0.000556
Maximum	0.033669	0.041433	0.047983	0.052144
Minimum	-0.033171	-0.079693	-0.03956	0.046592
Std. Dev.	0.007937	0.011079	0.010658	0.012469
Skewness	-0.17634	-0.821752	0.103437	0.100778
Kurtosis	4.377083	8.07212	4.921562	4.060275
Jarque-Bera	62.39041	877.6992	115.3242	35.96343
Sum Sq. Dev.	0.046616	0.090828	0.084062	0.115055
Observations	741	741	741	741

Table 2 represents that the average Nifty energy returns in this sample is 0.000754 which is the highest among all the sectors whereas the average Nifty Pharma returns turned out to be the lowest i.e. 0.000326 followed by Nifty IT returns i.e. 0.000398 reflecting these two as the most affected sectors in the study span. For Nifty50 returns, the standard deviation (0.007937) is the least. Though the kurtosis values reflect a positive kurtosis for all the sectors as well as for Nifty50, signifying that the values are not normally distributed for all the sectors and shows peakedness. The table 2 depicts the value of variance and signifies that there is not much spread of data from their mean. Jarque-Bera statistics are high for Nifty Energy indicating that the series is not normally distributed.

Table 3: Augmented dickey fuller test (ADF Test) (At first difference)

	t-statistics	Probability
Nifty 50	-15.88788	0.0000
Nifty energy	-14.44682	0.0000
Nifty IT	-26.6631	0.0000
Nifty pharma	-2.038546	0.0000

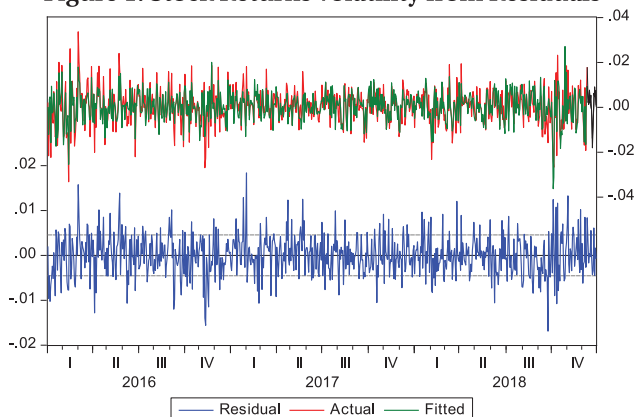
All the data series i.e. Nifty 50, Nifty energy, Nifty IT, Nifty Pharma are not stationary at level. In accordance, for further analysis, data series Nifty 50, Nifty energy, Nifty IT, Nifty Pharma are taken at first difference. ADF test results are represented in Table 3.

Table 4: Least Square Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000116	0.000168	0.692762	0.4887
NIFTY_ENERGY RETURNS	0.401884	0.016445	24.43772	0
NIFTY_IT RETURNS	0.219859	0.016185	13.58397	0
NIFTY_PHARMA RETURNS	0.163831	0.014699	11.14568	0

For applying the model, the CNX Nifty was taken as dependent variable and three sectoral indices returns were taken as independent variables. The results in table 4 indicates that the

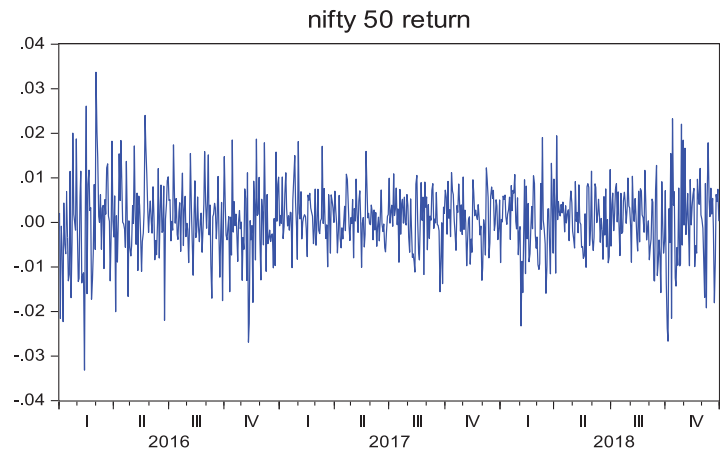
Figure 1: Stock Returns Volatility from Residuals



model is significant, depicting p values less than 0.05. Hence, the test can be conducted using the variables i.e. Nifty50 return and three sectoral returns.

Figure 1 shows the graphical representation of least square test results. Residuals when plotted on the graph depicts that the model is appropriately fit which means the actual returns and the fitted ones coincides each other as their value seems to be more or less same. Below figure 2 demonstrates the detailed graphical presentation of the volatility of CNX Nifty 50 returns.

Figure 2: NIFTY 50 Returns Residual Graph



It is visualized from the figure 2 that during the second quarter of the year 2016 there are more negative rallies owing to the exit of Great Britain from the European union in June. Again, in the fourth quarter of the same year, there is negative spike in the stock returns as Indian Prime minister announced Demonetization in the economy. Volatility seems to be high in the year 2017 resulting from the Trump's selection as President of US and his continuously changing economic policies towards international trade. Moreover year 2018 also begins with high volatility both ups and down in the market. These rallies continued in the first quarter of the year as a result of big PNB scam and budget predictions. Towards the end of 2018, when RBI governor resigned, it created volatility in the stock returns. It can be deduced that all such news, events and political announcements in any economy of the world has an impact on the country's stock market. Furthermore, the following tables represents the sector wise volatility caused due to Trump's victory.

Table 5: GARCH Model test result

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	1.60E-06	1.13E-06	1.420232	0.1555
RESID(-1)^2	0.030696	0.016394	1.872415	0.0611
GARCH(-1)	0.890127	0.064741	13.74896	0.0000

Table 5 indicates the results of GARCH (1,1) model estimation for Nifty 50, Nifty Energy, Nifty Pharma, and Nifty IT. Volatility clusters and shocks seems to be quite persistent as the alpha and beta values are 0.920823, which is very close one.

High volatility clusters appeared because the IT, Energy and Pharma sectors were the most affected sectors during Trump's

presidency. Trump's 'hawkish' trade policy of 'America first' and his plans to renegotiate all foreign trade deals affected trade treaties with India. The Indian IT industry faced an anti-outsourcing backlash in the US, which included facing certain class action suits and rules that increased their cost of operations. The Indian IT companies increased their investments in the US, which included setting up local development centres.

Trump promised to unleash America's shale oil, natural gas and coal reserves to make U.S energy self-sufficient. He had also promised to open onshore and offshore leasing on federal lands and lift the moratorium on coal leasing. This expanded the business opportunities for Indian oil companies including the state-owned Oil and Natural Gas Corporation of India (ONGC) whose foreign arm ONGC Vides Limited (OVL) has been expanding its operations globally.

Trump aimed at reducing the generic drug prices, but it impacted Indian pharma companies minimally. Because Indian pharma companies such as Sun Pharma, Lupin, Dr Reddy's and others have a dominant presence in the generic US market.



CONCLUSION

Trump's coming to power had both positive and negative implications on Indian economy as any major happening in any part of the world undoubtedly influences the financial

markets across the globe. The result of the event study methodology indicates that the Average Abnormal Returns is more negative in the period preceding the event day as compared to period after the beginning of Trump's presidency. The Average Abnormal Returns showed negative results continuously for 10 days in the pre-event, event day and 3 days post event. Moreover, the study used ARCH and GARCH models to examine the Trump effect on different sectors of the Indian economy namely, Pharma, IT, and Energy. The result of GARCH model signifies that the alpha and beta values are near to zero which indicates the presence of volatility clusters and shocks in the data. Volatility appeared to be high in the year 2017 resulting from the Trump's selection as President of US. The study concludes that Trump's victory had a positive impact on the Indian Energy sector whereas a negative impact was seen on the Indian Pharma sector. Indian IT Sector was also affected because of the stringent immigration rules and regulation against outsourcing.

If all the Trump's policies and proposals are implemented, then there will be only few temporary negative consequences for India. But in the long run, Indian economy will be benefited by the increase in the number of skilled workers and investments. If IT & Medical professionals return to India, Modi's dream of brain gain will become true. India's development will be faster 'Buy American, Hire American' policy is very costly for many IT industries in US. Indian-based IT industries in US may shift their base to India, which is very beneficial to Indian economy. With the increase of talent pool in India, our country can attract more foreign investments.

REFERENCES

- i. Kumar Arya (2018), "Demonetization Effect On Sectorial Indices With Special Reference To Indian Stock Market- An Empirical Analysis", International Journal of Commerce and Management, Retrieved from https://www.researchgate.net/profile/arya_kumar2/publication/325075455_demonetization_effect_on_sectorial_indices_with_special_reference_to_indian_stock_market-an_empirical_analysis/links/5af526694585157136ca41c1/demonetization-effect-on-sectorial-indices-with-special-reference-to-indian-stock-market-an-empirical-analysis.pdf
- ii. "Short-run Political Events and Stock Market Reactions: Evidence from Companies Connected to Malaysian bi-Power Business-political Elite" Retrieved from <https://www.sciencedirect.com/science/article/pii/S1877042815053951/pdf?md5=e38b54c7562a65e330620146312185ec&pid=1-s2.0-S1877042815053951-main.pdf>
- iii. Mehndiratta Neetu & Gupta Shuchi (2010), "Impact of Dividend Announcement on Stock Prices", International Journal of Information Technology and Knowledge Management, July-December 2010, Volume 3, No. 2, pp. 405-410
- iv. Maithili S Naik and Y V Reddy (2018), "Stock Market Volatility Before and After Implementation of VIX in India", IUP Journal of Financial Risk Management, Volume XV, No. 1.
- v. Ritika Jain (2017), "Is Demonetisation a Windfall for the banking sector? Evidence from the Indian stock market", Economics Bulletin, Volume 37, Issue 2. Retrieved from <http://www.accessecon.com/Pubs/EB/2017/Volume37/EB-17-V37-I2-P65.pdf>
- vi. Rafaqet Ali and Muhammad Afzal (2012), "Impact of global financial crisis on stock markets: Evidence from Pakistan and India", Journal of Business Management and Economics Vol. 3(7). pp. 275-282. Retrieved from http://www.e3journals.org/cms/articles/1342846725_Afzal.pdf
- vii. "US Presidential Elections: Impact on India" Retrieved from https://www.chase-india.com/US%20Presidential%20Election-Impact%20on%20India_10nov.pdf
- viii. "How will Donald Trump's win impact India? " Retrieved from https://www.dsij.in/productattachment/premarketreports/market_impactoftrump_dynamic_10.11.16.pdf

The Financial Implications of Decisions Related to Choice of Contracting Techniques and the Influence on Contractor Performance

**Dr. Anand Krishnamoorthy*

ABSTRACT

This study looks at the implications of outsourcing the public sector function of residential refuse collection. We hypothesize that the private sector can provide services in a more efficient manner than public sector agencies. This study is an extension of an earlier study on this topic using more recent data. Some results of this study are consistent with prior studies, on this topical area, but some are unique to the current study. Generally speaking, a majority of jurisdictions reported satisfaction with the quality of work provided by private contractors.

Keywords: *Outsourcing, local jurisdiction, private contractors, contract design variables, choice of contracting techniques, contractor performance*

**Associate Professor Troy University, Washington DC, USA*





INTRODUCTION

To produce needed services internally or to rely on a private source is an important governmental decision. In the United States, a prevalent form of privatization is contracting for needed goods and services. In analyzing the make or buy decision public organizations must initially develop political support for the action and ensure that consequences in terms of impact on citizens are acceptable. Critical decisions include the selection of particular services to contract and what contracting techniques should be used in choosing a private firm for a contractual relationship. This study focuses on the services public organizations rely on private contractors to provide and the various contracting techniques used in choosing a contractor for jurisdictions that contract for residential refuse collection. The following research questions are investigated in this study:

What contracting techniques do local jurisdictions use when deciding to hire a private contractor for delivery of residential refuse collection?

What is the association between contracting techniques and contractor performance for delivery of residential refuse collection?

A prior study (Shetterly et al, 2013) investigated *contract design techniques for residential refuse collection* and scheduled public bus transit service. That study relied on a 1992 International City/County Management Association (ICMA) survey of Alternative Service Delivery Approaches as a starting point. The 1992 ICMA survey shows patterns of contracting for-profit and non-profit firms covering 62 different services.

The current study builds on similar survey information collected by the ICMA in 2017. The 2017 ICMA survey resulted in a report titled Profile of Local Government Service Delivery Choices, 2017 and shows contracting patterns to for-profit and non-profit firms for 67 local governmental services. The 2017 survey was mailed to Chief Administrative Officers in a random selection of jurisdictions with populations of 10,000 or greater and counties with populations of 25,000 or greater. A total of 7,023 jurisdictions were mailed surveys and 1,321 responses were received.

The 1992 and 2017 ICMA surveys show that there is a substantial amount of contracting for local level services to for-profit and non-profit organizations. Table 1, which is located at the end of the manuscript, collapses the data from the ICMA surveys into seven major service categories and shows the amount of contracting to for-profit and non-profit firms within each category. This study focuses on residential refuse collection within the Public Works/Transportation Category. Although, the context of this study may seem narrowly focused, it has far reaching implications. Public agencies worldwide face the dilemma of whether to provide services in-house or outsource services to private contractors. Furthermore, although this study focused on only one issue which is residential refuse collection, it has implications for other public services such as scheduled public bus transportation.

As alluded to in the preceding paragraph, the target audience for this paper consists of local jurisdictions that provide public

services to residents who reside within the jurisdiction's limits. Local jurisdictions often times wrestle with the implications of providing public services in-house or outsourcing them to private contractors. In the abstract, they may realize that there are pros and cons to both aspects, but may lack specific knowledge of the various implications of this important public policy decision. This study sheds light on some of these implications and can therefore enable public policy decision makers to make a more informed decision regarding outsourcing local jurisdiction functions.

The results of this study has worldwide applicability. Throughout the globe, local jurisdictions are entrusted with providing services to residents who reside in the jurisdiction in question. Although this study was based on U.S. jurisdictions, the public policy implications of whether the jurisdiction in question should provide needed services themselves or outsource to private contractors is applicable to other countries and their respective local jurisdictions.

Given the substantial reliance on private providers a local government that decides to contract for service delivery is faced with a number of policy choices that impacts how service contracting is accomplished. The remainder of this study deals with the techniques local governments use when establishing contractual arrangements with private for profit and non-profit organizations. The next section describes the methodology used to investigate the research questions, described earlier, in the context of residential refuse collection. This is followed by sections that discuss the research results and a qualitative discussion of those results, respectively. The final section provides some concluding comments as well as the implications of this study. The reference list and all tables follow the conclusions section.



ETHODOLOGY

This study employs a web based survey using the on line survey resources offered by Survey Monkey. The target population for data collection are the set of city and county officials that indicated in the ICMA 2017 Profile of Local Government Service Delivery Choices that their jurisdiction outsourced residential refuse collection to either a for-profit or non-profit firm. In total 1,321 jurisdictions responded to the 2017 ICMA Survey and of those 328 reported contracting for residential refuse collection and represents the target population for this study.

A survey questionnaire was developed to acquire data on contract design and contractor performance. The survey questionnaire contained two sections. The first section included nine questions on contract design. All questions can be answered by using a check off procedure. The second section has one question for collection of performance data on five related attributes. The performance data question can also be answered using a check off procedure. An email message was sent to each target that provided an Internet link to access the survey. The email message advised targets that participation in the study is voluntary. Targets were given the option to decline to participate altogether, or leave blank any questions they did not wish to answer.

It should be noted that administration of the survey was undertaken by ICMA. The author received the survey data set in MS Excel format. The authors were also provided a summary report regarding relevant information such as administration of the survey and the response rate.

Contract design variables

The contracting design variables include specification type, solicitation method, contract type, financial incentive provisions, contract length, multiple awards, type of firm, and type of oversight used by the jurisdiction. These design variables, and their definitions, are consistent with previous studies on this topic and are explained in detail below:

Specification Type: A specification is a description of the work to be performed. It is hypothesized that better satisfaction with performance should result with a performance specification in which contractors are free from procedural constraints and able to devise their own methods on how work is best done.

Solicitation Method: It is hypothesized that use of a sealed bid method is expected to result in better satisfaction with contact or performance.

Contract Type: Because of increased flexibility and potential for innovation, use of a fixed price contract is expected improve the efficiency and overall satisfaction with performance of service contractors.

Incentives: Some contracts may include positive incentives which promote efficiency by providing contractors a share of the savings realized by implementing innovative practices. Other contracts may include negative incentives, such as penalties which deduct amounts from the contractor payment for missed stops or damaged refuse collection containers. Another common practice is to include a termination clause in the contract. From a principal-agent perspective, penalties and a termination clause shift risk to the contractor. Therefore, assuming contractors are risk-averse, use of these provisions is expected to increase the cost of contracted services with a resulting decrease in overall satisfaction with contractor performance.

Contract Length: Contract length measures the number of years for which the contract was awarded. A risk-averse contractor may favor a longer contract, rather than the uncertainty of a shorter contract at a higher price. Therefore, from this perspective, contract length is expected to increase satisfaction with contractor performance.

Multiple awards: Local governments may contract for a single service using one firm or many firms. A refuse collection contract could be awarded to one firm, or to two or more firms, with each contractor responsible for a designated geographic area. This variable measures the number of providers awarded a contract for each solicitation.

Firm Type: Firm type measures the type of private organization awarded a contract. With a for-profit firm the existence of a profit motive should provide a greater incentive for cost savings. Use of for-profit firms is expected to have a positive impact on contractor performance.

Oversight: Oversight measures the occurrence of monitoring activity. If oversight is conducted there should be a greater likelihood of receiving quality service. Oversight activity is expected to promote better satisfaction with contractor performance.

Dependent variable

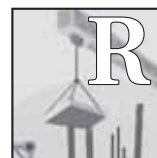
In keeping with prior research, five performance dimensions were used to measure the level of satisfaction with contractor performance for residential refuse collection. The five dimensions are efficiency (Cost per customer), reliability (timely in meeting schedules), complaints by citizens, damage to private property, and quality in terms of cleanliness, odor, noise, etc. An overall performance score was calculated for all of the dimensions.

The performance dimensions are measured on a Likert scale ranging from a low of 1 to a high of 7. A one is reflective of strong dissatisfaction with contractor performance and a seven with strong satisfaction.



TATISTICAL ANALYSIS

Descriptive statistics were used to show the usage pattern of contracting techniques among reporting jurisdictions. A Chi square analysis was then performed to determine the association between contract design techniques and performance (low vs. high) with a level of significance set at $p = 0.05$. Jurisdictions were divided into 2 groups of Low Performance or High Performance. Jurisdictions were classified into the Low Performance Group if the overall performance score for the level of satisfaction was less than the mean; they were placed in the high performance group if the overall performance score for the level of satisfaction was above average. Use of the Chi-square statistic is consistent with prior studies on this field. The Chi-square test was used to identify contract design variables that were associated with the overall performance score for the level of satisfaction.



RESULTS

Table 2, which is located at the end of the manuscript, provides descriptive statistics on the use of contract design variables. The survey questionnaire was made available via email notification to 328 respondents. A total of 84 completed questionnaires were received for an overall response rate of 26%.

The distribution of overall performance scores for the low performance group and the high performance group for each of the contract design variables are described in the succeeding paragraphs. A total of 30 jurisdictions that used performance specifications fell in the high performance group, while only 12 fell into the low performance group. For jurisdictions that did not use performance specifications, only 16 fell into the high performance group while 26 were in the low performance group.

Only 20 jurisdictions that used a solicitation method of sealed bid, fell into the high performance group, but 28 jurisdictions that used a solicitation method of sealed bid fell into the low

performance group. Out of the 36 jurisdictions that did not use a sealed bid solicitation method, 20 were in the high performance group, and 16 fell in the low performance group. Of the 70 jurisdictions that used a fixed price contract, 38 and 32 fell into the high and low performance groups, respectively. Of the 14 jurisdictions that used a different contract type, 9 were in the low performance group and 5 were in the high performance group.

Of the 76 jurisdictions that used a for profit firm, 62 were in the high performance group and only 14 were in the low performance group. For jurisdictions that outsourced residential refuse collection to a non-profit firm, the results were evenly split between the two groups.

There were 30 jurisdictions that reported using a penalty for nonperformance that fell into the high performance group, while 22 fell into the low performance group. A majority of the 32 jurisdictions that used termination for convenience features in the contract design fell into the low performance group.

For jurisdictions that reported shorter contract lengths, between 1 and 5 years, the majority were in the low performance group. For jurisdictions that used longer contract terms, of over 5 years, nearly 60% was in the high performance group.

Out of the 8 jurisdictions that reported multiple awards, about 75% (n=6) fell into the low performance group, while only 25% (n=2) fell into the high performance group. For jurisdictions that did not have multiple awards, 41 fell into the high performance group while 35 were in the low performance group.

For the 82 jurisdictions that use one or more oversight method, 68 fell into the high performance group while only 14 were in the low performance group. Both jurisdictions that reported no oversight were in the high performance group.

The results of the Chi-square test of association for each contract design variable and performance group are described in the following paragraph. The results of the Chi-square analysis demonstrate that only the performance specification design variable, type of firm and oversight method were statistically significantly associated with the performance group at the 95% level of significance ($p < .05$). No significant associations were found between the performance group and the other contract design variables.

For the performance specification variable, the Chi-square statistic was 4.01; for solicitation method, it is .73; for contract type, it is 2.01; for type of firm, it is 5.93; for the penalty for nonperformance variable, it is 1.03; for termination for convenience, it is 1.02; for contract length, it is 1.62; for multiple awards, it is 0.97; and for oversight method, it is 5.68. The chi-square statistic was statistically significant at the 95%, or higher, level of significance only for the performance specification, type of firm and oversight method variables. For those variables with a statistically significant Chi-square value, the results are consistent with the stated hypothesis with respect to that particular contract design variable.



DISCUSSION

The goal of this study was to investigate patterns of service contracting, use of contracting techniques, and the association between contracting techniques and contractor performance for local jurisdictions that use a private service provider for residential refuse collection. The following discussion addresses each of these contract design variables.

Specification Type

There is an even split between those jurisdictions that use a performance specification and those that do not. Use of a performance specification should be associated with stronger contractor performance. The rationale is that a performance specification has fewer procedural constraints and gives contractors the freedom to devise their own methods on how work is to be done. The finding of this study is consistent with the proposed hypothesis. Jurisdictions that use a performance specification reported greater satisfaction with contractor performance. Furthermore, the Chi-square result for this contract design variable was statistically significant.

Solicitation Method

57% of the jurisdictions reported using a sealed bid solicitation method. Based on a competitive contracting perspective use of a sealed bid method should be associated with stronger contractor performance. However, the results for this variable are inconclusive since the Chi-square statistic is not significant at conventional levels.

Contract Type

An overwhelming majority (83%) of jurisdictions reported using a fixed price contract which is hypothesized to result in higher satisfaction. However, the results for this variable are inconclusive since the Chi-square statistic is not significant at conventional levels.

Firm Type

An overwhelming majority (90%) of jurisdictions reported using a for profit firm which is hypothesized to result in higher satisfaction. The findings are consistent with the proposed hypothesis. Jurisdictions that use a for profit firm reported greater satisfaction with contractor performance. Furthermore, the Chi-square result for this contract design variable was statistically significant.

Incentives

62% of the jurisdictions reported including a penalty for non-performance in the contract that was awarded. 38% reported including a termination for convenience clause in the contract. From a principal-agent perspective, penalties and a termination for convenience clause shift risk to the contractor. It is hypothesized that a risk-averse contractor would compensate for such risk by increasing the cost of contracted services and thereby reducing overall satisfaction with contractor performance. However, the results for this variable are inconclusive since the Chi-square statistic is not significant at conventional levels.

Contract Length

Contract length measures the number of years for which the contract was awarded. This variable involved competing hypotheses. One hypothesis is that contract length would be associated with decreased satisfaction with contractor performance because contracts would be competitively awarded less frequently. A competing hypothesis was that contract length would be associated with an increase in satisfaction with contractor performance. From a principal-agent perspective, a risk-averse contractor may prefer the security of a longer contract at a lower price rather than the uncertainty of a shorter contract at a higher price. However, the results for this variable are inconclusive since the Chi-square statistic is insignificant at conventional levels.

Multiple Awards

A majority of jurisdictions did not utilize multiple firms for the same service. It is hypothesized that using multiple firms fosters competition among providers of the service in question and should result in better performance. However, the results for this variable are inconclusive since the Chi-square statistic is not significant at conventional levels.

Oversight Method

All the jurisdictions, except for two, reported using one or more oversight methods to oversee contractor performance. It is hypothesized that having oversight should result in higher quality work by the provider of the service. This hypothesis is supported by the statistically significant Chi-square statistic for this particular contract design variable.



CONCLUSION

The purpose of this study was to investigate the relationship between various contract design variables and satisfaction with contractor performance for local jurisdictions that out source residential refuse collection. The results indicate that specification type, firm type and oversight

method are significantly associated with contractor performance. The results for the other contract design variables are inconclusive at best.

The study has numerous practical implications. Local jurisdictions worldwide wrestle with the decision of whether to provide public services in-house or outsource them to private contractors. This study has shed some light on some of the issues that are relevant in this regard that deserve consideration.

Although this study focused on residential refuse collection in selected U.S. jurisdictions, it has applicability to other countries as well. India is one such example. Local jurisdictions in India provide residential refuse collection to residents who reside within the jurisdiction's boundary. These local jurisdictions might wrestle with the decision as to whether to provide services in-house or outsource them to private contractors. The results of this study should provide them with some insight into the issues, and the resulting implications, that are relevant to this important public policy decision.

This study's practical implications extend far beyond residential refuse collection. Local jurisdictions worldwide provide a myriad of services of residents who call the jurisdiction home. These include, but are not limited to, local transportation services such as buses and subways, electricity deliverance and the like. The contract design variables discussed in this manuscript are not unique to residential refuse collection and can therefore be applied to other local jurisdiction services as well.

There are numerous avenues for further research on this topic. One obvious avenue is to further investigate the contract design variables that did not yield statistically significant results. Furthermore, as alluded to in the preceding paragraph, this study was narrow in scope in that it only considered residential refuse collection. Hence, another potential avenue for future research is to investigate this issue with respect to other public sector services that are outsourced to private for-profit and not-for-profit contractors.

REFERENCES

- i. Agburu, J. and Ayortsum, A. (2017). "Effect of Outsourcing Strategies on Small and Medium Scale Enterprises," *Journal of Global Entrepreneurship Research*, Vol. 7, pg. 1-34
- ii. DeHoog, R. (1985).. "Human Service Contracting: Environmental, Behavioral, andOrganizational Conditions." *Administration and Society*, Vol. 16 (February), pg. 427-454.
- iii. DeHoog, R. (1990) "Competition, Negotiation, or Cooperation: Three Models for Service Contracting." *Administration and Society*, Vol. 22 (November), pg. 317-340..
- iv. Ferris, J. and Grady, E. (1991) "Production Costs, Transaction Costs, and LocalGovernment Contractor Choice" *Economic Inquiry*, Vol. 24 (July), pg. 541-554.
- v. Gormley, W. (1994). "Privatization Revisited" *Policy Studies Review*, Vol. 13, (Autumn/Winter), pg. 215-234.
- vi. International City/County Management Association (ICMA); www.icma.org; 2018
- vii. Iqbal, Z and Dad, A. (2013). "Outsourcing: A Review of Trends, Winners & Losers and Future Directions" *International Journal of Business and Social Science*, Vol. 4 (July), pg. 91-107.
- viii. Kettner, P and Martin, L. (1991). "Purchase of Service Contracting: Two Models." *Administration in Social Work*, Vol. 14, pg. 15-30.
- ix. Kettner, P and Martin, L (1993). "Performance, Accountability, and Purchase of Service Contracting." *Administration in Social Work*, Vol. 17, pg. 61-79.
- x. Nyamboane, J. and Haddud, A. (2017). "Exploring the Impact of Outsourcing on Organizational Performance," *Journal of Global Operations and Strategic Sourcing*, Vol. 10, pg. 362-387
- xi. Shetterly, D. (2000). "The Influence of Contract Design of Contract On
- xii. Contractor Performance" *Public Performance and Management*

xiii. Review, Vol. 24 (September), pg. 53-68.

xiv. Shetterly, D. (2002). "Contracting for Public Bus Transit: Do Techniques Employed Make a Difference in Service Outcome?" Journal of Public Procurement, Vol. 2, pg. 73-92.

xv. Shetterly, D., Kronenburg, M. and Duan, C. (2014). "The Impact of Contract Design on Contract Performance Satisfaction," International Journal of Management Research and Review, Vol. 3, Issue 4, No. 1

xviii. Sperka, L. and Enright, E. (2018). "The Outsourcing of Health and Physical Education: A Skoping Review," European Physical Education Review, Vol. 24, issue 3

Table 1 - Contracting Patterns by Service Category

Service Category	2017 FPO	2017 NPO	2017 Total	1992 FPO	1992 NPO	1992 Total
Public Works & Transportation	3,251	293	3,544	3,428	303	3,731
Public Utilities	516	67	583	482	49	531
Public Safety	1,312	1,598	2,910	1,323	299	1,622
Health & Human Services	972	1,392	2,364	1,041	1,681	2,722
Parks & Recreation	302	91	391	225	90	315
Cultural & Arts	71	452	523	63	518	581
Support Functions	2,301	149	2,450	2,728	244	2,972
Total	8,725	4,042	12,767	9,290	3,184	12,474

Source: 1992 and 2017 ICMA Surveys on Service Delivery

TABLE 2 – DESCRIPTIVE STATISTICS

Variable	Definition	n=84	%
Specification type	Performance specs.	4242	50.0%
	No performance specs.		50.0%
Solicitation method	Sealed bid	4814	57.1%
	Competitive negotiation	1210	14.3%
	Two step sealed bidding		11.9%
	Non competitive		
Contract type	Fixed price	7012	83.3%
	Cost reimbursement	2	14.3%
	Franchise		2.4%
Firm type	For profit	768	90.5%
	Non profit		9.5%
Incentives	Penalty for non- performance	52	61.9%
	Termination for convenience	32	38.1%
Contract length	1 year	2	2.3%
	2 years	2	2.3%
	3 years	8	9.5%
	4 years	4	4.8%
	5 years	36	42.9%
	6 years	4	4.8%
	7 years	8	9.5%
	8 years	2	2.3%
9 years	2	2.3%	

Variable	Definition	n=84	%
	10 years.	16	19%
Multiple awards	Yes	8	9.5%
	No	76	90.5%
Number of awards	One award	76	92.9%
	Two awards	6	4.8%
	Three awards	2	2.3%
Oversight method*	Citizen surveys	18	21.4%
	Observation by staff	70	83.3%
	Citizen complaints	72	85.8%
	Review of records	32	38.1%
	External oversight	12	14.3%
	No oversight	2	2.4%

*some jurisdictions reported using multiple oversight methods

Gap Analysis on EDI Implementation in Cargo Sector and Cargo Clearance Procedures at Indian Airports: Issues and Challenges

*Dr. Reena Sethi



ABSTRACT

Technology is productively being used globally to expand and upgrade trade transactions. As a result of technology modernization, significant strides have been made in air transport trade in India which is competing with the elite group in growth of international and domestic traffic. Air transport normally grows at a rate which is about twice the GDP growth rate. India aims to become the third-largest aviation market by 2020 and the largest by 2030. It is already a fastest developing domestic aviation market in the fourth year in a row with a growth rate of 18.6%. Air cargo is a significant sector in India, that is on a high-growth trajectory. This article presents gap analysis in EDI implementation at some important airports in India handling cargo operations. It has been observed during the study that gap between "cargo clearance vs facilitation steps taken" has reduced and there is scope for further improvements for hassle free cargo movement. RMS bills are mostly released by Customs using EDI. However, for exports, currently concerns are being faced like non-payment of customs duty through the banks in EDI system. The connections of EDI with systems of trade companions is in place but 100% communication exchange as envisioned is yet to be completed. At certain joint venture major airports, EDI implementation amongst Customs and Custodian is in position for Export/Import operations through Cargo Management System established by airport operators. This system is suitable for integration with carriers, exporters/importers, cargo forwarders and customs traders. However, EDI message exchange between entire regulatory authorities in the air cargo supply chain is not happening showing the way to old physical process at some points, thus delaying cargo clearances. Interface is essential at the software and hardware level so as to effortlessly incorporate with the present processes. EDI of different allied agencies are not completely inter-linked. Banking Gateways for online transfer/payment are not available 24*7 hours at all cargo airports. The paper also proves that improvement in EDI system reduces congestion at cargo terminals. The study establishes that reducing dwell time has improved through puts in the entire air cargo value chain. This paper focuses on obstacles in successful execution of EDI in Indian cargo sector and recommends some vital policy mediations.

Keywords: Air cargo supply chain, Cargo clearance, Electronic Data Interchange, Message exchange, Dwell time, RMS

* Professor Delhi Institute Advanced Studies, Delhi, India

INTRODUCTION

The global air transport is progressing very speedily. The Indian civil aviation sector has made rapid transition incorporating innovative ideas and new inventions in information technology. Changing global economy is compelling newer technologies to integrate various services and goods. **Electronic Data Interchange (EDI)** is an electronic communication and information exchange method that provides standards for exchanging data between applications across a supply chain via any electronic means. Emmelhainz [6] defines EDI as "inter organizational exchange of business documentation". Logistics sector is being enabled by EDI. Globally, airlines and freight forwarders are embracing devices which provide improved information management and container tracking. EDI has become crucial to such integrated methods. Electronics and information technology promote many aviation activities by streamlining jobs and lowering operational expenses.

EDI has been now happening for about 30 years. Buying orders, advance notices, useful acknowledgments, bill of lading, etc. can be electronically traded by following uniform standards. Handling of received messages is done by exploiting electronic processors. Individual involvement in handling of an acknowledged communication is ordinarily done only during error circumstances, for quality assessment and during special conditions. In logistics sector precisely, several enterprises or organizations, even in two different countries can electronically interchange forms and documents. B2B and B2C enterprises have made remarkable improvements, returns and savings by using Electronic Data Interchange (EDI) or other techniques of integrated system-to-system connections. Entire supply chain results into superior value, better performance and expenditure management. A market report by Dart Consulting estimated EDI to reach \$1.68 billion by 2018, with predictions reaching as high as \$2.1 billion by 2020 [13]. Thus, logistics segment is geared up for an impressive growth.

Global trade increased at a CAGR of 6.9 per cent in value terms during 1990-2015 [4]. In outgoing volumes, Asia Pacific stood out with growth over 10 percent year over year, followed by Central and South America at 8.7 percent and Africa at 8.5 percent [22]. ASSOCHAM report states that "Air cargo contributes about 20 percent of airlines revenue and involves a wide variety of service providers and employs nearly 70,000 persons in the country." [22] According to National Council of Applied Economic Research, Delhi Airport provides 17.89 percent to the Gross State Domestic Product. [16] The GMR group led Delhi International Airport Ltd (DIAL) attained 28th position globally. The cargo tonnage moved by Delhi airport is 29 per cent of India's overall air cargo. [16] It provides one million metric tons cargo in a year and as such has been projected as India's Air Cargo Gateway for its usage capacity, time saving processes and efficiency standards. These figures create a significant impact amongst its customers in promoting Delhi Airport as Cargo Hub Airport for Asia Pacific and the world. [16] As per cargo news, air cargo volume at Delhi Airport more than doubled to reach 980,000 metric tonnes per annum in 2018 [38]. Government of India aims to bring India in top five global air freight markets by 2025. [30]. It is endeavoring in making India the transit cargo hub to and

from other parts of the globe. Delhi, Mumbai, Chennai and Bengaluru are some of the major Indian airports which can be developed as committed digital/e-freight corridors interlink for most important airport hubs globally. Total revenues of Delhi & Mumbai Airports are given in Table 1 below:

Table 1: Total Revenues of Delhi & Mumbai Airports (Rs. In Crore)

S.No.	Year	Delhi	Mumbai
1.	2002-03	369	423
2.	2003-04	408	436
3.	2004-05	489	489
4.	2005-06	670	665
5.	2006-07	720	719
6.	2007-08	876	857
7.	2008-09	958	955
8.	2009-10	1,172	997
9.	2010-11	1,255	1,180
10.	2011-12	1,531	1,314

(Developed from Annual Reports of different years)

EDI READINESS IN B2B AND B2C

Physical processing of B2B and B2C transactions encompasses numerous paper documents and various human interferences that leave the system susceptible to errors. For simplifying a more encouraging business environment for MSMEs, a large number of policy actions have been introduced by the government.

Electronic Data Interchange has streamlined the work processes. Human interventions and paper documents have been done away with in EDI systems. Transparency is ensured due to EDI processes. Moreover, EDI takes care that business vital data is timely transmitted from source to destination. Different types of tasks and service delivery channels are replicated as a never-ending value-adding chain while obtaining responses for inbound and outbound logistics. Efficient supply chain can speed up business cycles besides improving data quality, lowering transitional charges, facility in soliciting orders, distribution and accounting of data involving suppliers and customers. Errors due to illegible handwriting and missing faxes/mail are eliminated. These advantages indisputably contribute to making domestic and international air cargo businesses more competitive. The air cargo trade goes on with challenges of complex decision making, security, sustainability, cost-effectiveness and client satisfaction.

EDI IN AIRCARGO SECTOR

The noteworthy progress in Civil Aviation and air routing has realized a leading contribution in facilitating cargo movements throughout the world. The desire for air cargo movement has progressed significantly over the last few years as the excitement for rapid delivery of e-commerce products has progressed. Requirement for e-business and e-commerce models akin to worldwide just-in-time marketing and

business process out-sourcing have impacted fast growth of air cargo logistics business and digitization of supply chains. EDI has a great role in impressive growth of cargo sector.

Due to reforms effected in many sectors, India witnessed a 23-notch jump to a record 77th position in the World Bank's latest report in 2019, on the 'ease of doing business' that captured the performance of 190 countries. [24] AAI Cargo Logistics and Allied Services Company Limited (AAICLAS) was incorporated on 11th August 2016 alongside a vision to develop a prominent integrated logistics network in India. It will operate as a multi modal interchange contact point connecting air, surface and water transport.

During the financial year 2017-18, MSME sector alone contributed to 7.5 percent growth in exports of goods in India [15]. At the same time, the total imports raised 10.5 % YoY in Sep 2018. [23] Rapid transportation through air as compared to road or sea, together with EDI, is likely to modernize the global business environment for both imports and exports. Indian carriers are now flying out to more than 100 countries having bilateral agreements with India. As such, the transshipment sector has imperative market prospects. In such a shifting trade environment, speed in transactions is an economical compulsion. Supply of orders is facing a fierce competition. EDI facility has tremendously assisted dispersal of imports within the country and has reinforced exports access to and from the gateways of international airlines. Likewise the growth of cargo transferred as 'deck cargo' in inland airlines and 'freight interline cargo' from transnational line is also picking up in India after embracing EDI. As the competition is becoming severer, the organizations must look at every aspect or chance to remain viable. Enterprises with efficient supply chains are more cost effective than those of their competitors. In order to productively introduce EDI system, it is crucial that the current business processes are improved before the implementation phase is kicked off.



CENARIO ANALYSIS AND FORECASTS

According to International Air Transport Association, Indian economy will upsurge to the tune of Rs 240,356 crore by 2025-26. [25] The National Foreign Trade Policy proclaimed that international trade of the country during the next five years till 2020-21 would increase three times. Predictions are that 35% of such international trade would move by air. and as such, air cargo logistics sector has an excellent potential to meet the future high growth [7].

According to International Air Transport Association, India is evolving globally as the third largest domestic market for civil aviation in the world [10]. Later on, the Indira Gandhi International Airport (IGIA) in Delhi was placed the second best airport in the world. During 1990-2015, total cargo volumes handled globally by airports increased by 7.7% representing 118.6 million tonnes. Advanced economies held the largest proportion (62%) of global cargo traffic equating to the handling of 73 million metric tonnes.

According to Planning Commission, cargo traffic witnessed an unprecedented growth during the period 2001-02 to 2007-08. Growth in cargo traffic increased by 12.3 per cent during this

period, which is 12.68 per cent for international cargo traffic and 11.57 per cent for domestic cargo. [42]

Planning Commission noted that “four airports at Delhi, Mumbai, Bengaluru and Hyderabad handle 67% of the total air cargo traffic in India.” In 2006, Planning Commission estimated that over the next twenty years, the domestic and international air cargo throughput is likely to propagate by 7-10 times from the present level.” [7] Recently, Planning Commission revealed an average annual rate of growth as 12 and 10 for domestic and international freight traffic as follows:

Table 2: Freight Traffic Growth

	Year 2011	Year 2017	Average Annual rate of growth
Domestic	0.9	1.7	12.0
International	1.5	2.7	10.0

Source: Planning commission

The JVC airports have shown impressive cargo growth in recent years as can be seen in the Table 3 below:

Table 3: Cargo Tonnage, Projected Growth & Annual Handling Capacity Of Jvc Airports

Year	Domestic Tonnage (in '000 MT)	International Tonnage (in '000 MT)	Total Tonnage Tonnage (in '000 MT)	CAGR
2010-11	53.9	37.9	91.8	-
2015-16	94.1	39.4	153.5	10.8%
2020-21	164.4	91.1	256.3	10.8%
2030-31	437.9	217	654.9	10.3%

Source: Planning commission

In FY18, domestic freight traffic stood at 1,213.06 million tonnes, while international freight traffic was at 2,143.97 million tonnes. [41] As presented by the *National Council of Applied Economic Research (NCAER)*, the general economic impact of Delhi Airport is projected to be approximately Rs 909.5 billion by 2020 that comes to 0.7 per cent of the National GDP. [15]

In 2010-11, on an average Delhi Airport handled 1,652 tonnes of cargo per day [16] Delhi's Indira Gandhi International airport handled over 'one million metric tonnes' of cargo in one year, between November 2017 and October 2018. [17].

As per data obtained from AAI and DIAL at the time of study, cargo volume for Delhi airport in 2014-15 was as below:

Table 4: Cargo Volume at Delhi for Year 2014-15.

Delhi Airport in MT		
International	Export	232,092
	Import	194,784
	Total	426,874
Domestic	Outbound	175,137
	Inbound	105,026
	Total	280,163
Total Air Cargo	Total Volume	707,039

Source: AAI, DIAL

Indira Gandhi International Airport, Delhi links to 67 domestic and 75 international destinations, served by nearly 64 Air Carriers and 16 Freighter airlines. DIAL is also accepted as the 'Authorized Economic Operator Certified Airport' by Central Board of Excise & Customs'. Cargo operations in Delhi are carried out at two separate terminals i.e. Greenfield cargo terminal and the Brownfield cargo terminal. Brownfield terminal operated by Celebi Delhi Cargo Terminal Management India Private Limited [approximately 70, 000 sq meters] is situated at a distance of about one km from the main terminal. The Greenfield terminal is operated by the Delhi Cargo Service Centre Private Limited. (approximately 48,500 sq meters} In 2007, the Delhi Airport was recognized for its exceptional and organized cargo handling arrangements. As per Centre Statistics Office, Govt. of India, across cities in India, Mumbai ranks 1st and Delhi ranks 2nd in the growth of Gross State Domestic Product (GSDP). In 2009-10, contribution of Delhi airport improved slightly to 20.8 per cent from 20.7 per cent in the previous year. Delhi airport contributed around Rs 351 billion out of the overall air-borne exports of Rs 1,690 billion [5]. It was predicted worldwide, commercial airlines are estimated to carry around 64 million metric tons of freight in 2018. "The existing volume of cargo being moved at AAI airports is 8.08 lakh metric tonnes. There is 34.53 per cent surge in tonnage and 19.55 per cent growth in revenue during financial year 2016-17 as compared to last year" [8]. This indicates that the domestic and international air cargo traffic in India is expected to develop hugely during next few years. As per the data base from Airports Council International (ACI), the global body that is responsible to monitor airport traffic, Delhi airport's compound annual

growth rate (CAGR) between the years 2014 and 2017 is 14.3%.[24].

Airport Authority of India shares revenue of 45.99 % and 38.7% from DIAL and MIAL respectively.[19] According to airport operator, the Indira Gandhi International airport for the first time ever touched over 'one million metric tonnes' of cargo in a year (between November 2017 and October 2018). It also moved the highest ever monthly cargo tonnage of 1,00,091 MT in October.

In India, all airports taken together have moved 3.36 million MT cargo traffic in 2017-18, 2.98 million MT cargo traffic in 2016-17, 2.70 million MT cargo traffic in 2015-16 and 2.53 million MT cargo traffic in 2014-15. Compounded Annual Growth Rate (CAGR) during the last three years for cargo traffic is 9.9%. Projected growth in 2019-2020 is 1,081,991 MT in JVC Airport Authority of airports of India as illustrated in following Table 5.

Report of January, 2016 [34] relating to setting up of International Air Cargo hubs in India, an optimistic volume of air cargo (both domestic and international) has been highlighted in 2020-21 and 2030-31 as 4,289,032 MT and 10,063,780 MT respectively, as can be seen in Table 6.

The above stated RITES report also highlights that with regard to setting up of cargo hubs, Indian Airports are much behind international airports, in so far as international airlines and destinations are served. Free Trade zone status is also not yet available in Indian Airports, as can be seen from the Table 7 below:

Table 5: Annual Handling Capacity of AAI Airports (in MT)

Name of the Airport	Covered Area (in Sqm.)	Annual Holding Capacity	Projected Growth (2019-20)
Chennai	54620	1102373	480235
Kolkata	21906	303293	102507
Coimbatore	2585	62780	737
Amritsar	2256	60833	40059
Lucknow	200	4866	1305
Guwahati	150	3560	00
Port Blair	945	23116	4633
Trichy	4000	28993	4748
Mangalore	1400	17885	500
Total	88062	1607699	1081991
Source: CPMS, AAI Also, as per RITES Project			

TABLE 6: FORECASTED VOLUME OF AIR CARGO

Location	International/ Domestic	Optimistic Tonnage (in MT)		Conservative Tonnage	
		2020-21	2030-31	2020-21	2030-31
India	International	2,502,044	5,553,662	2,301,186	4,442,876
	Domestic	1,786,988	4,510,118	1,618,119	3,461,186
	Total	4,289,032	10,063,780	3,919,305	7,904,062
Delhi	International	640,626	1,260,208	581,932	975,339
	Domestic	524,021	1,487,916	444,583	959,822
	Total	1,164,647	2,748,124	1,026,515	1,935,162
Chennai	International	406,269	1,102,646	354,146	764,574
	Domestic	166,253	525,651	132,237	285,491
	Total	572,522	1,628,297	486,383	1,050,065

Source: RITES

TABLE 7: COMPARISON BETWEEN MAJOR HUB AIRPORTS WITH REGARD TO CUSTOM STATUS

Country	Airport	Total Million Pax Handled	International Airlines being served	International Destination served	Nature of Custom Status
Singapore	Changi, Singapore	54.1	106	240	Free Trade Zone
France	CDG, Paris	63.8	120	270	
Germany	Frankfurt	59.6	110	264	
The Netherlands	Schiphol, Amsterdam	54.38	101	301*	
UAE	Dubai	70.5	140	270	Free Trade Zone
Hong Kong	Hong Kong	63.3	100	180	Free Trade Zone
USA	Ted Kennedy Anchorage	53.2	75	130	Free Trade Zone
China	Shanghai	51.6	87	194	Free Trade Zone
South Korea	Incheon, Seoul	40.78	60	123	Free Trade Zone
India	Delhi	39.75	58	62	
India	Chennai	14.29	37	45	

Source: CPMS, AAI

* (Including 27 direct cargo destinations)

Airports Authority of India data suggests that total air cargo at all Indian Airports during 2016-17 (Apr'16-Feb'17) perceived a growth rate of 9.3% and the air cargo has developed more than 20 times from 0.08 million metric tonnes in 1972-73 to 2.5 million metric tonnes in 2014-15. Data also indicate that overall air cargo at all Indian airports during 2016-17 and 2017-18 foresaw a progress of 10.1 per cent and 12.7 per cent respectively. For the period 2018-19 to 2022-23, 8.5 % growth has been projected by AAI.[17] The data maintained by the World Bank also shows that air freight moved by India went up from 96.3 million tonne-kilometers in 1970 to 1,833.8 million tonne-kilometers in 2015 (19).

As per data taken from Directorate General of Commercial Intelligence & Statistics, the significance of exports of MSME related products has been increasing consistently during last

four years. During the financial years 2015-16, 2016-17, 2017-18 and 2018-19 (till September, 2018), the value of exports are USD 130768.70 Million, USD 137068.80 Million, USD 147390.08 Million and USD 78519.91 Million respectively. Tremendous increase in export growth is leading to international cargo growth [21]. Similarly, by 2030, domestic cargo growth rate expected by various agencies like AAI and MOCA traverse from growth of 8 to 10 times and in respect of international cargo it is estimated to be 4 to 7.5 times [20].

Forecasted growth of this level would necessitate development of infrastructure abilities, conception of logistic parks, universalization of procedures and acceptance of information technology/computerization in addition to excellence of human resources in the aviation skills.

International Air Transport Association (IATA) forecasted international air travel worldwide to develop by an average of 6.6% a year and over 5% a year from 2010 to 2020. Express Industry Council of India published a Deloitte- led independent report titled '*Indian Express Industry-2018: A multi-modal play in building the ecosystem*'. This study predicts the growth of the express logistics industry at 17 per cent CAGR, estimated to reach Rs 48,000 crore by 2023. [39]

Nevertheless, in order to boost air cargo sector, 2017-18 Budget by Union Finance Minister laid emphasis to push infrastructure development for the logistics industry which includes, inter alia, development of multi-modal logistic parks with multi-modal facilities. It has also been proposed that logistics sector should be treated as an industry. In the budget of 2019-20, a modified scheme of bringing in duty-free capital imports and inputs for production and export has been presented, alongside introduction of single point of authorization under the Customs Act. It was also highlighted in the budget that Customs Authority of India is commencing complete and wide-ranging digitalization of /import/export transactions and positioning RFID expertise to expand export logistics [19]



KEY POLICY INTERVENTIONS

National Civil Aviation Policy

One of the key objective contained in National Civil Aviation Policy (NCAP) announced by M/O Civil Aviation (MOCA) on 15th June, 2016, is to promote government initiatives like '*Make in India*', '*Digital India*', '*Skill India*' and '*E-Commerce*', which ultimately give boost to all the sectors of air cargo i.e. domestic, international and express services.

Diminution of Dwell time:

One of the critical operation indicators of processes at cargo terminal of any airport is the Dwell time. More dwell time interrupts service quality and system operations. Dwell time has three

main components, i.e. valuation for payment of duty, examination of goods and registration of goods.

An important measure of supply chain productivity is dwell time. Dwell time is the ratio of time that an asset sits idle to the time necessary to fulfill its particular supply chain mission. As per 'CBIC' website, "Dwell time is the measure of the time elapsed from the time the cargo arrives in the Customs Station till the clearance is provided by Customs." [9]

The time release considered by Indian authorities is the time taken from arrival of the goods (represented by entry inwards) to release of cargo by customs (represented by grant of out of charge). Virtually, no time is taken at major Indian airports for assessment and examination of goods under the Risk Management System (RMS) for accredited clients. However, for the remaining goods, Dwell time was considered excessive and a need was felt to reduce the Dwell time.

An important footstep taken by Government for progress of air cargo was that Ministry of Civil Aviation prepared a Dwell-

Time study for six major airports. The intention was to ascertain the causes for higher dwell time in Indian Airports and suggest remedial action required. Based on the suggestions contained in the study report, the National Civil Aviation Policy released by Ministry of Civil Aviation mentioned that Dwell time would be reduced and finally, Government of India announced decrease in free period valid for air cargo at all airports. w.e.f. April 2017 as follows:

- a) Free period for import cargo was reduced from 72 hours to 48 hours. (I.e. two working days). The period of calculation of free period would begin from segregation time revealed in ICEGATE.
- b) Free period for export cargo in respect of airlines was reduced from 48 hours to 36 hours and free period for exporters was reduced from 24 hours to 12 hours. Thus, the total free period available for export cargo was 48 hours (i.e. two working days)."

In 2016, average dwell time was 100 hours in import and 38 hours in export. Subsequent to policy announcement on dwell time, secondary data sourced from IATA has revealed that airports have gradually driven to cut air cargo dwell time for imports to about 52 hours by December 2017. Assessments for the eleven major airports by IATA has further discovered that on the basis of average time taken for delivery of cargo and documents from the air carrier to the customer, the dwell time has further reduced to about 39 hours for imports by December 2018. A lot is yet to be done to bring down the dwell time equivalent to international norms.

Other Initiatives

- (i) The idea of 24x7 customs clearance of Import/Export Cargo has commenced at all major airports.
- (ii) "Single Window" concept has been adopted by customs w.e.f. 1.4.2016 in a scheduled manner for granting on-line approval to several regulatory organizations at one place.
- (iii) With 'Ease of Doing Business in India' together with 'Digital India' concepts, many airports have introduced latest technologies like robotics, artificial intelligence, biometrics, Automatic Storage & Retrieval System (AS&RS), Internet of Things, Elevated Transfer Vehicle (ETV) for managing import and export cargo.
- (iv) All the International Air Cargo Terminals accomplished by AAI are well equipped with latest cargo processing facilities besides having adequate storage area, mobile solutions, cargo handling equipments, cold rooms for perishable cargo and other fundamental amenities.
- (v) The Common User Domestic Cargo Terminal (CUDCT) concept has been presented for determined presentation of accessibilities.
- (vi) AAI has designed a road map to construct updated cargo infrastructure and conveniences at 24 AAI Airports to begin with. This scheme propounds push to financial growth and development and secures sure growth of all regions in India.

- (vii) Lately, private players have also developed the platforms which get together all main stakeholders in the supply chain, to communicate liberally and gain the best service support from each other. Clients can consider where and how to trade their service necessities to various service providers instantly and get best choices. With the presence of two-way communication platforms, the new innovative systems promote to and fro processing. Cargo E-Go platform has been initiated in April 2018 by one private company bringing together all key stakeholders in the supply chain.
- (viii) The Ministry of Commerce has started developing a national logistics portal, as part of its measures to ensure ease of trading and cut high logistics costs from 14 per cent of the GDP to 10 per cent by 2022. The National Logistics portal will be implemented in phases and will realize the promise of the Government of India to improve trade attractiveness, put up with 'Digital India' and overlay an approach towards making India a global logistics hub.
- (ix) Modernization of Delhi and Mumbai Airports had been considered as early as 1996 by Airports Authority of India. Technology upgradation of these airports is now in the lead as compared to other airports in India.

Integrated declaration

“Integrated declaration” has been emphasized recently in which improved customs Bill of Entry includes all kinds of data relating to permissions which were hitherto reflected in separate documents. Thirty-nine different documents have been swapped by a single window declaration.

Air Cargo Community System

Air Cargo Community System (ACCS) is an umbrella structure to bring all air cargo logistics trade stakeholders within its scope and offer end to end comprehensive solution under a digitized platform, where efficiencies are created to provide supply chain visibility. Cargo Community Systems are successful across the globe. With the endorsement for developing ACCS, the Ministry of Civil Aviation in its report, has added a new determination in the air freight industry. It is an immense initiative taken by Government to digitise the stakeholder interactions and facilitate the 'ease of doing business' through a national air cargo single window. This step of the government is in line with its proclamation listed out in NCAP, 2016. The gauge and magnitude of what is envisioned is unparalleled. This platform would challenge a lot of issues, in terms of avoiding delay in the seamless processing of EXIM trade, removing duplication of data, heavy loads of documentation and bringing uniformity in transactions. The government report takes the cognizance of the fact that airports and cargo agents have their own community systems and their investments in developing and managing those must be deliberated while rolling out any fresh system. The current community systems may remain with interface to the national single window so that already created infrastructure can be reused and leveraged.



ACTIVITIES INVOLVED IN AIR CARGO SUPPLYCHAIN

Air freight is normally handled for high value and low volume consignments. The old method of air dispatch is to transport a consignment encompassed by a distinct air waybill to an air carrier either directly or through a freight forwarder. Transshipment is a cumbersome process. There are too many activities from arrival of flight till the departure to the last consignee. A number of agencies are accountable for smooth operations in the cargo handling and movement which includes Customs, Carriers, Custodians, Air Freight Operators, Cargo Handling Agencies (CHAs), Bureau of Civil Aviation Security (BCAS) and many cross border inspection agencies. According to A.T. Kearney's research, “inefficiencies in the supply chain can waste up to 25 percent of a company's operating costs. With profit margins of only 3 to 4 percent, the consultants point out, even a 5-percent reduction in supply-chain waste can double a company's profitability.” [37]

The air cargo business encompass a complex supply chain, which embraces airlines, government regulators, suppliers, customs, ground amenities, air cargo forwarders, brokers, inland transportation, air cargo terminals, supply centers, integrated global express services and various kinds of service providers. Air cargo terminal is most essential in the air cargo supply chain. A normal air cargo terminal has three broad groups i.e. airline carriers, air cargo terminal operators and cargo-agents/forwarders. Collaborative efforts of cargo agents provide key sources for the revenue of air cargo terminals. It is obvious that such a large supply chain can function effectively in an integrated approach in a common platform where all the stakeholders and all their stated activities are interlinked. Efficient technological enablement of cargo management supply chain can improve handling and processing of cargo. Cargo activity supply chain management involves a series of steps from one end to another end as can be seen in the process chart at Figure 1 below:

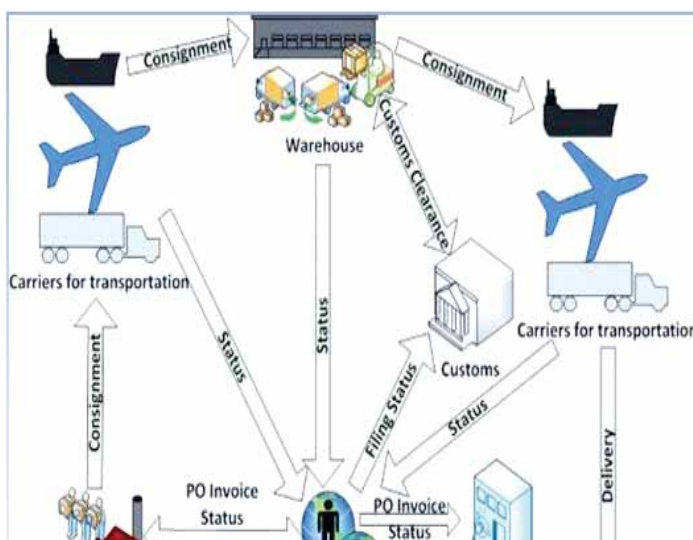


FIGURE : ACTIVITIES INVOLVED IN AIR CARGO MOVEMENT

Source: www.bing.com



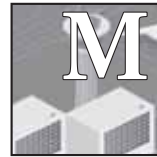
SUPPLY CHAIN IN AIR CARGO

According to Beamon (1998), supply chain efficiency is the measure of how well the resources expended are utilized.[3] Lambert et al (1998) says “Logistics is that part of the supply chain process that plans, implements, and controls the efficient, effective flow and storage of goods, services, and related information from the point of origin to the point of consumption in order to meet customer’s requirements.[27] Air cargo supply chain travels from source to regional warehouse, central warehouse, freight forwarders and then transmitted through aircrafts and vice versa, as explained in Figure 2. EDI plays an important role in streamlining the supply chain while quickly responding to market demands. Shipment visibility requires real time alerts with carriers, shippers and custodians in an IT enabled environment.



NEED AND SIGNIFICANCE OF STUDY

The present study was undertaken to assess functioning of EDI system in Aviation Cargo sector as the results are significant to increase revenues of respective governments as well as organizations in the supply chain, besides facilitating e-commerce and e-business services to meet citizens expectations.



METHODOLOGY USED IN THE STUDY

Methodology included carrying out an empirical study. The theoretical framework and the empirical study together constitute the base for the presented index. The approach for the study consisted of primary data analysis, secondary data analysis, analysis of information collected

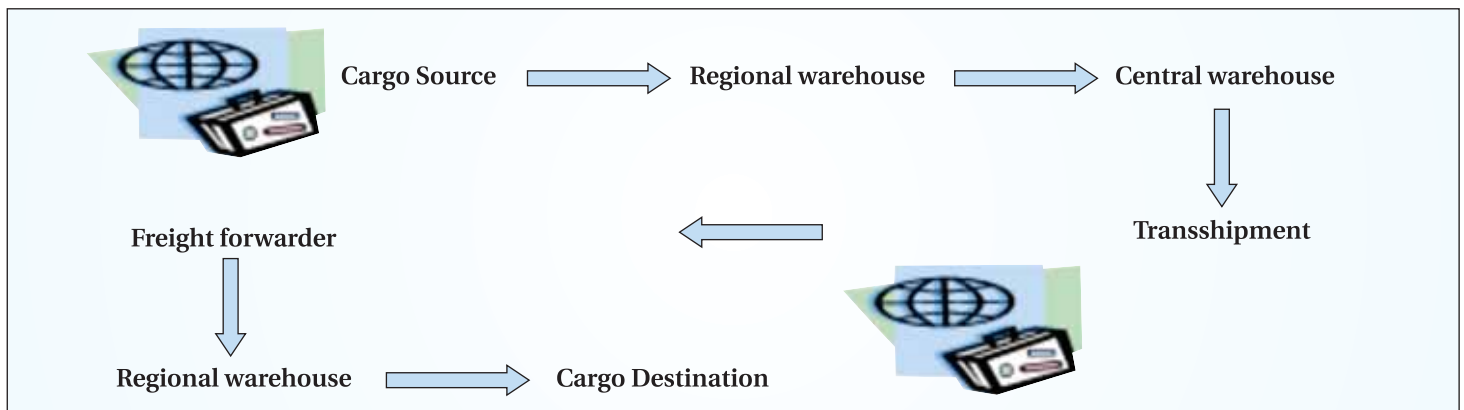
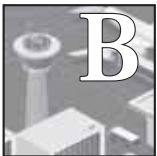


FIGURE 2: AIR CARGO SUPPLY CHAIN



BENEFITS OF EDI IN CARGO SUPPLY CHAIN

The supply chain activities require integration throughout the organization and beyond with suppliers and customers. In digital environment everything is carried out “just in time”. “Just in time” communication, and “just in time” delivery are attractive everyday ideas. Electronic Data processing being an alternative to paper-based requirements, many benefits are noticed in electronic processes as compared to physical processing of documents. EDI helps in more effective resource management as electronic records are used instead of original documents. Besides reducing paperwork, EDI results in ease of record maintenance and retrieval and improves transparency. Following documents are exchanged electronically through EDI, enabling trade at all levels of supply chain.

- Advance notices
- Functional acknowledgements
- All types of messages
- Goods and cargo statements and declarations
- Discharge and control notifications
- Support documents like invoice and packing list, master air waybill and house air waybill (for post-flight audits)

from stakeholders through following data collection techniques: Observations are based upon the visits of Mumbai, Delhi, Hyderabad, Goa, Lucknow, Leh and Bengaluru Airports.

- **Questionnaires and Opinion Surveys:** Forms were distributed to 100 cargo stakeholders at Delhi, Mumbai, Hyderabad and Bengaluru airports of India to elicit their views about processes and factors responsible for successful implementation of EDI, which were completed and returned by respondents. Diverse expert resources from government and industry were quizzed. Representatives selected for opinion survey and questionnaires were selected on the criteria that they should be associated with air cargo supply chain and dwell time issues. For testing hypothesis, responses were obtained on following ordinal parameters:
 - Extreme
 - Very Strong
 - Strong
 - Moderate
 - Low
 - n/a

Comprehensive case method

Due to higher growth in Delhi and Mumbai as indicated in various paras of this document, cargo terminals of these two airports were selected for comprehensive case study. These are India's two leading cargo terminals by volume and revenue. This involved secondary information and a primary recounting by those involved in various activities.

Interviews: Interviews with resource persons and experts were carried out. Policy makers, top management as well as freighters were interviewed to study bottlenecks in the present system. The interviews were performed either as telephone conversations or as personal meetings. Questions asked were basically open ended, capturing respondents' perceptions about the present process in cargo supply chain, challenges being faced and suggestions to enhance performance. Table 8 shows the breakdown of the composition of the survey respondents who were interviewed and whose views have been reflected:

TABLE 8: DISTRIBUTION OF RESPONDENTS

Respondents	Percentage
Clearing agents	30%
Transporters	25%
Consignees	5%
Policy makers	15%
Representatives of Airport Authority of India and Airport operators	15%
Shipping agents	10%

The overall target was 300 respondents. Majority of the respondents interviewed were in business operations/ policy making for more than 5 years.

Direct observations: Direct observations method was used to observe the complete supply chain process in Delhi and Mumbai. Every detail as it occurred was recorded in a flow chart. It was made sure to record the movement time at a fixed starting and stopping place for 50 cargo items selected at random. Several short charts rather than a long single chart were prepared to record necessary steps in operation. Wherever one or more improved methods were applied, a critical review was done with a view to evaluate the effectiveness of the new proposals regarding reduction of dwell time. Each step of activity with the corresponding elapsed time was recorded in the flow process charts prepared for further analysis. A total of 580 observations were made of 'cargo active' and 'idle times'. The number of observations was determined taking into confidence level of 95% and the limit of error of 5%. , which included periods before and after announcement of 'dwell time reduction' by Government of India. Period of study was spread over two years at different times. The observation period was not continuous but random. Analysis was made to arrive at significant trends, using the recorded flow process charts and observation sheets, to identify which step consumed a lot of time, and for duplication of effort, backtracking, excessive handling, costly delays, etc.

Literature Survey: Extensive Literature Survey was carried out for this research, which included relevant reports from DGCA, Ministry of Civil Aviation and Airport Authority of India. Annual Reports of Directorate General of Civil Aviation, Airports Authority of India and MOCA including Civil Aviation Policy document of Ministry of Civil Aviation, Parliament budget speeches, etc. were studied. Customs Rules and Regulations relating to EDI were evaluated. In addition, reports prepared by other relevant organizations were consulted, e.g. relevant ASSOCHAM reports, Project Report of RITES on "Setting up of International Air Cargo Hubs at Chennai and Delhi Airports" (2016), Asia Aviation Associates Report on "Creation of Centralized Domestic Air Cargo Handling Facilities at Airports in India", ARES Advisory "Feasibility Report on Air Freight Stations (2015)", etc. Various issues of "Cargo Talk" were analyzed. Primary data was also collected from Directorate General of Civil Aviation and MOCA websites relating to cargo growth at various airports. EDI-related literature was reviewed from the Government of India Report of the Task Force (2006) [7]. Export and import trade data was studied from the web site of Directorate General of Commercial Intelligence and Statistics [26].

Secondary sources including articles and books on the subject were scanned as also web based information to study latest research in the field. Gupta (2004) study revealed that E-Governance is said to be 20% technology and 80% management. [29] Prabhat Kumar et al (2004) case study of Indian custom EDI system revealed "If the technology used was of higher order, connectedness could have been enhanced. Partner agencies also need to catch up faster with customs computerization plan." [31]

Amir Parsa Thesis had concluded in 2003 that EDI is an electronic movement of repetitive business information /documents such as purchase orders, invoices, payments, bills, shipping-manifests, and delivery schedules, between the computer systems of trading partners that are based on standardized and structured messages. [2]

Puong (2000) argued, in any mode of public transportation, dwell time is a key parameter of system performance, service reliability and quality. Indeed, dwell time might represent a significant fraction of total trip time along a service transit line, thus affecting travel time and system capacity. Where dwell time variability lowers service reliability in terms of on-time performance and decrease service quality through longer waiting times and thus leads to overcrowding in the transport system (33).



IMITATIONS OF STUDY

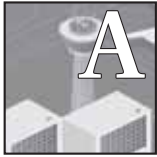
Data collection from Govt. agencies is not easy due to fear of compromising requirements of business confidentiality. Despite these constraints and limitations, study has succeeded in getting the desired results.



HYPOTHESIS FORMATION

Based on observations, discussions and literature survey, following hypothesis were formulated:

- A) Dwell time reduction is crucial to improving supply chain efficiency;
- B) Improvement in EDI system reduces congestion at cargo terminals;
- C) There is a gap between cargo clearance facilitation steps taken and the continuing bottle necks.



ANALYSIS, RESULTS AND DISCUSSIONS

Following forecast regarding domestic and international cargo growth has been revealed in

the study:

Three days data taken randomly, yielded following data in respect of Mumbai Joint Venture Airport:

Average daily Tonnage delivered 530

Average Clearance (%) of overall transaction

Within free period 54%
 Beyond free Period 46%

The essence of the findings obtained through opinion survey, questionnaires, interviews and direct observations during the study is outlined below:

- Airports have reduced the time for cargo clearance by implementing efficient electronic data interchange system.
- Trading across borders has become easier by introducing ICEGATE—an electronic data interchange system making it possible to lodge customs declarations through the internet and facilitating the operation of a risk management system, an electronic payment system and an electronic manifest system that allows stakeholders to submit their cargo manifest in advance. “ICEGATE is an

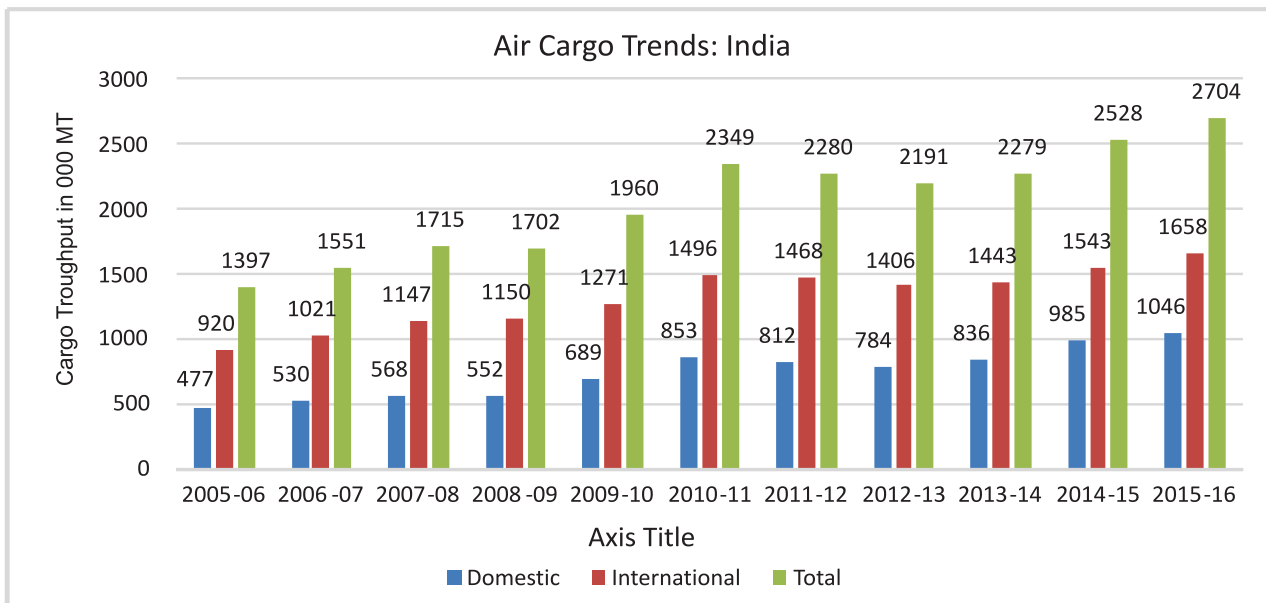


Figure 3: Air Cargo Trends: (domestic And International)

(Figure adapted from data obtained from Airports Authority of India and Directorate General of Civil Aviation)

Average daily gate pass generated	140	
Bill of Entry Submission	(%)	
Advance Bill of Entry	33%	
Within free period	43%	
	23%	Day1
	13%	Day 27%
		Day 3
Beyond free period	23%	
RMS Clearance	49%	
Within free period	68%	
Beyond free period	32%	
Additional Shift (11:00 PM to 7:00 AM)	.02%	

infrastructure project that fulfils the department's EC/EDI and data communication requirements.” [11] About 90 per cent of traders pay duty through e-payments and these transactions can be viewed on the ICEGATE (E-payment gateway).

- “Lengthy Processes”, “Obstacles in E-payments”, “Acceptance of linkages by all allied agencies”, “Need for enhancements in EDI system, “Absence of Accountability”, “Misplaced Packages”, “Debilitated Cargo”, “Delayed Carriage”, “Repeat activities”, etc. were the common responses.
- A mere 2 percent of the surveyed executives stated that dwell time is not crucial for supply chain efficiency.
- During the study, it was observed that physical compliance of documents realized significant time.

During observation period, the operation habitually started in the afternoon. Assessment and approvals appropriated up to 2 hours. However, the process took considerable time for physical examination. As a result, the cargo generally could not be cleared till next day due to crowding, even after adding the free dwell time. As cargo was not transported into the terminal and hauled in, this was more than the actual free dwell time allowed.

- It was observed that metro airports were doing well in implementation of government initiative of 24x7 export cargo operations. It is significant to realize that in pursuance of the customs circular mandating 24x7 export operations for all shipping bills, international airports at Mumbai, Delhi, Hyderabad and Bengaluru are providing round the clock resources. Overall outcome of exchange of electronic messaging is quite successful under their customized EDI systems. The e-filing of customs documents and exchange of Electronic Data Message (EDI) has fast-tracked the impeccable processing and clearance of cargo. Transparency and accountability has improved, thus cutting down on dwell time. Customs has also improved upon their EDI system of air cargo. The customs officials are also available on 24x7 basis in shift patterns. This has reduced the morning hour usage resulting in peak admittance from afternoon till evening. However, this facility is not completely optimized by all members of the export trade, though export cargo operations are being handled effectively without any delays and irregularities. At metro airports, additional facilities are being created to clear pharmaceutical and agro exports. "E-freight initiatives" are being implemented successfully at air cargo complexes, eliminating paper at many levels of cargo operations. The facility of payment of customs duty through e-banking has been introduced to facilitate imports and exports and quick clearance of goods. However, banks are not open 24 hrs. It was noticed that percentage of shipments admitted and cleared during night shift, second Saturday, Sunday and public holidays are negligible except for blood samples and bonded cargo. Hundred percent EDI is available in imports for Facilitated Bills of Entries in Risk Management
- GMR Hyderabad Airport International, which runs the airport claims that Hyderabad's cargo terminal is India's first modular integrated cargo facility. During 2011-12, Hyderabad airport handled 82,000 tonnes of cargo, a growth of 15 per cent against the national average of 11.2 per cent, which increased to 1,31,670 tonnes in 2017. This terminal also has India's only dedicated pharmaceutical handling zone. As per Cargo Talk (2016) [39], with its central location, world class infrastructure, free trade and special economic zone, there is huge presence of pharma sector. Hyderabad is one of the fast growing cargo airports. The study revealed that EDI implementation was one factor contributing to this progress.

MIAL, Mumbai has started commercial operations as a custodian for the air cargo terminal, in the year 2006. During the financial year 2013-14, CSIA and GVK-Mumbai International Airport Private Limited (MIAL) had registered Year-on-Year growth of 5%. M/S Cargo Service Center,

authorized concessioner of MIAL for handling export perishable cargo had registered Year-on-Year growth of 18 % during the financial year 2013-14. This signifies that the airport has achieved growth due to improved EDI system, cargo community system and e-message facilities. There was adequate deployment of manpower, equipment and resources. Cargo Management System at MIAL was introduced with "Air Cargo Community Platform". The online web based programme was propelled in the year 2013 to transform and transport the web services and is recognized as "GVK MIAL AIR EXCHANGE (GMAX)". GMAX is an integrated electronic platform assisting online cargo tracking by joining one Cargo Terminal Operator with another air cargo patron. All regulators utilize this e-freight service while networking through this portal.

- **Cargo Mobile Application:** MIAL and DIAL are the pioneer airports in India to extend "Cargo Mobile Application". This facility covers all the air cargo stakeholders and provides widespread discernibility about the cargo status at Mumbai Air Cargo Terminal.
- **E-Freight Initiatives:** MIAL was rated e-freight compliant cargo station in the month of January, 2015 by International Air Transport Association (IATA) for adopting paperless initiatives for air cargo operations. Some of the E-freight initiatives taken by MIAL are, E-reception (exports), online carting order (exports), elimination of hard copy of Airway Bill at cargo acceptance (exports), advance shipment information (exports), online examination receipt (imports), etc. APM Terminals Mumbai has announced a new value added service in March 2018, which is designed to accelerate and improve turnaround time of freight arriving at the terminal. Titled as Vehicle Booking System (VBS), the service entails the terminal allocating fixed time slots to each Container Freight Station (CFS) every day, whereby the CFS is encouraged to collect its consignment during the time allocated. Once the CFS' trailers reach the Y-junction at the port complex during the allotted slot, they can approach the terminal through the empty TT lane. The trailers thus skip traffic and enter the yard in a short time. Additionally, the terminal also allocates dedicated equipment at the yard block for serving these trucks once inside the yard. With CFSs directing their trailers only during assigned slots, the terminal is able to competently handle import clearings, eluding traffic congestion outside its gates.]
- The correlation between the level of EDI implementation and 'clear guidelines for EDI interchange agreements' and "training" was established. These results imply that changes in the levels of EDI implementation have good effect on execution of the systems. Implementation of EDI requires significant investment in infrastructure, training, and business process re-engineering. Latest educational training sessions for all EDI participants was aggressively mooted by practitioners.
- Importantly, the strongest correlation established in this study is between reduced dwell time and supply chain efficiency (0.90). Correlation between EDI improvements and reduced congestion was also positive. (.64) Findings

suggest the increasing importance of EDI in the cargo sector partake inclusive economic growth.

Second Assessment and Current Situation

The second assessment (following the reduction in free period for Dwell Time) was conducted in January 2018.

Following the implementation of dwell time reduction policy, improvement in cargo clearance at the airports has been noted. Relevant stakeholders including many clearing agents and some representatives of Ministry of civil Aviation, representatives of Airport Authority and Airport Operators are of the view that computerization of procedures and digitization of documentation has improved cargo clearance at airports.

Although some changes (to ensure supply chain security) have had an adverse effect on the dwell time, the overall effect has been beneficial in improving the efficiency of the transit trade supply chain. Greater efficiency is anticipated as the systems and processes become completely automated and infrastructure is improved.

Goods that arrive at the Customs prior to 1400 hours are usually cleared the same day. Coordination among various stakeholders and integration of IT Platform as a single window for all logistics related matters has tremendously improved. There is, however, a need to have more linkages with the IT systems of Railways, Road transport & Highways, Shipping, Civil Aviation, CBEC, State Transport departments etc. and the integrated system should act as a logistics marketplace. Policy changes have ushered in ease of documentation, faster clearance and digitization. Following e-services/ information is being offered by customs which has eased the cargo clearance process to a large extent:

- Challan Enquiry
- Job Status Tracking
- Document Tracking Status

- Drawback Enquiry
- DGFT Shipping Bill Integration Status
- Status in RBI EDPMS
- Check IE Code/BIN Status
- IEC Wise Summary Report
- CB Wise Summary Report
- License received from DGFT
- Warehouse Code Enquiry II.
- Electronic document filing in the International trade
- Bills of Entry
- Shipping Bills
- Import Goods Manifest
- Export Goods Manifest
- Console Goods Manifest
- Intimation and Notification
- ICEGATE Registration
- Month-wise DBK Scroll
- Custom Registration Status
- Provisional Assessment
- Electronic Return Filing
- E-payment
- Learning management system
- Claim & Intimations
- Grievance Redressal
- Refund follow up

As a result of various improvement measures, clearance time at Delhi and Mumbai has shown improvement. Following graph has been prepared on the basis of May 2019 data of CBIC:

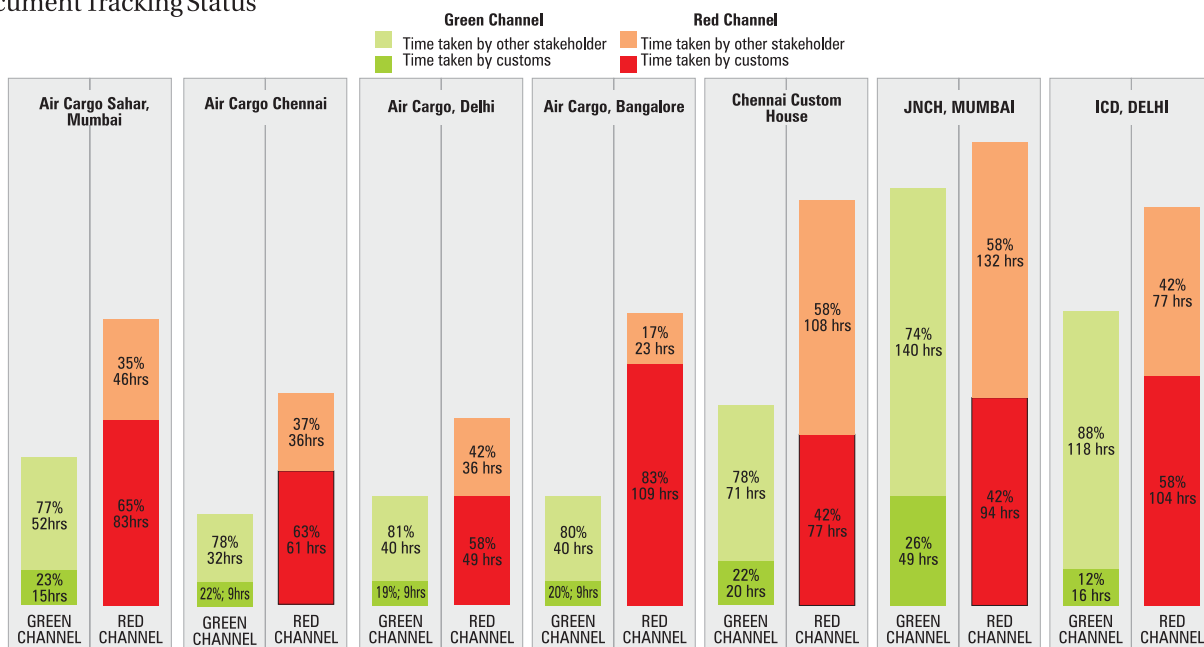


Figure: 4



LEARANCE TIME AT VARIOUS AIRPORTS

It can be seen from Figure 4 above that time taken by other stakeholders is more than the time taken by customs at red channel of Chennai Custom House and JNCH Mumbai, thereby indicating need for improvement.

Observations, discussions and analysis of data obtained during second assessment also revealed the following:

- EDI based customs control has integrated Customs EDI with other agencies. With the introduction of uniform and simple procedures, now there is a need for amendment to Import General Manifest, bank guarantee waiver, etc.
- Discussion with stakeholders during second assessment study revealed that the average time taken from filing of bills of entry to giving out of charge has reduced progressively for different categories of cargo subsequent to reduction of free period for import and export dwell time.
- Documents were studied which revealed that prompt filing of normal bills of entry, the percentage of normal bills of entry filed more than 48 hours after import manifest has declined from 50% in January to 40% in July, 2017 subsequent to EDI system improvements.
- The analysis reveals that still there is need to remove information gaps, service gaps and performance gaps. Performance gaps occur when delivery operators and customers do not satisfy their requirements (e.g. late delivery, delivery outside fixed times lot).
- The bills of entry filed within specified 24 hours declined from 29% in January to 23% in July, 2017, even as those filed between 24 hours to 48 hours increased from 19% to 34% during the same period.
- The interest free period for payment of duty after assessment has been reduced from 48 hours to 24 hours. In January, 2017, in respect of 40% of bills of entry, duty

was paid within 48 hours.

- In July, 2017, only in respect of 32% of bills of entry, customs duty payment was made within 24 hours of the assessment, which is an increase from 22% in January, 2017.
- Data collected through questionnaires and interviews suggest that trade prefers to take physical custody of the cargo based on their inventory management priorities.
- There is reduction in time in filing documents, examination and assessment procedure after the policy interventions.
- A comparison of the time taken at different stages of time release for normal and advance bills of entry for the two periods brings out the basic difference between these two categories, highlighting the obvious advantage of advance bills of entry.
- The analysis reveals that still there is a need to remove information gaps, service gaps and performance gaps. Performance gaps occur when delivery operators and customers do not satisfy their requirements (e.g. late delivery, delivery outside fixed time slot).
- The research also reveals that there is deficient interoperability at many places. There is a need for continued development of initiatives to increase interoperability.
- During January, 2017, 30% of the total bills of entry were subjected to assessment and examination.

Comparison of data between first assessment and second assessment and subsequent discussion with stakeholders proved that the entire assumptions made before the study initiated, have been verified. Responses of users to the hypothesis statement have been analyzed and correlations established between “dwell time and supply chain efficiency” on the one hand and “improved EDI system and reduced congestion” on the other hand. All the three hypothesis statements have been proved in the study as summarized below:

Hypothesis	Before policy interventions	After policy Interventions	Scope for further improvements
A	Free Dwell time was responsible for congestion at Airports leading to supply chain inefficiency.	Hypothesis proved	There is scope to reduce Dwell time even further
B	EDI system had been established but delays were still taking place	Hypothesis proved	There is scope for reducing delays with further integration of EDI systems at various levels.
C	It was known that Gap was already existing but study was made to find out whether the gap has reduced or not.	Hypothesis proved	Gap has reduced and there is scope for further improvements.



THE ISSUES AND CHALLENGES

The key issues which need further policy interventions were brought to notice during study:

- There are allied agencies like customs brokers, warehouse operators, and trucking firms that aim to work in tandem with safety regulators like drug controllers, health representatives, food safety and standards authority of India, animal and plant quarantine authorities, etc. for providing security, safety, and environmental regulations. These agencies are encompassed by the allied acts and have an assigned task in clearance of cargo through their certification. However, not all of them have their offices at the air cargo complex. Some have their offices positioned far away from the airports. Various agencies concerned in the customs clearance are not always present at the air cargo complex. As such, extra process time is necessary in the clearances of such import and export. EDI of different allied agencies are not completely inter-linked, due to which cargo clearance is congested at certain places.
- Identical trade, customs and transportation data is written multiple times during the logistics flow, ensuing in high administration costs and possibility for physical errors.
- Absence of shipment visibility necessitates continuous follow-up with regulators, carriers, shippers and custodians. This impacts additional message costs, fines and delays, and end up with client dissatisfaction.
- Banking Gateways for online transfer /payment are available only up to 2000 hrs.
- Key investment is often focused on major Tier-I cities, while smaller Tier-II cities are neglected to the detriment of the industry as a whole by restricting the movement of cargo within India.



RECOMMENDATIONS

Based on an analysis of the underlying reasons for the detected delivery gaps, a number of recommendations have been provided on how to reduce the gaps and increase user satisfaction, e.g. some processes vary at different airports, especially at non-metro airports. There should be standardization. Each custodian is embarking on its exclusive custodian structures. Subsequently, the trade is wriggling with multiple systems and there is deficiency of principles of data exchange across various airports for the similar operations. Data cannot be effortlessly integrated due to certain manual procedures and paper records. Even in cases where shippers have their specific computerized processes / ERP systems, they still deal with paper documentation with the related authorities/ mediators. There is an obligation for all-encompassing shared platform through which all operators and regulators can be associated. Cargo community system should be espoused at the earliest. All stakeholders should be brought to the common platform and nobody should repel. Facilitation of further industry collaboration is the need of the

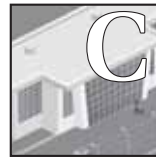
hour. All relevant governmental agencies should be hundred percent interconnected.

- ✓ Technology is crucial for supply chains as a means for collaboration. Automation and mechanization should be widely used at all cargo complexes in the Indian airports so that commercial supply chain for value to weight products is not affected. Devices like Warehouse Management System (WMS), new caster and wheel systems, Radio Frequency Identification Devices (RFID), Automatic Storage and Retrieval Systems (ASRS) should be leveraged to upsurge automation to enable speedier and well-organized operations managing congestion at the airports. The database should deliver valuable feedbacks about the position of goods in the warehouse. The purpose of a warehouse management system is to offer a set of computerized actions to manage the acceptance of stock and incomes into warehouse proficiency. WMS helps to standardize the rational depiction of the physical storage facilities (e.g. racking etc.), manage the stock within the know-how and allow a unified link to mandate processing and logistics management. The system benefits collection, packing and transportation of goods out of the WMS system. Along with such technologies, the trade should link with improved information movement between various activities in the logistics chain through electronic messaging and relationships with other EDI processes. Radio Frequency Identification Tags are immensely useful for real-time tracking of cargo containers within the warehouse.
- ✓ Material documentation is still being consumed even after implementation of EDI in the processing of both import and export cargo. Hard copies should not be insisted by customs, wherever data is transmitted electronically. Physical copies should be required only in those cases where no electronic data is delivered. This supports fall in the dwell time of import/export cargo by at least 10-20%.
- ✓ Customs should go for comprehensive EDI implementation for import/export registration, clearance and e-payment of duty, etc. This will help in discharging some manpower and man-hours in the existing group, which can be positioned somewhere else. Certain functionalities are needed to be realized fully through EDI.
- ✓ There is a need to completely dispense with the physical printing of various types of bills like customs, shipping bills and bills of entry with a view to accelerate processing time at examination points.
- ✓ Amendment message without human provisions should be made a part of regular EDI process for regularization of short/excess/over-carried cargo intervention. EDI should be enabled to identify repair return shipments.
- ✓ For effective implementation, it is recommended that EDI standards are quickly implemented uniformly throughout the country. All testing agencies are not completely linked to customs. It should be mandatory to adopt standardized actions, digital signatures, inter-

linking of regulatory agencies and acceptance of multi-model EDI processes. As such, valuable time is lost when documents physically travel from several positions to customs.

- ✓ Smooth movement of data between airports, airlines, operators and other stakeholders in the supply chain should be safeguarded. With a view to achieve better association of the processes, there should be inter-linkages and all side flow of information with airline carriers, airport operations, custom house agents and air freight stations, Customs, Banks, and other allied agencies like Plant Quarantine Officers, Assistant Drug Airport Health Officer etc. The trade should care for improvement in information flow between various parties in the logistics chain, through electronic messaging and other EDI practices.
- ✓ Processes should be improved to categorize parcels meant for examination based on item of export, standard applied and other precincts. System connection should also be effectually established with custodians to supply the packages so identified, to exclude human intervention and permit custodians to arrange rest of the cargo to warehouse.
- ✓ NIC and Directorate of Systems should provide regular training in respect of ICES/ ICEGATE to the airlines and other agencies for enhancing compliance with law and procedures.
- ✓ Legal and institutional provisions should be made that are conducive to promotion of EDI.
- ✓ Electronic declaration for continuous and efficient transshipment will help accomplishment of the vision to produce air cargo hubs in India.
- ✓ Government should remove duplication of activities between their agencies and custodians.
- ✓ Allocation of EGM and inward entry of import flight should be digitalized in totality to speed up things.
- ✓ At the time of survey, Mumbai International Airport Ltd. was in the process of creating a Temperature Controlled-Warehouse for Import Cargo. Extending similar facility to Export Cargo too will improve "B to B" as well "B to C" transactions.
- ✓ Field formations should be instructed by CBEC to respond online to the specific queries of stakeholders in a time bound manner.
- ✓ More research is required to be carried out on the EDI and System related issues in the interest of trade

facilitation and more customer-oriented delivery results.



CONCLUSION

The substantial growth in Civil Aviation and air connectivity over the years has portrayed a noticeable role in enabling cargo activities throughout the world. Generally, there has been an isolated outlook to planning of IT whether public sector, commerce or business. EDI being an IT enabled process, its implementation is always slow as EDI traffic and the IT infrastructure are to be linked with data systems of business partners. Setting up of an integrated approach with a total industry view through a common platform is a timeconsuming process. Techniques for transshipments and export / import procedures differ at various airports. As such, facilitation procedures with regard to transshipment cargo still need further precision and simplification by custom authorities. There is a pressing need for standardization of policy / procedures for computer networking systems. Many tasks could be simplified if unified technologies are espoused for improving efficiency. Free period for dwell time should be further decreased as new Indian carriers hover to and from International destinations. The transshipment sector is heading for considerable market potential as flow of goods and information are unified. Linkages should be seamless as there are too many steps in the whole transshipment process. Commercial, customs and transportation data should not be entered multiple times during the logistics flow, with a view to reduce high administration costs and scope for manual error. There is a need to further reduce the gap through unified exchange of all the organizations in the supply chain with EDI. Paperless initiatives will maximize usage capacity and facilitate proficient procedures and service standards This will enable our country to join international linkages and interact with any global community system. Manual documents should not be insisted upon wherever trade partners are submitting data electronically. This will avoid duplication of work and unnecessary paper work. Complementary policy solutions as stated above could further promote better cargo delivery performance.

To sum up, this study has offered an assessment of the significant linkages between reduced dwell time, improved EDI linkages and rapid cargo interchange. The outcomes of this study should be of significance for policy makers, practitioners and academicians. For practitioners these results can be used as a guideline in securing the returns of EDI mechanism. For academics, it offers a clue to initiate more research in this sector. These initiatives aim at addressing inefficiencies in air freight transport information interchange and EDI implementation in air cargo sector.

REFERENCES

- i. Airports Authority of India. (2018) *Annual-Reports(2014-2018)* Retrieved from <http://www.civilaviation.gov.in/publication/annual-reports>
- ii. Amir Parsa (2003), *Thesis on Analysis of EDI success implementation factors and their interrelationship with the level of EDI implementation within Swedish companies.*
- iii. Bea mon, B. M. (1998). *Supply chain design and analysis: Models and methods. International journal of production economics*, 55(3), 281-294.
- iv. Earnest and Young Report (2017, February), *East-based non-major ports to lead sustainable growth path for Indian maritime trade..*
- v. National Council of Applied Economic Research Report (2012) *The economic impact of the Indira Gandhi International Airport, Delhi*, retrieved from www.ncaer.org/free-download.php?plD=281.
- vi. Emmelhain, M. A. (1990). *Electronic data interchange: A total management guide.* Van Nostrand and Reinhold, New York, 1990.
- vii. Govt. of India Report of the Task Force (2006), *Financing Plan for Air ports*, The Secretariat for the Committee on Infrastructure, Planning Commission. Retrieved from www.infrastructure.gov.in.
- viii. <http://cargotalk.in/air-cargo-springs-suitable-growth-aa/>
- ix. http://www.cbic.gov.in/htdocs-cbec/dwell_time
- x. www.iata.org/pressroom, press release dated 24 October 2018
- xi. http://www.icegate.gov.in/htdocs-cbec/dwell_time
- xii. <http://www.indiatrade.com/newsletters>
- xiii. <http://www.dartconsulting.co.in/market>
- xiv. <http://www.dias.ac.in/download/2017/National%20Seminar%202017%20%20Brochure.pdf.p20-42>
- xv. <https://msme.gov.in>
- xvi. <http://www.ncaer.org/free-download.php>
- xvii. <https://aci.aero/wp-content/uploads/2018/09/Key-Statistics-ACI-World-WATR-2018.pdf>
- xviii. <https://aircargoworld.com/allposts/worldacd-reports-increased-cargo-tonnage>
- xix. <https://economictimes.indiatimes.com/industry/transportation/airlines/aviation/government>
- xx. https://www.aai.aero/sites/default/files/tender/NACS_Tender
- xxi. <http://www.zuccess.in/uploads/news/DECEMBER-2018/2018-12-17.pdf>
- xxii. <https://www.dailypioneer.com/2018/st...-handling.htm>
- xxiii. <https://www.ceicdata.com>
- xxiv. <https://www.financialexpress.com>
- xxv. <https://www.iata.org>
- xxvi. <http://www.dgciskol.gov.in/>
- xxvii. Lambert et al (1998), *Supply Chain Management: Implementation Issues and Research Opportunities, The International Journal of Logistics Management*, Vol. 9 Issue: 2. Retrieved from <https://www.emeraldinsight.com>
- xxviii. Ministry of Civil Aviation. (2018) *Annual-Reports(2014-2018)* Retrieved from <http://www.civilaviation.gov.in/publication/annual-reports>
- xxix. Gupta, M. P., Kumar, P., & Bhattacharya, J. (2004). *Government online: Opportunities and challenges.* Tata McGraw-Hill.
- xxx. *National air cargo policy, 2019*, Retrieved from www.globalaviationsummit.in/documents/NATIONAL-AIR-CARGO-POLICY-OUTLINE-2019
- xxxi. Prabhat, K. & Sushil, G. M. (2004). Effectiveness and change management in e-governance. *Towards e-government—management challenges.* Tata McGraw-Hill, New Delhi.
- xxxii. Sethi, R paper presented in National Seminar (2017), “*Techno Tryst 2017: Digital Transformation: Computational and Technological Advancements.* Retrieved from www.dias.ac.in
- xxxiii. Puong, A. (2000). *Dwell time model and analysis for the MBTA red line. Massachusetts Institute of Technology Research Memo*, 02139-4307. Retrieved from <http://www.myoops.org/>.
- xxxiv. RITES (2016, January) *Project Report prepared for Government of India on Setting up of International Air Cargo Hubs at Chennai and Delhi Airports.*
- xxxv. Business, D. (2015). *Doing Business 2016: Measuring Regulatory Quality and Efficiency.* World Bank Group. Retrieved from www.doingbusiness.org/reports/global-reports/doing-business-2016.
- xxxvi. www.bing.com
- xxxvii. www.atkearney.com
- xxxviii. www.cargobreakingnews.com, June 15, 2018 and September- Dec 2018 issues
- xxxix. www.cargotalk.in - online magazine
- xl. www.gvk.com/ourbusiness/airports
- xli. www.ibef.org/industry/indian-aviation.aspx
- xlii. www.planningcommission.gov.in

A Study of Engagement, Protean Career Orientation and Turnover Intentions of Faculty Teaching In Professional and Technical Institutions

**Dr. Khushboo Raina*



INTRODUCTION

The current wave of globalization has changed the way in which organizations tend to operate.

There is a huge consensus that it has led to the development and an inter-connected business place; but a huge pressure of performance and competition has also been imposed on these organizations (Green et al., 2017). They have to adapt to the organizational changes as well as changes pertaining to economical, technological and social aspects (Sisodia et al., 2007). The upcoming employee base has to bridge between these changes and requirements. Thus, organizations are in need of the employees who are willing to go beyond not only in terms of hard work but also ready to engage in approach which depicts learning, speed, resiliency and adaptability. A better engaged workforce can be achieved through the development of such an environment wherein positive emotions (involvement and pride) are promoted leading to better performances and well being of employees. Therefore, employees who have protean orientation will be able to survive better. The Higher education sector of India is burgeoning with a

**Assistant Professor Delhi Institute of Advanced Studies, Delhi, India*

significant increase in the number of institutions. The enrollment rates of students have also increased from 15% in 2009-10 to 24.5 % in 2016-17 (AISHE, 2018). There are 850 universities in India out of which 384 are State, 47 are Central, 296 are Private and 123 are Deemed (UGC, 2018). By their unique nature, universities are supposed to be the repository of the specialized and skilled intellectuals. They act as storehouses of knowledge in order to nurture the manpower needs of the nation. In the current scenario of Higher education institutions in India, faculty need to play a complex role. Universities across globe showcase a different picture of educational values, higher education system and the status of faculty so employed. The university setting or culture is entirely different. Universities in Western nations focus majorly on research and faculty development whereas Indian faculty is still striving to get an approximately similar stature. Much of the strategic practices enhancing engagement have been deployed by universities located in the USA and they implement the principles of protean career orientation indirectly in order to manage the intentions of faculty and hence, attain engagement. The traditional roles of the faculty have undergone a real transformation. They have to play multiple and much complex roles of a teacher, researcher, mentor and on non academic fronts too. The major reasons of the faculty to leave their organizations are related to less autonomy, fewer challenging tasks, low remuneration and poor hierarchical departmental structure. The young management and engineering graduates mostly look for corporate jobs paying hefty packages and not teaching because of less challenging tasks, promotional opportunities and self development opportunities. There is a dire need of studying the turnover intentions of faculty with respect to contemporary career concepts and the positive outcomes. The prime focus of the study was to establish the dimensionality of Faculty Engagement by exploring its factors, development of the scale and its validation; further, confirming the dimensions of Protean Career Orientation and Turnover Intentions scales. The assessment of the inter-relationships of these constructs, mediation effect by Turnover Intentions and effect of demographics on the Engagement, Protean Career Orientation and Turnover Intentions of regular full time faculty teaching Management and Computer Science Engineering courses in Government, Private and Deemed Universities in Delhi-NCR. No study has attempted to establish the relationship of these constructs in the context of Indian universities. This study will enhance the theoretical base of these constructs and provide an empirical foundation of the validation of the research instruments measuring Faculty Engagement, protean career orientation and turnover intentions. The study will be useful for regulatory bodies, apex institution managing the universities in India, administration, faculty and students.



RATIONALE OF THE STUDY

A radical transformation has been brought about by the globalization as to what organizations need to do differently to maintain their competitiveness. The higher authorities in academia and industry understand the fact that higher education contributes significantly towards the social and economic development of the respective countries. The present economies cannot be guided by just elementary

school pass outs (Shaw et al., 2012). There is a clear tangible evidence also, as the rate of enrollments have gone up, a diversified participation in higher education is clearly seen, new academic institutions are springing up and latest forms of instructional delivery are being adopted by these institutions. Investments in higher education have really gone higher in recent times and India has the largest systems of higher education in the world and fastest burgeoning systems in East-Asia. There is no dearth of business/industry oriented literature in the field of engagement, but very little academic research has been conducted in this field. Much of the research on employee engagement has been conducted in corporate settings and on corporate employees. There are very few studies which have been conducted in some other settings or sample like education and findings of such studies are least likely to be applicable in Indian academic settings (Pawar, 2014). The psychological involvement of an individual in one's work has been studied in detail but in case of higher education, extensive work is missing. This psychological engagement has been linked with the eagerness to achieve excellence, better performance and much reduced burnout in corporate employees (Nakamura & Csikszentmihalyi, 2005). There is an evident absence of any published model of faculty engagement with a special reference to university level faculty in Indian context. The changing context of the work environment of academic institutions has compelled the faculty to perform multiple roles and scenario has become much stringent for the faculty teaching management and computer science engineering programs in the light of recent events of shutting down of many engineering and business schools recently. Therefore, a study focused in this sample will shed light on their engagement quotient and their self development expectations which will further affect the students and university as a whole.



LITERATURE REVIEW

Kahn (1990) has been accredited as the founder of the concept of engagement and defined it as the deployment of an individual self to the work role and engaged people tend to express themselves in three ways i.e. cognitively, emotionally and physically while accomplishing their job roles. Kanste (2011) defines employee engagement as having a positive environment of well being in the workplace. Another definition is proposed by Shuck and Wollard (2010), who define it in terms of cognitive, emotional and behavioral state and positive organizational outcomes as its goal. Macey and Schneider (2008) argues that the concept of engagement can be perceived differently by different set of academicians and scholars. It may refer to a behavioral approach, psychological state and operational characteristic. Pritchard (2008) suggests that the concept of engagement can be defined in terms of: Stay (extent to which employees portray their own organization); Stay (the level of loyalty of the employees towards their organization); and Strive (extent of employees' readiness go beyond their set parameters of performance to attain organizational success). Ramadevi (2009) opines that engagement depicts the degree to which an employee is willing to put discretionary efforts into his or her work role over and above required time. The definition of work engagement has been proposed by Schaufeli et al. (2002) who

measured engagement in terms of vigor (energy), dedication (degree of involvement) and absorption (engrossment with work). Maslach and Leiter (1997) further explain that “engagement” is characterized by energy, involvement and efficacy which are said to be at the opposite of the continuum of three burnout dimensions exhaustion, cynicism and lack of professional efficacy, respectively. There are many more definitions to this crucial and indispensable construct of present organizations. Saks (2006) defined engagement at two levels i.e. job and organizational engagement and conducted a study to evaluate the model of the antecedents and consequences of both types of engagement based on social exchange theory. Engagement has been studied since a long time, but the concept of faculty engagement is relatively new. Almost all major studies on this concept have been conducted in Western nations. India, being a land popular for education since ages, and which has many educational institutions rendering programmes of varied disciplines, has never covered any study of this kind. There are very limited studies available on faculty engagement (Barman and Ray, 2011; Livingston, 2011; Selmer *et al.* 2014). In Indian context, the number of such studies is really scanty. Very closely related studies were selected for the literature review. Livingston (2011, p. 11) defined faculty engagement as: Perpetual focused attention, enjoyment, and enthusiasm for the activities associated with faculty work through which the individual finds purpose, senses congruence with personal values and talents, is challenged to use knowledge and skills, and experiences productivity even during difficult times. The author surveyed over 500 faculty members teaching undergraduate and graduate students in ten US higher education institutions and proposed four dimensions of faculty engagement, that is teaching, research, service and fit to the organization. An engaged faculty will bring revolutionary transformations in the academic settings. There are many factors which affect the engagement level of faculty. The changing demographics of faculty teaching in technical institutions is one of the reasons. The psychological functioning of teachers has recently become a focus of particular attention. Turnover and early retirement rates are high in the teaching profession, and teachers' emotional and motivational experience may seriously impact their classroom performance (OECD, 2005). According to Sharma (2006), for providing quality education to students, Indian education system requires five main prerequisites which are: quality syllabus, quality faculty, quality research,

quality teaching and evaluation and quality character. Further, Gakhar (2006) explains that despite so much globalization around, teacher will remain the most important part of the education or instructional process, and there are three areas which define the Indian teacher's competence:

- a) professional skills and abilities;
- b) professional knowledge and understanding; and
- c) professional values and personal commitment.

Though many authors would agree that faculty's role need to be examined closely in light of teaching skills, research aptitude and their values, many believe that motivating faculty is also a challenge of the hour. Winter *et al.* (2000) found

that activities like task identity, autonomy, skill variety and job challenge are able to satisfy and motivate professors and act as drivers for engaging them in meaningful work activities. On the basis of the level of initiatives taken by faculty in their institutions, Hagner and Schneebeck (2000) classified faculty teaching in the US universities into different categories viz.:

- a) *The Entrepreneurs*: They take risk and will come up with something innovative to promote teaching and learning.
- b) *The Risk Aversives*: They will always hesitate to make themselves completely engaged in the process in learning, lack expertise and need significant support to make revolutionary transformations.
- c) *The Reward Seekers*: The motivation of such faculty is related to the reward structure offered by the university. When they come to know that by adopting new technologies and forms of learning there will be a great impact on promotion, tenure and salary, they are ready to transform.
- d) *The Reluctants*: They firmly believe that old traditional modes were far better than present day methods, and it becomes very tough to engage such faculty as they are psychologically discarded from the educational system.

The constantly changing work environment and the attitude of people towards the work have driven the necessity of developing a better understanding of the interaction that employees have with their workplaces (Weng & McElroy, 2012). The continuous and consistent advancements in technology, communication channels and pressure exerted by globalization have introduced changes in the work structure which suggests major work arrangements for many employees (Burke & Ng, 2006). The change in employee attitude in terms of their career development and self role towards this is desperately needed (Briscoe and Hall, 2006). In such a contemporary and transforming work environment, employees have to perform the central role by managing their careers. They need to be an integral part of activities related to the self management of the career so that relevant career options can be created allowing them to attain their career goals and prove employability (Sullivan and Arthur, 2006). The concept of 'protean career' was first introduced by Hall (1976) who defined it in the terms of 'self directed career' wherein the career is managed more by the employee than the organization and it is identified as the opposite of traditional career approach. A protean individual's career choices and his self fulfillment seeking become the integrative component in his life. Further, Briscoe and Hall (1999) opine that the career of an individual can be guided by one's value system and belief of identity; the adaptability and flexibility can build potential, provide direction and finally make it to success in the careers. The underlying principle of this approach entails that the psychological contract of an employee is with oneself rather than his/her organization (Hall & Moss, 1998). Employee turnover is extensively studied in view of organizations and the services of the organization. Since 1950, the researchers of management and organizational behavior have started to look into the field of turnover intentions. A large amount of research and literature is available on the causes and

consequences of employee turnover whether it is voluntary or not. It is expressed in various ways and looked as voluntary separation of individual from the institution (Price and Mueller, 1981). Combination of organizational events, working conditions and psychological factors results into interactions effecting employee attitudes towards the institution (Fang, 2001). Most common consent of employees leaving the organizations is because of dissatisfaction or better opportunities. Mitchell et al. (2001) suggested that although the dissatisfaction of employees with the employer or organization is a factor in employee turnover but it is not the sole factor of the turnover. Their work suggests that employees take into account other factors than dissatisfaction before leaving the work. These take both personal and organizational factors into consideration and are inter-dependent. The attitude is said to predict behavior and has been reviewed by many authors (Kelman, 1974; Ajzen and Fishbein, 1977; Calder and Ross, 1977). However, assessment of those situations where predictions about behavior can be made is a challenge for the researchers. The major contribution towards the development of the framework of 'Attitude Intention Behavior' model has been made by Fishbein and Ajzen (1975). They suggested that different definitions of 'attitude' indicate a different set of measurement procedures and hence giving different results. Therefore, no formal definition of attitude was proposed by them.



RESEARCH METHODOLOGY

The present research is an attempt to assess the perceptions of faculty teaching management and engineering courses in professional and technical Institutions in Delhi NCR towards their engagement, protean career and turnover intentions. To achieve this, a 3X2X3 factorial design was prepared wherein a list of 3 categories of universities viz. Government, Private and Deemed running Management and Engineering courses in Delhi-NCR was taken from the University Grants Commission's website and within each category, questionnaires were administered to faculty members at 3 levels: Professor, Associate Professor and Assistant Professor.

Research Objectives

1. To explore and confirm the dimensions of Engagement, Protean Career Orientation and Turnover Intentions of faculty teaching in Professional and Technical Institutions.
2. To study the relationship of engagement, protean career orientation and turnover intentions of faculty teaching in Professional and Technical Institutions.
3. To study the effect of demographic variables on Engagement, Protean Career Orientation and Turnover Intentions of faculty.
4. To check the mediating effect of Turnover Intentions in relationship of Protean Career Orientation and Faculty Engagement.
5. To suggest a framework for Engagement, Protean Career Orientation and Turnover Intentions of faculty.

Sampling Design

The study has been conducted in two phases. Study 1 refers to the selection of sample for forming analysis group and study 2 for the validation group. The universe of the present study is finite in nature and comprises of the Government, Private and Deemed universities having both Management and Computer Science Engineering departments in Delhi-NCR.

Study 1

The population of the study 1 comprises of the full time permanent faculty who are teaching management and computer science engineering courses in Government, Private and Deemed universities in Delhi-NCR. The selected 12 Government, 20 Private and 5 Deemed universities have 1536 full time regular faculty in total. The list of universities was drawn from the UGC's website and faculty details were captured from the website of each university and confirmed during data collection. Fishbowl technique was used to draw the names of the faculty in each category (Professor, Associate Professor and Assistant Professor) for each type of institution (Government, Private and Deemed). It is a probability sampling technique. The technique has been applied by Maseko, Mkhonta, Masuku, Dlamini and Fan (2016) in their work. The bowl containing chits having names of the faculty written on them was given to the expert and list of faculty to be communicated was generated. For study 1, 100 faculty each from the Government, Private and Deemed universities were selected for the study through fishbowl sampling and out of 300 filled, 209 valid questionnaires were selected for the study representing a response rate of 69.7%.

Study 2

The population of the study 2 comprises of the remaining full time permanent faculty who are teaching management and computer science engineering courses in Government, Private and Deemed universities in Delhi-NCR after study 1. The technique of Stratified proportionate random sampling without replacement was used in study 2. Randomization when done properly leads to the elimination of subjective influences of the researcher. Systematic randomization is a superior method to any other method suggested for the purpose. Randomization through MS Excel applying Bernoulli's function was performed to extract the list of faculty to be contacted for study 2 (Smith, Morrow and Ross, 2015). The randomization was performed to meet the minimum academic cadre of 1:2:6 (AICTE) in 12 Government, 20 Private and 5 Deemed universities. A list of 713 faculty was generated through randomization by MS-Excel keeping intact the academic cadre ratio of 1:2:6 as prescribed by AICTE. Out of 713 filled, 609 valid questionnaires were considered for the study indicating a response rate of 85%.

Questionnaire Designing & Data Collection

A structured questionnaire was developed and used to tap the perceptions of respondents regarding various variables. The questionnaire was divided in two parts. Part A captured the demographic details of the respondents whereas part B captured their responses on different variables of Faculty Engagement, Protean Career Orientation and Turnover Intentions.

The research instruments used to develop the questionnaire are:

Table 1: Details of Research Instruments

Construct	Type of Construct	Number of Items	Tool	Reliability
Faculty Engagemen	Dependent variable	35	Self constructed	0.89
Protean Career Orientation	Independent variable	8	Briscoe, Hall and DeMuth (2006)	0.83
Turnover Intentions	Independent variable	6	TIS-6 by Roodt (2004)	0.91

Data was collected through primary sources using a survey based questionnaire. The questionnaires were administered personally to the respondents in form of hard copies. Physical presence of the researcher helped in verifying the authenticity of the respondents. The objectives of the study were made clear to the respondents in order to avoid any ambiguity and they were assured of keeping their confidentiality intact to avoid common method bias. Any doubts or queries raised by the respondents were addressed personally on the spot. The data for study 1 was collected from November 2015 to April 2016 and for study 2, the time frame was from August 2016 to May 2017. The data was subjected to descriptive analysis, inferential analysis, correlational analysis, Confirmatory factor analysis and path analysis using AMOS 21.0.

Statistical Tools & Techniques Applied

- a) Step I: To ascertain the factor structure of Faculty Engagement, Exploratory Factor Analysis (EFA) technique was applied and to test the reliability of the scale, Cronbach Alpha Test was applied.
- b) Step II: Model fit, content, convergent and discriminant validity were tested using Confirmatory Factor analysis. Inter-relationships between the constructs were also analyzed by CFA.
- c) Step III: SEM was used to build the structural model and analyze the mediation effect of turnover intentions in the relationship of protean career orientation and Faculty Engagement.
- d) Step IV: Demographic differences were analyzed using the inferential statistics through independent sample T-Test and one-way ANOVA.

Hypotheses

- H1:** There exists a positive relationship between protean career orientation and engagement of faculty teaching in professional and technical institutions.
- H2:** There exists a negative relationship between protean career orientation and turnover intentions of faculty teaching in professional and technical institutions.
- H3:** There exists a negative relationship between turnover intentions and engagement of faculty teaching in professional

and technical institutions

H4: Turnover Intentions significantly mediates the relationship between Protean Career Orientation and Faculty Engagement.

H5: There exists a difference between male and female respondents in terms of their perception towards engagement.

H₀6: There exists no difference between male and female respondents in terms of their protean career orientation.

H7: There exists a difference between male and female respondents in terms of their turnover intentions.

H8: There exists a difference between married and unmarried respondents in terms of their perception towards engagement.

H₀9: There exists no difference between married and unmarried respondents in terms of their protean career orientation.

H10: There exists a difference between married and unmarried respondents in terms of their turnover intentions.

H11: There exists a difference between faculty of Management and Computer Science Engineering departments in terms of their engagement.

H₀12: There exists no difference between faculty of Management and Computer Science Engineering departments in terms of their protean career orientation.

H13: There exists a difference between faculty of Management and Computer Science Engineering departments in terms of their turnover intentions

H14: There exists a difference in Faculty Engagement of faculty teaching at Government, Private and Deemed universities.

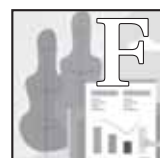
H₀15: There exists no difference in Protean Career Orientation of faculty teaching at Government, Private and Deemed universities.

H16: There exists a difference in Turnover Intentions of faculty teaching at Government, Private and Deemed universities.

H17: There exists a difference in Faculty Engagement of faculty teaching at Assistant, Associate and Professor level in professional and technical institutions.

H₀18: There exists no difference in Protean Career Orientation of faculty teaching at Assistant, Associate and Professor level in professional and technical institutions.

H19: There exists a difference in Turnover Intentions of faculty teaching at Assistant, Associate and Professor level in professional and technical institutions.



INDINGS & CONCLUSION

First factor measurement model of Faculty Engagement confirmed the three factor structure of the construct with acceptable values of model fit statistics and reliabilities.

The three factors had moderate and significant correlations between them which showed that there is some higher order construct defining them. Thus, second order CFA was conducted and the factors converged towards the Faculty Engagement construct with the model fit statistics, reliability and convergent validity well in limits. Three items from Affective Involvement, one item from Intensity of Effort and two items from Technical Enhancement were deleted due to poor loadings, correlation measurement errors, and non-significant t-values. The Faculty Engagement questionnaire now contains 13 items under three factors. Thereafter, dimensionality of Protean Career Orientation and Turnover Intentions was also established using first order CFA with all model fit statistics, reliabilities and convergent validity well in range. Three items from Protean Career Orientation and One item from Turnover Intentions were deleted due to poor loadings, correlation measurement errors, and non-significant t-values. To assess the distinctiveness and inter-relationships of these three constructs, full measurement model comprising Faculty Engagement, Protean Career Orientation and Turnover Intentions was run and it was found that the three constructs have significant correlations. The final questionnaire with all the three constructs has 23 items wherein 13 corresponds to Faculty Engagement, 5 measures Protean Career Orientation and 5 reflects the Turnover Intentions of the faculty. Positive relationship was exhibited between Protean Career Orientation and Faculty Engagement whereas negative relationships were found between Protean Career Orientation and Turnover Intentions and Turnover Intentions and Faculty Engagement. The establishment of discriminant validity depicted that each construct i.e. Faculty Engagement, Protean Career Orientation and Turnover Intentions are distinct from each other and represent different constructs.

The assessment of the correlations between the constructs was ascertained by Confirmatory Factor Analysis and the model revealed a good fit, which gave an indication of proceeding to the structural model (Hair et al, 2010). The data was imputed to check the anomalies of missing data. The path coefficients of the correlational and dependence relationships were found to be significant further confirming the magnitude and direction of the correlations achieved through CFA. The structural model incorporated three constructs, namely, Faculty Engagement predicted by affective involvement, intensity of effort and technical enhancement; Protean career orientation reflects the attitude of faculty to pursue a career which they really want to do or are self directed towards it and Turnover intentions talks of the intentions of faculty of not staying with the institution. The curved arrow represents the inter-correlation between the two exogenous constructs i.e. Protean Career Orientation and Turnover Intentions and the straight arrows represent dependence relationship/structural relationships between a) Protean Career Orientation and Faculty Engagement and, b) Turnover Intentions and Faculty Engagement. This model suggests the framework of Faculty Engagement, Protean Career Orientation and Turnover Intentions.

The researchers first tested the model by taking both Protean Career Orientation and Turnover Intentions as independent variables. When Turnover Intentions and Protean Career

Orientation were taken as independent variables then, there was a moderate but significant correlation between them indicating a mediation effect. Thus, turnover intentions has been taken as a mediator (Byrne, 2010). Also, the theory proposed by Fredericks (1981) suggested that intentions mediate between attitude and behavior and protean career orientation has been referred to as attitude by many authors (Vos and Segers, 2013; Briscoe et al, 2006; Hall, 1976; Sahu, 2016), engagement is a behavior (Macey and Schneider, 2008; Kahn 1990) and Turnover Intentions are the intent to leave the organization (Tett and Meyer, 1993; Mobley, 1982). To examine the mediating effect, Hayes (2009, 2013) method was implemented who opined that two direct relationships can't result in an indirect relationship. The process entails the estimation of the total and direct effect of predictor on criterion, as well as the indirect effect of the independent variable on the dependent variable through mediator by generating a bias-corrected 95% bootstrap confidence interval for the indirect effect using 2000 bootstrap samples. Bootstrapping instead of Sobel test was applied to affirm the mediation effect owing to non-robustness of the Sobel test. All the steps suggested by Hayes (2009, 2013) were confirmed and it was found that turnover intentions partially mediates between the protean career orientation and Faculty Engagement. To analyze the differences between male and female respondents and married and unmarried respondents in terms of their perceptions towards engagement, protean career orientation and turnover intentions, Levene's t-test for equality of variances has been applied



IMPLICATIONS & SCOPE FOR FUTURE RESEARCH

A better engaged workforce can be achieved through the development of such an environment wherein positive emotions (involvement and pride) are promoted leading to better performances and well being of employees (Robinson, 2006). When employees are able to receive the positive emotions, they are more capable to think in a much open minded and flexible way, adapt better and avoid conflicts at workplace (West, 2007). The culture of the organizations reflects their ideologies and thus builds their reputation. A culture which promotes the development of its employees is a superior one and acts as a magnetic force. Faculty Engagement instrument has been developed which is a significant contribution towards the body of knowledge and it can be further replicated to other sample or extended to a larger sample. The study will help the regulatory bodies and people responsible for managing Higher Education to shift their focus from the turnover intention or retention to self directed attitude as it directly affects the engagement whereas turnover intention partially mediate. Institutions can benefit by hiring those faculty who have a self directed attitude as it leads to engagement because a self directed career attitude is a key component of career development of an individual (Sterns and Kaplan, 2003). Institutions can identify faculty with high self directed attitude and involve them in programmes like Faculty Development Program and Consultancy assignments wherein they can also contribute towards the revenue generation of the institution. The future researchers can explore various other relationship sets within the scope of this

study. Alternative causal paths or changes in the directions of the causal relationships may exist, given the cross sectional nature of the study (Giardini & Frese, 2006). Future research can determine the specific attitudes possessed by the faculty and the factors responsible for it. There have been many survey instruments to measure engagement at corporate level

like Gallup's 12 item questionnaire but they lack in advising the practices required to engage the employees, therefore, an 'actionable' survey must be developed for the corporate organizations too identifying the problem areas along with determining the engagement levels.

REFERENCES

i.	AISHE (2018). All India Survey on Higher Education, Retrieved from http://mhrd.gov.in/sites/upload_files/mhrd/files/New%20AISHE%202017-18%20Launch_Final.pdf
ii.	Ajzen, I. (1985). <i>From intentions to actions: A theory of planned behavior</i> . In K. Kuhl and J. Beckman (Eds.), <i>Action control: From cognition to behavior</i> (pp. 11-39). Heidelberg: Springer.
iii.	Bakker, A. B., & Demerouti, E. (2008). Towards a model of work engagement. <i>Career Development International</i> , 13, pp.209-223.
iv.	Barman, A. and Ray, S. (2011). Faculty engagement in higher educational institution: a proposed model, <i>Romanian Journal for Multidimensional Education</i> , Vol. 3 No. 6, pp. 7-17.
v.	Baruch, Y. (2014). The development and validation of a measure for protean career orientation. <i>The International Journal of Human Resource Management</i> , 25(19), pp. 2702-2723.
vi.	Briscoe, J. P., & Hall, D. T. (2006). The interplay of boundaryless and protean careers: Combinations and implications. <i>Journal of Vocational Behavior</i> , 69, pp. 4-18.
vii.	Briscoe, J. P., and Hall, D. T. (2002). The protean orientation: Creating the adaptable workforce necessary for accessibility and speed. Paper given at the Academy of Management, Denver, Aug 13.
viii.	Byrne, B. M. (2001). Structural equation modeling with AMOS, EQS, and LISREL: Comparative approaches to testing for the factorial validity of a measuring instrument. <i>International journal of testing</i> , 1(1), 55-86.
ix.	Collis, J., & Hussey, R. (2013). <i>Business research: A practical guide for undergraduate and postgraduate students</i> . Macmillan International Higher Education
x.	Cronbach, L. J. (1951). <i>Coefficient alpha and the internal structure of tests</i> . <i>psychometrika</i> , 16(3), 297-334
xi.	DeFillippi, R. J. & Arthur, M. B. (1996). <i>Boundaryless contexts and careers: A competency-based perspective</i> . In M. B. Arthur & D. M. Rousseau (Eds.). <i>The boundaryless career. A new employment principle for a new organizational era</i> (pp. 116-131). New York: Oxford University Press.
xii.	De Vos, A., & Segers, J. (2013). Self-directed career attitude and retirement intentions. <i>Career Development International</i> , 18(2), pp. 155-172.
xiii.	Fishbein, M. And Ajzen, I. (1975). <i>Belief, attitude, intention and behavior: An introduction to theory and research</i> . Reading, Mass.: Addison- Wesley
xiv.	Fredericks, A.J. and Dossette, D.L. (1983). <i>Attitude Behavior Relations</i> , In Lattin et al. (2015), <i>Analyzing Multivariate Data</i> , Cengage Learning: Canada
xv.	Gallup Organization (2006). <i>Gallup Study: Engaged employees inspire company innovation</i> . Gallup Management Journal, Retrieved from http://businessjournal.gallup.com/content/24880/gallup-studyengagedemployeesinspire-company.aspx .
xvi.	Green, P. I., Finkel, E. J., Fitzsimons, G. M., & Gino, F. (2017). The energizing nature of work engagement: Toward a new need-based theory of work motivation. <i>Research in Organizational Behavior</i> , Vol. 37, pp. 1-18.
xvii.	Hair J, Black W, Babin B, Anderson R. (2010). <i>Multivariate Data Analysis</i> . 7. Upper Saddle River, NJ, USA: Prentice-Hall, Inc.
xviii.	Hall, D. T. (1976). <i>Careers in organizations</i> . Glenview, IL: Scott Foresman
xix.	Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. <i>Academy of Management Journal</i> , 33, pp. 692-724.
xx.	Lacy, J. C. (2009). <i>Employee engagement: the development of a three dimensional model of engagement; and an exploration of its relationship with affective leader behaviours</i> (Doctoral dissertation, Queensland University of Technology).
xxi.	Livingston, J. (2011). <i>Defining and measuring faculty engagement: validation of the faculty engagement survey</i> . Unpublished PhD thesis, Azusa Pacific University, California, available at: <a 44058352.pdf"="" education="" href="http://media.proquest.com/media/pq/classic/doc/2431875361/fmt/ai/rep/SPDF?_s_jrJaBq59UEOLcC1Og5cW%MacLeod, D. and Clarke, N. (2014). THE EVIDENCE: Wellbeing and Employee Engagement, Engage for success, May, 2014.</td> </tr> <tr> <td>xxii.</td> <td>Maslach, C., Leiter, M., (1997). <i>The Truth About Burnout</i>, Jossey- Bass, San Francisco.</td> </tr> <tr> <td>xxiii.</td> <td>OECD (n.d.). <i>Learning our lesson: Review of quality teaching in higher education</i>, Retrieved from https://www.oecd.org/education/imhe/44058352.pdf
xxiv.	Pawar, V.A. (2014). <i>Employee Engagement : An Empirical Study of Teacher's Engagement in Higher Education</i> , Unpublished PhD Dissertation, SVKM'S NMIMS University, Mumbai.
xxv.	Pritchard, K. (2008). Employee engagement in UK: meeting the challenges in public sector, <i>Development and Learning in organizations</i> , Vol. 22, Iss: 6, pp. 15-17.
xxvi.	Ramadevi, V. (2009). Employee engagement is a two-way street, <i>Human Resource Management International Digest</i> , Vol.17, No.2, pp. 3-4.
xxvii.	Robinson D., Perryman S., and Hayday S. (2004). <i>The Drivers of Employee Engagement</i> , Report 408, Institute for Employment Studies, UK.
xxviii.	Sisodia, R. S., Wolfe, D. B., & Sheth, J. N. (2007). <i>Firms of endearment: How world-class companies profit from passion and purpose</i> . Upper Saddle River, NJ: Wharton
xxix.	Supeli, A., & Creed, P. A. (2016). The longitudinal relationship between protean career orientation and job satisfaction, organizational commitment, and intention-to-quit. <i>Journal of Career Development</i> , 43(1), pp. 66-80
xxx.	West, L. S. (2007). <i>Examining the relationship between employee-superior conflict and voluntary turnover in the workplace: A comparison of companies across industries</i> . University of North Texas.



CALL FOR PAPERS

DIAS TECHNOLOGY REVIEW

THE INTERNATIONAL JOURNAL FOR BUSINESS AND IT

DIAS Technology Review is a refereed Journal for business and information technology academicians and professionals. The goal of the journal is to collect, store and disseminate new and relevant knowledge obtained from basic and applied research relating to all business and information technology disciplines. Submission deadlines for papers are March 31st for Spring Issue and September 30th for Fall Issue

The journal publishes original research that develops, tests, advances, or applies theory, research and knowledge to all areas of business and information technology. Articles with both strong theoretical foundations and significant practical implications are highly encouraged. Conceptual models, literature reviews, exploratory research are of interest if they make an important contribution to business and information technology theory, research or knowledge, and provide insight for academic application or business practice. All

types of rigorous methods (quantitative, qualitative, or combination) are acceptable. We invite you to contribute your valued paper to this journal for Spring or Fall Issue, as may be convenient. The Article may please be sent to the Editor, DIAS Technology Review. The detailed guidelines for the contributors are also mentioned in "Guidelines for Contributors".

We also accept articles online at dias@dias.ac.in: In case you need any additional information, feel free to visit our website at <http://www.dias.ac.in>

We will tremendously value your cooperation and support in this regard.

Note: For Editorial Policy and Guidelines for the contributors, please refer to our website: www.dias.ac.in



Letter to Editor,

Readers are our invaluable assets. In order that they can voice their opinion, share their views, provide any related information or suggestions, we are offering this platform exclusively for them. We expect their active participation in the process of enhancing the quality of the journal. Please write to us on dias@dias.ac.in or mail to: The Editor, DIAS Technology Review, Delhi Institute of Advanced Studies, Plot No.6, Sector 25, Rohini, Delhi 110 085.

ADVERTISEMENT RATES				
PARTICULARS	Per Insertion		Per Year	
	In Rs.	In US \$	In Rs.	In US \$
BACK COVER	50,000	1,500	90,000	3,000
INSIDE FRONT	40,000	1,200	75,000	2,400
INSIDE BACK	40,000	1,100	75,000	2,200
FULL PAGE	30,000	900	55,000	1,800
HALF PAGE	20,000	700	35,000	1,400
QUARTER PAGE	10,000	500	20,000	1,000

DIAS TECHNOLOGY REVIEW

THE INTERNATIONAL JOURNAL FOR BUSINESS AND IT

Feedback Form

Would you take a moment to evaluate the articles you have read in this issue of the “DIAS Technology Review”? Your valuable comments will help us to shape the future issues. Thank you.

- Editor-in-Chief

Article	Highly Appreciable	Somewhat Appreciable	Not Appreciable	Did not Read
Exploring User Acceptance and Intention Towards App Based Cab Aggregators Using Integrated TAM and TPB Model				
Inflated Self-Assessments and Metacognitive Ability: A Demonstration of the Kruger-Dunning Effect Among Knowledge Workers				
Study of Employee Engagement in Manufacturing Sector in NCR in Selected Industries				
Effect of Trump's Win on Specific Sector with Reference to Indian Stock Market				
The Financial Implications of Decisions Related to Choice of Contracting Techniques and the Influence on Contractor Performance				
Gap Analysis on EDI Implementation in Cargo Sector and Cargo Clearance Procedures at Indian Airports: Issues and Challenges				
A Study of Engagement, Protean Career Orientation and Turnover Intentions of Faculty Teaching in Professional and Technical Institutions				

We would appreciate your general comments and suggestions about articles in this issue of “DIAS Technology Review”.

.....

.....

.....

Name: Mr./Ms./Dr./Prof. Designation:

Address:

..... Phone:

DIAS Technology Review

The International Journal For Business & IT (A Biannual Publication)

DELHI INSTITUTE OF ADVANCED STUDIES

NAAC Accredited 'A' Grade Institute approved by AICTE & affiliated to GGSIPU, Delhi
Sector 25, Plot No.-6, Rohini, Delhi 110085 (India)



SUBSCRIPTION ORDER FORM

Enclosed Cheque/DD number dated for
Rs..... drawn in favour of Delhi Institute of Advanced Studies and payable at
Delhi towards the subscription of DIAS TECHNOLOGY REVIEW for a period of (tick as applicable)

1 year 2 years 3 years

Subscriber's Details

Name:..... Designation.....

Organization:.....

Mailing Address:.....

..... PIN/ZIP

Phone:..... Fax:

E-mail:.....

Date:

Place:

Signature and Seal

Subscription Rates*

Category	1 Year	2 Years	3 Years
Indian (in Rs.)			
Institution	400	600	1000
Individual	250	350	450
Student	150	250	350
Foreign (in US \$) Air Mail	50	80	120
Single Copy (in Rs.) 250/- (in US \$) 30/-			

*Subject to change without prior notice.

Heartiest Thanks to our Reviewers!

Having capable and accomplished professionals in the standard setting process is the key to the issuance and sustainability of every high quality product. We are really fortunate to have a panel of eminent and distinguished academicians and professionals who are continuously offering support to us for keeping the journal scholastic, intellectually vibrant and comprehensively informative. We particularly express our gratitude to the following panel for reviewing the articles and offering their valuable suggestions:

- ✘ **Dr. Alex P.Tang**, Professor, Department of Accounting & Finance, Morgan State University, USA.
- ✘ **Dr. Anand Krishnamoorthy**, Associate Professor, Department of Business, Troy University, USA.
- ✘ **Dr. A. K. Saxena**, Professor, Department of Business Administration, Bundelkhand University, India.
- ✘ **Dr. A.K.Saini**, Professor, USMS, G.G.S. Indraprastha University, India.
- ✘ **Dr. Angappa "Guna" Gunasekaran**, Dean, University of Massachusetts, USA
- ✘ **Dr. Anil Gurung**, Professor, Department of Marketing, Lewis College of Business, Marshall University, USA
- ✘ **Dr. Anu Singh Lather**, Vice Chancellor, Ambedkar University Delhi, India.
- ✘ **Dr. Atul Gupta**, Dean, Lynchburg College, USA.
- ✘ **Dr. Ajay Pandit**, Former Professor, Faculty of Management Studies, University of Delhi, India
- ✘ **Dr. Archana Singh**, Assistant Professor, Delhi Technological University, India.
- ✘ **Dr. Arun K. Somani**, Chair, Department of Electrical & Computer Engineering, Iowa State University, USA.
- ✘ **Dr. Ajay Kumar Singh**, Professor, Dept. of Commerce & Business, D.S.E., University of Delhi, India.
- ✘ **Dr. B.S. Bodla**, Professor, Department of Management, Kurukshetra University, India
- ✘ **Dr. Boldin Robert**, Professor, Department of Finance and Legal Studies, Indiana University of Pennsylvania, USA
- ✘ **Dr. C. P. Gupta**, Professor, Finance & Accounting, University of Delhi, India.
- ✘ **Dr. Chong W. Kim** Ex-Dean and Professor of Management, Marshall University, USA
- ✘ **Dr. Chung Baek**, Associate Professor of Finance, Troy University, USA
- ✘ **Dr. Framarsh Byramjee**, Professor, Department of Marketing, Indiana University of Pennsylvania, US
- ✘ **Dr. Gin Chong**, Professor, Department of Accounting, Finance & MIS, A & M University, USA.
- ✘ **Dr. Ibrahim J. Affaneh**, Chairman, Dept. of Finance & Legal Studies, Indian University of Pennsylvania, USA.
- ✘ **Dr. Jagdish Pathak**, Professor in Accounting Systems, University of Windsor, Canada.
- ✘ **Dr. James H. Graham**, Vogt Endowed Professor, University of Louisville, USA.
- ✘ **Dr. J. L. Gupta**, Former Professor, Management Development Institute, India.
- ✘ **Dr. J. K. Mitra**, Former Professor, Faculty of Management Studies, University of Delhi, India
- ✘ **Dr. Kavita Singh**, Associate Professor, Faculty of Management Studies, University of Delhi, India
- ✘ **Dr. Karmeshu**, Dean & Professor, Department of Computer and System Sciences, Jawaharlal Nehru University, India.
- ✘ **Dr. K. N. Badani**, Professor of Finance, Indian Institute of Management, Kashipur, India.
- ✘ **Dr. Krish Krishnan**, Professor, Indiana University of Pennsylvania, USA
- ✘ **Dr. (Mrs.) Madhu Vij**, Professor, Faculty of Management Studies, Delhi University, India
- ✘ **Dr. Margie McInerney**, Professor, Department of Management, Lewis College of Business, Marshall University, USA
- ✘ **Dr. Michael Newsome**, Professor of Economics, Marshall University, USA.
- ✘ **Dr. Meenakshi Handa**, Professor, GGSIP University, India
- ✘ **Mr. Naveen Jain**, President, DUET India Hotels, India.
- ✘ **Dr. N.C. Maheshwari**, President, Association of National Exchanges Members of India, India
- ✘ **Dr. Neena Sondhi**, Professor, IMI, India
- ✘ **Dr. Nupur Praksh**, Professor, University School of Information & Technology, GGSIP University, India
- ✘ **Dr. N. K. Kakker**, Former Director, Maharaja Agresen Institute of Management Studies, India.
- ✘ **Dr. Pankaj Kumar Gupta**, Professor, Centre for Management Studies, Jamia Millia Islamia, India.
- ✘ **Dr. Pankaj Sinha**, Professor, FMS, University of Delhi, India
- ✘ **Dr. P.K. Goyal**, Professor of Management, Institute of Management Technology, India.
- ✘ **Dr. P.K. Jain**, Professor of Finance, Indian Institute of Technology, India.
- ✘ **Dr. Raj Devasagayam**, Dean, State University, Old Westbury, USA
- ✘ **Dr. Ravi Shankar**, Professor, Department of Management Studies, Indian Institute of Technology, India.
- ✘ **Dr. R.K. Aggarwal**, Managing Director, Brahma Management Services Pvt Ltd., Varanasi, India
- ✘ **Dr. Rajendar K. Garg**, Professor of Marketing, Indian University of Pennsylvania, USA
- ✘ **Dr. Ramesh G. Soni**, Chair & Professor, Indian University of Pennsylvania, USA.
- ✘ **Dr. Rakesh Gupta**, Senior Lecturer in Finance, Griffith University, Australia, USA.
- ✘ **Dr. Ramchandra Akkihal**, Professor Emeritus of Economics, Marshall University, USA
- ✘ **Dr. R.K. Mittal**, Vice Chancellor, Chaudhary Bansi Lal University, India.
- ✘ **Dr. Sanjeev Mittal**, Professor, USMS, G.G.S. Indraprastha University, India.
- ✘ **Dr. Sharath Sasidharan**, Assistant Professor, Emporia State University, USA
- ✘ **Dr. Shikha N Khera**, Assistant Professor, Delhi Technological University, India.
- ✘ **Dr. Snehal Shah**, Program Chair in Human Resource, School of Inspired Leadership, India.
- ✘ **Dr. S. K. Pandey**, Associate Professor, Indian Institute of Management, Rohtak, India.
- ✘ **Dr. S. K. Tuteja**, Former Professor, Faculty of Management Studies, University of Delhi, India
- ✘ **Dr. Suneel Maheshwari**, Professor of Accounting, Indian University of Pennsylvania, USA.
- ✘ **Dr. S.S. Agarwal**, Director General, KIIT College, Gurugram, India
- ✘ **Dr. T.N. Kapoor**, Ex Vice Chancellor, Panjab University, Chandigarh, India.
- ✘ **Dr. Tanuja Agarwala**, Professor, FMS, Delhi University, India
- ✘ **Dr. Uday Tate**, Professor of Marketing, Marshall University, USA.
- ✘ **Dr. Vasudha Bhatnagar**, Professor, Dept. of Computer Science, University of Delhi, India.
- ✘ **Dr. Vibha Jain**, Associate Professor, Janaki Devi Memorial College, India.
- ✘ **Dr. Vibhabar Shrimali**, Professor & Dean, G. B. Pant Engineering College, Okhla, India
- ✘ **Dr. Vinod K Gupta**, Professor, Human Resource Department, Management Development Institute, India
- ✘ **Dr. Vikas Nath**, Director, BVIMR, India

We will like to have many more academicians and professionals in our team in our efforts to maintain the quality and contents of the journal. Hopefully, you may like to be one of them. If so, please mail your details to us.

DELHI INSTITUTE OF ADVANCED STUDIES



VISION

We strive to provide a dynamic learning environment for imparting holistic education that inculcates professional excellence, induces competitive spirit, instills leadership quality to carve a niche in the changing global scenario

THE INSTITUTE

DELHI INSTITUTE OF ADVANCED STUDIES is a dynamic growth oriented, affiliated to G.G. S. Indraprastha University. Established by Shri Laxman Das Sachdeva Memorial Educational Society, the Institute is providing dynamic learning environment that is changing in response to changing needs of society. At DIAS pursuit of Excellence is a way of life. The guiding philosophy behind all the academic activities of the institute is to inculcate professionalism in management and to enhance the effectiveness of organization. The Institute seeks professional excellence through ethics, passion and perseverance.

Shri S.K. Sachdeva, a well-known name in the educational world, is the Chairman of the Institute. Dr. S. N. Maheshwari, former Principal of Hindu College, Delhi University is its Professor Emeritus & Academic Director while Dr. N. Malati is its Director.

The Institute runs the following programmes affiliated with Guru Gobind Singh Indraprastha University.

Programme	Duration	No. of Seats
MBA	2 Years	180
MBA(FM)	2 Years	60
BBA	3 Years	60
B. Com(H)	3 Years	60

The success of a professional educational Institution is evaluated and judged both on its academic performance and the placement of its students. DIAS has been successful on both these fronts.

ACADEMIC PERFORMANCE

The students of DIAS have excelled in the University by securing top positions in MBA, MCA and BBA programmes and have been conferred 26 Gold Medals. The following students of DIAS were awarded Gold Medals at Annual University Convocation for standing 1st at the University Final Examinations:

MBA: Ms. Pratibha Manchanda (Batch 2000- 2002), Ms. Manpreet Kaur (Batch 2001- 2003), Ms. Silky Mahajan (Batch 2002- 2004) , Ms. Kavita Sharma (Batch 2003- 2005), Mr. Rahul Gupta (Batch 2004-2006), Ms. Priyanka Rastogi (Batch 2008 –2010), Ms. Ruchika (Batch 2009 –2011), Ms. Swati Jain (Batch 2012 –2014), Ms. Niti Chopra (2013 –2015) and Mr. Piyush Aggarwal (Batch 2016 –2018).

MCA: Ms. Lovelina Massand (Batch 2000 – 2003), Mr. Pratham Kailash (Batch 2002 – 2005), Ms. Neha Garg (Batch 2003 – 2006), Ms. Neha Chaudhary (Batch 2004 – 2007), Ms. Shruti Gupta (Batch 2005 – 2008), Ms. Kanchan Aggarwal (Batch 2007 – 2010), Ms. Richa Gupta (Batch 2008 – 2011), Ms. Sandhya Soman (Batch 2009 – 2012) and Ms. Sakshi Tyagi (Batch 2010 – 2013).

BBA: Mr. Vikas Sharda (Batch 1999 – 2003), Mr. Salil Mahajan (Batch 2002 – 2005), Ms. Simran Khanna (Batch 2005 – 2008), Ms. Anu Jain (Batch 2016 – 2019).

PLACEMENT

DIAS provides excellent placement opportunities for its students in prestigious organizations. Some of the companies where our students have been placed include: Tata Consultancy Services, IBM, Nucleus Software Ltd. , Accenture, Intersolutions, American Express , Standard Chartered, ICICI Prudential, Infosys, Adobe , Hughes, Thomas Cook, MASpar, Quark, Syntel, BEC Foods, Grapecity, NIIT, Safenet , Indus Valley Partners, Capital IQ, Federal Bank, Ernst & Young, Pepsico, Ameriprise Financials, Axis Bank, Newgen software and many.

MISSION

DIAS believes in learning to excel and excelling to serve. The aim of the Institute is to develop a unique culture that seeks to scale heights of glory through ethics, passion and perseverance.

The guiding philosophy of the Institute is to enhance team spirit, integrity and commitment to serve the cause of humanity.



DELHI INSTITUTE OF ADVANCED STUDIES

'A' Grade Institute, Approved by AICTE and Affiliated to G.G.S. Indraprastha University, Delhi
Plot No. 6, Sector 25, Rohini, Delhi - 110 085 India
Ph. : +91-11-2793 2742, 2793 4011, 2793 4400 Fax: +91-11-2793 4200 Email: dias@dias.ac.in