ISSN 2319-684X

Volume VI Issue 2 December 2018

ABS International Journal of Management

AN EMPIRICAL ANALYSIS OF MACRO ECONOMIC INDICATORS INFLUENCING INDIAN EXPORTS Reema Monga, Sneha Chaudhry EMBED THE CULTURE OF EMBRACING CHANGE Ankita Shukla INDUSTRY 4.0: THE HR PERSPECTIVE DIGITAL THINKING: GETTING READY FOR A DISRUPTIVE WORLD ROLE OF HUMAN RESOURCE MANAGEMENT IN THE EFFECTIVE IMPLEMENTATION OF ORGANISATIONAL CHANGE Jigyasa Narang AGILE IMPLEMENTATION ROADMAP FOR OPERATIONAL EXCELLENCY WITHIN ORGANIZATION Vikas Awasthi, Amit Kundaliya HEALTH 4.0: ROLE OF HEALTH INFORMATION SERVICES-A REVIEW Poornima Singh, Surya Nath Singh, Lallan Ran **BIOMEDICAL INDUSTRY 4.0 AND ROLE OF LIBRARY SERVICES** Priyamwada P. Joshi DIRECT BENEFIT TRANSFER IN SEED SECTOR: IMPACT & CHALLENGES Mahima Shrimali, Guruprasad Hirema MANAGERIAL SKILLS REQUIRED FOR INDUSTRY 4.0 REVOLUTION Akshay Arora, Vaishali, Mohit Jain EMPLOYEE ENGAGEMENT AND EMOTIONAL INTELLIGENCE: A CONCEPTUAL VIEW Guneet Kaur INTEGRATION OF SOFT SKILLS NEEDS OF INDUSTRY 4.0 THROUGH ACTIVE LEARNING IN MANAGEMENT CLASSROOMS Sanjay Kehar INDUSTRY 4.0: CHANGING INFORMATION AND COMMUNICATION TECHNOLOGY IN DIGITAL ERA AND ROLE OF LIBRARY AND INFORMATION PROFESSIONALS Hemant Kumar Sahu THE ROLE OF INDUSTRY 4.0 OF SMALL AND MEDIUM ENTERPRISES IN UTTAR PRADESH Kalpana Pundi INDUSTRY 4.0 AND INDUSTRIAL INFORMATION SERVICES IN INDIA: A PROPOSAL Prabhat Ranjan E-COMMERCE GROWTH IN INDIA Shailendra Kumar, Sadhana Singh, Deepti Gaur TRANSFORMATION OF EDUCATION INDUSTRY USING BIG DATA Somna Mishra THE STUDY OF THE ROLE OF HUMAN RESOURCE DEPARTMENT IN THE MANAGEMENT OF CHANGE IN THE ORGANIZATION Renu Bhardwa WHAT IS THE VALUE OF A FACEBOOK LIKE: THE TRUTH ABOUT FACEBOOK ROI Ritu Talwa WORK LIFE BALANCE: OPPORTUNITIES AND CHALLENGES Monika Gulia, Pratistha INDUSTRY 4.0: A CONNECTING JOURNEY IN MARKETPLACE Chetna P. N EFFECTS OF SOCIAL MEDIA MARKETING ACTIVITIES ON BRAND PREFERENCE AND CONSUMER RESPONSE IN EMCG COMPANIES Kritika Jain, Pallavi Saxena THE CHALLENGES OF ENTREPRENEURSHIP IN INDUSTRY 4.0: A CASE OF ALIGARH DISTRICT IN UTTAR PRADESH

A STUDY OF ATTITUDE AND WORK COMMITMENT OF TEACHERS IN GOVERNMENT AIDED AND SELF FINANCED HIGHER

EDUCATIONAL INSTITUTIONS IN NCR Ashok Kumar Asthana, Bhawna Bhatnagar



ASIAN BUSINESS SCHOOL

(Approved by AICTE, Ministry of HRD, Govt. of India) Marwah Studios Complex II, Plot A2, Sector 125, Noida - 201303 Chief Patron Patron Editor-in-Chief Editorial Board Dr. Sandeep Marwah

Dr. Lalitya Vir Srivastava

Dr. Anubhuti Dwivedi

Dr. Resham Sundrani Ms. Veenu Arora Ms. Poornima Singh

ABS International Journal of Management is the publication of Asian Business School, Noida, India.

Address for Correspondence: Asian Business School,

ABS International Journal of Management Marwah Studios Complex II, Plot A2, Sector 125, Noida – 201303. INDIA Tel.:0120-4594200

The views expressed in the articles and papers published in ABS Management Journal may not reflect by copyright and no part of this publication (including graphics) may be copied without the written consent of Editor-in-Chief, ABS Management Journal, Copyright, 2012, Asian Business School, Noida, India.

Published by

Asian Business School Marwah Studios Complex II, Plot A2, Sector 125, Noida - 201303, Noida.



Message from President's Desk



In the last quarter of previous century when we had computers and automation, we believed that the technology has helped us to reach pinnacle to help the businesses grow. However currently the world is becoming more and more networked and expected to do so till everything is interlinked with the rest.

We are talking in terms of Industry 4.0 being adopted by more and more business concerns worldwide and it is expected to influence other initiatives and cooperative efforts as well. In general, the key technological components that are progressively supposed to make up the foundation of Industry 4.0 mainly include autonomous robots, management of big data, cloud computing, internet of things (IoT), cyber security, system integration and simulations.

As a business principle, in addition to the main motto of profit generation, we also need to care about customer satisfaction, product quality and cost of production. Major digital transformations are expected to help the industry intensify their product portfolio with digital functionalities and also invest in big data analytics to drive innovation and significant improvements in efficiency as a basement capability.

After all, in an age when we are talking in terms of making India a USD 10 Trillion Economy by 2030, we need to focus on managing the age of disruption and certainly that India needs this technological edge for a faster economic growth. For a business organization that may potentially have to deal with a database of more than hundred million customers in India, it has no option but to use big data analytics to segment the data for better analysis so as to perform better.

I am sure that this Journal shall bring in new insights and help us to uncover the emerging trends related to innovations and use of technology in India as the fastest growing economy as a whole and shall serve as an important milestone in India's journey towards global competitiveness. My best wishes to Research and Development Cell at Asian Business School for the publication of ABS International Journal of Management, 2018 December issue.

Dr. Sandeep Marwah President Asian Education Group

Message from Director's Desk



It is a well acknowledged fact that nowadays the growth of businesses is predominantly dependent upon the use of technology and innovation at the highest level. Innovation has been considered as an art dependent upon the people who make it happen and relatively rare unpredictable occurrence. This requires that we understand innovation better and standardize the process of predictable results.

We are moving towards an era wherein the efficiency, effectiveness and profitability of business entities depends on devices autonomously communicating with each other. That is what we call as Industry 4.0 which is also referred to as the fourth industrial revolution. In the present time, industry is witnessing the transitional phase of adopting big data to internet of things. Indeed, such changes will outline the future of business where connection of cyber-physical systems, human and smart factories will communicate with each other through internet of things. The prime objective is that the machines need to talk to other machines with products and information being processed and distributed in real time resulting in changes to the complete industrial ecosystem.

For the growth of firms and thereby economy as a whole, we need to have highly intelligent connected systems that create a fully digital value chain. It needs to be based on cyber physical systems that integrate communications, Information Technology, data and other physical elements wherein these systems transform the traditional manufacturing bases into smart factories.

Yes, on the road ahead we do expect a lot of challenges including IT security issues, lack of adequate skill sets, general reluctance to change by stakeholders, lack of clarity on legal issues and regulations, unclear economic benefits, etc. But in case of an economy that has manpower of about 1.3 billion, it becomes an imperative for any firm to make use of big data analytics to segregate the massive data for better analysis.

The journal confluences trends and technologies that promise to reshape the way things are made. I congratulate the Research and Development Cell at Asian Business School for keeping up efforts of quality research publication.

Dr. Lalitya Vir Srivastava Director Asian Education Group

From the Desk of Editor-in-Chief



Technological advancements are shifting factory floors into a new era of possibilities. Digitization of manufacturing process and artificial intelligence application is the need for today's industry. The manufacturing industries are currently changing from mass production to customized production. All the Industrial revolutions have resulted in economic growth, increased productivity, and advanced welfare in the countries that managed to reap most of its positive benefits. Industry 4.0 or the fourth industrial revolution as we put it is already having an impact in factories around the globe. The current transformation of the industry through Internet of Things and cyber physical (production) system is posing challenges as well as opening up avenues for growth opportunities.

Use of high end technologies and machines equipped with AI will require Indian businesses to change the way they think and act, plan and execute; and will entail a process of transformation spanning across technology management, human resource management, change management, investment in R&D, marketing analytics and so on.

The Journal is an effort to present and facilitate an understanding of Industry 4.0 concepts, its drivers, enablers, goals and limitations. The quality research and views of scholars, industry professionals, functionaries from diverse business backgrounds will contribute building India into a more competitive economy in the wake of this fourth industrial revolution.

This journal will add to the existing body of knowledge in Industry 4.0 and the digital transformation in industrial markets by which discoveries are made, ideas are confirmed or refuted, events controlled or predicted and theory developed or refined. The Research and Development Cell at Asian Business School hopes that the research ideas published in the journal will set up new milestones and disciplined momentum for the growth and development of Indian economy.

Dr. Anubhuti Dwivedi

Associate Dean & Chairperson R&D Cell Asian Business School

TABLE OF CONTENTS

DESCRIPTION	PAGE NO.
A STUDY OF ATTITUDE AND WORK COMMITMENT OF TEACHERS IN GOVERNMENT AIDED AND SELF FINANCED HIGHER EDUCATIONAL INSTITUTIONS IN NCR Ashok Kumar Asthana, Bhawna Bhatnagar	1
AN EMPIRICAL ANALYSIS OF MACRO ECONOMIC INDICATORS INFLUENCING INDIAN EXPORTS Reema Monga, Sneha Chaudhry	6
EMBED THE CULTURE OF EMBRACING CHANGE Ankita Shukla	13
INDUSTRY 4.0: THE HR PERSPECTIVE Archana Kumar	17
DIGITAL THINKING: GETTING READY FOR A DISRUPTIVE WORLD Amit Kundaliya, Vikas Awasthi	20
ROLE OF HUMAN RESOURCE MANAGEMENT IN THE EFFECTIVE IMPLEMENTATION OF ORGANISATIONAL CHANGE Jigyasa Narang	23
AGILE IMPLEMENTATION ROADMAP FOR OPERATIONAL EXCELLENCY WITHIN ORGANIZATION Vikas Awasthi, Amit Kundaliya	28
HEALTH 4.0: ROLE OF HEALTH INFORMATION SERVICES-A REVIEW Poornima Singh, Surya Nath Singh, Lallan Ram	31
BIOMEDICAL INDUSTRY 4.0 AND ROLE OF LIBRARY SERVICES Priyamwada P. Joshi	37
DIRECT BENEFIT TRANSFER IN SEED SECTOR: IMPACT & CHALLENGES Mahima Shrimali, Guruprasad Hiremath	40
MANAGERIAL SKILLS REQUIRED FOR INDUSTRY 4.0 REVOLUTION Akshay Arora, Vaishali, Mohit Jain	46
EMPLOYEE ENGAGEMENT AND EMOTIONAL INTELLIGENCE: A CONCEPTUAL VIEW Guneet Kaur	50
INTEGRATION OF SOFT SKILLS NEEDS OF INDUSTRY 4.0 THROUGH ACTIVE LEARNING IN MANAGEMENT CLASSROOMS Sanjay Kehar	54
INDUSTRY 4.0: CHANGING INFORMATION AND COMMUNICATION TECHNOLOGY IN DIGITAL ERA AND ROLE OF LIBRARY AND INFORMATION PROFESSIONALS Hemant Kumar Sahu	59
THE ROLE OF INDUSTRY 4.0 OF SMALL AND MEDIUM ENTERPRISES IN UTTAR PRADESH Kalpana Pundir	68
INDUSTRY 4.0 AND INDUSTRIAL INFORMATION SERVICES IN INDIA: A PROPOSAL Prabhat Ranjan	74
E-COMMERCE GROWTH IN INDIA Shailendra Kumar, Sadhana Singh, Deepti Gaur	78

TABLE OF CONTENTS

DESCRIPTION	PAGE NO.
TRANSFORMATION OF EDUCATION INDUSTRY USING BIG DATA	82
THE STUDY OF THE ROLE OF HUMAN RESOURCE DEPARTMENT IN THE MANAGEMENT OF CHANGE IN THE ORGANIZATION Renu Bhardwaj	84
WHAT IS THE VALUE OF A FACEBOOK LIKE: THE TRUTH ABOUT FACEBOOK ROI Ritu Talwar	93
WORK LIFE BALANCE: OPPORTUNITIES AND CHALLENGES Monika Gulia, Pratistha	97
INDUSTRY 4.0: A CONNECTING JOURNEY IN MARKETPLACE Chetna P. N.	101
EFFECTS OF SOCIAL MEDIA MARKETING ACTIVITIES ON BRAND PREFERENCE AND CONSUMER RESPONSE IN FMCG COMPANIES Kritika Jain, Pallavi Saxena	105
THE CHALLENGES OF ENTREPRENEURSHIP IN INDUSTRY 4.0: A CASE OF ALIGARH DISTRICT IN UTTAR PRADESH Meenu	108

A STUDY OF ATTITUDE AND WORK COMMITMENT OF TEACHERS IN GOVERNMENT AIDED AND SELF FINANCED HIGHER EDUCATIONAL INSTITUTIONS IN NCR

Ashok Kumar Asthana Assistant Professor, NDIM Bhawna Bhatnagar Associate Professor, NDIM

Abstract:

Education is the backbone of any economy and the development of a nation largely depends on knowledge and innovations which in turn depends upon the quality of teaching and teachers. In national reconstruction too the teachers play an important role. Teaching and learning are the key drivers of knowledge and innovations and a favourable and positive attitude of a resource person often compliments it. Effective teaching results from a teacher's skill at creating both intellectual excitement and positive rapport in students, the kind of emotions and relationships that motivate them to do their best work. As teachers have not only the capacity but also the cherished desire to enhance our professional competence. The effective and productive learning in the higher educational institutions can be efficiently complimented and enhanced with a directed positive attitude of a teacher and finally it shapes the learning desires and their respective outcomes in a desired direction. As teachers have not only the capacity but also the cherished desire to enhance our professional competence. The present research makes an attempt to find out a different variable that affects attitude of a teacher in government funded and self financed higher educational institutions and also consider the impact of important variables like gender, payments and emoluments, qualifications, etc. on the attitude of teachers. The research work also makes an attempt to carry out a comparative study of the work commitments of teachers associated with government aided and self financed higher educational institutions.

Keywords: Self Financed Institutions, Government Aided Institutions, Attitude, Work Commitment, Teachers, Higher Educational Institutions, etc.

Introduction

"Teaching is a profession" is not as important an issue as important is this that 'teachers are professionals'. Maximum problems related to teaching-learning can be handled safely without giving too much financial inputs, if our teachers possess a healthy professional attitude and positive work commitment. In India, teaching covers the third largest work force; thus a large number of people enter this profession. Lack of professional attitude and low work commitment among this group has made it difficult to ensure uniform standards. The increasing demand for professional service with quality has put the onus on the teaching profession to be responsible and more accountable to the needs and conditions of service. It is lack of professional attitude among us that is why continuous and adequate efforts are not made to recognize the best ideas in time, practice and role in action for self renewal and sustenance.

It is teaching through which good and progressive social environment can be created and improved. It may be concluded that all teachers have positive and healthy attitude for their profession. The infrastructure, policies and strategies of Government should enable right attitude and job performance and attitude amongst teachers working in government aided and self financed institutions equally (Jose M.M., 2008). The performance of a teacher could depend on structure, strategy and policy followed physiological psychological and environment, motivational methods, etc. followed by the organization as a synchronized tool (Ramon R., 2017). There are indications that teacher's attitudes have a positive relation with success in teaching. If the teachers are well trained, motivated and committed to their professional learning will be enhanced. One's behaviour, to a great extent, depends upon one's attitude

toward the things idea, person or object, in this environment. An attitude is a hypothetical construct to represent an individual's like or dislike for an item. Attitude a powerful resource of human motivation - is capable out the pattern of life as well as success and happiness. Attitude is a great driving force in achieving goals. The importance of attitude in the life of an individual is universally acknowledged. The teacher who is committed to the profession may never complain of the workload or the number of extra hours she has to dedicate in her teaching irrespective of the fact she is paid according to the pay scale or not. Teachers are the pillars in education and the success of students largely depends on the right aptitude and attitude of teaching staff (Lal R. and Shergil S. S., 2012). Nobody can effectively take his place or influence children in the manner and to the degree; it is possible, for him alone to do. A committed teacher

ABS International Journal of Management

should be able to cope with the latest teaching techniques, methods and other audio visual materials for enhancing learning. All these depend on the efficiency and competency of a dedicated and committed teacher. If the teacher will not have a positive attitude and proper work commitment then they will not go to school on time and do proper evaluation of the students, as they are not planned to do their work on time. Enlightened, emancipated and empowered teachers lead communities and nations in their march towards a higher quality of life. They reveal and enlighten the path to attain humanistic, ethical and moral values in life. Teachers put forth before learners the sublime aspects of culture and inculcate empathy for fellow being.

Significance of the Research

This research will thus help policy makers to frame better policies such as good pay scale, training system, good opportunities for teachers and only by using the senior teacher's experience. The teachers themselves would be able to understand what the various things are and how they are handling the various systems. The society will develop sympathetic and positive attitude towards the teachers. They will be able to understand the teacher's physical and significant needs.

Objectives

The main objectives in context to present research work are as following:

- To study the attitude of teachers working in government aided and self financed higher educational institution in NCR with reference to variables gender, education qualifications and salary.
- To study the work commitment of teachers working in government aided and self financed higher educational institution in NCR with reference to variables gender, education qualifications and salary.

Hypotheses

- HO1 There is no significant difference in the attitude of teachers working in government aided and self financed higher educational institution in NCR in reference to gender.
- HO2 There is no significant difference in the attitude of teachers working in government aided and self financed higher educational institution in NCR in context to teachers training.
- HO3 There is no significant difference in the attitude of teachers working in government aided and self financed higher educational institution in NCR in context to payment.
- HO4 There is no significant difference in the work

commitment of teachers working in government aided and self financed higher educational institution in NCR in reference to gender.

- HO5 There is no significant difference in the work commitment of teachers working in government aided and self financed higher educational institution in NCR in context to teachers training.
- HO6 There is no significant difference in the work commitment of teachers working in government aided and self financed higher educational institution in NCR in context to payment.

Limitations

•

•

•

Following are some important limitations of the research

- The area considered narrow hence there would be a difficulty in generalizing the results to other parts of the nation.
- Consideration of more variables would definitely increase the quality of research further here only a few variables are considered.
- Sample of Teachers was drawn from the University affiliated degree colleges and, not from any other higher educational institutions like Universities or autonomous institutions.

Findings and Analysis

Table 1: Difference in attitude of teachers in Government aided and self financed higher educational institutions

Gender	N	Mean	SD	t (Stat.)	t (Tab.)	Sig. @ 0.05 Level
Male	360	192.25	13.01	1.06	1.97	NIS
Female	60	189.12	20.12	1.00	1.07	110
Total	420					

Interpretation: From the inferential table presented above it is evident that the statistical calculated value of t is less

as compared to the tabulated value of t, hence the null hypothesis which has been considered is accepted and it has been established that there exists no

significant difference in the teachers' attitude towards teaching profession on the basis of gender in aided and unaided schools.

Gender	N	Mean	SD	t (Stat.)	t (Tab.)	Sig. @
Trained	250	192.25	16.01	0.71	1.67	
Untrained	170	195.12	12.17	0.71	1.07	
Total	420					

Table 2: Difference in attitude of teachers in Government aided and self financed higher educational institutions in relation to academics (Whether they are trained or not)

Interpretation:

From the inferential table presented above it is evident that the statistical calculated value of t (0.71) is less as compared to the tabulated value of t (1.67), hence the null hypothesis which has been considered is accepted and it has been established that there exists no significant difference in the teachers' attitude towards teaching profession on the basis of their qualification related to formal teacher training in government aided and self financed schools. Since the government has a basic norm of appointing only qualified teachers in aided schools, majority of the untrained teachers are found only in self financed higher educational institutions. Hence the comparison has to be made between the trained and untrained teachers in government aided and self financed higher educational institutions. Hence the hypothesis that there is no significant difference in the attitude of teachers working in government aided and self financed higher educational institutions with reference to academic qualification has been accepted.

Table 3: Difference in attitude of teachers in Government aided and self financed higher educational institutions in relation to pay scale (one-way ANOVA)

	Ν	df	SD	F (value)	P (Value)	F (tab)	Sig. @ 0.05 Level
Between Groups	6126.75	2	3063.375	13.59	6.67	2.89	S
Within Groups	91000.25	417	218.22				
Total	97127.00	419					

Interpretation:

From the above table it is seen that the F value (13.59) is higher than the tabular value of F (2.89) at 0.05 level of significance. Therefore the null hypothesis has been rejected. It is observed that there exists a significant difference in the teacher's attitude towards teaching profession between teachers having different pay scales in government aided and self financed higher educational institutions. Hence the null hypothesis that there is no significant difference in the attitude of teachers working in government aided and self financed higher educational institutions with reference to pay scale has been rejected.

Table 4: Difference in work commitment of teachers in Government aided and self financed higher educational institutions

Gender	N	Mean	SD	t (Stat.)	t (Tab.)	Sig. @ 0.05 Level
Male	360	192.25	22.01	1.46	1.02	NIC
Female	60	189.12	27.12	1.40	1.95	1N5
Total	420					

Interpretation:

From the above table it is seen that the calculated t value is less than the table

value of t at 0.05 level of significance. Therefore the null hypothesis has been accepted. It is observed that there exists no significant difference in the teachers' work commitment towards teaching profession on the basis of gender in government aided and self financed higher educational institutions.

Table 5: Difference in work commitment of teachers in Government aided and self financed higher educational institutions in relation to academics (Whether trained or not)

Gender	N	Mean	SD	t (Stat.)	t (Tab.)	Sig. @ 0.05 Level
Trained	250	185.35	25.01	0.10	1.07	NIC
Untrained	170	185.12	16.17	0.19	1.87	INS
Total	420					

Interpretation:

From the above table it is seen that the calculated t value is less than the table value of t at 0.05 level of significance. Therefore the null hypothesis has been accepted. It is observed that there exists

no significant difference in the teachers' work commitment towards teaching profession between trained and untrained teachers in government aided and self financed higher educational institutions. It is to be mentioned that

there are no untrained teachers in the aided schools as the government does not allow appointing untrained teachers as per norms.

Table 6: Difference in work commitment of teachers in Government aided and self financed higher educational institutions in relation to pay scale (one-way ANOVA)

	Ν	df	SD	F (value)	P (Value)	F (tab)	Sig. @ 0.05 Level
Between Groups	11081.4	2	5540.7	12.39	2.67	3.01	S
Within Groups	172537.6	417	413.759				
Total	183619.00	419					

Interpretation:

From the above table, it is seen that the F value (12.39) is more than the table value of F (3.01) at 0.05 level of significance. Therefore the null hypothesis has been rejected. It is observed that there exists a significant difference in the teachers' work commitment towards teaching profession between teachers drawing different pay scale in government aided and self financed higher educational institutions. Hence the hypothesis that there is no significant difference in the work commitment of teachers working in government aided and self financed higher educational institutions with reference to pay scale has been rejected.

Conclusion

Teachers should be given right to oppose any attempt to subject their puritanical group to standards. Competent young men and women will not enter teaching unless they can live normal lives which are free from undue censorship. On the other hand, teachers must recognize that they are in the public eye and therefore must meet accepted standards of conduct. There should not be any politicization, castism, reservation and corruption in the educational system so as to maintain the standards of the education system. From the research conducted the following points have been concluded:

• There is no difference in the attitude of teachers in government aided and self financed higher educational • institutions with reference to gender.

- There is no significant difference in the attitude of teachers in government aided and self financed higher educational institutions with reference to • academic qualification.
- There is significant difference in the attitude of teachers in government aided and self financed higher educational institutions with reference to pay scale.
- There is no difference in the work commitment of teachers in government aided and self financed higher educational institutions with reference to gender.
- There is no significant difference in the work commitment of teachers in government aided and self financed higher educational institutions with reference to academic qualification.
- There is significant difference in the work commitment of teachers in government aided and self financed higher educational institutions with reference to pay scale.

Recommendations

On the basis of research undertaken following recommendations could be forwarded:

- Teachers are to be guided and counselled so as to be aware of their duties and working conditions for perfect adjustment thus helping them to build a positive attitude towards the teaching profession.
- To increase the work commitment, the authorities need to elaborate their roles and provide guidelines for proper work. This is also necessary for stopping the exploitation of teachers. Teachers should be involved in the decision making process related to education and teaching including drafting of the curriculum.

References

- Jan F. et al., (2015). The factors affecting the teachers self esteem in Higher Educational institutions. *Journal of research on humanities and social science, Volume* - 5, No - 9, ISSN - 2224 – 5766.
 - Jose, M.M. (2008). A study of the Impact of Psychological contract on Organizational commitment among Temporary and Permanent teachers in Degree College. *Journal of Contemporary Research in Management. Volume – 3.*
 - Kanti, K.S. (2013). A study of the relationship between Teacher Attitude & Teaching Aptitude of prospective Secondary School

Teachers. International Journal of Education and Psychological Research (IJEPR), 29(4), 95-98.

Kant, R. (2012). A study of teaching aptitude and responsibility feeling of secondary school teachers in relation to their sex and locale. *Academic Research International,* 1(2), 254-259.

Khan, M.S. et al. (2014). The impact of Multiple factors including the demography upon the college teachers regarding their Job satisfaction. *Journal of Education and Practice*", *Volume* -*5*, No - 34, ISSN - 2222- 288X.

- Kessuwan K. and Muenjohn N. (2013). Employee Satisfaction; Work Related and Personal Factors. *Journal of School of Management,* RMIT University Melbourn.
- Lee C.C. and Chen C.J., (2013). The relationship between Employee Commitment and Job attitude and its effect on service quality in the tourism industry. *American Journal of Industrial and Business Management*. ISSN – 2164- 5175.
 - Lal R. and Shergil S. S. (2012). A comprehensive study of Job Satisfaction and aptitude towards education among male and Female Teachers of Degree

Colleges. International Journal of Marketing, Financial Service and Management Research, Volume- 1, No – 1.

- Luddy N., (2005). Job satisfaction amongst employees at a public health institution in the Western Cape. *Faculty of management science Publication*, University of Cape, South Africa.
- Mishra S., Sharma M., Sharma R.C., Singh A., and Thakur A., (2016). Development of a scale to measure faculty aptitude towards Open Education Resources. *Open Praxis, Volume -8, Issne - 1*, Pp - 55- 89.
- Mathur S.M. and Gupta S.K. (2014). Outside Factors Influencing Behavior of Employees in Organizations. International Journal of Information and Education Technology, Vol. 2, No. 1.
- Mohan K. and Gomathi S. (2014). A study to empowering employees capabilities towards organizational excellence. *Mediterranean Journal of Social Sciences*, ISSN 2039-2117 (online), *Volume* – 5, No – 20.
 - Mehmood T., Akhter M. Hussain A. and Azam R. (2013). Attitude of Prospective teachers towards profession: A measure for institutional development.

International Journal of Asian social Science", Volume- 3, NO - 11, ISSN - 2363 – 2374.

- Naefi W.A. (2014). Assessing Employee Attitudes towards Organizational Commitment and Change: The Case of King Faisal Hospital in Al-Taif Governorate, Kingdom of Saudi Arabia. *Journal of Management and Sustainability, Vol. 4, No. 1,* ISSN 1925-4725.
- Punia P. (2012). Relationship between attitude organization culture and performance of employees in a scientific research organization. *Journal of the Indian Academy of Applied Psychology, Volume 38, No – 3,* ISSN – 0019-4247.
- Qureshi M.I. et al. (2013). Analysis of various determinants which affect on job performance: (a case study on private and public universities employees of D.I.khan). *Gomal University Journal* of Research, 29(1).
- Ruiz B. and Adams S. (2003). Attitude towards teamwork and team effectiveness in Higher Education, *Proceedings of 2003 American society of engineering education Annual Conference and Exposition.*

AN EMPIRICAL ANALYSIS OF MACRO ECONOMIC INDICATORS INFLUENCING INDIAN EXPORTS

Reema Monga & Sneha Chaudhry Assistant Professor, Gitarattan International Business School

Abstract:

Exports are the most important elements for identifying the economic strength of any country but the exports are influenced by various factors which are also need to be understood in order to actually examine the economic growth of a country. The paper thus examines the export growth influenced by various macro-economic indicators (Gross Domestic Product, Foreign Direct Investment, Foreign Exchange Reserves, Balance of Trade, Consumer Price Index, Unemployment, Population, Exports, Imports, Unemployment and Population), using data from 2000 to 2017. The paper studies the relationship between exports and indicators by using multiple correlation, multiple regression and the future growth predictions are calculated through Compound Annual Growth Rate.

The paper concludes that the Indian exports are mainly affected by its Imports followed by the other indicators under study and in order to enhance Indian exports, the change in policies should be made in accordance with them.

Keywords: Exports, GDP, Macro Economic Indicators, etc.

Introduction

Economy is the large set of interrelated production and consumption activities that aid in determining how scarce resources are allocated also known as an economic system which is further broken into two major areas of focus, micro-economics and macro-economics. Macroeconomics can be used on a national scale to a global scale. The Macroeconomics is a branch of the economics field that studies how the aggregate economy behaves. In macroeconomics, a variety phenomena is economy-wide of thoroughly examined such as inflation, price levels, the rate of growth, national income, gross domestic product and changes in unemployment. It focuses on trends in the economy and how the economy moves as a whole. Macroeconomic indicator is a piece of economic data that is used by analyst to interpret current or future investment possibilities or to judge the overall health of an economy. Economic indicators can be anything the investor chooses, but specific pieces of data released by the government and nonorganizations profit have become followed. widely Macroeconomic indicators are economic statistics

which are released periodically by Government agencies and private organisations. These indicators provide insight into the economic performance of a particular country or region and therefore can have a significant impact on the economy. For the purpose of the study following ten major influencing macroeconomic indicators were selected (Gross Domestic Product, Foreign Direct Investment, Foreign Exchange Reserves, Balance of Trade, Consumer Price Index, Unemployment, Population, Imports, Unemployment and Population) based on the literature reviewed. An attempt has been made to identify the relation and impact of these selected indicators on the exports of the Indian economy.

Literature Review

Veeramani (2007) studied Sources of India's export growth in pre and post reform period providing a brief view of the pace of India's export growth in pre-liberalization period (1950-1990) and post-liberalisation period (1991-2005) on the bias of world trade effect, market composition and commodity composition. The study concluded that the pace of growth was increased due to world demand and real effective exchange rate after 1991.

Kumari (2010) researched the Effect of Economic Indicators on Export Performance of India in Pre and post-Liberalisation period (1986 to 2011). She studied the relationship between exports and various economic indicators: GDP, Imports, Per Capita Net National Income (PCCNI), Balance of Payment, Exchange Rate and Industrial Production. Diversification of India's exports is depicted through the export import ratio. It was found that the exports are mainly affected by three indicators: GDP, Imports AND PCCNI and the change in policies should be made in accordance with them.

Arize & Malindretos (2012) studied the impact of Foreign Exchange Reserves on Import Demand in Asia using various techniques like the dynamic error-correction model, econometric techniques organized around Johansen, Harris-Inder and Hansen co- integration analyses; fully modified OLS, dynamic OLS and ARDL to estimate long-and-short run demand elasticity's it was found that an increase in foreign reserves may have a positive effect on the demand for imports since it relaxes the excess demand liquidity restriction. It was concluded that the evidence points to the non stationary of all variables involved in the model. In addition, further test results suggest that there is a unique, statistically significant long- term equilibrium relationship among real imports, real income, relative price and real foreign exchange reserves.

Sweidan (2013) studied the Effect of Exchange Rate on Exports and Imports of Jordan in 1976–2009. Testing approach to co-integration and the error correction model was used and it was found that Jordan's competitiveness has a trend of deterioration. The influence of Jordan's exchange rate on exports and imports is active in the short-run only.

Genc & Artar (2014), Bhattarai (2011) in their study established a co-integrated relationship between effective exchange rates on Exports and Imports of selected emerging countries for the period of 1985-2012. The study concluded that there is co- integrated relationship between effective exchange rates and exports-imports of emerging countries in the long run.

Kaur & Sharma (2014) conducted an empirical research on the Impact of Foreign Direct Investment on macroeconomic Parameters of India. The Explanatory variables used in the study were Gross Domestic Product (GDP), Foreign Exchange Reserves (RES), Gross Capital formation (GCF), Exports (EXP) and Employment (EMP) and it was found that there is a positive and significant impact of FDI on GDP, GCF, EXP, EMP and RES.

UK essays (2015) have done macro economic analysis taking macroeconomic indicators, namely GDP, Unemployment, Fiscal Policy, Monetary Policy and Exchange Ratio. It can be concluded that in research paper the UK economy has a steady GDP growth, low unemployment and low inflation before 2008, which produces a steady environment for businesses to invest. However, due to the collapse of major banks and the housing markets, the UK economy shrunk significantly with unemployment rising to an unprecedented level.

Alotaibi (2016) tried to identify the influence of Exchange Rate on Country's Import and Export. It was concluded that the exchange rate of the currency occupies a portfolio that holds the bulk of its investments, which determine the portfolio are real return. As supply and demand for currencies change, the values of those currencies change.

Barua (2016) studied the impact of FDI inflows on exports and growth of Indian Economy for the period of 2000-2012. Using Simple Regression and Multiple Regression Models built on the hypotheses formulated and validating the results of the models based on ANOVA and Durbin-Watson test. The study clearly revealed that FDI not only acts as a vehicle for accelerating the pace exports but it is also an important variable that alters the level of GDP of the host country.

Hamzalouh, Ismail and Rahman (2016) studied the impact of the GDP and population on trade of Common Market for Eastern and Southern Africa (COMESA) using panel data approach where study aimed to uncover the increases in trade volume among the member countries of COMESA and identified the important factors that affect COMESA trade using panel data models. The results showed that in fixed effect model (FEM), an increase in GDP leads to a 65% increase in imports, and in Random effects model (REM), an increase in GDP leads to an 86% increase in exports.

Amadeo (2017) had presented an article

from 'The Balance' explaining the impact of population on exports. The article talked about the introduction of exports, its current scenario and how exports fit into the Balance of Payment. The Impact of Population on Bilateral Trade Flows in the case Organization of the Islamic of Conference has been taken as the base to the investigate bilateral trade flows and their determinants among six big Organization of the Islamic Conference economies by using panel data analysis and cross sectional data. Hence it was found that the impact of population on bilateral trade flows is positive for the exporter country, while it is negative for the importer country.

Giri & Joshi (2017) had done research on The Impact of Macroeconomic Indicators on Indian Stock Prices to examine the long run and the short run relationship between stock price and a set of macro-economic variables for Indian economy using annual data from 1979 to 2014. The method used was VECM to test the short and long run causality and variance decomposition and the results confirmed a long run relationship among the variables with evidence suggesting that Economic growth, inflation and exchange rate influence stock prices positively. However, crude oil price influences the stock price negatively. This implied that the increase in oil price induces inflationary expectation in the mind of investors and hence stock prices were adversely affected.

Objectives of the Study

- (a) To identify various macroeconomic indicators affecting India's Exports through review of literature.
- (b) To understand the relationship between macro-economic indicators and Indian Exports.
- (c) To analyse the impact of macroeconomic indicators on Indian Exports.

Scope of the Study

The scope of research is too wide since exports range has widened after the Indian economy became an open economy in 1991 and is expected to rise further based on certain macroeconomic indicators. There would be various factors that will be fruitful or vice versa when analysed with exports. The time period taken into consideration for the study is 17 years ranging from 2000 to 2017 (calendar year). The parameters identified on the basis of the literature reviewed are Gross Domestic Product, Foreign Direct Investment, Foreign Exchange Reserves, Balance of Trade, Consumer Price Index, Unemployment, Imports, Population, Exports, Unemployment and Population.

Hypothesis

Ha1: There is a relationship between Macro-economic indicators and exports. Ha2: There is an impact of Macro-economic indicators on exports.

Research Methodology

The research mainly focussed on the secondary sources of data collected from government websites like RBI, data.gov.in, mospi, Census, commerce ministers, United Nation, MHRD, World Bank, finance ministry, ibef.com etc.; Reports of all economic indicators have been taken into consideration separately for each indicator; besides this various journals like IOSR, Journal of International and Global Economic Studies, Indian Council for Research on International Economic Relations etc. were taken into consideration along with the various Newspapers articles like- Business today, economic times and Livemint.

The collected data for different parameters were analysed through CAGR i.e. Compound Annual Growth Rate, Multiple Correlation and Regression all calculated with the help of MS Excel 2007 and SPSS.

Results and Discussion

Macroeconomic indicators like interest rates, GDP, inflation are capable of driving the market into frenzy, causing a lot of money to be lost or made in an instant. So, it is very important for investors or country as a whole, to study and know about these indicators.

India's trade deficit touched a 56-month high in January; driven by a sharp rise in imports of petroleum, chemicals, silver, pearls and machine tools, even as exports expanded for the third consecutive month. A 9% rise in exports at \$24.3 billion was outweighed by a 26% increase in imports at \$40.6 billion, leaving a trade gap of \$16.3 billion, the highest since May 2013. It can be seen that exports increased in five years gap but the increase between 2010 -2015 is considerably less (Business Standard, 2013). While exports of both goods and services, still account for only about 22 percent of the Indian GDP, their multiplier effect for economic activity is quite large as the import content is not as high as for example in the case of Chinese exports (UNDP Report, 2013). The Growth Rate of exports was observed at 14.34 for the 17 years data collected.

Exports are component of aggregate demand (AD) and rise in exports will help increase AD and cause higher economic growth. Exports have been on a positive trajectory since August 2016 to January 2018 with a dip of 1.1 percent in the month of October 2017 and exhibited positive growth of 9.07 percent in dollar terms during January 2018.

Gross Domestic Product: With economic reforms adopted in the last few years start in, India is poised to remain the fastest growing large economy in the world, and its GDP is expected to reach \$5 trillion by 2025, a top Indian official has told the World Bank. In 2018, India is expected to grow at over 7.4% (Live mint, 2018) Taking into consideration the last 17 years from 2000 to 2016, the increase from 2010 to 2015 was 20.73% which is very less compared to the increase from 2005 to 2010 which was 51.71%. The major decline started after 2008 that have impacted the average of the next five years and the CAGR (2000-16) value is observed as 11.53. The ratio of exports plus imports to GDP increased by more than 50% between 1997–98 and 2007–08 from 21.2 % to 34.7%.

Population: India's population has already reached 1.26 billion in the current year and considering the present growth rate, by 2028, the country's population will be more than China, according to a recent report from the UN. The population is important for the growth of the economy as there is a need for skilled labour in the economy and for the country like India- having young population is also at benefit. The population from the year 2000 to 2015 is increasing considerably and expected to grow annually at the rate of 1.50 percent.

Foreign Direct Investment: Foreign direct investment promotes exports; foreign enterprises with their global network of marketing, possessing marketing information are in a unique position to exploit these strengths to promote the exports of developing countries. There is a constant increase in FDI inflow in India increasing at the rate of 26 percent in 2014 to an estimated \$35000 million with maximum growth in the services sector especially in electricity, gas, water, waste management and information and communication and it is further expected to grow at the rate of 17.65 percent.

Average Exchange Rate: The major change or fluctuation in the exchange rate is caused by the change in Inflation, Interest Rates, Current-Account Deficits, Public Debt, Terms of Trade, Political Stability and Economic Performance. The average exchange rate increased drastically from 45.72 (2010) to 64.15 (2015) and is also expected to increase at the rate of 2.61 percent in future.

Imports: Exporting and importing help grow national economies and expands the global market. In 2008, imports were 308500 US\$ Million which actually increased from 2006 data which was 190700 US\$ Million it was because to make economy stable in 2008, with the compound annual growth rate of 15.66 the imports will increase further.

Foreign Exchange Reserves: Foreign currency assets, a major component of the overall reserves, rose by USD 1.925 billion to USD 396.572 billion. The major increase was in 2005 in the year gap of 2000-05 which was more

than double and the trend continued till 2010 and thereafter with the annual growth rate of 15.07 percentage. There was fall in reserves after 2008 which became stable again in 2011. India has been among the more successful in this regard, with foreign exchange reserves rising to \$320.56 billion in August 2014, compared to \$274.80 billion in September last year. The foreign exchange reserves rose by USD 1.960 billion to USD 421.720 billion in the week to January 16, due to increase in foreign currency assets the reserves had declined by USD 2.154 billion to USD 419.760 billion.

Balance of Trade: The balance of trade data records the value of merchandise trade of India with its trading partners. India's largest trade partners include US, EU, and China. India has maintained an overall trade deficit since 1990 and in the past decade, the deficit has increased manifold. According to the World Trade Organization, India's share export of merchandise goods in 2015 was 1.5%. The balance of trade was negative from 2000 to 2015 which implies that the trade was in deficit. Foreign direct investment and foreign income have a significant positive impact on balance of trade whereas domestic consumption and real effective exchange rate impacted negatively on the balance of trade in India.

Consumer Price Index: The CPI has increased to 9.5 but a drastic decrease was observed in the year gap 2010 to 2015. As in 2015, the CPI reached to 5.88 from 9.5 in 2010 and is predicted to grow at the rate of 4.77 percent in future values.

 Table 1: Correlation of Exports and Macro Economic Indicators

	GDP	Popul- ation	FDI Inflow	Avg. Exchange Rate	Exports	Import	Foreign Exchange Reserves	Balance of Trade	Consumer Price Index	Interest Rate	External Debt	
l l Co	Pearson Correlation	1	.987**	.841**	0.136	.967**	.942**	.951**	872**	.497*	-0.425	.967**
GDP	Sig. (2-tailed)		0	0	0.602	0	0	0	0	0.042	0.089	0
	Ν		17	17	17	17	17	17	17	17	17	17
	Pearson Correlation		1	.853**	0.159	.934**	.904**	.950**	827**	0.454	-0.361	.965**
Population	Sig. (2-tailed)			0	0.541	0	0	0	0	0.067	0.154	0
	N			17	17	17	17	17	17	17	17	17
	Pearson Correlation			1	0.282	.807**	.810**	.937**	787**	.615**	-0.341	.792**
FDI Inflow	Sig. (2-tailed)				0.273	0	0	0	0	0.009	0.18	0
	N				17	17	17	17	17	17	17	17
Average	Pearson Correlation				1	0.101	0.131	0.192	-0.16	.585*	0.05	0.102
Exchange Rate	Sig. (2-tailed)					0.701	0.615	0.461	0.54	0.014	0.847	0.698
	Ν					17	17	17	17	17	17	17
Exports	Pearson Correlation					1	.992**	.938**	944**	.610**	557*	.913**
	Sig. (2-tailed)						0	0	0	0.009	0.02	0
	N						17	17	17	17	17	17

	Pearson Correlation				1	.937**	978**	.659**	606**	.869**
Imports	Sig. (2-tailed)					0	0	0.004	0.01	0
	Ν					17	17	17	17	17
Foreign	Pearson Correlation					1	901**	.614**	501*	.891**
Exchange Reserves	Sig. (2-tailed)						0	0.009	0.04	0
	N						17	17	17	17
	Pearson Correlation						1	698**	.640**	779**
Balance of Trade	Sig. (2-tailed)							0.002	0.006	0
	N							17	17	17
	Pearson Correlation							1	605*	0.381
Price Index	Sig. (2-tailed)								0.01	0.131
	Ν								17	17
-	Pearson Correlation								1	-0.247
Interest Rate	Sig. (2-tailed)									0.338
	Ν									17
	Pearson Correlation									1
External Debt	Sig. (2-tailed)									
	Ν		Ì							

Interest Rate: India Interest Rate averaged 6.6 Percent reaching an all time high of 14.5 Percent in August of 2000 and a record low of 4.3 Percent in April of 2009. Due to tight cash conditions in the system, banks have been borrowing an average Rs. 80, 000 crore daily from RBI. Due to worsening liquidity conditions, bank borrowing shot up to Rs. 1.2 trillion from the central bank in December 2012, (economist.com, 2008).

External Debt: The external debt increased considerably from 2000 to 2015 in US Million Dollar approximately four times which is a huge amount and tension on Government to repay it back. The increase was not much from 2000 to 2005 and the future growth rate accounts to 12.42 percent.

There exists а strong positive correlation between exports and on particular Macro Economic Indicators. The correlation values always lies between +1 and -1 and if the value is positive, the variables are highly correlated or positively correlated and if value is negative then variables are negatively correlated. The value 17 in the above table no. 1 shows the number of years taken for the research and in this we have taken years from 2000 to 2016 to see the impact of Macro Economic Indicators on Export. This calculation has been done from SPSS after presenting the data in the form of tables above. Hence, the null hypothesis i.e. H01 is rejected and there is a significant relationship. Now, the impact of macroeconomic indicators is studied by Multiple Regression analysis. The R, R² and Adjusted R² are statistical measures which are used to show the relations between the variables. R^2 tells about the goodness of fit and shows deviations in dependent variables explained by independent variable. Adjusted R² is used when there are more than two independent variables. It is taken because impact cannot be 100%, there are variations and they are adjusted. The difference is impacted by other factors also, hence the value is 0.999. When independent variables are increased than R² will also be increased, therefore, variation is 100% as per the value of R.

Unstandardized Coefficient										
Model	В	Standard Error	t	Significance						
Constant	-163418.103	62031.553	-2.634	.039						
GDP	015	.012	-1.278	.248						
Population	154.559	62.800	2.461	.049						
FDI Inflow	118	.178	662	.532						
Average Exchange Rate	-81.667	29.970	-2.725	.034						
Imports	.883	.065	13.549	.000						
Foreign exchange Reserves	034	.049	693	.514						
Balance of Trade	.752	.100	7.520	.000						
Consumer Price Index	1614.489	859.800	1.878	.109						
Interest Rate	878.668	591.561	1.485	.188						
External Debt	.044	.026	1.708	.139						
R - 1.000a										
R2 - 1.000										
Adjusted R2 - 0.999										

Table 2: Multiple Regression Coefficient Table

Exports = -163418.103 + 154.559 P+ 0.883 M + 0.752 BOT + 1614.489 CPI+ 878.66 ROI + 0.044 ED- 0.015 GDP - 0.118 FDI Inflow - 81.667 AER - 81.667 FER

Where, P = population, M = Imports, BOT = Balance of Trade, CPI = Consumer Price Index, ROI = Interest Rate, ED = External Debt, GDP = Gross Domestic Product, AER= Average Exchange Rate, FER= Foreign Exchange Rate.

Hence, Result show that 1% increase in Macro Economic Indicators will lead to an increase in Population by 154.559, Imports by 0.883, Balance of Trade by 0.752, Consumer Price Index by 1614.489, Interest Rate by 878.66, External Debt by 0.044 and decrease in GDP by 0.015, FDI Inflow by 0.118, Average Exchange Rate by 81.667 and Foreign Exchange Reserves by 0.034. The significance value with t-test which shows the significant relation of the model and proves that Null Hypothesis i.e. H02 (There is no impact of Macro Economic Indicators on Exports) is rejected which means there is significant impact of some Economic Indicators Macro on Indian Exports. Those indicators are

Population, Average Exchange Rates, Imports and Balance of Trade. Rest of the indicators does not reject the null hypothesis.

F significance value also shows the impact of variables. F - Value is used when we need to know that the whole model is significant or not and also when we need to compare two models. However, t test will tell you if a single variable is statistically significant and an F test will tell you if a group of variables are jointly significant. It also contains a single value of dependent variable and there more than two independent variables. This is where the F- test is used. F - Value is 3108.094 with 0.000 significance value which is less than 0.05, hence the model is found to be perfectly significant which shows that the impact of different indicators can be studied.

The R and R2 value of 1.000 signifies that the variables under study have a 100 percent impact on Indian exports and no other factor influences the same, but in reality this is not possible as there are various other factors which influences extorts but are not considered under study which can also be noticed through the value of adjusted R square (0.999) which shows that there exists various other factors (not included in this study) which may influence Indian exports.

Findings

Variations and some indicators may not be showing significant impact on exports, the indicators like GDP, Indian Economy observed a slow growth for almost all the indicators under study between 2010- 2015. Exchange Rate immediately reached to 64.15 from 45.72. The figure was 44.94 only in 2000 which rose to 250 in 2009. Accompanied by 100 million increases in FDI from 2010 to 2015, Foreign Exchange Reserves increased from 2005 which means there was little impact of Crises on Indian Economy, on the other hand Balance of Trade remained negative from last 17 years, Consumer Price Index decreased from 9.5 to 5.88, a major decline, Interest Rate decreased but it again took its position to 8.08 from 8.34 and the External Debt increases from 2010 to 2015 which a concern area for the economy. The CAGR was also calculated to ascertain the growth rates in all the indicators and Growth Rate was maximum in case of Imports which is 15.66 and the lowest was observed in case of the population where growth rate is 1.50.

ABS International Journal of Management

The correlation result shows the strong relation between all the macroeconomic indicators and exports and the Multiple Regression analysis where there is high significant relationship between Population Exports, & Average Exchange Rates & Exports, Imports & Exports and Balance of Trade & Exports. The R value is 100% which means that there is impact of all the indicators on exports but adjusted R2 is 0.999 which implies that there could be FDI Inflow which does not have significant relation or impact on exports.

Conclusion

The present study was conducted to identify the impact of various macroeconomic indicators on Indian exports, and it was observed that during 2010-15 almost all the indicators had a slow growth. The CAGR value predicts the growth trend in the coming future for all the influencing indicators. The Correlation and Multiple Regression analysis also showed a significant impact on the all the variable with some having strong impact. Hence, with the results it could be concluded that all the indicators under study have the impact on the Indian exports but the major impacting indicator are Population, Average Exchange Rates, Imports and Balance of Trade. Hence, by regulating these indicators the Indian exports can also be regulated.

Managerial Implications

a highly competitive global In environment, the functioning and competitiveness of an economy is highly influenced by its trade. The more the country is involved in the trade, the more it will lead to growth of the economy a as whole, while there are certain factors influencing the effective working. Thus, the government, organisations or researchers involved need to have such an effective plan which would foster the growth, and for this planning, they need to have a thorough understanding of the trends

in all the influencing indicators for a specific time frame. Consequently, the research could be a reference for the organisations and the researchers to identify the major influencing indicators and also their impact on the Indian Exports which will further help them in defining effective working plans.

References

- Tendulkar, D. S. (2000).Indian Export and Economic Growth Performance In Asian Perspective. Indian Council for Research on International Economic Relations, Working Paper No. 54. Abugri, B.A. (2008). Empirical Relationship between Macroeconomic Volatility and Stock Return: Evidence from Latin American Markets. International Review of Financial Analysis, 17(2), 396-410.
- Sweiden (2013). The Effect of Exchange Rate on Exports and Imports: The Case of Jordan. *International Trade Journal, 27(2)*, 156-172.
- Cheung, Y. and Sengupta, R. (2013). Impact of Exchange Rate Movements on Exports: An Analysis of Indian Non-Financial Sector Firms. BOFIT Discussion Papers Institute for Economies in Transition Bank of Finland.
- Kapur and Mohan (2014). India's Recent Macroeconomic Performance: An assessment and way forward. *IMF working papers*. Working Paper No. 14/68.
 - Tomar, S.D. (2014). Selected Macro – Economic Variables and its Impact on Chinese and Indian Exports. IOSR *Journal of Business and Management, 16(3).*
- Kumari and Malhotra (2014). Trade-Led Growth in India and China: A Comparative Analysis. Journal of International and Global Economic Studies, 68-88.
- Mugge, D. (2015). Studying Macroeconomic Indicators as

Powerful Ideas. *IOSR Journal, 23,* 410-427.

- Gondaliya and Dave (2015). The Impact of Exports and Imports on Exchange Rates in India. International Journal of Banking, Finance & Digital Marketing, 1(1), 01-08.
- Shaikh, S.A. and Hongbing, O. (2015). Exchange rate Volatility and trade flows: Evidance from China, Pakistan and India, *International Journal of Economics and Finance, 7(11)*, 121-127.
- Panda, S. and Mohanty, R. K. (2015). Effects of Exchange Rate Volatility on Exports: Evidence from India. *Economics Bulletin*, 35(1), 305-312.
- Kaur and Gupta (2016). Impact of Macroeconomic Variables on Stock Market. JABER, 14(14).
 - Hunjra, Chani and Shahzad (2016).The Impact of Macroeconomic Variables on Stock Prices in Pakistan. International Journal of Economics and Empirical Research, 2(1), 13-21. Solgaonkar and Dubey (2017). A Study on The Impact Of FDI on Macro Economic Parameters. International Journal of Research in Economics and Social Sciences, 7(5), 459-466.

EMBED THE CULTURE OF EMBRACING CHANGE

Ankita Shukla Teaching Assistant, Mangalayatan University

Abstract:

Change generates emotions as employee's experience the processes and outcome of amend, including cultural change. An organization's affective culture, which shape the way emotions are experienced and expressed, plays a particularly important part during changes to the culture or to any other significant aspect of managerial life. This article contributes to the literature by illustrating the associations between culture, change and emotions and presents the results of a qualitative study. We found that when participants' values were harmonizing with those of the organization they tended to react to change more optimistically. Cultural change provoked emotional reactions, often of an intense nature. When emotions were acknowledged and treated with respect, people became more engaged with the change.

Keywords: Organizational Culture, Organizational Change, etc.

Introduction

Change is fundamentally about feelings; companies those want their workers to contribute with their heads and their hearts have to accept that emotions are central to the new management style. The most successful change programs reveal that large organizations connect with their people most directly through values and those values, ultimately are about beliefs and feelings (Duck, 1993, p. 113). There are number of ways in which organizational culture, organizational change and emotions are related. Firstly, organizational culture is imbued with emotion and therefore cultural change is especially emotional. A change in culture can be the goal of management and but could occur indirectly as a result of strategic, tactical or operational changes. Secondly, an organization's culture influences affective how these emotions are experienced and expressed. Thirdly, there might be specific elements of a culture that an employee likes or dislikes and these influence emotional responses to any type of change. There is little literature that integrates employees' emotional responses to change with an analysis of their organizations' affective cultures.

Literature Review

Emotions are direct responses to events, issues, relationships and objects that are important to people (Lazarus, 1991; Frijda, 1988), whereas mood is longer lasting, more diffuse and not always linked to something specific (Isen, 2000; Weiss, 2002). Affect is a broad term including emotion, mood and disposition (Barsade and Gibson, 2007). Organizational change has the potential to trigger positive and negative emotions and moods in the employee that depend on a range of factors. These include the perceived valence of the outcomes, the change processes that are used, the speed, timing and frequency of change, the nature of leadership and the employee's personality and emotional intelligence (Kiefer, 2005; Jordan, 2005, Wanberg and Banas, 2000; Smollan, 2006). The culture of the organization can also play an important role in both generating emotions during change and influencing their expression or suppression. The affective culture, in particular, will help or hinder employees' adjustment on an individual level. Organizational culture is regarded as a set of assumptions, beliefs, values, customs, structures, norms, rules, traditions and artefacts (Schein, 2004). The term organizational climate is often

used instead of culture, or in addition to it, and is the employee perception of the culture and a manifestation of it (Allen, 2003). The debate as to the similarities and differences between them, and the multiple theoretical perspectives on each (Payne 2002; Denison, 1996), lie outside the scope of this article, and to simplify matters the term organizational culture will be used throughout. More colloquially, culture is "how things are done around here" (Martin, 2002, and it shapes the behaviour of its members in overt and covert ways. It has also been called a system of shared meanings (Pizer and Härtel, 2005) but how widely it is really shared is debatable (Martin, 2002). For example, sub-cultures exist in organizations (Allen, 2003; Ryan, 2005) which are often based on categories such as hierarchy, department, professional identity, ethnicity and gender, but may also be conceptualised as differing value systems. For example, Palthe and Kossek (2003) developed a typology of sub-cultures that are employeecentred, professional-centred, taskcentred and innovation-centred. Employees' responses to change are often coloured by their perceptions of, and engagement in, the sub-culture as well as in the broader organizational culture (Harris and Ogbonna, 1998; Morgan and Ogbonna, 2008). Subcultures may become counter-cultures or anti-cultures (Elsmore, 2001) and according to Armenakis, Harris and Moss holder (1993, p. 687), "these cultural memberships may polarize the beliefs, attitudes and intentions of members" through group discourses and undermine readiness for change.

Organizational culture is substantially about values (Kabanoff, Waldersee and Cohen, 1995; Ryan, 2005; Duck, 1993), which have been termed "embedded codes" (Branson, 2007, p. 382) - even if these might be contested. Values may evolve or be deliberately determined and articulated in mission statements and websites and included in induction and training sessions. In this way, they are overt guides to behaviour but the messages and the mechanisms may be more subtle. They often contain emotional language, as the following corporate websites indicate: The Virgin brand is built upon Richard Branson's core philosophy - if you keep your staff happy then your customers will be happy, and if you keep your customers happy then your shareholders will be happy (Virgin, 2008). At The Walt Disney Company, entertainment is about hope, aspiration and positive (Disney Corporation, resolutions 2008). At The Walt Disney Company, entertainment is about hope, aspiration and positive resolutions (Disney Corporation, 2008). We have four core values (or passions) that are the 'glue' connecting Vodafone in every country around the globe. These are Passion for Customers, Passion for Our People, Passion for Results, and Passion for the World Around Us" (Vodafone New Zealand, 2008). When Vodafone New Zealand acquired an internet service provider to enter a new market its work culture was reported in the press as being "energised". According to a senior manager, the company's culture was "youthful, casual and fun" and that "it was important for workers to have

energy and passion" to be competitive (Keown, 2006, p. C4).

Researchers have explored the emotions-culture nexus. Schein (1990, p. 111) indicates that "Culture is what a group learns over a period of time as that group solves its problems of survival in an external environment and its problems of internal integration", and he emphasizes that "such learning is simultaneously a behavioural, cognitive, and an emotional process." Focusing on the affective process he contends that one of the factors that contribute to the development of culture is the "emotional intensity of the actual historical experiences" organizational or group members have shared (Schein, 2004, p. 11). Beyer and Nino (2001) assert that culture both engenders emotions and provides for their expression in socially accepted ways and that culture acts as a 'glue' that binds people. According to van Maanen and Kunda (1989, p. 46), "Any attempt to manage culture is therefore also an attempt to manage emotions." The role of emotion is emphasized somewhat idealistically by Bratton, Grint and Nelson (2005, p. 51), who claim that "The most critical function of corporate culture is to generate commitment and enthusiasm among followers by making them feel they are part of a 'family' and participants in a worthwhile venture."

Organizational values often are reflected in the language that is used, and the language of culture in the context of change can be suffused with emotion. Martin (2002) explains how jargon both defines a culture and shapes it. For example, in researching mergers and acquisitions she noted that the informal use of terms such as 'shark', 'ambush', 'stud', 'cupid', 'rape' and 'afterglow' reflect themes of sex and violence and that these "metaphors tap the emotional aspects of life in particular kinds of organizations and industries, alluding to emotions that

may not be socially acceptable to express more directly" (p. 80). If, as Branson (2007, p. 377) claims, "Values alignment is the bedrock of successful organizational change", this process needs to be carefully managed but nevertheless cannot always work. A person's sense of identity is partly determined by his or her values, which can mesh or clash with organizational values (Ashforth and Mael, 1989; Pepper and Larson, 2006). As Ryan (2005, p. 432) puts it, culture "represents the often unwritten sense of identity, feeling part of the organization. It provides a 'glue' and understanding in that it can help individual members make sense of events and change activities." According to Carr (2001, p. 429), "the processes involved in the relationship between employee and organization are deep-seated, largely unconscious, intimately connected to the development of identity and have emotional content." He suggests that change 'dislodges' identity and leads to anxiety and grieving.

Van Knippenberg, van Knippenberg, Monden and de Lima (2009) reported from a study of a merger that members of the dominant company felt a much of organizational stronger form identification than the members of the other company. Similarly, Larson and Pepper (2006) found in a takeover that members of the acquired company resisted the values of the acquiring company, as a result of what they termed 'identity tensions'. Van Dijk and van Dick (2009) found that change can undermine an employee's identity, particularly in terms of social status, while resistance to change undermines a change leader's identity as a person with power. It should also be emphasized that in addition to its cognitive and behavioural components, resistance to change is also affective (Piderit, 2000; Szabla, 2007), but the role of affect is frequently overlooked or Discounted as irrational (Domagalski, 1999). In the context of cultural change the

emotional elements, wrapped as they are in values and identity, are particularly salient. A number of other examples provide evidence of the dissatisfaction and alienation that can be experienced by employees when the culture changes. Eight years of structural change at GE, according to Huy (2001, p. 619), "left remaining employees reeling from cultural shock and its managers exhausted." Kavanagh and Ashkanasy (2006) found that when values were threatened by change in the tertiary education sector, employees responded with defensiveness, shock and lower levels of trust. Having conducted in-depth studies of two privatised organizations Elsmore (2001) concluded that changing the culture on a large scale is a long term endeavour and causes pain and anguish, particularly when the change is legislated in a topdown fashion. Brooks and Harfield (2000) report on a culture change programme in a local government authority from a civil service mentality to one of 'public management' where the user pays for a service. The cultural change programme, known as 'Giving Value - Being Valued', was considered inequitable since the 'Being Valued' component fell short of the effort expended by staff in 'Giving Value', and evoked negative emotions. At Hewlett-Packard strategy, structure and culture all changed with a new CEO (Forster, 2006). The family-culture of previous years gave way to one more focused on the individual and profit-sharing was replaced by individual performance measures. A number of disaffected staff resigned. Schein (2004, p. 309) points out that new leader, who are often brought in specifically to change the culture, need to deal with emotional reactions.

Research Methodology

For this study we have adopted a qualitative/social constructionist approach because it provides a useful way of understanding the three main constructs of organizational culture,

emotions and change, all of which have been subjected to social constructionist treatments in the literature. "A general assumption of social constructionist is that knowledge is not disinterested, apolitical, and exclusive of affective and embodied aspects of human experience, but is in some sense ideological, political and permeated with values" (Schwedt, 2003, p. 307). One of the major dimensions of organizational culture is a set of values (Schein, 1990; Martin, 2002) which are moulded by both intra- and inter-organizational forces (Standard Pedersen and Dobbin, 2006). Organizational cultures can be shaped by explicit management intervention but are also influenced by multiple employee (and managerial) discourses and sub-cultures so that there is often a divide between espoused and perceived values (Kabanoff et al., 1995). The social processes that enact the values "endow them with the meaning" (Rosen, 1991, p. 6), and, as Allen (2003) put it, organizational actors create, but are also constrained meaning. by, organizational The social constructionist perspective of emotions takes the view that emotions are phenomena that are culturally mediated (Antonacopoulou and Gabriel, 2001) and developed through interaction in social relationships. Cultural factors influence not merely the experience of specific emotions (such as shame, anger or pride) but also influence how appropriate their display is. Commenting on this approach Callahan and McCollum (2002, p. 14) indicate that "emotions are created or constructed as part of a common sense making process in social structures" and that "social constructionist knits together the personal and the social." Social constructionism underlies much of the literature on emotional labour (e.g. Mann, 1999; Bolton; 2005; Fineman, 2008). Zembylas (2006) notes that the feeling and display rules that operate in organizations are both contributors to, and outcomes of, organizational culture. Change

has also been the subject of social constructionist approaches. The way in which change is framed by various organizational actors (for example, as an exciting opportunity or a response to problems) can stimulate discourses about change (Bean and Hamilton, 2006; Mills, 2000; Ford, Ford and McNamara, 2002) that may or may not result in shared understandings. Resistance to change may be seen as culturally acceptable and negotiable - or as unacceptable as a barrier to be 'dealt with' or 'managed' (Dent and Goldberg, 1999; van Dijk and van Dick, 2009).

The emotions that people experience express or suppress during organizational change, are shaped by social relationships inside and outside the organization (Bryant and Wolfram Cox, 2006). To explore the interaction between organizational culture, change and emotions we interviewed 24 people in Auckland, New Zealand, in 2006 and 2007. There were 11 women and 13 men, 16 European, two Maori, three Asian and three of Pacific Island background. The participants came from a variety of industries, organizations, functional departments and hierarchical levels. They had experienced a wide range of changes including mergers, restructuring, redundancy, relocations, new systems and job redesign. Participants were sourced through management consultants who knew them so that we had no previous Relationship with them. The interview was part of a larger project on emotions and organizational change and one question participants were specifically asked was, how did the culture of the organization impact on your emotional responses to the change? Some commented on how the change had affected other employees and some also referred to the influence of organizational culture elsewhere in the interview. Part of the social construction of knowledge rests on how researchers select and

ABS International Journal of Management

interpret interviewee comments. We drew up a table of the 24 participants and noted key issues and quotes from the transcripts that deal with organizational culture. We particularly looked for the emotional ramifications of changes to the culture, the influence of the affective culture, and for how positive and negative views of the existing culture impacted on their emotional reactions to any of the changes they were discussing. We also examined whether emotional support has been provided by leaders and managers of change and whether this was evidence of cultural norms. The analysis of the findings is, therefore, our reconstruction (Schwandt, 1998) of the dynamics of culture, emotions and organizational change.

Limitations

In the present research, we investigated individuals' perceptions of how culture affected their emotions during change events. This study, therefore, uses ideographic perceptions of organizational culture from individual subjects influenced bv change. However, given that our focus has been on emotions in relation to change events, this approach is justified in our opinion. Methodological debates about researching organizational culture are as heated as they are in other areas of organizational behaviour (e.g. Rosen, 1991; Martin, 2002). The wider project covered many causes of emotional responses to change and therefore did not delve into the culture in as much depth as a more narrowly targeted study would. Quantitative studies within organizations and across national boundaries may give a much more detailed picture of organizational

culture, and its affective elements, and of the influences of nationality, ethnicity and gender. Ethnographic accounts could provide a deep and rich vein of material that is peculiar to an organization, such as those provided by van Maanen and Kunda (1989) Martin et al. (1998) and Elsmore (2001). Further research may have the capacity to more completely capture the many variables at play when considering emotional reactions to change events, such as emotional labour, perceived organizational support, organizational EI, systemic justice, sub-cultural issues, professional norms and gender factors. In addition, the roles of leaders in creating, sustaining and changing culture, and the degree to which they infuse culture with emotion needs deeper exploration.

Conclusion

Organizational change has the capacity to alter the culture, whether deliberately or not, and thereby influence people's emotional reactions. Conversely, the culture affects the way in which staffs respond to the change on an emotional level. Arguments have been advanced by researchers that organizational culture, change and emotions are socially constructed. Many have criticized the cynical way in which all these elements have been deliberately manipulated to control people and harness them to the organizational machine (Sturdy and Fineman, 2001; Zembylas, 2006). Yet if employee engagement is to be authentic organizations need to create cultures sufficiently strong to embrace change without altering their fundamental ethos and to develop an acceptance that emotions are a natural part of organizational culture

and organizational change. This study has contributed to the literature by integrating affective culture with other elements of an organization's culture and by presenting ideographic accounts that reveal how participants in change believe the affective aspects of organizational culture shaped their emotional reactions. Dramatic changes faced by organizations in the economic crisis, developing in late 2008 and mushrooming in 2009, have strained and altered organizational cultures and put an emotional burden on staff. The lessons from our research study should be of benefit to managers struggling to maintain, adjust or blend organizational cultures and deal with the emotional outcomes for staff.

References

- Allen, D.K. (2003). Organizational climate and strategic change in higher education: Organizational insecurity. *Higher Education*, 46(1), pp. 61-92.
- Alvesson, M. (2002). Understanding Organizational Culture (London: Sage Publications).
- Antonacopoulou, E.P. and Gabriel, Y. (2001). Emotion, learning and organization change towards an integration of psychoanalytic and other perspectives, *Journal of Organizational Change Management*, 14(5), pp. 435-451.
- Armenakis, A.A., Harris,
 S.G. and Moss holder, K.W.
 (1993) Creating readiness for organizational change, *Human Relations*, 46(6), pp. 681-703.

INDUSTRY 4.0: THE HR PERSPECTIVE

Archana Kumar Chief Human Resources Officer, Ireo Private Limited

Abstract:

Industry 4.0 refers to the fourth industrial revolution. Each revolution is characterized by its ability to transform economies, jobs and even society itself through the introduction of new technologies and processes. The impact of Industrial revolution ripples across industries, businesses and communities, affecting not just how we work but also how we live and relate to one another. In a short span of time, terms like robotics, artificial intelligence, nanotechnology, quantum computing, biotechnology, the Internet of Things, fifth-generation wireless technologies (5G), additive manufacturing/3D printing and fully autonomous vehicles have become common terms in the world of business and industry.

Industry 4.0 has the potential to create opportunities for new roles. While the lower order skills will be easily replaced by automation. However, the higher order skills which require intuitiveness, empathy and leadership navigational skills in face of adversities will be in high demand.

Instead of changing the curriculum, the need of the hour is a complete disruption in the approach to learning. It is no longer enough to have a formal education, but more important to inculcate the process of continually acquiring new skills and knowledge.

The future will be in the hands of the organizations that see opportunities and challenges in a changing world—a picture that conveys both hope and ambiguity.

Keywords: New roles, Opportunities, New Skills, etc.

Introduction

After the 1st revolution in 18th century, 2nd in the 19th century and 3rd in the 20th century, the 21st century is witnessing the 4th industrial revolution characterized by the fusion of technologies and the blurring of lines between the physical, digital, and biological spheres. This time the revolution is advancing at extraordinary speed, driven by technologies developing at an exponential rate.

Life 4.0

In this confluence of disruptive digital technologies, the change being brought around in the manufacturing sector is beyond recognition. The emergence of the human-machine interaction is a reality today. The human skills required to work alongside robots who have AI and ML inbuilt in them is absolutely without any parallel in human evolution. These Bots are now playing an increasing role in factories and manufacturing, the speed, accuracy computational power is increasingly pushing human resources out of the industry compounds. The onslaught of machines has led to an astonishing rise in data volumes, leading to advanced analytics and business intelligence.

The human machine interface doesnot just ends there. Internet-of-Things (IoT) where machines can communicate with machines through ML with no human interface has today reached our homes without our blinking the eyelid. Our smart phones can interact with our smart TVs; Alexa can understand our life pattern better than most of the family members; smart pad controlled smart homes already seem like an alsoran technology; augmented reality today is part of our entertainment system and games.

More and more people have adapted to Direct-to-home screening, Netflix and Amazon for entertainment. Internet sensations are challenging the Film industry. New norms for work, life, home, entertainment, games are changing how we lived life before the digitalization of our lives and now.

Jobs 4.0

It is not just in industrial set-ups and factories that the transformation is being brought around at an incredible pace. The office work space is also transforming. But this is not the first time that workplaces are transforming 360 degrees. The world moved from agrarian economy to the Industrial economy and the place of work transformed. However, it took over a century for that to happen. Then with the advent of computers, jobs were lost in large numbers and there was stiff resistance from Labour unions against their deployment. However, that also took almost 3 decades. The current transformation at workplace will be turbulent.

"A new report by the McKinsey Global Institute predicts that by 2030, as many as 800 million jobs could be lost worldwide to automation. Rote jobs that involve physical labor (machinist, cooks) or data processing (payroll clerks, data entry) are most at risk of automation." There are automated check-out counters, toll tax collections, railway ticket sales, airline booking, bank tellers, parking attendants and now even waiters at restaurants. The jobs which were low skill have all but disappeared from our lives and we have adjusted to it easily.

The effects of technology didnot result in mass scale unemployment. Every industrial revolution led to switching of gears and large scale enhancement and change of vocational skills and knowledge. The level of educated workforce increased. They adapted to new technology and continued to be productive. However, the challenge is in managing the transition and often the current workforce is the one to be badly affected. The new generation that follows comes with requisite skills to find suitable jobs in the new workplace.

In the years to come, high-paying creative and cognitive jobs will be at a premium, while the demand for middle and low-skill occupations will decline. A concerted push is required to up skill the workforce through government intervention since private industry spends on training and upgrading workforce has seen a steady decline in investment over decades.

Employee 4.0

In all this technology overcast, what is the average human worker expected to adjust with? This may be projected as a doom and gloom scenario. However, a closer inspection reveals that the human employee has already adjusted to several every day automation and finds them extremely beneficial.

Today, there are no doormen or security guards at the office entrance. Advanced access and security devices do the job with much more speed and convenience. The attendance register has also been replaced with a swipe or biometric device that allows an unobstructed entrance to a place of work. Use of paper stationery, keeping physical files, sending typed/written notes, standing in queues to take reimbursement, going to a bank to deposit salary cheques are some work habits which has become almost totally defunct with the use of computerization at workplace.

The next level of intelligent technology is also very prevalent today. Your HR bot is always available to you through any mobility device to seek answers to all your queries. Today, the pulse of the organization can be easily gauged through the use of Bots which through facial recognition, textual interpretation and artificial intelligence. The incidents of several CEOs replacing their EAs with these Bots are emerging especially in the new-age industries. These Bots provide them a real-time update on any HR input they need regarding their workforce.

These technologies enabled robotic employees, usually called bots since they have no physical form yet are named resources in the company, are now acting as our coach, mentors and advisors too. The smart technology and its connectivity helps in mining through gargantuan data in seconds to provide us with answers to our work related concerns. Mentors are available digitally where collective wisdom is churned through ML to give us the exact answer we need to face a work challenge. Similarly, emotionally intelligent bots are able to coach us in doing our work intelligently.

The physical HR and Admin department has today become virtual and yet the reach and connectivity across regions and territories is consistent. Virtual teams work on a common project across continents and the client gets the solution delivered in time and to the expectations.

Skills 4.0

In a short span of time, terms like robotics, artificial intelligence, nanotechnology, quantum computing, biotechnology, the Internet of Things, fifth-generation wireless technologies (5G), additive manufacturing/3D printing and fully autonomous vehicles have become common terms in the world of business and industry.

Despite the digital onslaught, today the need for human resources is more critical than ever. It is vital because of their intrinsic knowledge and ability to keep adapting to the continuously technology. transforming The amalgamation of the physical world with the digital allows for the creation of digital organizations which are not only interconnected, but also capable of more holistic, informed decision making. Not just that, human talent has to envision and prepare itself for more collaborative jobs between humans and robots.

It is not just 'what' the job would entail but also the 'who' and 'how' it will be done that is extremely important to bear in mind. Consequently, the 4th revolution will also revolutionize the workforce towards an increasing number of contractual, temporary and/ or ad hoc employees. Gig and temp workforce will constitute the majority share of the future employee base.

Industry 4.0 has the potential to create opportunities for new roles. While the lower order skills will be easily replaced by automation. However, the higher order skills which require intuitiveness, empathy and leadership navigational skills in face of adversities will be in high demand.

Instead of changing the curriculum, the need of the hour is a complete disruption in the approach to learning. It is no longer enough to have a formal education, but more important to inculcate the process of continually acquiring new skills and knowledge.

Impact 4.0

The impact of the Industry 4.0 is not just on how we do work and our employment. It is evident that the impact is all pervasive and revolutionary. It permeates our personal life as much as it impacts our professional life. The obsolescence of old low skill jobs is set off by the emergence of new-age digital skill requiring high-tech jobs. Would we have understood what these jobs meant if we had heard of them in 2003?

- Virtual assistant
- Search Engine Optimisation specialist
- Social media manager
- Uber driver
- Wellbeing coach
- App developer
- Web analyst
- Blogger
- Genetic counsellor
- Sustainability director
- Drone operator

Today most of them have become commonplace. Technology does not scare us. We have learnt to make peace with it and include it seamlessly in our lives.

But the Technology revolution is a constant upward steep curve. The impact is only just being felt. The rapidly advancing technological frontier is demanding skills in digital technology & connectivity which concern with, communication, media, entertainment, retail sales, banking and finance, human resources, customer service and the list is never ending. Industry 4.0 will create a complete transformation of human existence, and with so much to assimilate, the industrial players need to focus on:

- Focus on the next frontier of operational effectiveness using new age tools & technology.
- Make their business adapt to the changing values and work ethics of the emerging working class.
 Build foundations for
 - Build foundations for the organization's digital transformation by developing digital capabilities, enabling collaboration in the ecosystem, managing data as a valuable asset, and coming to grips with cyber security'.

As the Digital Factory engines start to roll faster and faster, the Human resource factory has to ensure an agile workforce in a constant learning environment. The world of vertical and horizontal integration of business and its stakeholders has to find a parallel in the emergence of a matrix organization where skills are more powerful than designations. The nature of employee will transform from being a full time on-rolls to a gig worker providing professional services to multiple organisations and being rewarded on results and services.

Now is the time for moving from talks to action. And obviously the first movers shall outpace the competition. With digitization expected to result in a quantum jump in performance, the human resource has to keep pace with continuous performance appraisals and instant rewards. Globalisation, inclusion and diversity will not be values but a business imperative. The entire eco-system has to be readied for the imminent onslaught of the digital tsunami. Data will be the final word. Data analytics and mining shall be the base for all policy decisions be it a political, macro-economic, financial, social or educational sphere.

The ever widening Human Resource skill gap has to be bridged. Building the digital-HR roadmap is critical to find the maximum return on investment. The capability-maturity model of the company has to be aligned with its digital strategy. The realistic assessment of where the organization is with the in-house people skill sets and what it needs to have concurrent to the digital ambition has to be charted. Any chasm between the two needs immediate attention at a micro level within the company and macro level in industry and economy.

The future will be in the hands of the organizations that see opportunities and challenges in a changing world—a picture that conveys both hope and ambiguity.

In Industry 4.0, the game is set to become Big now– Big data, big investments, big impacts!

References

•

- Industry 4.0 at McKinsey's model factories
- The Fourth Industrial Revolution – Deloitte

DIGITAL THINKING: GETTING READY FOR A DISRUPTIVE WORLD

Amit Kundaliya Associate Director- Digital, Nagarro Vikas Awasthi Sr. Project Manager, Denave Pvt. Ltd.

Abstract:

Industry 4.0 is all about driving digital technologies to the core of traditional manufacturing and industrial practices/ processes. For manufacturers to be able to remain competitive, they must embrace the digital transformation and everything it has to offer. There is an inherent need to pay attention to the digital transformation trends which are and will be driving industry 4.0.

The industry is getting disrupted by technologies like advanced data analytics, artificial intelligence machine learning, IoT and others taking a center stage.

In this paper we will be discussing about a digital ecosystem and its constituent elements, we will also focus on the industry trends and the value at stake across few industry verticals like: Consumer centricity, Connected digital enterprise and Change ready mindset.

Consumer journeys and experiences will be driving future business strategies, culture & operating models of all the industry sectors and manufacturing is not untouched. For an enterprise to be transformed, digital must shift to the core of the business, with digital platforms, processes and data fully connected from CMO, CIO to COO. Perhaps the most challenging part of a transformation journey is around the mindset. We will be diving deeper into each of the above aspects and discuss how organizations may make use of digital technologies (Artificial Intelligence, Machine Learning to name few), focus on consumer experience and adopt an agile mindset to have a successful digital journey.

Keywords: Transformation, Agility, Connected Experiences, Artificial Intelligence, Machine Learning, etc.

Introduction

Industry 4.0, commonly known as the fourth industrial revolution (4IR), is the technology-based transformation where many physical and digital technologies are combining through data analytics, artificial intelligence, and the Internet of Things (IoT) to create true digital enterprises. Leaders across the enterprises are fast realizing that digital is not only about technology, it is also about ideating and creating new experiences and service models.

A challenge that many organizations face is around the definition of digital for them. A technology solution addressing a certain business problem or solely a technology-based approach is not digital, it rather restricts digital to a small part of the organization, and instead, companies must bring digital into every aspect of the business, creating a digital ecosystem that includes people, processes and technologies. Let's take a look on a few very important aspects which are essential for any enterprise for a successful transformation journey.

Change Ready mindset

As digital continues to disrupt most business operations, traditional organizations struggle to cope with the pace of change. Organizations must focus on speed, emerging technologies, and data but the agility needed for the same is somehow missing in a traditional outfit. We will discuss how organizations can keep their workforce relevant via re-skilling them.

Digital transformation – although talks about driving digital technology to core still demands leadership and individuals driving the company's change. The huge task of transitioning a business from traditional one to become a technology-driven entity demands initiative, direction and continuous movement.

A transformation journey must start from the top of the organization, for any enterprise successfully transform itself it is very essential to have the C layer and other top executives share the same vision about digital and are aligned on what their digital roadmap will look like. CEO-leadership of transformation perhaps could be considered the most essential part of a successful digital business transformation. The emergence of new C level roles like Chief Digital Officer, Chief Experience Offices, and Chief Data Officer etc. augmenting the traditional CIO / CTO roles is a clear indication on how serious the enterprises are about a digital mindset.

While digital clearly provokes change, there is no need to make a big bang rollout, it's always about starting small, rapidly realizing the value and then gradually building it up. The fundamental elements of an effective operating model remain as important as ever.

Adopting a test & learn based approach and being change ready are the traits which an organization needs to build across. The consumers' preferences are changing at an exponential speed and the technological landscape is changing even faster. Employees need to be ready and empowered to move at this pace. Agility is the key for any transformation journey. Re-skilling the workforce and building a culture of continuous learning is what is going to be a key differentiator between success & failure.

Here are some key principles which are very important for a change ready organization:

- Agility the ability, foresight and willingness to quickly adapt to changing circumstances was essential.
- Anticipation reflecting on a technology-driven future that could look substantially different.
- Diversity workforce diversity and inclusiveness increased the prospect that the company would be open to new ideas.

Consumer Centricity

Today's consumers are the new marketmakers, with an exponential rate of changing consumer expectations they are reshaping industries and changing how businesses operate, compete & win. Success depends on how well the business operates at the speed of consumer. Consumer centricity focuses on a shift from being product/services led to being consumer led. Having an outward-in view of the business is the new thinking. The consumer experiences & journeys drive future business & operating models. The success. Consumer is in charge!

Customer experience leaders know that digital is not only about being technology-focused. Rather, it is about imagining and re-imagining about how to be relevant to current and future customers—from creating new experiences and models to transforming the business.

Let's take banking industry as an example, according to Capgemini world retail banking report 2018, 70% of the bank executives believe that consumer expectation is the biggest factor which is causing disruption in the banking industry. About 95% of the executives believed that offering consumers a better experience is the most important aspect. Banks are now realizing that their traditional ways of working are constantly getting challenged. The customers are looking at alternate ways of banking and the demand for digital channels has been on the rise. Traditional banks which earlier operated in a closed mode are opening up and partnering with fintech firms to extend their banking capabilities and improve operational efficiencies. Banks are finally opening to social media as a viable customer experiences tool, and a fundamental content marketing tool.

The fact is what has been working in the past for businesses yesterday is not going to work tomorrow or might already be not working today. Attracting new customers and retaining existing ones needs a customer-focused digital transformation. It starts with reimagining the customer experience and making sure that the right processes and technology are placed to make it a Does it mean that we define the same journey for each and every consumer? The answer is NO. Leading companies are already re-imagining customer experiences with a strong focus on digital. By giving customers rich experiences in their own languages, Marriott is reaching \$7 billion in annual sales online.

A customer-relevant & digitally powered business is no longer good to have, but is fast becoming the only means to stay competitive and survive.

Forrester research shows a correlation between customer experience excellence and revenue gains tied to customer loyalty- be it through repeat purchases, lower switching rates or increased word of mouth. The research revealed potential loyalty-related revenue boosts of \$3 billion for wireless service providers, \$2 billion for airlines and \$1 billion for hotels as stand-outs among the industries analyzed.

Connected Digital Enterprise

Digital business transformation is nothing more than a business transformation but using digital technologies or transformation in a digital age for digital people. The rate of change in technology is causing disruptions in the business models but at the same time, it is creating a lot of opportunities.

Businesses need to understand this and get ready with a connected ecosystem with technology at the core. Placing digital at the core means connecting digital platforms and data, end-to-end across the business.



Figure 1: A High-Level View of Connected Enterprise

A successful Transformation relies on creating a connected digital enterprise (connecting employees, customers, partners, technology, data and more). In other words – digital should run across the front stage part (customer facing applications, products & services, etc.) to the backstage (enterprise IT, employee portals, etc.) connecting the business functions and creating value across the horizontal.

Role of Technology

The rate of technology-based innovation is already exponential - let alone what tomorrow will bring. Most companies are struggling to keep pace with the newer technology trends. Technology is no more an enabler to the business – it itself is one of the key business areas and has the power to alter human experiences and consumer journeys.

Netflix is a perfect example of an overall business model transformation riding on technology innovations. Somewhere In 2004, Netflix started a digital journey to move away from its very successful DVD-by-Mail business mode to a Video streaming-based model. It is one of the rarest cases where an organization abandoned its traditional model to embrace a future technology-based model. Another success story is Amazon. Initially an online bookseller, it started focusing on alternate business models riding on technology and created multiple techbased business platforms. The below diagram shows the latest technology trends which are causing digital disruptions. Let's briefly discuss a few of them.

<figure><image>

Figure 2: Hype Cycle for Emerging Technologies, 2018

Machine Learning & Artificial Intelligence

The industry is fast becoming data centric. Making sure that the customer data is being captured at every possible avenue, connecting the data and deriving actionable insights with an overall view of the customer is MUST for the industry. The game is fast moving towards being "personalized & selective" according to the customer preference. Data provides the ability to address customer's evolving expectations. Any industry with very large amounts of data — so much that humans can't possibly analyze or understand it on their own — can utilize AI& ML.

Potential of Blockchain

Blockchain (distributed ledger) technology is viewed by many pundits as enabling the next big wave of technology-driven business transformation on a global scale. It all started with crypto currency and slowly moved to banking and other financial sectors. The insurance and healthcare industries are exploring the distributed ledger setup to make innovative use of the same.

Reality

Three flavours of 'reality' are finding great use in modern digital businesses. Assisted, Mixed and Virtual reality are being used in a wide variety of business solutions. For example, Virtual reality is being used in the Gaming and casino industry. Augmented and assisted reality is finding its place in the manufacturing and automotive sectors for workforce training and productivity improvements.

References

- https://www.gartner.com/ smarterwithgartner
- Capgemini World Retail Banking Report, 2018.
- https://www.nagarro.com/ en/blog/post/71/assistedaugmented-and-virtual-realityour-industry-4-0-initiative

ROLE OF HUMAN RESOURCE MANAGEMENT IN THE EFFECTIVE IMPLEMENTATION OF ORGANISATIONAL CHANGE

Jigyasa Narang Research Scholar, Punjabi University

Abstract:

Change management has been characterized as 'the procedure of constantly recharging an association's course, structure, and capacities to serve the regularly evolving necessities of outer and inside clients. It is very well contended that the fruitful administration is vital to the progress of any association. This is important for them to survive and prevail in the present very focused and consistently advancing business conditions. It can be argued that the successful management of change is crucial to any organization in order to survive and succeed in the present highly competitive and continuously evolving business environment. Organizational change is the usage of new strategies or advances proposed to realign an association with the changing requests of its business condition, or to benefit from business openings. Moreover, organizational change administration is the procedure of perceiving, managing, and dealing with these human feelings and responses in a way that limits the inescapable drop in efficiency that goes with change. Organizations need to manage new innovation, and with updates for existing innovation. They need to adapt to redesigns, process change activities, and mergers and acquisitions. Which particular parts of progress are at present affecting most on honing directors? How would they respond to change? The current digital age is but a stepping-stone in the evolution of a world enabled by the exponential use of technology in the workplace. There are a number of pressures that are speeding up the adoption of digital technologies within HR organizations. The rise of consumer technology is contributing to the digitization of Human resource management. Human resource management being an important part of the organization, is receiving innovation in its work and making a large portion of it to give best administrations not simply to have the capacity to accomplish hierarchical objectives yet, in addition, to keep its customers i.e. workers fulfilled and motivated. This paper mainly focuses on the role of HRM in effective implementation of organizational Changes in relation to innovation and technology, and more specifically to the need of change in delivering HRM activities.

Keywords: Organisational Change, Innovation, Human Resource Management, etc.

Introduction

At whatever point an association transforms anything huge, it faces a noteworthy time of progress as labourers and administrators conform to their new duties or workplaces. Change administration is an arrangement of arranging, investigation and execution that endeavours to limit both short-and long haul disturbance to make the progress as consistent as could be allowed.

HR experts encourage change administration in two primary ways: 1) guaranteeing that general change destinations are met by taking part in the arranging and execution stages with different supervisors; and 2) utilizing their commonality with the association's workers to comprehend their necessities and desires amid a change. In numerous associations, an HR proficient is the key connection between auxiliary change chiefs and the

workers will's identity most influenced by the change. There is a constant weight on associations to receive new advancements, be aggressive and reconsider system for their survival. The situations where regular methodologies can be lucratively connected are getting rarer. "Stable states" are an illusion; repetitive, troublesome change is winding up increasingly recognizable. Associations should constantly adjust themselves to their surroundings either by responding to outer occasions, or by proactively forming the business. With innovation, economies, socioeconomics, governments, shopper inclinations also, rivalry all evolving quick, it's anything but an issue of whether associations should change be that as it may, of how and in what course they should change. This is notable, yet at the same time, many change activities neglect to accomplish their targets. The assignment of the change administration master is to

help plan customer associations for occasional change and to help them through occurrences that might be especially confounded.

Research Methodology

I have collected the information from the secondary sources like journals, newspapers, research articles, magazines, book reviews, editorials, and review article and from the World Wide Web.

Objectives

The main objectives of the research work are:

- 1. To study the impact of innovation on HRM.
- 2. To review the need for change in delivering HRM activities.
- 3. To study the role of HRM in effective implementation of organizational Changes in relation to innovation and technology.

Review of Literature

The fast advancement of data and correspondence innovation have provoked numerous associations to effectively look for new ways, thoughts and inventive arrangements in enhancing their present item, process, framework and innovation which is alluded to as authoritative change, and it had been acknowledged broadly that powerful and productive human administration asset rehearses are vital in separating positive work practices among representatives which perpetually will prompt association change (Tan and Nasurdin, 2010).

Nobody would debate that each association has encountered change. However, regardless of association's commonality with change, achievement in usage is generally uncommon. It was evaluated that 70% of hierarchical change activities flop totally (Bear and Nohria, 2000). Among those regarded effective, 75% of them neglect to accomplish their planned outcome (Nikolaou, Gouras, Vakola and Bourantas, 2007).

In spite of these low achievement rates, associations still proceed with the authoritative changes trying to adjust and react to the changing financial conditions, mechanical advancements, client and customer desires and a moving workforce. It was evaluated that 56% of associations are experiencing at least three complex changes at some time (Barell, Savaie and Mennier, 2007).

Associations likewise, are changing the manner in which they actualize and oversee change. Change administration in associations is presently moved from being the duty of an inner or outside change specialist devoted to its execution and administration to progressively being recognized as a center competency for most authoritative pioneers (Doyle, 2002).

The human asset work in progressively observed as one of the key capacities

in the improvement and usage of vital reactions to expanding aggressive weight as both open and private associations are compelled to adjust to the residential and worldwide rivalry, innovative headways, slower development and declining markets (Buyens and De Vos, 2001). Such vital reactions include successful correspondence of the significance of human asset over the association and a re-examination of the job of line administrators in human asset conveyance.

All things considered, the aptitudes required to lead, oversee and execute change are being consolidated into the current desires, jobs and duties of human asset director and different workers (Doyle, 2002).

In this way, it isn't astonishing that in a domain where the greatness of progress, its multifaceted nature and its recurrence are expanding, the human asset people and pioneers have started to concentrate on the selection of progress administration best practices.

Change administration is a way to deal with moving or progressing people, groups and associations from a present state to a coveted future state. It is an authoritative procedure went for helping change partners to acknowledge and grasp changes in their business condition. The hierarchical change includes both dealing with the change procedures and taking care of human issues at the nearby level (Kanter and Dretler, 1998).

Authoritative change has turned into an undeniably unavoidable marvel in both business and human administration associations because of powers, for example, globalization and political movements to neoliberalism (Piderit, 2000; Baines, 2007).

In spite of the expansion in the apparent need of progress and endeavours at executing authoritative change activities, it has been evaluated that no less than two-third of hierarchical change endeavours don't result in their planned points nor do they cultivate managed change (Choi and Ruana, 2011).

Worker opposition is the frequently referred to issue experienced by the administration when attempting to execute change, yet for an association to transform, it is basic that the representatives of that association likewise change (Bovey and Hede, 2001).

One of the prevailing points of view inside 'arranged ways to deal with's change is that of Lewin (1951), which contends that change includes a three phase process:

- Unfreezing current conduct
- Moving to the new conduct
- Refreezing the new conduct

•

This three-advance model was for a long time the overwhelming system (Todnem, 2005). Ever since its definition, the hypothesis has been explored and adjusted, with stages being separated to make more exact advances. For instance, Bullock and Batten (1985) built up a four - arrange show:

• Exploration • Planning • Action • Integration

Expanding on crafted by the early scholars, change has been reliably conceptualized in two fundamental ways. The main considers change to be a balanced, vital process where the association picks another strategy and adjusts to change. The second methodology sees change as transformative determination, where associations commonly oppose the change occurring around them. (Surge and Fennell, 1995). This is parallel to prior perspectives - associations adjust through vital procedures, or they neglect to see the requirement for change and are supplanted.

Wiggins (2009) refers to imperfect maps of progress, complex issues, shallow arrangements, misconception opposition, and abuse of information about change administration process as the fundamental difficulties in the change administration process.

Anyieni, (2013) additionally contends that change administration intends to design, start, figure it out, control and settle change forms on both corporate and individual levels.

Nickolas (2006) contends that the assignment of overseeing change incorporates its effect on individuals, and numerous supervisors locate this troublesome. Change may cover such various issues as vital heading or on the other hand self-improvement programs for staff. Key, mechanical, and basic changes, and additionally changes in states of mind and practices, are altogether gone for aggressiveness also, reasonability. Another key component is to have appropriate and refreshed innovation, from the beginning of execution, through checking amid the procedure, and in the last assessment. This is exceptionally costly, and money related quality is basic (Senge, 1999). Be that as it may, innovation can additionally diminish cost. Preparing in aptitudes and expert advancement of the IT workforce is basically what's more; it is a critical driver of ERP (Enterprise Resource Planning). Innovative change may be either incremental (slow changes after some time made for a general change) or achievement (real change because of new advances), which applies new information to existing issues. It is probably going to prompt new employment, and to old occupations being eliminated. A business that does not stay aware of innovative advances will bomb at some point or another.

Eagerness to change implies adaptability; however unexpected occasions anytime in the business process make that troublesome (Kotter, 1995). Great administration of data stream will lessen, yet, not kill, unexpected occasions. Kotter sees that different activities, for example, add up to quality administration, rightsizing, rebuilding and social change are additional types of progress administration.

Kotter (1996) created a 8-step demonstrate:

- Establishing a feeling of direness
- Creating a managing alliance
- Developing a dream and system
- Communicating the change vision
- Empowering representatives for wide based activity
- Generating here and now wins
- Consolidating gains and delivering more change
- Anchoring new methodologies in the way of life.

Advantages of Change Management

administration Change enables associations to relieve the negative impacts of critical authoritative change. How much these negative impacts are experienced relies upon whether the change is at a little or extensive scale. Change can affect the work processes of labourers, lessen spirit, decrease item quality or prompt client misfortune if not precisely considered. As a HR proficient, a key obligation is surveying the human effect of progress and discovering approaches to urge a smooth change to new employment duties.

Building up a Change Management Plan

The initial phase in building up a change administration methodology is to make a graph that points of interest the position depictions and duties regarding labourers at all levels of an organization. This is done as such that administrators have the most up and coming data conceivable on the sorts of labourers utilized, their present obligations and how much these

obligations can be easily altered. This procedure is typically executed as a community oriented exertion between venture pioneers and HR and tends to take the configuration of a few little gathering gatherings over some undefined time frame.

Stages in Changes Management

following The stage includes investigating current worker obligations recognizing how current and representatives can be effectively changed to the new authoritative structure. In this stage, HR is in charge of meeting with representatives and different individuals from the change administration group to evaluate how well workers could acclimate to new occupation obligations. On the off chance that present workers do not have what it takes or skill expected to change into another position, this stage would likewise include enrolment endeavours for new a ability.

In this stage, HR experts make a general rundown of the positions that will be emphatically influenced by the change, positions that will be to some degree influenced and positions that ought not to be influenced. This is done with regards to the new hierarchical structure, current worker abilities and duties and regardless of whether any new representatives should be contracted. The motivation behind this general procedure rundown is to enable administrators to all the more unmistakably see how proposed changes will influence the worker cosmetics of the association. Change, as the recipe Barack Obama utilized in the 2008 decision battle, is in actuality inescapable. There's no real way to escape change, regardless of the fact that you are so impervious to it. In the event that anything Obama has shown us, it's to grasp change. However, recognize that its mind boggling nature shows a multi-faceted test for HR. Change is difficult to foresee, non-direct, and particularly difficult

ABS International Journal of Management

to imitate. In any case, associations today can adopt distinctive strategies to its administration – think protective versus hostile styles.

Regardless of whether you choose to adjust to change, envision it, or utilize a blend of both, HR has an awesome task to carry out in utilizing this chance. In a time where hierarchical deftness is an absolute necessity, it's an ideal opportunity to re-evaluate the significance of HR initiative in achieving change.

Conveying Change to the Workplace

Change is a thing that delivers new thoughts, arrangements and development. It's tied in with breaking free from our hover of solace with the end goal to begin seeing elective courses offered to our associations to advance the correct way. It's tied in with grasping business change, making your association defter, prepared to adjust, and exploiting the most recent advancements to support intensity.

Change in the working environment can take numerous structures. From the presentation of new procedures and the distance to all the more disrupting changes, for example, a merger or a procurement. Regardless, change is most importantly a matter of practices. Protest, opposition or then again: drive and eagerness, are for the most part enthusiastic responses that could represent the deciding moment the accomplishment of progress usage.

One thing that we have to comprehend is that change can't occur without somebody encouraging it. General administration remains in a place of power to drive change administration. They have the ability to inspire positive feelings and kill negative ones to drive the association towards progress. An association's administration controls its kin and is in charge of bringing security to guarantee a smooth progress amid periods of progress. A vital vision, a proactive commitment to building a solid organization culture, and a submitted interest in creating capabilities are for the most part fundamental to help authoritative change. Generally, the initiative group is in charge of getting change going in the work environment.

The Role of HR in Change Management Process

Directing change, or at the end of the day: change, is the reality for an association to influence its procedures to develop to pick up in intensity. Clearly, the bigger the association, the additionally difficult the assignment is. Also, who'd be preferred set over HR to take-up the job of strolling change operator? Their nearness to the general population of an association makes it simple to impact administration and give the correct structure to help change in the working environment.

A Role of Watchdog

The HR office assumes an essential job in re-examining authoritative plan to realize change and encourage the execution of these new procedures. This infers it additionally has a pivotal checking job to do. Amid periods of progress, HR authority will be communicated by ensuring the organization culture's honesty and ensuring that procedures are reasonable and agreeable.

Setting Aside the Opportunity to Communicate

As HR gain in mastery and business knowledge, it's imperative for them to impart their vital vision to fund and promoting, and in addition other key divisions of the association. HR's focal capacity in the administration of individuals and ability implies they can without much of a stretch impact change appropriation through vital HR arrangements in the fields of compensation, progression and enlisting to refer to a couple. Center chiefs, the primary mainstays of your association, are time and again forgotten in this procedure. Data contacts them past the point of no return or they miss the capabilities required to achieve change. Why? Organizations regularly lose track of the main issue at hand with regards to business change. They go too quick, changing procedures and frameworks, without setting aside the opportunity to prepare and disclose the circumstance to administrators.

Building up a Change Agenda

HR ought to suggest a timetable and characterize particular developments to become both the association and its representatives through time. Business requires change some investment and whenever hurried, could unavoidably wind up in an exorbitant disappointment. So making it stride by step will guarantee that representatives hold fast completely to these progressions and don't consider "it was better previously".

Envisioning Emotional Roadblocks

We know too well how change can make dread and hesitance among workers and administrators alike. Change isn't a simple thing, subsequently why it's critical to foresee negative responses however much as could be expected – regardless of whether not all things can be arranged ahead of time, obviously.

Preparing Managers

It's vital to go with and prepare directors, not all that they turn out to be great change operators – this ought to be done before business change happens – however so they comprehend the intricate details of the change they are contributing their endeavours to. You ought to give them an importance and reason to take part in the business change. Effectively tuning in to your directors is basic to go with them through the distinctive difficulties they will confront as well.

Proposing Adapted Solutions

Contingent upon whether the change is required to adjust in an exceptionally focused market or because of a period of development, HR ought to propose satisfactory answers for every circumstance. For instance, an abnormal state of market rivalry that requires decreasing expenses won't have similar difficulties than an organization that is extending its tasks around the world. HR ought to have the capacity to think of a methodology that is suited to the setting in which change needs to occur.

Conclusion

Organizational change has the capacity to alter the culture, whether deliberately or not, and thereby influence people's emotional reactions. Conversely, the culture affects the way in which staff responds to the change on an emotional level. It is apparent from this article change is an ever-present component that influences all associations. There is a reasonable agreement that the pace of progress has never been more prominent than in the current persistently developing business condition. Numerous organizations invest a great deal of energy and exertion to acknowledge new financial patterns, while others receive them effortlessly. New business objectives call for new authoritative practices. Globalization has seen the tearing down of past global market boundaries. It is no big surprise that tireless change has turned into a reality of hierarchical life. Unfortunately, generally organizations' operational techniques and structures reflect past business substancesmaking authoritative latency a standout amongst the most noteworthy obstructions to change. With the end goal to develop such a system it is prescribed that further exploratory investigations of the idea of progress and how it is being overseen ought to be led. Such examinations would seemingly distinguish basic achievement factors for the administration of progress. The paper additionally

proposes that strategies for estimating the achievement of hierarchical change administration ought to be composed with the end goal to assess the estimation of any new systems proposed.

References

- Abdullah & Muhammad, I. R. (2011). Antecedents of Organizational Commitment of Banking Sector Employees in Pakistan. Serbian Journal of Management, 7 (1), 89 – 102.
- Adeniji, A.A., & Osibanjo, A.O.
 (2012). Human Resource Management: Theory and Practice. Pumark Nigeria Limited.
- Barell, C., Savaie, A., & Mennier,
 S. (2007). Patterns of Discomfort
 with Organizational Change.
 Journal of Change Management, 7 (1),
 13-24.
- Bear, M., & Nohria, N. (2000).
 Cracking the code of change.
 Harvard Business Review, 78 (3), 133-139.
 Pmid: 11183975.
- Bovey, W.H., & Hede, A. (2001). Resistance to Organizational Change: The Role of Cognitive and Affective Processes. *Leadership* and Organization Development Journal. 22 (8), 372-384.
- Frese, M. and Fay, D. (2001). Personal initiative: An active performance concept for work in the 21st century. *Research in Organizational Behavior, Vol. 23*, pp. 133-187.
- Frese, M., Fay, D., Hilburger, T., Leng, K. and Tag, A. (1997), The concept of personal initiative: Operationalization, reliability and validity in two German samples. *Journal of Occupational and Organizational Psychology, Vol. 70, No. 2*, pp. 139-161.
- Ghitulescu, B.E. (2013). Making change happen: The impact of work context on adaptive and proactive behaviours, *The Journal of Applied Behavioral Science, Vol. 49, No. 2*, pp. 206-245.
- Grant, A.M. and Ashford, S.J. (2008). The dynamics of

proactivity at work. Research in Organizational Behavior, Vol. 28, pp. 3-34.

- Choi, M., & Ruaua, W. (2011). Individual Readiness for Organizational Change and its Implication for Human Resource and Organization Development. *Human Resource Development Review*, 10 (1), 46-73.
- Hislop, D. (2003). The Complex Relations between Communities of Practice and the Implementation of Technological Innovations. *International Journal of Innovation Management, 7(2),* 163-188. doi:10.1142/S133919603000775.
- Husain, Z., & Farooq, A. (2013). Instrument Development to Measure Organizational Change and Balanced Scorecard. *The Business & amp; Management Review,* 3(2), 1-12.
- Lamm, E., & Gordon, J.R. (2010). Empowerment, Predisposition to Resist Change, and Support for Organizational Change. Journal of Leadership & Organizational Studies, 17(4), 426-437. doi:10.1177/ 1548051809355595.
- Lewin, K. (1951). Field theory in social science: Selected theoretical papers. New York: Harper and Row.
- Lines, R. (2005). The structure and function of attitude towards organizational change. *Human Resource Development Review, 4 (1),* 8-32.
- Minbaeva, D.B. (2005). HRM Practices and MNC Knowledge Transfer. *Personal Review.* 34(1), 1-25.
- Nikolaou, J., Gouras, M., Vakola, I., & Baurantas, U. (2007). *Best Practices in Organizational Development and Change*. San-Francisco, Linkage.
- Tan, C.L., & Nasurdin, A.M. (2010).
 Human Resource Management
 Practices and Organizational
 Innovation: An Empirical Study in
 Malaysia. *Journal of Applied Business*Research, 2(4), 105-112.

AGILE IMPLEMENTATION ROADMAP FOR OPERATIONAL EXCELLENCY WITHIN ORGANIZATION

Vikas Awasthi Sr. Project Manager, Denave Pvt. Ltd. Amit Kundaliya Associate Director-Digital, Nagarro

Abstract:

Industry 4.0 is all about driving digital technologies to the core of traditional manufacturing and industrial practices/ processes. For manufacturers to be able to remain competitive, they must embrace the digital transformation and everything it has to offer. There is an inherent need to pay attention to the digital transformation trends which are and will be driving industry 4.0. The industry is getting disrupted by technologies like advanced data analytics, artificial intelligence machine learning, IoT and others taking a center stage.

In this paper we will be discussing about a digital ecosystem and its constituent elements, we will also focus on the industry trends and the value at stake across few industry verticals like consumer centricity, Connected digital enterprise, change ready mindset, etc. Consumer journeys and experiences will be driving future business strategies, culture & operating models of all the industry sectors and manufacturing is not untouched. For an enterprise to be transformed, Digital must shift to the core of the business, with digital platforms, processes and data fully connected from CMO, CIO to COO. Perhaps the most challenging part of a transformation journey is around the mindset. We will be diving deeper into each of the above aspects and discuss how organizations may make use of digital technologies (Artificial Intelligence, Machine Learning to name few), focus on consumer experience and adopt an agile mindset to have a successful digital journey.

Keywords: Transformation, Agility, Connected Experiences, Artificial Intelligence, Machine Learning, etc.

Introduction

Agile roadmap is always a phenomenon of implementation since its inception, fundamentally everyone agrees that Agile will lead to the growth of progress. On the other end, same feeling is with lean product development. There are few frameworks who are advocating and combining both to manage project along with operational excellence in the organization. Even this is an integral part of Implementation to achieve the objective of Industry 4.0.

Agile Mindset

At the initial time, Agile was talked to the level of project execution but that cannot the be only area to implement agile even implementation cannot be fully functional until it is not executed on the organization level. There can be two approaches which should work at the same time. The thought process and mindset change from leadership to the execution team and implementation should be from the Implementation team to leadership.



Figure 1: Agile Roadmap For Operation Team And Leadership

Guiding Principles

According to http://agilemanifesto. org, there are twelve guideline rules for agile.

1. Our highest priority is to satisfy the customer through early and

continuous delivery of valuable software.

- 2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
- 3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
- 4. Business people and developers must work together daily throughout the project.
- 5. Build projects around motivated individuals. Give them the environment and support they need and trust them to get the job done.
- 6. The most efficient and effective method of conveying information to and within a development team is a face-toface conversation.
- 7. Working software is the primary measure of progress.
- 8. Agile processes promote
sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.

- 9. Continuous attention to technical excellence and good design enhances agility.
- 10. Simplicity-the art of maximizing the amount of work not done--is essential.
- 11. The best architectures, requirements, and designs emerge from self-organizing teams.
- 12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behaviour accordingly.

These rules are self-explanatory but the implementation is always a challenge. Actually, it is a cultural shift for the organization and this is not an easy task to shift the thinking and culture of the organization.

Four Dimensions of Agile

There are four dimensions of Agile:

- 1. Value- based pricing
- 2. Cooperation to enhance competitiveness
- 3. Mastery to respond over change or uncertainty
- 4. Leverage the impact of the people and information

Cultural Shift

Agile mindset is a cultural shift, here leadership must start incorporating following in the thinking:

- 1. People and resources are two different entities. People are living things and can not be treated as other resources like infrastructure etc.
- 2. There is a need to follow the practice of servant leadership. Leadership is to enable the team to perform to get the result, they are actual people who work to deliver, and leadership role is to facilitate the same that's why the term servant leadership

announced within the agile practice.

- 3. Leadership should encourage positive disruption, it will help the organization to fail early and adopt the better mechanism. Tackle failure as a learning curve and improve fast.
- 4. The system should be agile to respond quickly for any change either due to positive disruption or due to the outcome of the failure.
- Success should be celebrated, it helps in building the team and people are focused towards common goals. Even small success should be celebrated.
 Feedback is a necessary process

Feedback is a necessary process and every level. It enables people with the right philosophy with respect to organization vision and goals. It should be in multiple directions. It will help to grow together and reduce a lot of effort and create better understanding to achieve a common goal.

2.

- a. From top management till execution team
- b. Execution team to top management
- c. Supplier/ vendors to organization and vice versa
- d. Customer to organization and vice versa

 Culture should be people friendly, these are people only who provide the result and execute in real terms. If people 3. are motivated and focused towards the common goal, the organization can grow exponentially.

Agents of Changes

 Top management – The top management is the group of the people who ensure the direction of the organization, they should be clear towards the idea of the empowerment rather than controlling the workforce. This is the level in which mindset shift is required in thinking and processes. They should be adoptive and understanding the benefits of being agile. Most of the time this is the only layer which is talking to the changes but not adoptive in the pattern. These people should be trained in the agile process before implementing and should work as an influencer to the change within the organization. Top management role is to facilitate the adoption to the middle management and make sure disruption is happening in a positive way and not harm to the organization in long run.

Middle Management - The middle management should work as a change agent here, they should be adoptive to suggestions and execution point for the concept of empowers the people. They should help top management and team to visualize the exact benefit of process shift. Middle management is the real people who can check the pulse for agile maturity and ensure it is happening at all the levels. Middle management should not act as a barrier between two layers, but they should act as a facilitator and provide a growth opportunity. Environment should be encouraging to all.

Team – The team is the real agent to execute the processes and it is the most impacted group of people due to the change and mindset shift. There should be an ample amount of training to the team so that they can visualize the benefit of the process which they are doing. They should be motivated and understanding the impact of the changes which they are doing. They should feel aligned with the organization goals and motivated enough to attain the organization. If possible, their growth can be directly connected to the organization elevation in that sense they will feel as a part of the journey. Top and middle layer should enable the potential to the team and create a forum to grow for everyone.

- 4. Suppliers/Vendors- The suppliers are the group of the organization who are responsible to provide material/ services timely to ensure smooth operations. Within the recent time it has been a big help for the organization.
- 5. Dealers/Channel partners -These are an integral part of the organization and culture shift is not possible without including these groups. A roadmap should be defined for these as well because being agile will also transform the delivery pattern and supply chain.
- Customers Ultimately customers are the person who is paying and end point in the chain of using services and product. This depends upon the industry to industry, like in Colgate it may not matter for the customers about the culture of the organization as they are buying from channel partner still feedback loop can help. But the organization like Boing, it will be helpful as the customer is closely involved during the integration journey.

Roadmap at a Glance

6.

Most of the time people agree with the concept of Agile be implementation has its own challenges like and the biggest issue is the mindset. Although SAFe and few other frameworks have already defined the roadmap which looks easy to implement. Following image is taken from https://www. scaledagileframework.com which describes how to implement Agile within the organization.



Figure 2: Implementation Roadmap

As these are widely discussed topic and Image is self-explanatory, details about the steps are not covered. It suggests a balanced approach for the top to bottom of the organization.

Other Aspects to be Taken Care

There are few other important which are mandatory to implement Agile in culture to get it completed within the organization

- 1. Digital transformation
- 2. Identify right tools to set up the process
- 3. MIS Process should be defined by the tools suggested in point two only
- 4. Lean budgeting
- 5. Change project management mythology from waterfall or hybrid to Agile (SCRUM, XP, Kanban)
- 6. Communication process
- 7. System thinking

Conclusion

To conclude, we can say the journey towards implementation starts from mindset shift to culture shift. It involves all the layers in the organization including vendors, suppliers, and customers. Furthermore, using the right tools in place is necessary with transforming digitally and improving processes.

References

- h t t p s : / / w w w . scaledagileframework.com
- http://agilemanifesto.org
- Gunasekaran, A. (1999). Agile manufacturing: A framework for research and development. *International Journal of Production Economics, 62 (1–2)* 87-105.

HEALTH 4.0: ROLE OF HEALTH INFORMATION SERVICES-A REVIEW

Poornima Singh Assistant Professor, Asian Business School Surya Nath Singh Former-Director, National Institute of Virology (ICMR) Lallan Ram MD, Additional Medical Health Officer, South Delhi Municipal Corporation

Abstract:

The health industry is vast, interdisciplinary, and multinational in nature and has global importance. The paper describes the basics, 4Ws and 2Hs of Health-4.0 (a subset of Industry 4.0). Health 4.0 is in the initial stage of development and yet to be reached to the masses for its uses and applications. Hence, it is essential here to define, clarify, overview its availability, affordability, and adaptability. The main objective of the study is to find out the various possibilities to use Internet of Medical Things (IoMT), Internet of Services (IoS), healthcare/medical devices, and applications that enable personalized patient-specific devices and care programmes. The descriptive research method has been used in the study. The result suggests that the concept of Health 4.0 needs to be promoted through appropriate policies and programmes. It can be concluded that in the fast-changing, technologies, techniques, tricks as well as high completion it is need of the time to keep pace with digitization and other ICT innovations at different levels to implement Health 4.0 concept.

Keywords: Health 4.0, Industry 4.0, Medicine, Health Electronics, Health Industry, Production, Medicals, Paramedical, Cyber-Physical Systems, Internet, Cloud Computing, Big Data, Artificial Intelligence (AI), Information and Library Science and Cognitive Computing, etc.

Introduction

We are passing through age of transition, completion, the fourth industrial revolution, a new fast growing as well as obsolescing digital ICT virtual era. Health is an important component of our lives next to our basic needs and fundamental rights i.e. food, cloth and shelter. The health/ medical, industry is very vast, mostly interdisciplinary and multinational in nature and also has global importance. In the healthcare sector composes of hospitals, academic organizations, research institutes, health information system (HIS), patient information system, and clinical information system. Health-4.0 (subset of Industry 4.0), a strategic concept of healthcare domain, which is now a buzzword the latest fourth industrial and revolution denoting current trend of automation, digitization, virtualization communication/ interaction/ and data exchange (man to machine visà-vis) of proper information to proper users at proper time. It is also expected that traditional, manual and mechanical industrial systems are going to be gradually replaced with industry

4.0/Health 4.0 i.e. modern sensors, embedded systems, cyber-physical systems (CPS), robot, big data, artificial intelligence (AI), cloud computing (CC), the Internet, ICT, Library and Information Science (LISc) tools, 4G/5G mobile technology, cognitive computing, etc and other new emerging subset technologies e.g. Internet of -Technology, Services, People i.e. IoT, IoS, IoP techniques to create a new reality to revolutionize human life. It is based on vertical and horizontal virtualization, service integration creating a new above fully automation/ digital services. There are not only enough opportunities, advantages but more challenges too, while using Health 4.0 for our social, personal, physical, organisational and psychological lives. The literature review suggests that there are various reasons and evidences to adopt Health 4.0 (1, 9, 12, 14, 15, 19-21).

Need of Study

It is fact that when economy of a country does not grow the next generation i.e. children are going to be penalized and we, present generation is responsible for coming phases. There are various reasons to carry out the present descriptive study.

Today our lives are full of competitions and health industries are no exception to it. To remain competitive, medical device manufacturers as well as consumers need the ability to innovate and respond quickly to the changing healthcare systems, ways and means in which patients can now be treated. Hence, it needs Health 4.0 for biomedical healthcare devices manufactures, patient care worldwide through above innovations. It includes above numerous devices. Consequently, any delay, missing link in the process of adoption and/or any stage in the product release and delivery will lead/ result to press the various challenges, opportunities/ loss of market. It is also expected that implementation of Health 4.0 is certainly going to boost the whole healthcare system (12-15, 19, 21).

ABS International Journal of Management

- Health 4.0 has already arrived and ready to change not only trade and business but also social as well as personal and organisational factors (15).
 - Customization of patientspecific devices will require high quality, high mix production that particularly lends itself to the greater automation and higher levels of intelligence provided by the Health 4.0 model. Physical objects passing through production processes will incorporate their own aforesaid embedded Software and Computing Power (CSP) to interact with more intelligent Cyber-Physical machines, Production Systems (CPPS) on the plant floor. Intelligent exchanges of information within completely networked this will environment enable production to be self-managing and self-optimizing. (7-8, 12, 15, and 20).
 - In general sense, industry is a place to produce goods at the mass level and/or related services within a budgetary provision as it provides the major source of revenue of any country. To have a competitive advantages effectively and efficiently, it is essential to have a strong health information system (HIS) due information revolution, to scattering and seepage to provide pinpointed information to proper users at proper time and also to support Health 4.0

(5, 7-8, 15).

- Health 4.0 device manufacturers experiencing are challenges with the increasing demand for updation, opportunities i.e. pricing, quality, quantity, profit margin and speed. They also are facing issue related to 4Ms: money (prices and benefits), materials (quality and quantity), machines (infrastructure, hardware, software, speed, etc.), as well as manpower (workforce), 4Ws and 2Hs (i.e. what, why, where, when and how and how much) of Health-4.0 (5, 7-9, 15).
- Health 4.0, has already been arrived and being used and applied in the various healthcare/ biomedical sectors viz. diagnoses, treatment, integrating electrocardiogram capability or blood pressure cuffs, surgery, eye lenses, etc. within a device increases its value (5, 15-21).
- The CPS has arrived and also been adopted in various healthcare/ medical sectors, however, yet the Big Data, CPS, Robot, AI, CC, ICT, LISc tools are to be used, tested to be and reach to the masses. Various steps have been initiated in this direction but miles to go (5, 14, 5, 11, 15, 18, 19-21).

Objective of Study

To investigate various recent developments, components, its availability, applicability, affordability, scalability of Health 4.0 in healthcare/medicine sectors viz. bio-sensors, huge amount of data acquisition (Big Data) systems, ICT based computer network, CC, AI, etc.

- To present an overview and find out the various opportunities and challenges that arise out of it i.e. Health 4.0/Industry 4.0 and also suggest solutions for these.
- To have a suitable subject based discipline-wise HIS to support Health 4.0 concept.

Scope and Limitations

This study is descriptive in nature and limited to biomedicine, healthcare and other related subjects and devices viz. healthcare industries, electronic devices using Health 4.0 for the diagnosis and treatment of human diseases, as well as mass production of these devices.

Healthcare's Digital Revolution

There is considerable amount of technological evolution has been experienced in the healthcare digital technologies. Health 4.0/Industry 4.0 combines a wide set of technologies at different stages of maturity, supported by new enabler technologies and propositions. The smart phones/ mobiles are now widely available; CC has reflected the potential for almost infinite storage with atleast/ reasonable cost is also available. There are four factors in Health 4.0 to play viz. digital data, interconnectivity, automation, and digital customer interface (1-5, 9, 12, 15, 18-21). A brief comparative view of Today's traditional current factories and modern Health 4.0 has been summarized in Table-1.

Table 1: Comparison of '	Today's Healthcare	Factories and Health 4.0/	'Industry 4.0
--------------------------	--------------------	---------------------------	---------------

Data Source		Today's Heal	thcare Factories	Healthcare 4.0/Industry 4.0	
		Attributes	Technologies	Attributes	Technologies
Component	Sensor	Precision	Smart Sensors & Fault Detection	Self aware Self Predict	Degradation Monitoring & Remaining Useful Life Prediction
Machine	Controller	Predictability & Performance	Condition-based Monitoring & Diagnostics	Self-aware Self-Predicted Self Compare	Uptime with predictable Health Monitoring

ProductionNetworkProductivity & OEELean Operation: Work and WasteSelf-O SelfSystemSystemOEEReductionSelf	ConfigureMaintainWorry Free ProductivityOrganize
---	--

Source: Jay Lee, Behrad Bagheri, Hung-An Kao, (2015) (12)

Table-1 summarizes that there are big differences between current and traditional health factories. In the Health 4.0 the industrial application of these digital transformations is radically changing value creation in every market. In this study, we also examined the impact it is making on the healthcare industry (3, 9, 12, 15, 18-21). Other developments are:

- Health i. 4.0/Industry 4.0 Revolution-, involves usage of smart mobiles making connections never like before, delivering solutions in innovative new areas such as patientspecific devices and 'Lab on a Chip' i.e. electronic diagnostic, testing, robotics assisted surgery, 'Internet of Medical Things' (IoMT) (1-9, 12-15, 19-21).
- ii. Automation and Digitizationa modeled on a Value Chain Organisation, using the IoT and the IoS and IoP (2, 9, 11, 15, 19-21).
- iii. Value-based care- device sensors or self-monitoring (1, 8-11, 14-15, 19-21).
- iv. Healthcare/Medical Industries and Health 4.0- from producing smaller product viz. syringe to manufacturing sophisticated hospitals products/equipments e.g. surgical advanced equipments viz. motors devices.

In a classic example of "Siemens AG's -electronics plant in Amberg produces printed circuit boards (PCB) that show what product-driven manufacturing is all about. Each printed circuit board is given an individual barcode that enables it to communicate with the machines and the manufacturing machines to access the individual file of the each printed circuit board. The components

also receive individual codes so that they "know" at which point in the process and at what point in time they are needed. The components are then automatically directed to their destination on the basis of the information the transport system receives through the code. As soon as the blank enters the machine, it is recognized by the barcode. The machine can retrieve all processing information from the file system in real time. The plate is then loaded with various components, such as microchips. Each component and the subsequent steps are also documented and monitored in real time by numerous scanners. The machines also indicate in good time if a certain component is no longer available or a technical problem occurs. Inspection engineers monitor the entire value chain of the circuit board on the computer (Vermeshan (2016)." A particular application for drugs is the use of a data matrix code that makes drugs more counterfeit-proof. The digital code gives the packaging for each cough syrup a specific identity, enabling the drug to be clearly identified after it has left the company. This makes it traceable across the entire logistics chain, and consequently more difficult to counterfeit (9-13, 15, 19-21)." Therefore, Health 4.0/ Industry 4.0 applications go beyond production and encompass the entire value chain."

Review of Literature

It has been written as well as spoken much about Industry 4.0 followed by Health 4.0 as subset of Industry 4.0 at various platforms in different ways (1-21). The term "Industry 4.0" was used in public for the first time at Hannover Messe in 2011, and subsequently integrated into the German Government's high-tech strategy. The

term Industry 4.0, as defined by the German Academy of Engineering and the Science and Industry Research Union (Forschungsunion Wirtschaft-"is Wissenschaft), the technical integration of Cyber-Physical Systems (CPS) into production and logistics, as well as the application of IoT and services in industrial processesincluding the resulting consequences for value creation, business models and downstream services and work organizations. Industry 4.0 is the digitalization of production, which then leads to the provision of associated services (smart services, servitisation) (19, 2016)". Since, it is a new concept industrial of fourth generation industrial revolution/development (2, 18), it is essential and right time to communicate, use to the masses. Lee et al. (14, 2014), in this paper, unified 5-level architecture which is proposed as a guideline for implementation of CPS. Herman, et al. (7, 2015) reviewed 51 publications related to patient care related to Industry 4.0 based manufacturing system including interoperability, virtualization, visualization, decentralization, real time capability, service orientation, and modularity. Hermann further proposed four components/factors for Industry 4.0 viz. CPS, IoT, IoS, and smart factory. However, Pott (19, 2015) describes, "Industry 4.0 in the medical technology and pharmaceutical industry sectors." Partner Morris Hosseini (9, 2015) describes transformation in healthcare space.

Thuemmler Chritoph and Bai Chunyue, eds. (20, 2017) edited a book entitled, "Health 4.0 Applications of Industry 4.0 Design Principles and Future Asthma Management", describe how the creation of new digital services-through vertical and horizontal integration of data coming from sensors on top of existing legacy systems-that has already had a major impact on industry is now extending to healthcare. It also deals the fourth industrial revolution (i.e. Health 4.0) (2, 18), which is based on virtualization and service aggregation and shows how sensors, embedded systems, and CPS are fundamentally changing the way industrial processes work, their business models, and how we consume, while also affecting the health and care domains (Internet book review). A Conference Proceeding (2017) entitled, "Medical Technologies National Congress (TIPTEKNO)", summarizes that Industry 4.0 will affect all sectors including the daily social life in fact as if it seems that it effects only factories (17, 2017). Many topics, including to achieve higher accuracy and quickness in diagnosis, to establish more secure hospital information systems, to make medical devices more efficient, innovative and useful also by using the basic principles by coming out from Industry 4.0, are dealt with the concept of Health 4.0 and Industry 4.0 (1, 5, 9, 13-15, 19-21). Lee EA (13, 2008), Acatech (2011), Collins FS and Varmus H (4, 2015), Hermann M et al. (8, 2016), Hosseini P Morris (9, 2015)-digital transformation in healthcare space, Lee, et al. (14, 2014), Bagheri B, Yang S, Kao HA, Lee J, et al. (1, 2015), Lobo, et al. (15, 2016), deal with a Cyber-Physical Systems Architecture for Industry 4.0-based Manufacturing Systems, Vermeshan O and Friess, Thuemmler and Bai (20, 2017) deals with digital revolution, digital transformation, etc.

Research Method

Since Health 4.0 is a new and the latest concept, and practical scientific experience can be shared here, hence the descriptive a literature based method has been used for the study and also supported by studies of the other contributors in the field.

Health4.0;HistoricalDevelopments, Principles and Components

The ICTs are an integral part of the human environment till today. The term "Industry 4.0" was first introduced and coined by German Industry Science Research Alliance in 2011, denoting smart factory by complete networking via, modern sensors, embedded systems, CPS, robot, big data, AI, CC, internet, ICT, LISc tools, 4G/5G mobile technology and cognitive computing, etc. and/or combinations of other new emerging technologies, techniques in shaping is digital discourse. However, Health 4.0 is now being used as subset of Industry 4.0 using above devices for healthcare/ medicine sectors and currently it is more as vision and mission of any industry due to increasing digitization for production and services than a reality (1, 11-14, 20-21).

The major developments in the field are presented by Lee EA (13), Acatech (2011), Collins FS and Varmus H (4), Hermann M et al. (8), Hosseini P Morris (9)-digital transformation in healthcare space, Lee, et al. (14), Lobo, et al. (15) Jazdi J et al. (11,2014), Vermeshan O and Friess (11, 20), Thuemmler and Bai (20), which describe the technology behind the shift of point of care to point of need and away from hospitals and institutions; how care will be delivered virtually outside hospitals; that services will be tailored to individuals rather than being designed as statistical averages. Furthermore, other studies (2-3, 5-7, 10, 16-21) describe CPS, big data, manufacturing/ production, Industry 4.0, Health 4.0, data analytics, revolution, principles, design, precision, smart devices; ICT, LISc tools and pharmaceuticals industries, big data, internet, e-health, Precision Medicine, 5G Mobile and Health, etc. The subject-wise developments are: Principles of Health 4.0 (8, 15, 19-21), Interconnection-Internet and Integrations (3, 19-21), Information Transfer, Transparency/ Communication/Exchange (3, 6, 12,

14, 15, 17, 19-21), Technical Assistance, Autonomy/decentralization Decisions (1, 14, 15, 19). Hence, Health 4.0 autonomy is an essential factor to take on spot decision in case of urgency/ necessity.

Components of Health 4.0

The Computer, Modern Sensors, Cloud Computing (CC), Cognitive computing, Internet of Things (IoT) and Internet of Services (IoS), embedded system, Cyber Physical System (CPS), Industrial Internet of Things(IIoT), Artificial Intelligence (AI), Robot, Big Data, 4G/5G Mobile Technology, Smart Factories modern ICT, LISc tools are the main components of Health 4.0/Industry 4.0. (5, 7-9, 12, 15-21). It has minimum human control and the modular machine is part of a digital network and is monitored via a human-machine interface, which also includes quality checks, maintenance by a connected service technician and an immediate alert from the machine as soon as it realizes that a certain component will soon be unavailable. A particular application for drugs and or any product is the use of a data matrix code that makes drugs/product more counterfeit-proof. The digital code gives the packaging for each product e.g. cough syrup a specific identity, enabling the drug to be clearly identified after it has left the company. This makes it traceable across the entire logistics chain, and consequently more difficult to counterfeit. Therefore, the Health 4.0/Industry 4.0 application goes beyond production and encompasses the entire value chain (1, 12-15, 19-21).

Robotic technology is being used in almost all the scientific and industrial sectors now-a-days. Other areas of innovation in Health 4.0 include robotic-assisted surgery; diagnosis, next generation of advance equipments and medicines, smart inhalers that track inhaler use, avoid triggers and warn of asthma attacks, and biometric stamps that act as a 'lab on a chip' (LOC) alternative to reagents and chemicals. Health industry is full of data ranging from start of product to arrival and use of it. Big data analytics consists of 7Cs in the integrated Health 4.0/ Industry 4.0 and cyber physical systems environment. 7Cs: (Connectionsensor networks, Computer, Cybermodel and Memory, Communication, Community/customizationpersonalization and value, Cloud computing, and Cognitive computing). Hence, the role of big data in Health 4.0 and adoption of Health 4.0 is much more than others. It is an undisputed fact that IoT as well as Things, IoT, IoS and Internet of People IoP are playing crucial role in healthcare industry and supporting in various decision processes making as well as ambient living. These will create added value, general growth and prosperity (Vermeshan et al.). It is going to be value added service to have better healthcare devices as well as prosperity using Health 4.0. The digitalisation of industry affects the entire value chain. From individual products to digitising workflows in companies and connecting companies with clients and service providers via the IoT –Industry 4.0 makes completely new manufacturing processes possible and requires new and specific business models (15, 19).

Opportunities and Advantages

The Health 4.0 has more opportunities than the challenges. Today, in a Health 4.0/Industry 4.0 factory, machines are connected as a collaborative community. Such evolution requires the utilization of advance- prediction tools, so that data can be systematically processed into information to explain uncertainties, and thereby make more "informed" decisions. The CPSbased manufacturing and service innovations are two inevitable trends and challenges for manufacturing industries (1, 12-14). These are: Medical Device Manufacturers, Valuebased care (15), Patient Information (1-15, 18-21), Internet of Medical Things (IoMT), and other technology, medical

devices and applications that enable personalized patient-specific devices and care programmes (15, 21).

Challenges and Problems

Though there are more benefits and better opportunities using Health 4.0 but there are challenges and problem too. The main problems faced/to be faced are: Competition, Finance/ Budget/Investment and management -cross industrial collaboration (1, 15, 19-21), Data Ownership and Data Security (agreements, MOU, data encryption, etc.), Legal issues (IPR, Specification, agreement, maintenance, monitoring) (15, 19-21), Standards i.e. product registration, employment and development, standardization, skill employment, etc. Health 4.0 is directly related to factory/industrial production hence, product registration, employment and skill development are the main factor to be taken into consideration, while adopting it.

Results and Major Findings

- It has been observed based on review of literature that efforts have been made to adopt recent development of Health 4.0 devices, however it is restricted to developed countries and multinational industries and yet to be reach to developing and underdeveloped countries. The overview of the literature also indicates that various major opportunities viz. applications of medical device manufacturing, value based care, patient information, suitable standard HIS, LISc tools, other tools and techniques, etc. are not up to the mark and needs advertisements at global level to make the health devices more effective, efficient, innovative and useful.
 - It has been observed that the uses of Health 4.0 is increasing but with a very slow speed hence investment and management, international and cross industrial

collaboration, still remain missing.

- It indicates that since Health 4.0 is in its initial stage the concept of data ownership and security (agreements, MOU, data encryption, etc.) are considered only very few cases. Some steps have been considered but much more to be done related to legal issues, IPR, specification, agreement.
- It reveals that the provision of maintenance and monitoring of various processes are there but differ from factory to factory in various aspects of Health 4.0.
- Standards (i.e. product registration, employment and skill development), are the regular and routine process and are being adopted in the majority of cases. The study also indicates that there is no uniformity in Standardization, and employment procedure while adopting Health 4.0.

Suggestions

- The concept of Health 4.0 is new and very initial stage of development need to be promoted through appropriate policies and programmes.
- Since the concept of CPS is playing a major role in Health 4.0 as sub set of Industry 4.0 are in their initial stages of development, it is essential and suggested to clear skill and knowledge about it before adopting and implementing it (15).
- The ICLs should provide information services to support Health 4.0. They should make use of makerspace, Google Glass, context aware technology, internet of things, more personalize services, big data, CC, and augmented reality as a symbiosis web, reading, writing, and executing simultaneously,

web OS, middleware, and a massive web allowing intelligence interaction just like a human brain.

Conclusions

It can be concluded that in the fast changing- technologies, techniques, tricks as well as high completion, it is need of the time to keep pace with digitization and other ICT innovations different levels to implement at Health 4.0 concept. Many sub-topics need to be included to achieve higher accuracy and quickness in diagnosis, to establish more secure hospital information systems, to make medical devices more efficient, innovative and useful. "The health industry is going through an exciting time with many new opportunities in innovative routes to patient care. Those that ignore the opportunities, Health 4.0 offers will be in serious danger of not being able to compete in the near future as others drive down manufacturing costs and increase business agility in response to developing technologies (15)".

References

- Bagheri B, Yang S, Kao HA, Lee J., (2015). Cyber-Physical Systems Architecture for Selfaware Machines in Industry 4.0 Environment, *IEAC-Papers OnLine*, 2015.
- Bernard, (2018). What is Industry 4.0? Here's A Super Easy Explanation For Anyone. https://www.forbes.com/sites/ bernardmarr/2018/09/02/ what-is-industry-4-0-heres-asuper-easy-explanation-foranyone/#57f04c709788
- Bonner Mike, (2018). "What is Industry 4.0 and What Does it Mean for My Manufacturing?" Retrieved -09-24-2018.
- Collinns FS and Varnus S., (2015). A New Initiative on Precision of Medicine. New Eng J Med, 372; 793-795.
- Flidler SA, Thuemmler Chritoph

and Gavras A, eds., (2015). Requirements for Engineering for Digital Health. Springer, Switzerland.

- Gwenda Sippings, Gwenda, (2018). How to manage a successful corporate library – a guide for manager. http:// www.emeraldgrouppublishing. com/librarians/management/ viewpoints /corporate.htm on Friday, October 12th, 2018.
- Herman M. et al., (2015). Design Principles for Industry 4.0 Scenarios. Technical University of Dortmund, Faculty of Engineering, Auty Endowment Chair Supply Net Order Management.
- Hermann, Pentek, Otto, 2016.
 Design Principles for Industrie
 4.0 Scenarios, accessed on 4 May 2016.
- Hosseini Partner Morris (2015). Digital Transformation in Healthcare Space.
 - Industry 4.0 in the Medical Technology and Pharmaceutical Industries, 2018.
- Jazdi N., (2014). Cyber Physical Systems in the context of Industry 4.0 Automation, Quality and Testing, Robotics, *IEEE*, ieeexplore.ieee.org.
- Lee J., Bagheri B, Kao H. A., (2015). A Cyber-Physical Systems Architecture for Industry 4.0-based Manufacturing Systems, *Manufacturing Letters*, *3*; 18-23.
- Lee E. A., (2008). Cyber Physical System, Design Challenges; *IEEE*.
- Lee J, Kao HA, Yang S., (2014). Service Innovation and Smart Analytics for Industry 4.0 and Big Data Environment. *Procedia Cirp*, *16(93)*; 6-8.
- Lobo Francisco Almada, (2016). Industry 4.0; Manufacturing and the Future of Medical Things. *Asian Hospital and Healthcare Management*, November Accessed

ob 5-8, 2018.

- Md. Ashikuzzaman, (2018). Industrial Library: An Overview. http://www.lisbdnet.com/ industrial-library-an-overview/
- Medical Technologies National Congress (2017). Trabzon, Turkey 12-14 Oct. 2017 DOI: 10.1109/ TIPTEKNO.2017.8238036, IEEE.
- Plosker, George, R. (2018).
 The Information Industry Revolution: Implications for Librarians. Online, 27(6), Nov-Dec 2003. http://www. infotoday.com/online /nov03/ plosker.shtml
- Pott Ariane, (2016). Industry 4.0 in the Medical Technology and Pharmaceutical Industry Sectors. Dosswier Article October: BIOPRO Borden-Worttemberg, GmbH.
- Thuemmler Chritoph and Bai Chunyue, eds., (2017). Health 4.0: Applications of Industry 4.0 Design Principles and Future Asthama Management; *Health 4.0; How Virtualization* and Big Data and Revolutionizing *Healthcare*. Chapter-2. PP 23-37. DOI 10.1007/978-3-319-47617-92.
- https://en.wikipedia.org/wiki/ Industry_4.0
 - Vijayaraghavan A, Sobel W, Fox A, Dornfeld D, Warndorf P. 2008 Improving machine tool interoperability using standardized interface protocols: MTConnect; *Proceedings Of The* 2008 International Symposium on Flexible Automation (ISFA), Atlanta, GA, USA.
 - Wang T, Yu J, Siegel D, Lee J., (2008). A similarity-based prognostics approach for remaining useful life estimation of engineered systems; International conference prognostics and health on management (PHM). IEEE; 1-6.

BIOMEDICAL INDUSTRY 4.0 AND ROLE OF LIBRARY SERVICES

Priyamwada P. Joshi Senior Faculty, VPM's Joshi- Bedekar College

Abstract:

The biomedical industry is very vast and has global importance. The article describes the basics of Industry 4.0, which is the latest industrial revolution denoting a current trend of automation, digitization and communication of proper information to proper users at a proper time. It is a name given to the current trend of automation and data exchange in manufacturing technologies. It includes cyber-physical systems, the Internet, cloud computing, big data, information and library science and cognitive computing. Industry 4.0 is more useful in biomedicine and its industrial products, where everything is correlated to public health, life as well as death. It is already being used and applied in the various biomedical device sector viz. diagnoses, treatment, integrating electrocardiogram capability or blood pressure cuffs within a device increases its value. Hence, biomedical industries have no option but to adopt tricks, techniques and technology of Industry 4.0. Libraries must provide effective and efficient information services to Biomedical Industries to cope up with new technologies.

Keywords: Library Services, ICT, Biomedical Industries, Biomedicine, Information Services, etc.

Introduction

Industry 4.0 is a name given to the current trend of automation and data exchange in manufacturing technologies. It includes cyber-physical systems, the Internet of things, cloud computing and cognitive computing. Industry 4.0 is commonly referred to as the fourth industrial revolution. Industry 4.0 is already being applied in the biomedical device sector. For example, integrating electrocardiogram capability or blood pressure cuffs within a device increases its value. The Internet of Medical Things (IoMT) brings together technology, medical devices and applications that enable personalised patient-specific devices and care programmes. Mobile devices that can track chronic and lifestyle associated diseases such as diabetes. The libraries will provide Lib 4.O services. They will make use of makerspace, Google Glass, context aware technology, internet of things, more personalized services, big data, cloud computing, and augmented reality as a symbiosis web, reading, writing, and executing simultaneously, web OS, middleware, and a massive web allowing intelligence interaction just like a human brain.

Review of Literature

The extensive application of information technology in all supply activities will change chain the way of doing business (Porter and Heppelmann, 2014). In 2011 Germany coined the expression "Industry 4.0" for the digital transformation of manufacturing, an allusion ex-ante to the Fourth Industrial Revolution (Lasi et al., 2014). Industry 4.0 is a name given to the current trend of automation and data exchange in manufacturing technologies. Industry 4.0 is commonly referred to as the fourth industrial revolution. Industry 4.0 fosters what has been called a "smart factory". Within modular structured smart factories, cyber-physical systems monitor physical processes, create a virtual copy of the physical world and make decentralized decisions. Over the Internet of Things, cyber-physical systems communicate and cooperate with each other and with humans in real-time both internally and across organizational services offered and used by participants of the value chain.

Library 4.0

Industries have undergone three revolutions Industry 4.0 and Library

4.0 is an impact of Web 4.0. Library and information centres play important role in growth and development of these revolutions and will provide services in present fourth generation also through Library 4.0.

Chauhan (2009) wrote that Library 4.0 must include not only software-based approaches but also technological environment development such as makerspace, Google Glass, context aware technology, digitalization of contents, big data, cloud computing and augmented reality.

Libraries will be able to survive only by cooperating with various professional academic networks in the era of Web 4.0 and Industry 4.0. He also said that the form of that cooperation will become Library 4.0, and it will be constructed in a virtual library environment where all the services are provided in virtual space.

Library 4.0, as a future library, will become an intelligent library where not only inference and research are available, but the system will analyze information by itself and discuss findings with users like a colleague (Chauhan, 2009). We can imagine an environment that fuses platforms, services, and large amounts of content (massive web), a library that allows librarians, users, and machines to coexist (symbiotic web), technology that allows humans and machines to read, write, execute, and concur at the same time (read-write-executionconcurrency web), and a library that thinks, makes decisions, and provides services using reasoning library (intelligent library).

Context-aware Computing Technology

Libraries will use context aware computing technologies. Contextaware computing technology is a system designed to search and provide the services that users require in their current situation by analyzing and identifying the available contextual information (the current situation of the user) such as the user's current location, time, people and devices in the vicinity, and the user's behavior and inputted data (Noh, 2013). Context aware services applicable to libraries are book status information (book location checks and guidance service using augmented reality technology, checks and guidance service for books being moved or returned), book content

information, My Library management service, library internal information, providing and lending electronic books, and connection with relevant agencies (Lee, 2013). Noh (2013) wrote, in an example of an application of context aware technology to the library, that the library may recognize the user and provide customized service to both new users and existing users. In addition, it can provide information suitable to the circumstances of users, context aware reference and book lending service, and identify the user in an emergency by recognizing their behavior, route, and temperature. Besides this, as an environmental comfort service, temperature, humidity, and lighting can be adjusted for different users, books, and equipment (Song et al., 2008; Noh, 2010).

Next Generation Digital Libraries and Displays

Library 4.0 will make it possible to realize a cutting-edge display environment equipped with recognition capability. The technologies and products making that environment possible have already been launched, and applying them well to the developing NGDLs (Next Generation Digital Libraries) will be the key to success. Representative models of this cutting-edge display equipment are Google Glass, HUD, Flexible Display, and Transparent Display. Google Glass is a kind of wearable computer equipped with Head Mounted Display (HMD), which is under development as an R&D project titled "Project Glass" and will make it easy to realize a ubiquitous digital environment (Furlan, 2013). Google Glass can use many other Google applications including Google Now, Google Map, Google Plus, and Gmail. Google Glass can presently display functions including showing information in a hands-free form, interaction through voice command in natural language, video recording, picture taking, video calls, image search, translation, directional guidance, message sending, weather search, and providing flight information. These functions are only the beginning and can be extended, strengthened, and enhanced as much as is desired (Noh, 2015). Displays presently available or at a stage of commercialization to be applicable to the library in the near future are HUD (Head-Up Display), Flexible Display, and Transparent Display (Fig. 1). The future library will construct display environments using these technologies.



Fig.1. Changes of Display Environment (Source: Noh, 2015)

HUD (Head-Up Display) is a device which allows the pilot of an airplane to accurately view information from instruments and CRT within his or her view, designed to display operating information on the windshield glass of an automobile or airplane (Newman, 1995). At present, it is used for reducing automobile accidents. Flexible Display is a paper like display known for realizing the same picture quality even if it is folded or bent (Kirschner & Muller, 1987). This technology will replace existing screens on laptops, PC monitors, and televisions, and is expected to be embraced by the electronics market thanks to the reduction in screen size and volume it represents. Transparent Display is a collective name for a display that is completely see-through when turned off, and remains partially transparent when turned on. This technology, which combines augmented reality and touch screens, has many everyday applications, including living room windows or indoor and outdoor advertisements and PSAs.

Infinite Creative Space

Combining infinite creative space with library services is an innovative idea which will have a positive impact on the lives of library users. Infinite creative space in libraries will allow users to see the world differently and give them an opportunity to explore or imagine new possibilities or a future they will create. The concept of infinite creative space is meant to facilitate the creation of something using technology, but does not include only STEM activities. The space is intended to draw creative people, and the infinite creative space movement cantered in libraries helps to teach users to think creatively and explore solutions. It is a space where people gather and create new things with certain technologies.

Conclusion

The internet age has made users aware of the many different ways to acquire knowledge besides physical books, and therefore librarians have reached for new identities within their core mission of information community helpers. However, the current study could provide only a limited range of applications and service provided by Library 4.0 to Industry 4.0. Hence, further studies must also concentrate on detailed apply Web 4.0 and Library 4.0 concepts to provide services to Industry 4.0 to maintain and improve user satisfaction.

References

- Chauhan, S. K. (2009). LIBRARY 4.0. Retrieved from http:// key2information.blogspot.kr/
- Furlan, R. (2013). Build your own Google glass [resources_hands on]. *Spectrum, IEEE*, *50(1)*, 20– 21.
- Kirschner, R. K., & Muller, H. R. (1987). U.S. Patent no. 4,647,967. Washington, DC: U.S.Patent and Trademark Office.
- Lasi, H., Fettke, P., Kemper, H. G., Feld, T., & Hoffmann, M. (2014). *Industry 4.0. Business &*

Information Systems Engineering, 6(4), 239.

- Lee, J.M. (2013). Understanding big data and utilizing its analysis into library and information services. *Journal of the Korea Biblia Society for Library and Information Science, 24(4)*, 53–73.
- Newman, R.L. (1995). *Head-up displays: Designing the way ahead.* Avebury Aviation.
 - Noh, Y. (2010). A study on Library 3.0 concept and its service model. *Journal of the Korean Society for Information Management*, 27(4), 283–307.
- Noh, Y. (2013). A study on nextgeneration digital library using context-awareness technology. *Library Hi Tech, 31(2)*, 236–253.
- Noh, Y. (2010). A study on Library 3.0 concept and its service model. *Journal of the Korean Society for Information Management, 27(4)*, 283–307.
- Porter, M. E. (1994). The role of location in competition. *Journal of the Economics of Business, 1(1),* 35-40. 2009/11/library-40.html
- Noh, Younghee. (2015). Imagining Library 4.0: Creating a Model for Future Libraries. *The Journal of Academic Librarianship*, 41, 786-797.

DIRECT BENEFIT TRANSFER IN SEED SECTOR: IMPACT & CHALLENGES

Mahima Shrimali Assistant Manager, KRIBHCO Guruprasad Hiremath Senior Officer, KRIBHCO

Abstract:

In the era of continuous technological evolution by Manufacturing, Service and various other sectors, the agriculture sector has relatively lesser scope to make a fast-track progress in association with available technology due to various reasons. Under such circumstances, DBT (Direct Benefit Transfer) was implemented in the Agriculture sector along with many sectors. This scheme was introduced in the year 2013 and it's witnessing mixed reviews by various stakeholders including farmers.

This paper throws light on the technological innovation in the certified seed industry with the introduction of DBT, The status of the industry prior to DBT, challenges, adaptability/acceptability and future of DBT in certified seeds.

The paper also explains about the technological infrastructure developed and required for implementation of a nation-wide scheme; aiming to transfer benefits to large number farmers procuring the certified seeds being provided by Seed Nodal Agencies.

The experience of seed producing agencies is also covered in the paper which explains market behaviour pre-DBT and post-DBT. Overall, this paper attempts to describe the role of various stakeholders in the entire value chain i.e. from the transfer of subsidy from central government exchequer to the farmer's account.

Keywords: Direct Benefit Transfer, Agriculture Sector, Market Behaviour, Technological Innovation, etc.

Introduction

On first January 2013, GOI launched the Direct Benefit Transfer Scheme with the aim of reforming the government delivery system by modifying the existing procedures in welfare schemes for accurate targeting of beneficiaries, bringing in transparency in flow of information and funds. This was done to realize the dream of MAXIMUM **GOVERNANCE** MINIMUM GOVERNMENT by using modern technology and IT tools. As on date, cumulative Direct Benefits total transferred have been Rs 534189 crores.1 A total of 464 schemes from 57 different ministries are under DBT. These include various subsidies that impact the citizens such as LPG subsidy, Pensions, LIC, PDS, scholarships, various grant in aids, stipends, etc.

Earlier, the subsidies in food grains, kerosene which were sold through the public distribution system, the end consumers paid the below-market rates. The gap between the market price and the lower consumer price for these products was covered by the subsidy. Now the end beneficiary will have to pay the full price and the intended subsidy will be transferred directly in his/her account. The Government has successfully implemented DBT in LPG and saved substantially for the exchequer.

The three major enablers of DBT are JAM i.e. Jan Dhan, Aadhaar and Mobile. With these as prerequisites for successful implementation of Aadhaar as on date more than 22 crore Jan Dhan Account, more than 100 crore Aadhaar and about 100 crore Mobile connections are making it possible to achieve this ambitious objective of implementation of transfer of benefits directly into the accounts of beneficiary across all the states and union territories. Upon successful implementation, DBT is envisaged to bring in efficiency, effectiveness, transparency, and accountability in the Government system and infuse confidence and faith of its citizens in the governance.

A robust technological infrastructure is the foundation for implementation of such a huge mission. A typical process flow of DBT explains that the first step is the identification of the beneficiary, followed by verification of eligibility for the intended benefit. These are then certified by the relevant department in the district /state and a database is sent to the central ministry of the same department for release of funds through CPMS (Central Plan Scheme Monitoring System). They in turn release the fund to the beneficiary's account.



Figure 1: Process Flow for DBT (Source: Ministry Publications)

Various Stakeholders involved in this process are:

- 1. Beneficiary
- 2. District/State Government officials
- 3. Sponsor Banks
- 4. CPMS



Figure 2: Stakeholders Involved In Process (Source: Ministry Publications)

DBT in Certified Seeds

Agriculture being one of the core independence sectors after saw dramatic changes decades after decades. From food crisis due to famines to abundance in food achieved due to the Green Revolution in various phases made Indian agriculture sector a classic case study for the entire world. Small size land holdings of India coupled with unpredictable weather conditions and lesser availability of credit always posed a challenge to ruling governments to improve lives of the agrarians/farmers. Therefore, the Government of India initiated subsidies as a measure to eradicate poverty and to promote socioeconomic development in society.

Subsidies make lives of farmers easy as it provides easy credit to them during peak periods in Agriculture i.e. Kharif/Rabi/Zaid. The process of disbursement of subsidies has evolved over the years and every evolved system has attached costs and involves a great expenditure on exchequer of Governments (transactional costs/ operational costs). Thus, to make the process of subsidy delivery more streamlined, Direct Benefit Transfer (DBT) was started on 1st January 2013. The main objectives of which were as follows:

- To simplify and fasten transaction process i.e. flow of information/ funds and to ensure accurate targeting of the beneficiaries
- To avoid De-duplication of beneficiaries and misuse of funds by sending it to wrong beneficiaries
- Reduction of fraud

To Ensure

- A simple and user-friendly Government to People (G2P) interface and Transparent, ancient and reliable manner.
- Directly delivering entitlements to eligible individuals and households in a fair.

How is it Done?

- Registration of farmers with their details & bank accounts
- Validation of farmers' bank
 accounts through PFMS gateway
- Linking the developed application software with scheme funds

Thereby

- Reducing delay in subsidy administration
- Ensuring correct targeting of the beneficiary
- Curbing pilferage, if any
- Automated bills & UC generation

Subsidy on Certified Seeds

Currently, the seed subsidy is provided mostly for distribution, marketing and transportation and not so much for production. These subsidies are given as a part of various technology missions and other centralized schemes. Despite various efforts to ensure availability of good quality seeds of high yielding varieties and hybrids, yet nearly 70-75% of the total seed availability of good quality seeds is met through farm saved seed. Many schemes such Rashtriya Krishi Vikas Yojana, Macro Management Agriculture, Integrated Scheme for oilseeds, pulses, oil palm and maize (ISOPOM), National Mission on Oilseed and Oil Palm Technology missions for cotton, National Food Security Mission etc. provide for subsidy on seeds. Some of them also provide incentives for investment in Seed manufacturing infrastructure and upgradations.



Figure 3: Stages in Seed Production Cycle

Presently, GoI is providing subsidy on the production of certified seeds to farmers and procurement of Breeder Seeds by seed producing agencies. In India, sowing of quality seeds is the concern as there is always an alternate availability of seeds such as own farm saved seeds. Thus, subsidies play a key role in promoting farmers to sow quality certified seeds instead of easily available other seeds. The nature of subsidy is evolved over the period and since the introduction of DBT, it is witnessing a major shift in the entire industry.

Pre-DBT Scenario

Initially, the seeds were sold to farmers at the rate which was derived after deducting the subsidy from the all in cost price. The sale rate was communicated by GoI and other state governments to authorized seed dealers who in turn used to get the subsidy after producing the required documents at the end of season. The entire process can be summarized in the flowchart as under:



Figure 4: Pre-DBT Process

Issues and Concerns:

This system posed some challenges enlisted below:

- Establishing true beneficiaries who are bonafide in Nature
- Lengthy process which used to result in delay in realization of subsidy
- Complicated process which made process of claiming subsidy more difficult
- Lack of proper monitoring in entire transaction process
- Pilferage/ Leakage of subsidy in 4. the wrong hands
- Differences in subsidy realization for the same crop by various farmers in the same season

DBT in Seeds

The DBT System introduced in the seed sector was envisaged to cull out the explained drawbacks in the earlier system. Prime motives behind the introduction of DBT in seed business areas under:

- To electronically transfer input subsidy (GOI/State) to the bona fide farmer's account
- To eliminate bogus dealer payments through wrongful inclusion and wrongful exclusion of beneficiaries
- To make available the real-time price as well as stock information to seed dealers
- To provide quick and convenient methods for grievance redressal
- To prevent any misuse of subsidy by putting in place a robust MIS

Steps Followed in Subsidy disbursement: Post Introduction of DBT

- 1. Seed transactions made through mobile/web-based applications by the registered dealers/ societies or they are transacted in offline mode through a specially designed mobile App- Seed DBT App which is later synced with the server when internet access was available.
 - Farmers can purchase certified seeds from any authorized dealers in their respective district.

2.

3.

5.

- The dealer sells the seeds to farmers on the first-come-firstserve basis at an all-in-cost price (Full price) and maintains a sales register with the farmer's signature and in the sales register; details of farmers and seeds purchased are recorded.
- The seed transaction details are entered into the mobile app or web-based application which uploads the data to the central server and calculates the admissible subsidy to farmer.
- The admissible calculated subsidy is then directly remitted to the farmers' account through PFMS (Public Financial Management System) under the Ministry of Finance within 7 days. The dealers (having valid seed licenses) have the option to use the mobile or web application to record the seed transaction.

Implementation Modalities

- Training and awareness campaign
 To stakeholders like field officers
 like DDAs, DAOs, AAOs,
 farmers, seed producers, dealers,
 PACS regarding registration and
 transaction modules for DBT of
 seed input subsidy.
- Registration of farmers Through Lokvani centres (Kisan Service Centres), Cyber Cafés, DDA/ DAO/Block Office, PACS/ LAMPS of Cooperation Dept/

Dept. of Agril/Mobile App (FR Seed DBT).

- Collection Information of required for farmer registration i.e. by Aadhar/Voter Card/ Card/Passport, Ration land record (Khatoni), Bank passbook details, Farmer name, father name, village, block, district, mobile number, alternate person name, relation to alternate person be provided in the Farmer Registration detail.
- Validation of account details of the farmer through Public Financial Management System (PFMS) mode. Farmer identification number is issued.
- Seed transaction through Mobile App (DBT App) or Web Application by block seed outlets/registered dealers, PACS, LAMPS, etc.
- Subsidy Payment through PFMS Mode
- Generation of Management Information System (MIS) reports

An Example of Implementation of DBT in Seeds: Odisha

DBT was introduced in the state of Odisha from Kharif-2016. The progress of the DBT implementation is as under:



Figure 5: Implementation of DBT in Seeds



Figure 6: Seed DBT: Integration of Applications-System Flow (Source: Direct Transfer of Subsidy of different agricultural Inputs to farmers: DBT INITIATIVES IN ODISHA)

Result of the Implementation till 2017

- Registration of about 18.00 lakh farmers (HOF) (59.30 lakh family members) through web and mobile interface till date.
- Bank account details, family members, Photo ID, Aadhar number (optional) are being captured during the registration process.
- Sharecroppers are not deprived during the registration process.
- 2719 Service Cooperative Societies (PACS/LAMPS) and 628 AAOs were involved in registering farmers.
- Farmers registered (paddy procurement) under the FS & CW Department have also been brought to the fold of registered farmers.
- Registration is dynamic & is still continuing at http:// odishaseedsportal.nic.in & http://agrisnetodisha.ori.nic.in by the AAOs & PACS/LAMPS.

However, the impact was not all rosy. For 2017 Rabi season farmers purchased only 2000 quintals of certified groundnut seeds from OSSC against target of 30,000 quintals. The Corporation was selling more than one lakh quintals of groundnut seeds before DBT. OSSC registered low offtake of moong and biri seeds. Big blow for corporation which sustained a loss of about Rs 30 Cr. State Govt came to the rescue of OSSC by providing a subvention of Rs 7.5 Cr. Table 1: Sale of Seeds through DBTMode

Crop	Lifting	Farmer Sale
Paddy	299593.40	291943.80
Black Gram	486.32	5.24
Groundnut	419.70	120
Cohomo Nomo	No of Distinct Farmer	Total Amount (in Rs.)
		iotal Amount (m Ks.)
	205	005000 5
NMOOP	325	625339.5
NMOOP NFSM	325 22788	625339.5 11821350
NMOOP NFSM RKVY	325 22788 48824	625339.5 11821350 23014663.2
NMOOP NFSM RKVY STATE PLAN	325 22788 48824 277255	625339.5 11821350 23014663.2 247654412

Source: Direct Transfer of Subsidy of different agricultural Inputs to farmers: DBT INITLATIVES IN ODISHA

An Example of Implementation of DBT in Seeds: UP

- Uttar Pradesh is the first state in the country to introduce DBT in agri-subsidy.
- They launched a dedicated web portal for the purpose : upagripardarshi.gov.in
- Out of 23.3 million farmers, 17 million farmers are registered online.
- DBT started with hybrid seeds in Kharif 2015.
- All kind of subsidies being transferred through DBT portal since Kharif 2017.
- Rs. 456.17 Cr. subsidy transferred through DBT to 2.33 million farmers in the year of 2017-18.

The DBT programme benefited around 1.5 lakh farmers in Kharif 2015. They were given the freedom to buy seeds from any of the designated retail outlets operated by private companies at market prices, with the subsidy being credited separately into their bank accounts. While in the preceding kharif season, the UP government spent more than Rs 85 crore as subsidy on hybrid paddy, maize, jowar and bajra seeds, the outgo fell to less than Rs 25 crore in kharif 2015 post introduction of DBT. In the Rabi season, too, farmers bought wheat, oilseeds and pulses seeds from designated government/semigovernment and cooperative outlets at market-linked rates. The total subsidy

amount, transferred directly into the accounts of approximately nine lakh farmers, came to Rs. 127 crore. This again was lower compared to a bill of Rs. 217 crore during 2014-15 rabi.

The main reason for the subsidy savings was the knocking-out of fictitious beneficiaries. In fact, the DBT system's biggest achievement has been that many farmers received subsidized seeds for the first time, thanks to the transparent manner for identification of beneficiaries. In the earlier system of "at source" subsidy, there wasn't any means to check who was getting the subsidy. And since the seeds were sold at below market prices, it led to paper transactions and diversion of subsidized material.

Under the new system, small and marginal farmers are approaching the designated outlets with a sense of entitlement, after having registered themselves online on the Agriculture Department's DBT portal. Nor is there scope for embezzlement by seed stores in-charge, as the subsidy into the accounts of farmers can be transferred only after the money collected from them has been deposited in the treasury. The readily available database also makes it possible to provide certified seeds — that require replacement only once in three years - to new sets of farmers each season. This allows for faster diffusion of technology, unlike in the earlier system where the same set of big and influential farmers ended up getting new certified seeds every year.

The new system has other important spin-offs as well. The robust farmerlevel data generated can be useful for planning purposes in different agro-climatic zones of UP. Also, the process of data generation and more farmers buying from designated state seed outlets has resulted in renewal of contact between them and the agriculture department, which again is beneficial for extension of technology.

ABS International Journal of Management

There are, nevertheless, two major challenges in implementation of subsidy via DBT for all agricultural inputs. The first is the issue of upfront payment — not all farmers can pay market prices for say, fertilizers and wait for the subsidy to be credited to their bank accounts — and the second is the exclusion of sharecroppers by virtue of their not 'owning' land. The latter challenge can be addressed through changes in land leasing laws, which allow formal recognition of non-landowning cultivators.

Impact of DBT on Seed Producing Agencies

While impacts/benefits of DBT is talked about in regard to farmers and government; seed producing agencies have been equally affected by the DBT. The quantum of production, sales and profitability of agencies is largely dependent on prevailing schemes of government, market behaviour and climatic conditions. Since introduction of DBT it has been observed that it is becoming increasingly difficult for liquidation of seed stock which is resulting in carry over stock. The incidence of carry over stock is pushing the seed producing agencies for lower seed production which is resulting ultimately in lesser availability of quality seeds in the market. However, complete acceptance of DBT by the farming community can revitalize the seed sector.

Table 2: Before Implementation ofDBT in Uttar Pradesh (2014-15)

S.N	Agency	Approved Qty for subsidy (qtl)	Achieve- ment (qtl)
1	UPSSC	200000	200000
2	NSC	298000	256000
4	IFFDC	170000	27000
5	UP Agro	145000	38000
6	PCF	520000	456000
7	Govt Ag. Dept	746000	746000
8	TDC	50000	38000

Source: Primary Market Survey

Table 3: Before Implementation	of DBT	in Uttar	Pradesh	(2015-16,	2016-17
& 2017-18)					

	,					
		2015-	-16	2016-17		2017-18
S.N	Agency	Approved Qty for subsidy (qtl)	Achieve- ment (qtl)	Approved Qty for subsidy (qtl)	Achieve- ment (qtl)	Approved Qty for subsidy (qtl)
1	UPSSC	55000	11980	55000	3397	175000
2	NSC	90000	8000	70000	818	100000
4	IFFDC	40000	6400	40000	885	30000
5	UP Agro	70000	20548	40000	14000	25000
6	PCF	400000	204784	200000	107000	125000
7	Govt Ag. Dept	455000	417000	495265	316000	356000
8	TDC	0	0	35000	0	0
C	$D \cdot M$	1 . 6				

Source: Primary Market Survey

It can be observed from both the above tables that since introduction of DBT, the achievement from the agencies has been on lower side and is reducing year after year. Hence, reach -ability/ acceptance of DBT by all the stake holders is essential for the revival of the seed industry as a whole.

Advantages of DBT in Seeds for Various Stakeholders

For Implementation Agencies

- Manage Beneficiaries in CPSMS
- Use Pre Validated Data of beneficiaries
- Advanced bank account matching through a fuzzy logic that matches bank accounts with the name of the beneficiaries. This logic helps identify beneficiary records that could have mismatches and enable rectification to reduce delays in payments.
- Last level of agency need not have bank account of its own.
- MIS on Bank reconciled payments (Success/failure)

For Ministries

- Unique Farmer ID for beneficiary identification in order to eliminate the pilferage/ leakage of funds OR landing of funds in the wrong hands
- A developed unique batch code for tracking all the inventory
- No Float/Idling of funds hence

effective utilisation of financial resources

- Real time accounting and reconciliation
- Minimal failure due to prevalidation of bank accounts and look-up in NPCI mapper by sponsor bank
- Consolidated MIS-Scheme/ Agency /District/Date Wise
- Utilisation Certificates as per GFR

For Beneficiary

- The beneficiary gets the in-cash benefit directly into his bank account within 7 days allowing for increased engagement with bank accounts.
- Inclusion of sharecroppers (who do not own land and hence, cannot provide land record details) as beneficiaries.
- Online checking of payments credited in his/her account.

Challenges

- Identification of beneficiary: The collection of accurate information about the beneficiary including their identity proofs, land particulars and bank account numbers remains a challenge as many are still deprived of the same.
- Acceptability of farmers: The majority of the farmers are not in a position to make upfront

full payments for certified seeds. Across the country, farmer purchase the agri–inputs on credit. Hence it becomes very difficult for an already indebted farmer to pay a high price for the basic input for farming which is seed.

- Financial Inclusion at Rural level is yet to be completely exploited. It will also require an extensive financial education among the farmers who have their bank accounts but are yet to operate them and avail services and become comfortable with doing the transactions.
- Connectivity: The network connectivity for operations of POS machines for sales of agri inputs, high speed internet connectivity are still an issue. Hence it would require a robust digital and internet infrastructure. Inadequate Grievance Redressal
 - Mechanism: The day to day problems which are faced require a highly efficiency resolution mechanism which is in place but a lot needs to be done to strengthen it.

Conclusion and Way Forward

While the government speaks of various advantages associated with DBT, it comes with some challenges due to which various stakeholders are still against DBT. India having large number of small-size farmers mainly faces the challenge of liquid credit availability. Due to credit/cash crunch for the farming community, all in cost price (total cost) which have to be paid by the farmers upfront during the process of purchase of seeds is becoming a concern for acceptance of DBT. Due to Onetime payment of full cost, even seed agencies are witnessing reduced sales leading to sowing of own farm saved seeds.

From the government point of view, even after so much of information collection, it is becoming difficult to establish a full proof system along with partnered banks. Constant promotional programmes and technology upgradation has to be done in order to escalate the implementation in farming community. Following are the measures which can be adopted for an effective and inclusive implementation of DBT.

- Convergence of all agri-input subsidies: A one-stop solution for all agri inputs is required. As on date, the fertilizer subsidy is working on a different mechanism as seed. Hence convergence and integration of all Agri Input Subsidies viz. Fertilizers, Seeds, Agri Machinery, etc. will help in a consolidated and mass acceptance.
- Conducting more number of demonstration programs and distribution of seed mini kits as a promotional measure would help in generating awareness about DBT.
- More efforts need to be made by various stakeholders by forming PPCs i.e. Public Private Cooperative agencies and NGOs to spread awareness about the benefits of DBT to sharecroppers.
- Integration with PFMS and Coordination with banks needs to be strengthened for quick resolution mechanism.
- In order to address the issue of full upfront payment of products, Kisan Subsidy Cards (KSC) can be introduced. Banks are now issuing Kisan Credit Card (KCC) to farmers, providing a credit limit of up to Rs three lakh linked to their landholdings. This credit limit could be split into two parts. While the existing KCC component would enable farmers to withdraw cash towards making payments towards labor or electricity/diesel for irrigation, the KSC sub-limit can be used only to make the upfront payments on subsidized inputs like seed and fertilizer. Such payments should, however,

be allowed only through custommade swipe machines, with the KSC limits getting 'recharged' when the subsidy amounts from the government are transferred into the farmers' bank accounts. The KSCs cannot be used to draw cash from ATMs or to purchase other commodities; they can operate only on the special swipe machines kept at the designated seed/fertilizer stores. Taking care of the small and marginal farmer who has difficulties in upfront payments.

Technology today enables subsidy on agricultural inputs to be delivered an efficient, transparent and in inclusive manner via DBT in seeds. Once the system gets accepted by farmers, extending it to fertilizers and other inputs is a natural corollary. A successful implementation will require an extensive approach to first make the farming community comfortable with financial inclusion. Open their accounts, operate them, transact via ATMs or mobile banking, and check their account balances and their details. Though this may take some time, but with the speed of implementation of various technology based schemes of the government, the day wouldn't be far when the dream of transferring the benefits to the intended beneficiaries is realized in its true sense and be beneficial for both the exchequer and the deserving farmers.

References

- https://dbtbharat.gov.in/
- https://indianexpress.com/ article/india/india-news-india/ subsidy-reform-seeding-changethrough-direct-benefit-transfer/
- http://www.newindianexpress. com/states/odisha/2018/ feb/06/direct-benefit-transferturns-a-dampener-odishagovernment-plans-to-sellcertified-seeds-1769014.html

MANAGERIAL SKILLS REQUIRED FOR INDUSTRY 4.0 REVOLUTION

Akshay Arora, Vaishali & Mohit Jain Management Student, Asian Business School

Abstract:

Industry 4.0 is characterized by smart manufacturing, implementation of Cyber Physical Systems (CPS) for production. The high-tech manufacturing environment will need both skilled managerial and production labor with expertise. The demand for special skills will drive the shift of job creation requiring more qualified managers and highly differentiated customized products and services, value added services including an efficient supply chain. All this requires continuous innovation and learning which depends on an enterprise's capabilities. Also, these include competencies like creativity, critical thinking, communication, strategic thinking, and problem solving to find and develop creative solutions for the complex world we live in. This paper aims at analyzing a viewpoint on the best suitable management practices which can promote the climate of innovation and learning in the organization, and hence facilitates the business to match the pace of Industry 4.0. Management approaches can play a vital role in the development of dynamic capabilities. It draws the attention towards the important role of management practices in Industry 4.0. Our aim is to look for the skills/competencies needed by contemporary managers to cope with new challenges of Industry 4.0? However our research is based on the use of peripheral information from different sources available to general use via internet platform and understanding of the authors of this paper, but with detailed study and analysis we have come to a common conclusion which includes the adaptation and need of upskilling the methodologies at all levels to be in sync with Industrial Revolution.

Keywords: Management Practices, Entrepreneurial Thinking, Analytical Skills, Innovation, Adaptability, etc.

Introduction

Fourth Revolution/ Industrial Industry 4.0 is marked by lightning advancements and mindspeed boggling changes bringing together digital, physical and technological advancements and thus is highly unpredictable. Enterprises have to react quickly to opportunities and challenges of the business world. It describes the increasing digitalization of the entire value chain and the resulting interconnection of people, objects and systems through real time data exchange. In-spite of enormous progress in industry managers constantly need to face new challenges. The term Industry 4.0 is often referred to as the fourth industrial revolution. The concept of this Industrial Revolution describes the increasing digitalization of the entire value chain and the resulting interconnection of people, objects and systems through real time data exchange. This creates many new opportunities for companies, but at the same time several upcoming challenges from the ongoing automation and digitalization.

The digitalization of manufacturing is optimizing with integrated technologies and communication technologies. With these new integrated systems, it is possible for the factory of the future to be adaptive with respect the production. Consequently, to the qualifications and skills of the skilled labor, which are required to fulfil the tasks occurring in a factory of the future, will differ as well. The constantly changing list of skills required for Industry 4.0 must be regularly updated so that the relevant adjustments in the education system and upskilling existing ones can be customized. In future, the focus will be on interdisciplinary thinking and acting, cross-functional process know-how, and skills involving specialized and more general application knowledge. The goal should be to prevent a twofold digital divide between large and small industrial enterprises and between high-skilled and low-skilled workers. SMEs should receive special support to help them develop the skills needed for Industry 4.0. Our aim is to look

for the arsenal of skills/competencies future demands of us and that the contemporary managers need, as well, to cope with revolutionary challenges of Industry?

This paper talks about a few skills needed and forms as the learning concept which integrates the skills and tries to address the identified research demands. Finally, it has been concluded of the learning and thoroughness for the need of managerial skills in the Industrial Revolution and to society.

Key Managerial Skills

According to the literature the authors identified three main categories to classify core managerial competencies. Firstly, Technical Competencies that comprise all job-related knowledge and skills for example media skills, coding skills, knowledge management, and statistical command. Technical skills are abilities an individual acquires through practice and learning. Secondly, Managerial Competencies which include all skills and abilities

for the general problem is solving and decision making for example: analytical and research skills, conflict and problem solving, creativity. They focus on the ability to make business decisions and lead subordinates within a company, include ability, negotiations tactics and response behaviour. Thirdly, Social Competencies which include an individual's social values, motivations for example: ability to transfer knowledge, leadership skills, ability to work in a team. Social ability in which expectations for future interaction with others are built, and based upon which individual perceptions are developed of their own behaviour. However, the study is focused on exploring the Managerial Skills in business cooperation. Few important skills have been selected and discussed for analysis, as below: -

Creativity & Innovation

With an avalanche of new technologies, new products and new ways of working there is an important need of being creative to draw the benefits from changes. Today Robots can be helpful to us in many respects but creativity in humans cannot be completed by them and so it is becoming a key focus area for employers for the 21stcentury employees. Creativity is characterized by the ability to perceive the world in new ways, to find hidden patterns, to make connections between seemingly unrelated phenomena, and to generate solutions.

Entrepreneurial Thinking

Entrepreneurial Thinking skills refer to the ability to identify marketplace opportunities and discover the most appropriate ways and time to capitalize on them. It is more like a state of mind that opens your eyes and business processes to hidden opportunities.

Complex Problem Solving

It is mainly about attaining mental elasticity to solve the unforeseen problems and being able to relate them to the landscape that's changing at breakneck speed and getting more complex. Solving problems involves both analytical and creative skills. Analytical or logical thinking includes skills such as comparing, evaluating and selecting. It provides a logical framework for problem solving. Also, it is an essential skill in the workplace and personal situations.

Critical Thinking

People who can turn data into insightful interpretations will be sought after due to the complexity and interconnectedness of various fields like computer science, engineering and biology.

Conflict Management

Avoiding conflicts in an organizational format, identifying conflicts if any and resolving conflict is a key skill for a Manager. Thus managing and resolving conflict requires emotional maturity, self -control, and empathy. Further, conflict management is a skill that can be developed and practised over a period of time.

Decision Making

Decision making is the process of making choices by identifying a decision, gathering information, assessing alternative resolutions, implementation and following up. Decision-making is an integral part of modern management. Essentially, Rational or sound decision making is taken as primary function of management. According to Dictionary, the term decision making means – the process of deciding something important, especially in a group or in an organization.

Analytical Skills

Analytical skills are the thought processes required to evaluate information effectively. Analytical skills are the ability to visualize, gather information, articulate, analyze, solve complex problems, and make decisions.

Research Intelligence

Research skills can be from the need to be able to use reliable sources for continuous learning in changing environments. Ability to provide in depth information and advice on a given topic is an important skill. The most successful people tend to develop research skills early and use them consistently to efficient productivity.

Coordinating with Others

Effective communication and team collaboration skills will be a top demand among job candidates in any industry.

Social Intelligence

Social Intelligence talks of and considers the application of social and non-formal platform for beneficial outcomes. It involves spotting right areas at right time and understanding the need and use of such platforms for different purposes and also as alternatives to connect for innovation and creative linkage.

Emotional Intelligence

Qualities that relate to emotional intelligence such as empathy that curiosity will be a big consideration factor for hiring managers of the future.

Adaptive Thinking

Ability to determine the meaning of what is being expressed and what is to be conveyed in a manner so as to communicate and be in sync with the change that is foreseen. Being open to change as with technology and to different methodologies is covered under the process of Adaptive think which serves as very important skill for coping with revolution.

People Management

Irrespective of how many jobs get automated and how advanced Artificial Intelligence becomes, employees will always be a most prized resource. Humans are more creative, better at reading each other and able to piggyback of many ideas and energy, but this also

ABS International Journal of Management

means that we humans also get sick, we get demotivated and get distracted. So, it is important that managers and team leaders are aware of how to motivate their respective teams, maximize their productivity and respond to needs. Thus, knowing how to delegate and plan the tasks as to available resources in sync with business needs. It also considers the proper use of resources, fulfilling their needs and demands and also retention of resources.

Service Orientation

People who know the importance of offering value to clients in the form of services and assistance will be in demand as businesses would want to provide solutions to the problems of society.

Research Methodology

A questionnaire survey was conducted in 2017, amongst the experts (high qualified managers) of the automotive and pharmaceutical industries, employed in transnational companies (TNC's). Considering 10 experts from each sector, who filled the questionnaire.

Automotive and Pharmaceutical Industry branches were considered for the purpose of study. Since these two industries are self-motivated and rely primarily on novel technologies as well as product and process innovations formed the basis of selection for this study. Their choice was supported by other specific characteristics of these industries. Also, both industries search for and employ qualified personnel. Furthermore, they are oriented toward ongoing improvement of competencies. On the other hand, they also differ in certain fundamental aspects. In the automotive sector, it is the entrepreneurship that determines its global reach, whereas in the pharmaceutical industry it is related by social and demographic changes. It is also important to note that despite an increase in efficiency in the

pharmaceutical industry, it is still lower than in automotive enterprises.

Study results for the automotive sector

The automotive industry is the highly consolidated sector, with the global overcapacity of about 30%. The market is rather saturated and demand is driven by product replacement. The Profit margin on new cars is relatively low, particularly in the low price/high volume segments of the market. The automotive industry is one of the most important worldwide drivers of growth and employment, as well as technological and managerial innovation.

The automotive industry is а highly competitive market with a widespread use of new technologies and innovations, and a high level of employment. It is not only the fastest growing sector, but also one of the largest employers in the Polish industry, directly responsible for 65% of all jobs in industrial enterprises. Between 120 and 150 thousand people work at factories producing cars, car parts and subassemblies.

Replies submitted by respondents from the automotive industry are characterized by similar evaluations of selected competencies (Table 1). This applies in particular to competencies related to entrepreneurial thinking, analytical skills and time management abilities. The greatest diversity was noted in the assessment of research skills. The finding is likely to be related to the fact that the value of such competencies for managerial staff in the industrial sector is underestimated.

Table 1. Assessment of competencies in the automotive sector

	Managerial competencies	Arithmetic mean	Standard deviation
1	Creativity	3.71	0.92
2	Entrepreneurial thinking	4.57	0.53
3	Problem solving	4.25	0.71
4	Conflict solving	4.25	0.71
5	Decision making	4.57	0.92
6	Analytical skills	4.13	0.35
7	Research skills	2.38	1.51
8	Efficiency orientation	4.50	0.53

Study results for the pharmaceutical sector

The pharmaceutical industry is one of the most rapidly growing industrial sectors both in Poland and across the world. It is characterized by a growing degree of automation and computerization. Polish manufacturers are increasingly oriented towards the markets in advanced drugs. The growth of the industry is chiefly determined by social and economic factors including ageing of the societies, increasing wealth, good economic climate and, last but not least, decisions made by officials. The latter factor grows in importance depending on the price of the drug. In the European Union countries, about 83% of the price of drugs is paid by institutions responsible for public health.

The pharmaceutical industry ranks among the most stable economic sectors. A growth in society's wealth is accompanied by an increasing demand for pharmaceutical products. As the value of the pharmaceutical market experiences stable growth, pharmaceutical companies need highly qualified personnel.

Replies submitted by experts from the pharmaceutical industry are similar with regard to the decision-making skill (Table 2). All respondents from the sector consider it to be very important for Industry 4.0 workers. Similarly to the automotive industry, the greatest variation was observed in the assessment of research skills.

Table	2.	Assessment	ofc	ompetend	ies in	the	pharmaceu	itical	sector

	Managerial competencies	Arithmetic mean	Standard deviation
1	Creativity	2.57	0.54
2	Entrepreneurial thinking	3.57	0.79
3	Problem solving	4.86	0.38
4	Conflict solving	4.71	0.49
5	Decision making	5.00	0.00
6	Analytical skills	4.14	0.90
7	Research skills	2.29	1.38
8	Efficiency orientation	4.43	0.53

Comparative Analysis Knowledge becomes a key determinant

potential of the development enterprises. Employees of with entrepreneurial thinking skills stand out because they tend to think creatively and take ownership of their jobs as well as performance. This is recognized by experts from the automotive sector. Experts (practitioners) attach a very high value to competencies related to decision-making (Fig. 1). Such thinking probably arises from the view that the ability to make optimal and effective decisions is the only way to increase efficiency and win a strategic advantage.

Interestingly, the competencies related to research skills were not valued very highly. Research competencies and skills are essential for the effective conduct and understanding of research and ultimately for evidence-based decisionmaking in business. The development of research competencies is particularly relevant for junior employees whose career is increasingly dependent on their research output.



Conclusion

The paper describes key managerial skills and modular learning techniques for the Industrial Revolution which is gaining importance and turning out to be a competitive platform in all market verticals. The development of new technologies triggers improvements in the quality of life, upskilling human brain which leads to further innovations and hidden grounds for the scope and the welfare of whole society. It also functions as the main driving force behind the contemporary global economy. Fourth Industrial Revolution encourages innovation in basic research methodologies, new solutions adopted and implemented in the economy, monitoring practical effects of such implementations and identification of the potential for new implementations. For those to be possible, employee support and improvement of their competencies are necessary which is through practicing and learning new skills thus sailing through a smooth path.

References

- Platform Industry 4.0; (2015).
- Kohl H., (2016). Holistic approach for human resource management in Industry 4.0, *Vol. 54*.
- http://www.businessdictionary. com/definition/managerial-skill. html
- Key_competencies_for_ Industry_4.0.pdf
- Knowledge Acquisition in Complex Systems, Proceedings of the 2016 International Conference on Economics and Management Innovations, part of Advances in Computer Science, vol. 57.
- 161205_KF_eng_POS_ Kompetenzentwicklung_fin.pdf
- https://www.careerfaqs.com. au/news/news-and-views/the-10-skills-you-ll-need-by-2020and-beyond
- https://www.slideshare.net/ AlaaKhamis/industry-40-andsmart-factory
- Morgan J., the Future of Work – Attract New Talent, Build Better Leaders, and Create a Competitive Organization
- George K., (2015). Industry 4.0 – How to navigate digitization of the manufacturing sector.
- A declarative approach to new product development in the automotive industry. Environmental Issues in Automotive Industry (2014).
- https://www.researchgate. net/publication/318164528_

Industry_40_framework_ for_management_and_ operations_a_review

- Metternich, J., Hummel, V., Learning Factory Morphology: Study on Form and Structure of an innovative learning approach in the manufacturing domain.
- Womack, J. P. (1990); Lean Thinking. Simon & Schuster, NY.
- Womack, J. P. (1990); *The machine that changed the world*. Rawson McMillan, NY.
- Wagner U., (2012). The Stateof-the-Art and Prospects of Learning Factories, Procedia CIRP, *3*:109-114
- Standley M. (2015), Industry 4.0
 A Discussion of Qualifications and Skills in the Factory of the Future: A German and American Perspective, Germany.
- Kowalski A. Kogut M. (2017). Building a database system for management of rail loading processes support. Hradec Economic Days, University of Hradec.
- Computer information systems and industrial management, CISIM 2013
- Technical Job Skills on http:// www.investopedia.com

EMPLOYEE ENGAGEMENT AND EMOTIONAL INTELLIGENCE: A CONCEPTUAL VIEW

Guneet Kaur Assistant Professor, Gitarattan International Business School

Abstract:

As per a recent study by Quantum Workplace, employee engagement has hit an eight year low which straight away means that one-third of the employees who turn up for work are not fully present mentally. One popular blog calls them the "working dead". It is extremely important to understand this vital sideline as it can be detrimental to the organization's success. Another article in the Fast Company estimated the value of employee disengagement to the US economy to be around \$370 a year. In a business scenario where inter-dependency is inherent, it is extremely important to communicate, cooperate and integrate processes in order to enhance competency. Emotional Intelligence is one phenomenon which has proven to benefit employees as well as managers to carry the right information, social cues and critical insights required to work as a team. EI increases one's awareness of ability to understand self as well as others. Misreading behavior and emotionally-charged interactions can lead to a weak organization which cannot flourish in today's business environment. EI training will improve crucial skills like decision-making, coping with stress and inter-personal skills. This would ultimately lead to increased employee engagement and better performance all around.

This paper endeavours to understand the conceptual connection between emotional intelligence and employee engagement and to focus on comprehending how emotional intelligence gives impetus to a much important management criteria employee engagement.

Keywords: Employee Engagement, Emotional Intelligence, Workplace Performance, Business Environment, etc.

Introduction

Emotional Intelligence as a construct affects the vast arena of managerial effectiveness as it has proven to be a potential strength for work and organizational performance (Boyatzis, 2009). The second construct, Employee Engagement is termed as the mental and physical involvement into the organizational processes which are valued from a leadership perspective as well as employee commitment to the organization.

Emotional intelligence evolved from works by theorists like Gardner (1983) and Williams and Sternberg (1988), who proposed broader approaches to intelligence. Salovey and Mayer (1990) were the first to coin the term "Emotional Intelligence" and included Gardner's intrapersonal and interpersonal components in the construct. Goleman (1998) propagated the need for emotional intelligence in the business horizon as an effective tool for leadership and group performance. EI has been identified as a key capability in building teams and synergizing their energy towards sustainability.

Emotional intelligence could definitely strengthen the current understanding of both emotions and intelligence (Sternberg 2001) and enhance our sense of functionality of human emotion and the breadth of human intelligence. During the 1980s, psychologists started accepting the idea of multiple intelligences along with an array of research on interaction between emotions and cognition. The topic drew worldwide attention from researchers by late 1990s because of this newly coined term and a new form of intelligence. By 2007 the wide diversity of those interested in EI came to be matched by the wide diversity in conceptions they employed. Some defined EI as a capability to reason with emotions, others correlated it with traits like achievement motivation, flexibility, happiness and self-regard. Still, some saw this random like the addition of such attribution to be complicated

and speculated if this abstract concept of emotional intelligence could be identified (Locke, 2005).

EI is considered to be a set of cognitive abilities (ability model), however, other dimensions combine capabilities along with a wide range of personality traits (mixed model). The most famous mixed model was proposed by Daniel Goleman (eg. 1995, 1998a) which includes 25 competencies segregated categories: into 5 self-awareness (emotional awareness, accurate self-assessment, self-confidence), self-regulation (self control, trustworthiness, conscientiousness, adaptability, innovation), motivation (achievement drive, commitment, initiative, optimism), empathy (understanding others, developing others, service orientation, leveraging diversity, political awareness) and social skills (influence, communication, conflict management, leadership, change catalyst, bond building, collaboration, team capabilities).

It leads to the conclusion that the four main aspects of EI: (a)appraisal and expression of emotions; (b) use of emotion to enhance cognitive processes and decision making (c) knowledge about emotions; and (d) management of emotions (George, 2000). The first aspect specifies the ability to exactly assess and express one's own emotions, knowing, and expressing others' emotions with empathy. The second dimension means the capability to use emotions to focus attention. The third implies the individual's knowledge of reasons and results of emotions, and how emotions progress over time. The fourth aspect encompasses the ability to manage and control emotions. This particular dimension showcases the individual's management of positive moods, to handle negative ones and to improve the management of other three ones. And also there is a strong linkage between these four dimensions.

A lot of research has been done on leadership and its impact because of EI. However, little has been done to know why some leaders have an inborn instinct for creativity while many don't. EI can influence the role of a leader in (a) encouraging a specific behaviour in leaders (b) facilitating leaders' behaviour to emotional and creative requirement (c) promoting a fruitful synergy between leaders and employees. This leads to free will of employees towards a commitment for creativity and enhance the human capital of the organization.

A previous model developed and validated by Rego and Fernandes, 2005 will be closely studied which consists of factor-structure on the basis of six dimensions (1) understanding one's emotions (2) self-control against criticism (3) self-encouragement (4) emotional self-control (5) empathy (6) understanding of other people's emotions. This research aims to show how these areas of a leader's EI explain the two dimensions of employee's creativity. It is supposed that higher the EI of employees, the higher their creative ideas.

Understanding one's emotions

A leader who is able to understand his emotions clearly is more likely to establish and maintain supportive relationships with his employees. His behaviour will be more realistic in fostering the employee's trust and happiness. They are the role models for their subordinates becoming the beacon of reliability and respect. Employees will feel free under them to put forward any unconventional ideas and present conflicting suggestions without any fear of resentment. This self-understanding makes them extra careful about evaluating employees' ideas and decreased biasness. They can resist their negative emotions which doesn't shatter the trust and respect.

Self-control against criticism

Effective leaders with a good amount of control against criticism don't take comments and suggestions of their employees as personal attacks and are always available for accepting feedback and original ideas. They do not feel threatened by the changes that creative ideas may imply, are more inclined to welcome employees' creative suggestions, maintain high order relations with employees. They are most suitable for constructive criticism and feedback. This valuable information gives a chance to employee improving their performance in without pressure for a particular outcome. Intrinsic motivation is also enhanced which is a stimulant for creativity as a motivated person tends to be (a) curious and learning oriented (b) cognitively flexible (c) willing to take risks and (d) persistent in facing obstacles, challenges and opportunities.

Self- encouragement

Creatively inclined employees need consistency when facing hurdles in their path and encourage themselves

to develop unconventional ideas, which are new as well as useful. Selfencouraged leaders are able to nourish these strengths in employees and would view adverse situations in a more positive light. They would be willing to take more risks without fear of failure. Not only their own they also elevate the spirit of their team members and inspire them with more zeal, excitement and positivity. This kind of attention broadens the cognitive elements of association, thus increasing the probability of creative activities.

Emotional self-control

Going through the process of problem solving involves collaboration and interaction with co-workers. There may be disagreement which may give rise to emotional debates and personal conflicts which are toxic to creativity. Resonant leaders with a good sense of self control are effectively able to manage these conflicts and support the identification of a common goal or direction. Such leaders avoid conflicts and negative emotional explosions. In return, they get respect and a supportive team providing overall emotional safety to the whole team. It has a direct impact on risk taking capability.

Empathy

It is defined as the sensitivity of an individual about other's feelings and concerns. Leaders high in this deeply understand the values, worries, fears and positive emotions of their employees, to recognize and respond to changes in emotional states and to provide support when needed. Communication is respectful and appreciation of ideas is more. It cultivates a culture of positive moods and emotions making them more confident about the future enhancing creative thought and innovation problem solving.

Understanding other people's emotions

Leaders who know people's emotions can exactly perceive when employees

are getting frustrated and recover from setbacks from and disappointments, pinpointing the causes of those negative emotions and helping employees to become aware of the problem and adopt a proactive approach of creatively solving it. These leaders can also identify positive moods in employees and then nourish their optimism to envision opportunities for improvement.

Gender

Some literature also suggests that women score higher on measures of EI than men, while others suggest no difference. Some say gender moderates the relationship between EI and dependent variables. Like Rego & Fernandes (2005) found that understanding of one's emotions explains the health level of female students but not of male.

Employee Engagement

The challenge of engaging employees fully into their work and specifically with limited resources in this VUCA environment has earned a serious interest by business organizations. The key reason for the importance gained by employee engagement is the strategic perspective that every individual worker is committed towards contributing to the organization's overall performance (Truss et al., 2014). Initiated by William Kahn in 1990, there is a serious plethora of research going on in this area. It can be defined as the extent or degree to which employees commit to something or someone within the professional arena, their hard work and the duration of their persistence. It can be classified as a positive emotion that relies on objective setting and its strategic alignment but totally based on the rapport between the manager and his subordinate. Previous findings have established its major impact on organizational factors like job satisfaction, organizational commitment and employee's motive to sustain in the organization (De Clercq, Bouckenooghe, Raja & Matsyborska,

2014). The rationale behind genuine involvement of employees is affected by employee's feelings, ideas and perception about his job. Strong empirical research confirms that employee engagement is a unique psychological state (Albercht, 2010; Markos & Sridevi, 2010; Truss et al., 2014).

The manager-subordinate relationship conveys a significant factor in overall organizational performance at each level. The climate and environment created by the management provide a conducive opportunity to the employees to nourish and display not only their talent but also their commitment and feelings towards their work and the organization as a whole. This scenario creates a psychologically happy and emotionally connected workforce. According to a study by Gallop in 2006, organizations with highest engagement scores averaged greater productivity by 18% if compared with lower scored companies.

Literature Review

Suchs studied if there is a correlation between frontline managers and supervisors' emotional intelligence and the degree of the engagement of their direct reports. Using non-experimental, quantitative analytics Pearson's Product-Moment Correlation was used to determine the potential relationship between the emotional intelligence of 24 frontline managers and supervisors and employee engagement of their direct reports. Though a moderate favourable correlation was found with a Pearson r value of 0.39267 at a p value of 0.0577, the hypothesis was denied. Two studies using concurrent validation were conducted. 51 managers and executives were interviewed. Six executives were found out to be outstanding performers and 6 as above average. Eleven of them were categorised as average. Using the same method, 14 middle-level managers were identified as outstanding and

14 as above average. No middle-level managers were identified as average. Then behavioural interviews were conducted on managers in term of efficiency orientation, attention to detail, initiative, flexibility, selfconfidence and planning. They were also coded for social competencies like empathy, persuasiveness; developing others, group management, networking, negotiating, communication oral and social objectivity. To measure cognitive skills, they were classified for concepts, systems thinking and pattern recognition. Inter-rater reliability among coders ranged from 0.70 to 0.96 with a mean of 0.89. The study resulted in identifying competencies significant for executives which were efficiency orientation, self-confidence, networking, systems thinking and pattern recognition. Near significant competencies identified for executives were initiative, oral communication persuasiveness. and And those competencies significant for middle managers were efficiency orientation and use of concepts, planning, empathy and group management. The second study involved 133 executives and managers out of which 22 executives and managers were classified as outstanding performers and 76 of them were classified as average performers. This study found some emotional intelligence competencies as significant: efficiency orientation, planning, attention to detail and flexibility. The social intelligence competencies identified were empathy, management, negotiating, group developing others, social objectivity, oral communication and persuasiveness. The cognitive intelligence competencies identified were systems thinking, the use of concepts, pattern recognition, quantitative analysis and written communications.

Brunetto et al. examined the impact of EI upon job satisfaction, well-being and engagement of police officers in explaining their orgn'l commitment and turnover intentions. 193 police officers in Australia were studied using partial least square modelling method. As expected, eI was expected to lead to job satisfaction and well-being with positive path relationships leading to employee engagement and orgn'l commitment thereby affecting turnover intentions.

Cartwright and Holmes (2006) have studied the challenge of regaining employee engagement and reducing cynicism by understanding the need for redressing the work-life balance and the organizational need to recognize the meaning and emotional aspects of work.

Carmeli (2003) studied the relationship between emotional intelligence and work attitudes, behaviour and outcomes among senior managers. Focusing on the importance of emotional intelligence for successful leadership impacting on the social skills of managers improving performance at personal as well as organizational levels. The study narrowed the scope by empirically testing the degree to which emotionally intelligent senior managers in public sector organizations develop high job satisfaction, career commitment, job involvement & commitment. effective diminish continuance commitment and workfamily conflict, withdrawal intentions and better job performance. EI has proven to be positively associated with job satisfaction (Smith et.al 1969, p 6) displaying more positive moods and feelings that generate higher levels of satisfaction and well-being.

Luthans (2002) studied employee engagement and manager self-efficacy and its implications for managerial effectiveness and development. They understood the theoretical concept of employee engagement first and then an empirical investigation was done to find out managers' psychological state of self-efficacy and its role in employee engagement. This study suggests that both employee engagement and manager self-efficacy are important antecedents that together very positively influence manager effectiveness.

Findings

After studying varying literature on Emotional Intelligence and Employee Engagement, this conceptual research concludes the factors reasonably identifying a connection between both in the following terms:

- 1. Employee engagement refers to high performance by the employee which is related to the self-regulation and selfawareness factor of Emotional Intelligence.
- 2. Employee engagement also means highly motivated employee which correlates to the self-awareness and motivation aspect of emotional intelligence.
- 3. Engagement manifests in empowered employees which can be if the social skills and selfawareness traits of an employee are high.
- 4. Where engagement is based on effective and strong managersubordinate relationship which is directly or indirectly related to social skills.
- 5. Engagement should focus on strategic alignment within the organization which can be achieved by self-regulation, empathy and motivation found in emotional intelligence.
- 6. Delivering results is required by an engaged employee which is connected to self-regulation aspect of emotional intelligence.

Conclusion

In conclusion, it is rightly justified to say that there are many aspects where employee engagement is related to emotional intelligence. Working in an organization requires a lot from the employee side as well as from the management side. The endeavour is to be effective and efficiently coordinate

all processes and deliver results. Hence, we can have a better understanding of engagement if there is emotional intelligence in the human mind and the spirit of unity flourishes together combining all important aspects of an organization.

References

•

- Suehs Derrick (2015).Emotional Intelligence and Employee **Engagement:** А Quantitative Study to Explore the Relationship between the Emotional Intelligence of Frontline Managers and Supervisors and the degree of Employee Engagement of their Direct Reports in a Tertiary Care Health Care Setting Education Doctoral. Paper 239.
- Υ, STT. Brunetto, Teo, Shacklock, K, & Farr-Wharton, R 2012, 'Emotional intelligence, well-being satisfaction, job explaining engagement: and organisational commitment and turnover intentions in policing. Management Human Resource Journal, vol. 22, no. 4, pp. 428-441.
- Cartwright, S. and Holmes, N. (2006). The Meaning of Work: The Challenge of Regaining Employee Engagement and Reducing Cynicism. *Human Resource Management Review*, 16,199-208.
- Abraham, Carmeli (2003). The relationship between emotional intelligence and work attitudes, behavior and outcomes: An examination among senior managers, *Journal of Managerial Psychology, Vol. 18 Issue: 8*, pp.788-813, https://doi.org /10.1108/02683940310511881
- Fred Luthans, Suzanne J. Peterson, (2002). Employee engagement and manager selfefficacy. Journal of Management Development, Vol. 21 Issue: 5, pp.376-387, https://doi.org/ 10.1108/02621710210426864

INTEGRATION OF SOFT SKILLS NEEDS OF INDUSTRY 4.0 THROUGH ACTIVE LEARNING IN MANAGEMENT CLASSROOMS

Sanjay Kehar Professor, Stratford University

Abstract:

The industry scenario has changed at a rapid pace and is still changing. It's a whole transition from the first industrial revolution in England to the fourth taking its roots from Germany, popularly termed as the industry 4.0. To keep pace with these rapid changes, the workforce too needs to change their skills and competencies at the same pace, but this process is slow and lagging behind. There is an imperative need today to imbibe the changing scenario within the nascent mindset of our forthcoming generations of management graduates. There is an urgent need to integrate the skills needed by the workforce of industry 4.0 through active learning in the management classrooms. This would help the student managers to be corporate ready and take up the challenges thrust upon them by the changing industrial and corporate environment. The change in the industrial climate is forcing us to move towards green products which are safer for consumption by the human population and also for its disposal after use so that the environment is taken care of and to meet the concept of achieving sustainable development goals for the industries, globally.

It is critical for student manager to acquire new set of skills, not only in the areas of science and technology but also soft skills like creativity, leadership empathy towards the co-workers, team building and others, these capabilities termed as soft skills would contribute in a big way towards personal and professional growth from the perspective of industry 4.0. The student manager today has to lay emphasis on social skills as it is all about building and sustaining relationships with stakeholders.

This is all about overall development of student manager and making them employable as well as sustaining their place in organizations, by imbibing the principle of continuous improvement in skills and abilities, moreover to make continuous learning a habit.

Keywords: Industry 4.0, Sustainable Development, Management Education, Soft Skills, Environment, Green Products, Change Management, Industrial Revolution, etc.

Introduction

The only thing constant is change. We have to change ourselves continuously daily with our experiences and learning from each interaction we have with people in our work and personal environment. The ability to utilize interpersonal skills is essential in the workplace and personal lives. Interpersonal skills often referred to as soft skills, include communication, listening, team problem solving, crosscultural relations and customer service (Dubrin, 2004). Several studies have been conducted to provide credence for the importance of interpersonal skills needed in business and industry (Murnane, 1996, Maes, Weldy & Icenogel, 1997; Argenti, & Forman, 1998; Cameron & Whetten, 2002, http://www.mba.com, http://www. westga.edu/~bquest). From these

studies, soft skills emerged as the top skill business and industry look for in job candidates, especially in the fast changing industrial world and moving towards the fourth and the fifth industrial revolution, moreover with the emergence of the trans-national organizations taking a leap forward in each continent of the world. China and India might approach saturation limit in the coming 10 years, so the next destination for the global spread of organizations is African continent, which is still more or less a virgin land with rich reserves of natural resources. The population there has begun to enhance their education and skills in anticipation of welcoming global organizations to set up their manufacturing and distribution base in the continent. Soft skills are hence emerging as the biggest challenge

globally for the student managers of today to get international placements and give a leap forward to the profits of the organizations they would work for. For example, data from a survey conducted by the National Association of Colleges and Employers, the Job Outlook 2000, ranked verbal communication [4.61], teamwork [4.61] and interpersonal [4.54] as the top three soft skills required.

These finding can also be used to support feedback from business and industry, which continue to suggest dissatisfaction with the lack of academic preparedness by some recent graduates and/or employees (http://www.pathfinder-one.com, Mackenzie, 2004, Alsop, 2004, http:// www.economist.com). This assessment provides management instructors with data that can be used to modify the curricula and teaching techniques considered necessary to prepare future business leader with skills necessary for the 21st century workplace. An important stakeholder to consider while incorporating this data into programs and/or courses of study is the population being served, students and/ or future business leaders. Especially, if the stakeholder has prior experiences and/or currently employed in business and industry. The voice of the customer is a source of knowledge concerning performance of the production and service system (Foster, 2001).

Today it's all about the transformation of passive learning to active learning in the management classrooms. This concept has evolved over the ages and now making learning more practical and fun oriented so that the concepts of management become permanent in the minds of the student managers and they understand the need and importance of changing continuously in their skills and competencies. The principal of Kaizen in TQM is applicable to all of us in the continuous development of our skills and competencies.

What is Active Learning?

Learning is considered an active activity, rather than one that is passive. For those not familiar with the term 'passive', Cambridge Dictionary defines it as "not acting to influence or change a situation; allowing other people to be in control". Being 'active', on the other hand, is being busy with a particular activity, actively trying to engage with it. Throughout business school, students should aim to be active learners in order to process, retain and apply the information presented to them. It's easy to fall into the trap of passive learning, but with the right knowledge, you can ensure you become as active as possible during your studies and maximize the learning experience. Whether you're a new student or close to finishing your degree, consider the below to learn

how you can better become an active learner.

Active vs. Passive Learning

If a student reads, listens or observes in a passive manner, it can result in information transfer. However, a simple transfer without judgment will not lead to effective learning as all information will be given equal weight. An active learner will engage with the material, conceptualizing what it means at the time of acquisition. A passive learner may retain some of the information, but without engaging with it, will struggle to both retain and apply in a practical sense. As such, business school students should aim to be active learners - processing and questioning the information when discussed. The more that you actively engage with the content at the time of learning, the better you will be able to recall and apply in the future. Better you are ready to take on the fourth industrial revolution scenario with a bang and with full confidence and assuring yourself for a good placement.

Preparing for an Active Study Session

The thought of preparing before learning may seem redundant to some students, but it has great value for active learners. Before watching a lecture or presentation, undertaking research or reading new material, you should read the subject guide first and identify the core issues. Regardless of the mode of delivery, a student's first step should be to distil the information into 'background', 'core' and 'supplementary'. Background information provides a foundation for more detailed discussion and will often contextualize the core issues. The core issues are those that must be mastered in order to have a basic level of competency in the subject or in practical scenarios at your workplace and are identified in the student materials for each subject. Lastly, supplementary materials give substance and detail to

the core issues in the industry as of today's scenario.

Listening to a Presentation or Lecture

When listening to a lecture, presentation or audiobook, the first step should be to take legible notes that highlight the core issues discussed and linking them with today's industry scenario. It's important not to transcribe the presentation, but instead, write down the major points that you are dissecting. If you don't understand a particular word or concept, make a note of this too. Note taking reinforces active learning and helps learners stay focused and engaged during the presentation. The difference between active and passive learning, in this case, is listening versus hearing. According to 'Skills You Need', "That is fully concentrating on what is being said rather than just passively 'hearing' the message of the speaker." Make an extra effort to engage with what the presenter is discussing, and asking questions in case of any clarifications or doubts and later pursue the different thoughts that came to mind. Sharing the thoughts with your instructor and fellow students in class or your specific teams.

Actively Reading and Comprehending New Materials

Reading learning materials is slightly more complex, as different techniques will work for different students. That being said, there are some general tips that will promote active reading for the vast majority of students. This involves two parts - research and reading. As discussed above, active learners should identify the core issues before they begin their learning. This is very applicable for reading, and should be expanded on by skimming the chapter titles and headings, and scanning the article to identify references to the core issues. Then, active readers should read the material one paragraph or sub-topic at a time, allowing time to critically process the information. Readers

ABS International Journal of Management

should underline any words that are not understood, check the meaning of these words, and re-read any sections that you feel were unclear or were perhaps read passively. Finally, you should note down what is stated about the core issues, which will ultimately help you in information retention.

Analyze and Critique the Information

In business school, a tertiary level critical analysis is required, so of it's important to consider this while you are learning. This involves two steps - analysis and critique. When analyzing the information, identify any omissions, questionable conclusions, assumptions made, or any preconceived ideas of the author/presenter. Then, form critical thought to identify or explore the strengths and weaknesses of the information, compare the material with other sources, and form an opinion. One means of testing your level of comprehension is to try and paraphrase the information using simple English and explain what you've learned to someone else. This step will test whether the required level of comprehension has been met, and what still needs to be worked on in an active manner. It's all about learning and application of knowledge at your workplace.

What do You Think?

Overall, effective studying involves identifying the core requirements, distilling information, understanding the information, making notes, and forming personal opinions on the topic. This is the essence of active learning, and those considered active learners are proficient in all steps.

Paradigm Shift towards the Fourth Industrial Revolution

The Fourth Industrial Revolution, toward which we are facing as a society, is still in its infancy but growing exponentially. Advances in technology are disrupting almost every industry and in almost every country. No longer do natural or political borders significantly reduce the acceleration of change.

Today, we are taking our first steps into the Fourth Industrial Revolution, created by the fusion of technologies that overlap physical, biological, and digital ecosystems. Known to some as Industry 4.0, these possibilities have been defined as "the next phase in the digitization of the manufacturing sector, driven by four disruptions: the astonishing rise in data volumes, computational power, and connectivity; the emergence of analytics and business-intelligence capabilities; new forms of human-machine interaction such as touch interfaces and augmented-reality systems; and improvements in transferring digital instructions to the physical world, such as advanced robotics and 3-D printing" (Baur & Wee, 2015). Such systems of automation enable intelligence to monitor the physical world, replicate it virtually, and make decisions about the process moving forward. In essence, machines now have the ability to think, problem solve, and make critical decisions. In this era, the notion of big data and data analytics will drive decision-making.

To prepare learners for success during 3. the fourth, or even fifth, industrial revolution the notion of education has to change at scale. If all of the change we are seeing has taught us one major lesson it is that schools must prepare kids to do anything, not something. Having current and future generations go through the motions and "do" school just won't cut it. Just because it worked for us as adults, does not mean it works or even serves, well for our learners. The transition to the Fourth Industrial Revolution does not spell doom and gloom for society as we know it. The idea here is to be proactive, not reactive, and to understand where opportunities lie for growth and improvement in education systems across the globe.

Top Ten Soft Skills That Employer Would Be Looking for the Fourth Industrial Revolution

1. Complex Problem Solving: The process of details of a problem to reach a solution. As the industrial scenario is fast changing its imperative to have this skill in case of understanding complex situations in business and solving them appropriately.

2.

- Critical Thinking: Making reasoned judgments that are logical and well-thought out, of the various business situations faced bv organizations in this changing and turbulent environment. It is a way of thinking in which you don't simply accept all arguments and conclusions you are exposed to but rather have an attitude questioning involving such arguments and conclusions. It is thinking out of the box as no one else can. It is all about applying your mind and thinking capability about thinking solutions towards complex business issues and coming up with some brilliant outcomes in the interest of your organization. It's all about being more competitive and earning more profits.
- Creativity: Mental characteristic that allows a person to think outside the framework of his mind, which results in innovative different approaches to or particular business issues. Creativity today is in all business areas such as human resource, marketing, finance, operations sustaining competitive and edge over competition as in the fourth industrial revolution the competition is evolving very fast, and we have to keep our organization always ahead by creating new opportunities out of nowhere and creating opportunities towards earning more profits and enhancing the brand equity.

- 4. Management Skills: Having the capacity to run a business. It's being able to make the right choices while managing the overall performance of the company. Management skills have evolved a great deal in the changing business scenario of today, as we have to create and sustain the market position of our organization, the managers need to sharpen and upgrade their skills every day, by learning from their mistakes and creating more opportunities from ideas which have clicked. It's a continuous process of enhancing skills as a manager.
- Coordination: The unification, 5. integration, synchronization of the efforts of group members from various departments and specializations so as to provide unity of action in the pursuit of common goals. It is a hidden force which binds all the other functions of management. Coordination is needed in all the important management functions such as planning, organizing, leading and controlling.
- Emotional 6. Intelligence: The ability to recognize your emotions, and emotions of the members of your teams to understand what they're telling you, and realize how your emotions affect people around you. It also involves your perception of others: when you understand how they feel, this allows you to manage relationships more effectively. This is all about stepping in the others shoes and thinking in a way they might think about a business or a personal situation.
- 7. Judgement and Decision-Making: The thought process of selecting a logical choice from the available options. For effective decision making, a person must

be able to forecast the outcome of each option as well and based on all these items, determine which option is the best for that particular situation. This skill is very crucial for the success of any business enterprise as a manager you might think on any complex business oriented tasks every minute as the changing business scenario in the fourth phase of industrialization would pose great challenges, as well as opportunities. We as a manager need to judge the recent trends and then take the final decision on the complex problems.

- 8. Customer Focus: Business today is customer centric. The customer dictates whether we would be in business for long or no. In this era of rapid change and customer having much more option and choice than ever before, we can label customer as the queen. As the queen needs pampering and attention at all times so the business of today needs to analyze the changing needs, wants, and demands of the customer and fulfil them at a profit. Having a customer focus includes maintaining usually a great customer service both pre and post sales. So the manager in this era should have lots of patience and customer centric approach if they need continuous flow of profits for their organization.
- Negotiation: Method by which 9. people settle differences. It is a process by which compromise or agreement is reached while avoiding argument and dispute, both within and outside the organization. Negotiation is emerging skill attribute an organizations have as to negotiate and save costs for the organization and sustain competitive edge.

10. Cognitive Flexibility: The brain's ability to transition from thinking about one concept to another. The quicker you are able to switch or "shift" you're thinking from one dimension to another, the greater your level of cognitive flexibility. It's all about coming out a situation fast once the task is complete and focus on the other tasks at hand. It needs quick response by keeping your wits around you. In this era of industrialization its all about keeping an open mind towards the various business options and choosing the best options.

Conclusion

Corporate recruiters want candidates with soft skills who add value with their soft skills, and also have the ability to make a difference in the workplace. Business employees need to communicate effectively, get along well with their co-workers, embrace teamwork, take initiative, have high work ethic, and portray professionalism in the 10 most critical skills needed in the era of the fourth industrial revolution, along with the other basis soft skills as working in teams, communication skills, effective presentation skills, work ethics and others. The management schools today imbibe these skills in student managers through active learning and participation. Keep regular checks on their learning's and reiterate the importance and benefits of these skills in today's industrial scenario, as this is the era of competition and the theory of Darwin- Survival of the fittest upholds its significance.

References

AACSB International – the Association to Advance Collegiate Schools and business. Biz Schools at Risk. 2002, May-June, Retrieved August 4, 2004 from the World Wide Web at http: //www. aacsb.edu/ publications/... /may-june02/ p48-55 Biz Schools at Risk.pdf

- Allen, M. (2000). Teaching nontraditional students. *American Psychological Society Observer, 13 (7),* 16-23.
- Alsop, R. (2004). Top Schools Struggle To Teach Soft Skills. Retrieved August 14, 2004 from the World Wide Web at http://www.careerjournal.com/ specialreports/bschool03/
- Argenti, Paul A. & Forman, J. (1998). "Should business schools teach Aristotle?" Strategy & Business. Retrieved August 14, 2004 from the World Wide Web at http://www.strategy-business. com/briefs/98312
- Aslanian, C. (1996). Students over twenty-Four Becoming the Norm at U.S. Colleges. College Board News. May-June, 1.
- Bean, J. C. (1996). The professor's guide to integrating writing, critical thinking, and active learning in the classroom. San Francisco: Jossey-Bass Publishers.

- Business School Graduates "Well Prepared For Work" http:// www.pathfinder-one.com
- Cameron, K. & Whetten, D. (2002). *Developing management skills*. Upper Saddle River: Pearson Prentice Hall.
- Cooper, J., & Robinson, P. (1998). Small-group instruction in science, mathematics, engineering and technology (SMET) disciplines: A status report and an agenda for the future. Retrieved August 21, 2004 from the World Wide Web at http://www.wcer.wisc. edu/nise/cl1/CL/resource/ smallgrp.htm.
- Dover, K. (2001, September 27). Adult Learner Stories - Successful non-traditional Students. Retrieved August 14, 2004 from the World Wide Web at http://www. http://adulted. about.com/od/studentprofiles/ Dubrin, A. (2004). *Human Relations: Interpersonal, Job-Oriented Skills.* Eighth Edition. Pearson Prentice Hall.

- Foster, T. (2001). The Voice of the Customer. Managing Quality an Integrative Approach. Upper Saddle River: Prentice Hall. P. 127-128.
- Giezkowski, W. (1992). *The Influx* of Older Students Can recitalize Teaching. Chronicle of Higher Education: B3B4. LeBreton, Gil. Letter to Herman Crow.
- Hicks, T. (2002, December 16).
 "Advising the first-generation college student: Effective retention tools for colleges and universities". *The Mentor: An Academic Advising Journal, 5(1).*
- Job Outlook 2000, National Association of Colleges and Employers, http://www. naceweb.org/FormsLogin. asp?/pubs/JobOutlook/ joboutlook2000/report.html
- Lucas, T. (1997). Promoting Secondary School Transitions for Immigrant Adolescents. ERIC Digest.

INDUSTRY 4.0: CHANGING INFORMATION AND COMMUNICATION TECHNOLOGY IN DIGITAL ERA AND ROLE OF LIBRARY AND INFORMATION PROFESSIONALS

Hemant Kumar Sahu Scientific Officer-C, Inter-University Centre for Astronomy and Astrophysics

Abstract:

The paper gives a brief overview of Industry 4.0, the fourth industrial revolution [Industry Revolution: first -Mechanization through water and steam power/Engine (1784), second-Electrical Evolution, (1870), the third-Electronic and ICT (1970), and fourth-Cyber Physical System (2005)] to the mass cheaper and faster production, higher quality. It helps to early detection of faults on assembly lines using the internet, robotics, ICT, big data, cloud computing with the adoption of automation and digitization to enhance it with smart industry a fully autonomous system in changing ICT era and role of library professional to support Industry-4.0 information needs. The article describes the basics of Industry 4.0, which is the latest industrial revolution denoting a current trend of automation, digitization, data exchange in manufacturing technologies, i.e., communication of proper information to proper users at an appropriate time. It is commonly referred to as the fourth industrial revolution. It includes cyber-physical systems, the Internet, cloud computing, big data, Library and Information and Science (LISc) as well as cognitive computing. The article discusses the roles of various technologies and Library and Library and Information Science (LISc) professionals to support above new industrial revolution and reveals impacts, possibilities, needs as well as adaption. Industry 4.0 is in the initial stage, yet to reach to the masses and more useful in its industrial products, where everything is correlated to our day to day lives. It is already being used and applied in the various industrial device multinational sectors to increases its value, quality, quantity, accuracy, early detection, etc. Hence, more prominent multi-national companies/industries have no option but to adopt tricks, techniques, and technology of Industry 4.0. The main aim of the study is to find out the availability, applicability, various possibilities to use information services using Industry 4.0 technologies in the different sectors like the Internet of Things (IoT), Internet of services (IoS) brings, together technology, devices, and applications that enable personalized industry-specific devices and care programmes. The study is limited to Industry 4.0, information services and the role of library and information science professional and other related subjects. The descriptive method has been used for the study and also supported by studies of the other contributors in the field. Mobile devices that can track chronic and lifestyle associated industries. The findings are also supported with tables, graphs, figure to denote fact and data. The LISc professional should provide Library 4.0 based information services to make use of makerspace, Google Glass, context-aware technology, internet of things, more personalized services, big data, cloud computing, ICT and augmented reality as a symbiosis web, reading, writing, and executing simultaneously, web OS, middleware, and a massive network allowing intelligence interaction just like a human brain. It can be concluded that in the fast-changing, technologies, techniques, tricks as well as high completion it is need of the time to keep pace with digitization and other ICT innovations at different levels to have Industry 4.0.

Keywords: Industry 4.0, Industrial Information Centre And Library, Library And Information Science Professionals, Cloud Computing, Big Data, Production, Cyber-Physical Systems, Internet, Cloud Computing, Big Data, Artificial Intelligence (AI), Information And Library Science, Cognitive Computing, etc.

Introduction

The world has moved from industrial revolution/age to information age and we are witnessing the beginning of transformation knowledge production and its dissemination in the society. We are passing through a constant expeditiously evolving world, where new trends, technologies and techniques in science are developing and obsolete on daily basis. This has impacted not only on many different areas viz. conventional industrial developments but also in our every walk of life, where real world and virtual reality continue to merge as well as allied to this modern information and communication technologies (ICTs), which are being combined with traditional industrial processes. Consequently, it is changing the various production areas leading to fourth generation industrial revolution and traditional companies have now realized that customers are unwilling to pay large amounts for incremental quality improvements. These impacts are important steps to cope with increasing highly demands for customized products as well as services to improve resources efficiently and effectively. Industry 4.0, is a name given to current trend of complete automation and data exchange in the manufacturing technology, the fourth industrial revolution [Industry Revolution: first -Mechanization through water and steam power/Engine (1784), second-Electrical Evolution, (1870), the thirdElectronic and ICT (1970), and fourth-Cyber Physical System (2005)] to the mass cheaper and faster production, higher quality. Consequently, modern smart companies have no option but to adapt the Industry 4.0, where industries are introducing modern ICTs with intelligence devices. It helps to early detection of faults on assembly lines using the internet, robotics, ICT, big data, cloud computing (CC), artificial intelligence (AI) with the adoption of automation and digitization to enhance it with smart industry a fully autonomous system in changing ICT era (26).

Industrial Revolution

The industry is the production of goods or related services within an economy. The major source of revenue of a group or company is the indicator of its relevant industry. When a large group has multiple sources of revenue generation, it is considered to be working in different industries. Manufacturing industry became a key sector of production and labour in many countries during the Industrial Revolution, upsetting previous mercantile and feudal economies. This came through many successive rapid advances in technology, such as the production of agricultural goods, textile, steel glass, mining, coal, invention of machine tools, etc. "The Industrial Revolution marks a major turning point in history; almost every aspect of our daily life was influenced in some way mainly standard of living of the general mass population, which began to increase consistently to meaningfully improvements until the late 19th and 20th centuries. However, the Industrial Revolution was the transition to new manufacturing processes in the period from about 1760 to sometime between 1820 and 1840. This transition included going from hand production methods to machines, new chemical manufacturing and iron production processes, the increasing use of steam power, the

development of machine tools and the rise of the factory system. Textiles were the dominant industry of the Industrial Revolution in terms of employment, value of output and capital invested. The textile industry was also the first to use modern production methods. The Industrial Revolution began in Great Britain, and many of the technological innovations were of British origin. By the mid-18th century, Britain was the world's leading commercial nation, controlling a global trading empire with colonies in North America and the Caribbean, and with some political influence on the Indian subcontinent, through the activities of the East India Company. The development of trade and the rise of business were major causes of the Industrial Revolution".

Need of Study

Firstly, industry 4.0 is in the initial stage, yet to be known and reach to the masses and more useful in its industrial products, where everything is correlated to our day to day lives. It is already being used and applied in the various industrial devices in multinational sectors to increases its value, quality, quantity, accuracy, early detection, optimized the processes, add value, etc. in the entire supply chain, almost in real time. Hence, more prominent multinational companies/industries have no option but to adapt tricks, techniques, and technology of Industry 4.0. In this process very huge data/ information is required. The data/information collection, storage and communication plays an important role in process of Industry 4.0, where Information Centres and Libraries (ICLs) and LISc professionals play a key role in collation, organisation, collection, storage and communication of above resources and services for use by public as well as private industries and individuals to support Industry 4.0. Hence, the present study is need of time.

Secondly, "Industry 4.0 embraces a

number of automation, data exchange and manufacturing technologies that are changing the landscape of how we make products and expanding the boundaries of innovative, new manufacturing opportunities. It is modelled on a Value Chain Organisation that merges real and virtual worlds using the Internet of Things (IoT) and the Internet of Services (IoS). It provides factories with real-time intelligence allowing them to efficiently produce products of higher quality that can be completely customized. Five years ago the industrial device connectivity market was largely insignificant but it is now expected to grow at a 38 percent over the next five years by adopting the capabilities of the IoT (Lobo. 2018). There is no systematic scientific descriptive study on the above interdisciplinary subject especially in developing countries like India, hence the present study."

Thirdly, today, in an Industry 4.0 factory, machines are connected as a collaborative community. Such evolution requires the utilization of advance- prediction tools, so that data can be systematically processed into information to explain uncertainties, and thereby make more "informed" decisions. Cyber-Physical System-based manufacturing and service innovations are two inevitable trends and challenges for manufacturing industries. Lee et al. (2018) in a paper addresses the trends of manufacturing service transformation in big data environment, as well as the readiness of smart predictive informatics tools to manage big data, thereby achieving transparency and productivity (20-22).

Fourthly, today our lives are full of competitions and industries are no exception to it. To remain competitive, various industrial device manufacturers, as well as, consumers need the ability to innovate and respond quickly to the changing industrial systems, ways and means in which the industries can now be treated the best. It can be assumed that in very near future innovations and agility (quick move) of I- 4.0 is clearly going to be vital, part and parcel for industrial devices manufactures, the best care worldwide through above innovations. It includes numerous devices, hardware, software, techniques and technologies. It is a fact that in the present fast growing industrial society there are various recent developments in its various sectors resulted in higher availability, affordability, technologies, techniques and tricks. Consequently, any delay, missing link in the process of adaption and/or any stage in the product release and delivery will lead/result to press the various challenges, opportunities/ loss of market. Industry 4.0, is now-a-days buzzword and internationally accepted concept leveraging (way of applying) individualizing and virtualization across the international domain and the latest a new arrival in the industrial revolution but very fast growing industry, which involves from manufacturers/ producers to consumers/users via service providers. (1, 4, 9-11, 21, 28).

Fifthly, now I- 4.0 has already arrived and ready to change not only trade and business but also social as well as personal and organisational factors. In I- 4.0 man and comprehensive machine interact with each other as real virtual world of production. Automation/digitization are continued their development. Human workforce is slowly/gradually being replaced by machines and software in almost all the areas of industries. The healthcare/ medical industries are going to shift from manufacturing/ production industry to a service industry by adopting Health 4.0 with new roles and responsibilities beyond traditional manufacturing products (9-11).

Sixthly, customization of productspecific devices will require high quality, high mix production that particularly lends itself to the greater automation and higher levels of intelligence provided by the I-4.0 model. Physical objects passing through production processes will incorporate their own embedded Software and Computing Power (CPS) to interact with more intelligent machines, Cyber-Physical Production Systems (CPPS) on the plant floor. The products (CPS) will be the service consumers and the machines (CPPS) the service providers. Intelligent exchanges of information within this completely networked environment will enable production to be self-managing and self-optimizing. Consequently, it is essential and mandatory as well as compulsion for industries to move from physical traditional production system to modern I- 4.0. Hence, it is essential to have present descriptive study before adapting I- 4.0 (3, 5-8, 12, 14, 20).

Seventhly, in general sense industry is a place to produce goods at the mass level and/or related services within a budgetary provision. The major source of revenue of any country comes from these groups of industries as the growth of industry determines pace of economic development of any nation. Healthcare/medical industry is same as other industries in regard to value chain to cope with the changing demands highly sophisticated of higher quality. To have a competitive advantages effectively and efficiently, it is essential to have a strong industrial information system (IIS) due to information revolution, scattering and seepage to provide pinpointed information to proper users at proper time and also to support I- 4.0. It is more useful in healthcare than other industrial sectors and its products. It is a new concept and in the initial stage of development and yet to be reached to the masses for its uses and applications. These digital devices are emerging and facilitating the mass quality based manufacture/ production. Hence, the present study (3-5, 9-11, 24, 26, 28).

Eighthly, the I-4.0 device manufacturers

are experiencing with the increasing updation, opportunities i.e. pricing, quality, quantity, profit margin and speed as well as more challenges too i.e. 4Ms (Money-(prices and benefits), (quality materials and quantity), (infrastructure, hardware, Machines software, speed, etc.), as well as manpower (workforce), 4Ws and 2Hs (i.e. what, why, where, when and how and how much) of Industry 4.0. Hence, there is need of the time to adapt I- 4.0 cope up with the modern fast changing needs of the society as well as also to overcome above competitive challenges as new emerging technology both at manufacturing and distribution levels. It is also essential here to define, clarify, overview its availability, affordability, and adoptability of I-4.0 along with applications (9-11, 28).

Ninthly, recent advances in manufacturing have proved wavs and means for the systematic and scientific development of CPS, in form of I-4.0 with pinpointed and proper communication of information and exchange of data. It is also well known fact that utilizing various components of I- 4.0 in very near future will not only improve the quality of products but also perform more efficiently, and effectively, collaboratively, realistically, to transform it into next generation including industrial sectors, which are also changing very fast in their ways and means for their value based industrial models (1, 3, 13-17, 26, 28).

Tenthly, industrial system as whole is going to be highly benefited from the implementation of I- 4.0, device, as well as concept. The CPS has also been arrived and also been adopted in various industrial sectors mainly to multinational industries, however yet to be introduced and reach to the masses at grassroot level. Few steps have been initiated in this direction but miles to go. Hence, it is essential to have knowledge about I- 4.0 and to carry out the present study.

ABS International Journal of Management

Eleventhly, industries especially pharmaceutical industries/factories are working on smart pharmaceutical models to enable, and support link between the traditional physical and modern virtual world. The present study is going to cover above aspects of health 4.0 (14, 21).

Twelvethly, the Big Data, CPS, Robot, AI, CC, ICT, LISc tools are being used and tested in various industrial sectors, systems and services to cater the needs of individualized/personalized products and services. Now above technologies have been arrived based automation, digitization, on and virtualization. Consequently, it will lead to individual as well as cross country/ organizational healthcare services/ systems, highly dependents on real time data/ information. This development is going simultaneously responding aforesaid 5Ws + 2Hs and 7Cs, as new healthcare model will be under factory budget (1-7, 15-17, 20-26).

Objectives:

The main objectives of the study are:

- To give an overview and to find out the availability, applicability, affordability, scalability various possibilities to use information services using Industry 4.0 technologies in the different sectors like the Internet of Things (IoT), Internet of Services (IoS), CC, AI, ICT, BB, CPS, biosensor, LISc, etc. bring together technology, devices, and applications that enable personalized industry-specific devices and care programmes to make these devices more effective, efficient, affordable, useful and that enable personalized specific devices and care programmes.
 - To reveal the fundamentals to find out the various new opportunities and more challenges arise out of i.e. Industry 4.0 in term of increasing competitiveness,

accelerating innovations, bringing new products to the market more quickly and also suggest solutions.

To present higher, standard quality, enough quantity (i.e. maximize the products), cheaper (i.e. minimum cast/resources) and faster industrial products using Industry 4.0 above tools and devices for more accuracy and expeditious fault findings/ diagnosis and solutions/ treatments.

Scope and Limitations:

This study is descriptive in nature and limited to industry as well as mass production. The study is also limited to Industry 4.0, information services and the role of library and information science professional, Information centres and libraries (ICLs) and other related subjects.

Industry 4.0:

The term "Industry 4.0", shortened to I-4.0 or simply I-4, originates from a project in the high-tech strategy of the German government (Marr, Bernard)., which promotes the computerization of manufacturing but was revived in 2011 at the Hannover Fair In October 2012 the Working Group on Industry 4.0 presented a set of Industry 4.0 implementation recommendations to the German Federal Government. The Industry 4.0 workgroup members are recognized as the founding fathers and driving force behind Industry 4.0. On 8 April 2013 at the Hannover Fair, the final report of the Working Group Industry 4.0 was presented. This working group was headed by Siegfried Dais (Robert Bosch GmbH) and Henning Kagermann (German Academy of Science and Engineering). As Industry 4.0 principles have been applied by companies they have sometimes been re-branded, for example the aerospace parts manufacturer Meggitt PLC has branded its own Industry 4.0 research project M4." (14).

Table 1: Summary of IndustrialRevolution

Gener- ation	Year	Revolution
1st	(1784)	Mechanization through water and steam power/ Engine
2nd	(1870)	Electrical Evolution,
3rd	(1970)	Electronic and ICT, and
4th	(2005)	Cyber Physical System, i.e., Industry 4.0)



Figure 1: Industry 4.0

(Source -https://www.forbes.com/sites/ bernardmarr/2018/09/02/what-isindustry-4-0-heres-a-super-easy-explanationfor-anyone/)

Table 1 reveals a summary of industrial revolution from 1st generation to generation whereas Figure-1 4th summarizes various components of Industry 4.0, a transformation i.e. fueled by nine fundamental technological advancements, mainly based on Internet of Things (IoT), Cyber Physical System (CPS), Big Data (BD), Cloud Computing (CC), Collaboration Systems, Artificial Intelligence (AI), Robotics, ICT, which has been described as following as component of Industry 4.0. The Industry 4.0 (I-4.0) is commonly referred to as fourth generation of industrial revolution is already re-defining how we manufacture 'things' today. It sets out the concepts for how companies can achieve faster innovation and increase efficiencies across the value chain. But, in the world of medical device manufacturing, which is burdened with regulatory compliance and is still largely dependent on paper-based processes, what does Industry 4.0 really mean?

How will it help manufacturers meet demand for increasingly sophisticated, higher quality and rigorously regulated medical devices, and beyond those highly personalized custom devices? New trends in how medical devices are made and how they deliver value are fundamentally changing, devices are moving more and more into the world of the Internet of Things, utilizing highly sophisticated chipsets, processing capabilities and sensors. They are mobile and connected like never before, delivering solutions in innovative new areas such as patientspecific devices and 'Lab on a Chip' electronic diagnostic testing. What does the future of manufacturing medical devices, efficiently and profitably, look large like? Or, should we say manufacturing the 'Internet of Medical Things' (IoMT) (4, 10, 24, 28).

Role of the Industrial Information Centres and Library and LISc Professionals: Information is power and necessary keep the decision makers abreast of the technical data/ information available, accessible worldwide. Generally, large volume of industrial information data/ information is lost due to lack suitable industrial information of system/ICL. However, an effective flow of information inside/outside industry is an important component to minimize the resources (4Ms= money, manpower, machine and materials) and avoid duplications. Many private businesses and public organizations, including hospitals, museums, research laboratories, law firms, and many government departments, industries and agencies, maintain their libraries/ ICLs for the use of their employees in doing specialized research related to their work. Industrial ICLs/ libraries belong to this special library category and a large extent an outgrowth of the efforts on the part of businessmen.

Role of the Industrial Information Centres and Library: The library

or information center (ICL) is also known as store house an important place for various information/data resource, which contributes to the accomplishment of objectives by the organization. The primary aims and objectives of any industrial ICLs are identified closely with those of the organization so that the ICLs can meet the real pinpointed, accurate, appropriate information needs of its clientele on real time basis to provide timely, information to the organization to succeed in its technical and business operations at different levels for decision making (25). The role of the ICLs in any field is changing and developing and has touched every aspect of its functions and services viz. form, format, acquisition /collection, classification, cataloging, reference, SDI/CAS, inter library loan, document delivery circulation as well as training and research support. The impact for change must come from the library and information science (LISc) professional rather than the employer, whose view of change may be rather narrow. Increasingly the industrial ICLs/ library's role will be close involvement in the organization's business activities, identifying information needs and giving the advice to meet those needs even to support I-4.0. This will include exploitation of external resources, acquisition of special collections and an active role in the development of the "corporate memory" and integrated information systems. In the present study the role of the ICLs/ library and LISc professional within its organization is reviewed, and its place within the information network.

Role of the Industrial LISc Professionals: "The world today boast of a knowledge based society. This quest for knowledge knows no bounds and limits and is never satisfied. According to Issa (2003), there has come to be in today's world, a full realization of the fact that information remains the prime commodity of the

present age. It has continued since the dawn of civilization to the modern age. Indeed, the availability and free flow of information bring about knowledge, which has great potentials to provide impetus for the social, cultural, spiritual, political, economic, scientific and technological advancement of a nation (1)." The growth of industries determines the pace of economic development of a nation. Industrial libraries play an important role in providing relevant information for the development of industries. To keep pace with the advancements in technology and management, the information needs in the industry are also becoming more and more sophisticated. To cope up with this emerging need industrial ICLs/ libraries are also equipped with recent information and advanced technology. Industrial library professionals act as an important channel for information transmission with a variety of information services to support industrial information management. Hence job satisfaction of industrial library professionals is very important for increasing the performance level of libraries, which in turn enhances the productivity of industries (25). Hence, to cope up the industrial sophisticated developments LISc professionals should have skill and knowledge of recent advanced ICTs to support I-4.0. They can also support in planning, organization, staffing, coordination, reporting and budgeting I-4.0.

Impact of ICT on Industry: The I-4.0 revolution considers important factors from technological, industrial as well as social point of view. The ICT is the applications of computer and telecommunications equipment to stores, retrieves, transmitted and manipulate data, often in the context of a business or other enterprises. The terms are commonly used as a synonym for computers and computer network, but it also encompasses other information distribution technologies

ABS International Journal of Management

such as television and telephones. industries associated Several are with information technology, such computer hardware, software, as electronics, semiconductors, internet, telecom equipment, e-commerce, and computer services. The responsibilities of those working in the field include administrations, network software development and installations, and the planning and management of an organization technology life cycle, by which hardware and software are maintained, upgraded, and replace. Librarians and support staff working in the industry and corporate libraries provide a variety of services for people of all ages. Special libraries provide specialized information services trade organizations, research to laboratories, businesses, government agencies, art museums, hospitals, newspapers, publishers, and others.

Major Historical Developments:

The earliest recorded use of the term "Industrial Revolution" seems to have been in a letter from 6 July 1799 written by French envoy Louis-Guillaume Otto, announcing that France had entered the race to industrialize. In his 1976 book. Keywords: A Vocabulary of Culture and Society, Raymond Williams states in the entry for "Industry": "The idea of a new social order based on major industrial change was clear in Southey and Owen, between 1811 and 1818, and was implicit as early as Blake in the early 1790s and Wordsworth at the turn of the [19th] century." The term Industrial Revolution applied to technological change was becoming more common by the late 1830s, as in Jérôme-Adolphe Blanqui's description in 1837 of la révolution industrielle. Friedrich Engels in The Condition of the Working Class in England in 1844 spoke of "an industrial revolution, a revolution which at the same time changed the whole of civil society". However, although Engels wrote in the 1840s, his book was not translated into English until the late 1800s, and his expression

did not enter everyday language until then. Credit for popularizing the term may be given to Arnold Toynbee, whose 1881 lectures gave a detailed account of the term. Some historians, such as John Clapham and Nicholas Crafts, have argued that the economic and social changes occurred gradually and the term revolution is a misnomer. This is still a subject of debate among some historians.

Research Method

The descriptive method has been used for the study and also supported by studies of the other contributors in the field.

Components of Industry 4.0.: Herman, et al (2015) suggested to use Industry 4.0 components and proposed four components viz. CPS, IoT, IoS, and Smart Factories (4-11, 15-21, 24, 26, 28).

Modern Sensors: In I-4.0 the fourth industrial revolution transformation, sensors, machines, part and ICTs are inter connected popularly known as CPS can interact with each other as well as can collect, analyse the data to forecast failure, auto configuration and adaptability the changes for quicker, more flexible, and better efficient process tor qualitative and quantitative productions at reasonable and/or reduced costs.

The Computer Networking: Horizontal and Vertical Integration: It is an undisputed fact that even today's fourth generation industrial revolution the most of ICTs are yet to be connected fully. Consequently, causing a big gap among raw material, engineering plant production process, business, services, supply as well as function, capabilities and use due to lack of complete automation/integration and access of data from any machine, anytime (24x7), anywhere.

Cyber Physical Systems (CPS) and

Cyber Security: The I-4.0 revolution is not only accounts for technological and industrial revolution but also covers social aspects and popularly known as CPS. The CPS, is "A transformative technology for managing interconnected systems between its physical assets and computational capacities (20)". According to Lee, CPS is, "Integrations of computation, and physical processes embodied computers, networks, monitor and controlled physical processes usually with feedback loops, where physical processes affects computation and visà-vis." In such an environment, CPS can be further developed for managing information/data to reach the goal of intelligent, resilient as well as self adoptable machines by integrating CPS with production, logistics, and services in the current industrial processes. Consequently, today it is possible to transfer factories into an Industry 4.0/ factory with significant economical potentials (2, 20-31).

Internet of Things (IoT) and Internet of Services (IoS): The IoT is a new paradigm especially related to smart factory aspect, which includes Radio Frequency Identification (RFID), sensor, actuators, mobiles, etc. with provision of unique address system interact/cooperate with each other to achieve the common goals. The IoT brings together physical objects with embedded electronics, software, sensors and network connectivity that means they are able to collect and exchange data with each other. These devices will have more and more for product tracking, inter and intra factory interaction, automated control with real time basis to follow steps, machines, for end production. In the manufacturing environment this becomes the Industrial Inter to achieve the net of Things (IIoT) physical objects with embedded and added machine learning, machine-to-machine communication and integration of existing automation technologies. This
not only increases productivity but also identifies any inefficiency, increases quality consistency, and reduces waste both in terms of better utilization of machines and reduced scrap. Alongside manufacturing making existing processes more efficient, Health 4.0 offers new opportunities in terms of increasing competitiveness; accelerating innovation; bringing new products to market more quickly; adding capability to easily customize individual orders, and enabling faster response to customer demands (1-9, 14-21, 28-31). Autonomous Robot: Now robots are widely used in almost all the sectors of our life and industries are no exception to it for handling complex processes with greater utility and safety. Robotic technology is being used in almost all the scientific and industrial sectors now-a-days. Other areas of innovation in I- 4.0 include roboticassisted production; early fault finding/ diagnosis, next generation of advanced equipments and other industrial products, and biometric stamps that act as a 'lab on a chip' (LOC) alternative to reagents and chemicals. A LOC is an automated, miniaturized laboratory system that can be used inside and outside of a hospital for a wide range of patient measurements such as blood gases, glucose and cholesterol levels. This technology enables fast diagnostics with only small amounts of samples and materials required (3, 10-15, 19-21, 26-28).

Big Data: Big data term is now used to manage the vast data worldwide. industry is full of data ranging from start of product to arrival and use of it. Big data analytics consists of 7Cs in the integrated Health 4.0/ Industry 4.0 and cyber physical systems environment.

7Cs: Connection-sensor networks, Computer, Cyber-model and Memory, Communication, Community/ customization- personalization and value, Cloud computing, and Cognitive computing. Hence, the role of big data in Health 4.0 adoption of Health 4.0 is much more than others.

Cloud Computing (CC): Now CC is being used in majority of advanced data storage and retrieval system due to various reasons and I-4.0 is not exception to it. It is supposed to facilitate business process with virtual access despite geographical distances (cloud). There is huge amount of data/ information generated in I-4.0., which harbours a lot of data/information that can, amongst other things, be used for quality assurance measures. The CC, which can provide 'anytime, anywhere' and has ability and storage for the huge amounts of data generated. Its service are used to store the voluminous data hence, are also used in Health 4.0 and allows healthcare industries/companies to scale their IT resources much more easily and cost-effectively. However, it also entails potential data security issues and need to be addressed before adopting. The main obstacles cited included high investment requirements and companies' low level of automation (10, 19-21).

Cognitive Computing:

Modern ICT and LISc Tools: Information is power and its needs in our every walk of life is well known globally so as to Health 4.0 industry. The ICTs are now an integral part of the our lives/environment. The so-called IoT with its intelligent sensors makes life easier in many areas. Examples include tracking parcel deliveries and wearable (portable computer systems), which provide assistance in everyday Health/Hospital Information life. Services/Systems (HIS) play an important role to support Health 4.0 and to cope up with changing needs of multinational health/medicine industries. On the other hand biomedical/health Information centres and libraries (ICLs) are known as store knowledge/information house of resources with huge collection of information/ data resources with its pinpointed and prompt services to the proper users at proper time. Now-a-

days integration of HIS constitutes a real and growing needs; especially large multinational healthcare/medical industries using multiple hardware and software even to support Health 4.0. Last three decades it is experienced that information integration has attracted much attention by using ICTs. However, now health industries are adopting and/or on the verge of adaptation its fourth generation revolution i.e. Health 4.0. The automation/ digitalisation of industry affect the entire value chain. From individual products to digitising workflows in companies and connecting companies with clients and service providers via the IoT- Health 4.0/Industry 4.0 makes completely new manufacturing processes possible and requires new and specific business models (6, 18-21).

Artificial Intelligence (AI): The AI is playing a significant role in the processes of Health 4.0 for the man machine interaction. The so-called IoT with its intelligent sensors makes life easier in many areas. Examples include tracking parcel, location deliveries of raw materials, parts, and wearable (portable computer systems), which provide assistance in everyday life. A change is also taking place in the industry (9, 15, 19-21).

Results:

Discussion and Interpretation: The main objectives of the study is to give an overview to achieve higher quality, cheaper and faster production of Industry 4.0 devices viz. communication devices mainly internet, smart Mobile devices, CC, AI, CPS, Big Data, IoT, IoS, IoP, cognitive computing, ICT, LISc tools .The findings are also supported with tables, figures to denote fact and figures with various variables based on literature review. The major findings are:

• It has been observed based on review of literature that efforts have been made to adopt recent development of I- 4.0 devices, however it is restricted to developed countries and multinational industries and yet to be reach to developing and underdeveloped countries as well as small scale industries.

- The overview of the literature also indicates that various major opportunities viz applications of industrial device manufacturing, value based care, information, the IIS, LISc tools, etc. are not up to the mark and needs advertisements at global level.
- The study also reveals that there is lack of suitable standard IIS to cope with the I-4.0 and also to organize, and establish more authenticate accurate, IIS. The existing IIS is not up to the mark to make the industrial devices more effective, efficient, innovative and useful. Hence, it is affecting adoption of I-4.0.
- The other studies have indicated that the uses of I- 4.0 is increasing but with a very slow speed hence investment and management, international and cross industrial collaboration, is also not there.
 - "Although strict regulations mean that changes may happen more slowly in the medical markets compared with some other industries, I-4.0 offers medical device manufacturers such incredible benefits that it will happen. It provides a pathway for efficient production of increasingly complex products while capturing and analysing data flows to assist with regulatory compliance and process improvement (18)". Regulatory compliance does not guarantee high quality but the end to end traceability and complete visibility of production processes within the I-4.0 model means compliance can be less painful while product quality, and so customer satisfaction, is increased indicated by Lobo (24).

- Findings point out that since I- 4.0 is in its initial stage the concept of data ownership and security (agreements, MOU, data encryption, etc. are considered only very few cases). Some steps have been considered but much more to be done related to legal issues, IPR, specification, agreement.
- Furthermore, it reveals that provision of maintenance, monitoring, of various processes are there but differ from factory to factory in various aspects of I-4.0.
- The study also concludes that there is no uniformity in standardization, and employment procedure while adopting I-4.0.

Suggestions:

•

- The concept of I- 4.0 is new and very initial stage of development need to be promoted through appropriate policies and programmes. Hence, it is suggested to adopt and use I-4.0 and its various technologies and techniques, it is essential and suggested to clear skill and knowledge about it before adopting and implementing (18). The ICLs should provide Library 4.0 based information services support I-4.0. Hence it is suggested to use of makerspace, Google Glass, context aware technology, internet of things, personalized more services, big data, cloud computing, and augmented reality as a symbiosis web, reading, writing, and executing simultaneously, web OS, middleware, and a massive web allowing intelligence interaction just like a human brain.
- To keep pace with automation, digitization and technological innovations, LISc professional must have to reshape his/her role from production, service deliver to business execution to

support his/her organisation.

Privacy and data security is paramount, hence needs to be protected for quality of services. The basic concept of security and safety as well as up-datedness, resilience, have to be accepted as a mandatory variable.

Conclusion

It can be concluded that I-4.0 is not only going to address challenges faced globally viz. population based problems, resources of energy and efficiency, production, etc to the mass cheaper and faster production, higher It helps to early detection quality. of faults on assembly lines using the internet, (IoT, IoS), robotics, ICT, big data, cloud computing (CC), AI, data exchange in manufacturing technologies, communication of proper information/data to proper users at an appropriate time, with the adoption of automation and digitization to enhance it with smart industry in changing ICT era and role of LISc professional to support Industry-4.0 information needs, as well as cognitive computing. It also reveals that in the fast-changing, technologies, techniques, tricks as well as high completion it is need of the time to keep pace with digitization and other ICT innovations at different levels to have Industry 4.0. The LISc professionals, as well as, ICLs have to play a vital role to support I-4.0 and there is need to train LISc professional with new skills, knowledge with more global vision as this is an open new field.

References

- Abdulsalami L. T., Okezie Q. I. and Agbo A. D. (2013). The role of the library in the promotion of knowledge societies in Nigeria. *Pelagic Research Library; Advance in Applied Science Research.* 4(1), 59-70.
- Angela Abell, (1986), The Role of the Industrial Library. Management Research News, 9(2), 1-4, https://doi.org/10.1108/

eb027876

- Bagheri B, Yang S, Kao HA, Lee J, (2015). Cyber-Physical Systems Architecture for Selfaware Machines in Industry 4.0 Environment - *IEAC-Papers OnLine*, 2015.
- Bernard (2018). What is Industry 4.0? Here's A Super Easy Explanation For Anyone. https://www.forbes.com/sites/ bernardmarr/2018/09/02/ what-is-industry-4-0-heres-asuper-easy-explanation-foranyone/#57f04c709788
- Bonner, Mike, (2018).What is
 Industry 4.0 and What Does it
 Mean for My Manufacturing?
 Retrieved 2018-09-24.
- Collinns FS and Varnus S, (2015). A New Initiative on Precision of Medicine. New Eng J Med. 372, 793-795.
- Flidler SA, Thuemmler Chritoph and Gavras A, eds. (2015). Requirements for Engineering for Digital Health. Springer, Switzerland.
- Gwenda Sippings, Gwenda (2018). How to manage a successful corporate library a guide for manager. http:// www.emeraldgrouppublishing. com/librarians/management/ viewpoints/corporate.htm on Friday October 12th, 2018.
- Heiner Lasi, Hans-Georg Kemper, Peter Fettke, Thomas Feld, Michael Hoffmann, Industry 4.0 (2016). Business & Information Systems Engineering, 4 (6), 239-24.
- Herman M. et al. (2015). Design Principles for Industry 4.0 Scenarios. Technical University of Dortmund, Faculty of Engineering, Auty Endowment Chair Supply Net Order Management.
- Hermann, Pentek, Otto, (2016).
 Design Principles for Industry 4.0 Scenarios, accessed on 4 May 2016.

- Hosseini Partner Morris, (2015). Digital Transformation in Healthcare Space.
- http://kalyan-city.blogspot. com/2011/03/what-is-industrymeaning-classification.html.
- https://en.wikipedia.org/wiki/ Industry_4.0 retrieved on 22-11-2018.
- https://www.bartleby.com/ essay/Whats-the-Information-Technology-Industry-FKZ38GSTC.
- https://www.edu.gov.mb.ca/ k12/cur/socstud/frame_found_ sr2/blms/4-1.pdf
- https://www.forbes.com/sites/ bernardmarr/2018/09/02/ what-is-industry-4-0-heres-asuper-easy-explanation-foranyone/#37c57e469788
- Industry 4.0 in the Medical Technology and Pharmaceutical Industries, 2018.
- Jazdi N, (2014). Cyber Physical Systems in the context of Industry 4.0 Automation, Quality and Testing, Robotics, *IEEE* – ieeexplore.ieee.org
- Lee J, Bagheri B, Kao HA, (2015). A Cyber-Physical Systems Architecture for Industry 4.0-based Manufacturing Systems, *Manufacturing Letters, 3*, 18-23.
- Lee EA, (2008). Cyber Physical System; Design Challenges. In: IEEE.
- Lee J, Kao HA, Yang S, (2014). Service Innovation and Smart Analytics for Industry 4.0 and Big Data Environment. *Procedia Cirp, 16 (93)*, 6-8.
- Lipikson Herman Augusto, (2017). Industry 4.0 and its impact on society.
- Lobo Francisco Almada, (2018). Industry 4.0; Manufacturing and the Future of Medical Things. *Asian Hospital and Healthcare Management*, HiMSS Asia Pacific-2018 Conference November Accessed ob 5-8.

- Md. Ashikuzzaman, (2018). Industrial Library: An overview. http://www.lisbdnet.com/ industrial-library-an-overview/
- Moraes Eduardo Cardoso and Lepikson, Herman Augusto, (2017). Industry 4.0 and its impacts on society. In: Proceedings of the International Conference on Industrial Engineering and Operations Management Bogota, Colombia. October 25-26. http:// ieomsociety.org/bogota2017/ papers/116.pdf
- Plosker, George, R., (2018). The Information Industry Revolution: Implications for Librarians. 27(6), Nov-Dec 2003. http://www. infotoday.com/online/nov03/ plosker.shtml
- Pott Ariane, (2016). Industry 4.0
 in the Medical Technology and
 Pharmaceutical Industry Sectors.
 Dosswier Article, October 2016.
 BIOPRO Borden-Worttemberg,
 GmbH.
- Thuemmler Chritoph and Bai Chunyue, eds., (2017). Health 4.0; Applications of Industry 4.0 Design Principles and Future Asthama Management. *Health 4.0; How Virtualization* and Big Data and Revolutionizing *Healthcare*, Chapter-2, 23-37. DOI 10.1007/978-3-319-47617-92.
- Vijayaraghavan A, Sobel W, Fox A, Dornfeld D, Warndorf P (2008). Improving machine tool interoperability using standardized interface protocols: MTConnect. *Proceedings of the* 2008 international symposium on flexible automation (ISFA), Atlanta, GA, USA.
- Wang T, Yu J, Siegel D, Lee J, (2008). A similarity-based prognostics approach for remaining useful life estimation of engineered systems. *International conference on prognostics and health management* (PHM). , 1–6.

THE ROLE OF INDUSTRY 4.0 OF SMALL AND MEDIUM ENTERPRISES IN UTTAR PRADESH

Kalpana Pundir Research Scholar, Mangalayatan University

Abstract:

The fourth industrial digital revolution in industrial production emerging from the comprehensive networking and computerization of all areas of production. Equipment, machinery, materials and products apprehend environmental conditions and processing status via sensors communicate with one another via embedded software and thus optimize the production process in an unprecedented manner. From an industrialization point of view, the state has the highest number of micro, medium and small enterprise (MSMEs) in India. The small and medium scale sector has been assigned an important role in the industrial economy of the country on account of some of its inherent advantages like low capital intensity, high employment generation capacity, GDP and export earnings, regionally balanced development and even distribution of wealth and income. The fourth industrial revolution has begun and offers attractive opportunities for industrial companies. However, the industrial internet is not an end in itself. It is closely tried to clear economic objectives and holds the potential for clear differentiation in global competition. This study focuses on the fourth industrial revolution which helps to develop small and medium enterprises in Uttar Pradesh.

Keywords: Small & Medium, Enterprises, Uttar Pradesh, Industry 4.0, Development, Employment Generation, etc.

Introduction

Uttar Pradesh is the state located in northern India. It is the most popular state in India and is the fourth largest Indian state by area. It is the second largest Indian state by economy. Uttar Pradesh is not only one of the largest states in India; it is also one of the most important regions in India from an economic point of view. Agriculture has been one of the biggest sources of revenue for the residents of Uttar Pradesh. The service sector and industrial sector is the second largest sector of U.P's economy like- Ghaziabad, Kanpur, Allahabad, Moradabad, Bareilly, Aligarh, Sonbhadra and Varanasi are known for their industrial importance in the state. Here in the industrial sector a large pool of skilled, semi- skilled and unskilled labour employed. The population is also looked upon as a largest consumer base in the country with around 200 million peoples. Its contribution to gross state domestic product (GSDP) expended at a compound annual growth rate (CAGR) of 11.29% to 3.76 trillion (US\$ 213.44 billion) where as the net state domestic product (NSDP) expended at a (CAGR) of 11.24% to

12.22 trillion (US\$ 189.62 billion). The state has witnessed a high rate of infrastructure growth in a recent past. There has been a considerable rise in the number of industrial cluster/ hubs and public private partnership (PPP) projects in the infrastructure domain. The state has become a hub for the semi conductor industry with the several major players having their offices and research and development (R&D) center in Noida. The small scale Industries constitute an important segment of the state economy in term of employment generation, source of foreign exchange earnings and exports the favourable government policies coupled with availability of large pool of human resources make the state one of the best location for sitting up SSI's units within the state.

Objectives of the Study

- 1. To understand the importance of employment generation and development of industrial economy in the context of Uttar Pradesh.
- To review the challenges faced by MSME (Micro, Small &Medium Enterprise) in adopting industry 4.0 technologies.

Research Methodology:

The present study is exploratory in nature and relies extensively on secondary data used. The secondary data were collected from various published annual reports of the ministry of MSME,s and annual reports of Uttar Pradesh MSME,s development schemes, and Journals, magazines, old research papers literatures and websites. The scope of this study is confined only to Industry 4.0 of Small and Medium Enterprises in Uttar Pradesh.



Figure 1: Development of Industry 4.0

What is Industry 4.0?

Industry 4.0 it is a new method of production that is creating a fourth industrial revolution. Go a bit backward, about 250 years ago under the 18th century James Watt's made new improvements to the steam engine since then first industrial revolution has started.

Since the beginning of the assembly line in 1913, Henry Ford's started the second industrial revolution, which resulted in a huge increase in production of the time they were discontinued in 1927. Soon after this every manufacturing industry started using the assembly line to increase efficiency and productivity as well as cut cost, the days of mass production had arrived.

As a result of the third industrial revolution in 1970, the computers started at the bottom of the factory giving the rise to the automated assembly line for mechanical work. Computers have changed humans rapidly; another major inflection point in productivity, seemingly today every manufacturing functions that can be automated. Has been highly automated factories turn out the complex consumer electronics products that we take for granted at prices we can afford.

This is not end, right now our vision is for industry 4.0 fourth industrial revolutions for "cyber physical production system" in which sensorsmart laden, production, smart manufacturing functions, machine modular system, process, smart embedded device start working together wirelessly either directly or IoT the internet of things (Internet cloud), AI artificial intelligence, machine learning, robotics. This is the industrial 4.0 vision for the fourth industrial revolution.

The fourth industrial revolution or industry 4.0 is upon us and replacing the inefficiencies of traditional automation with automatically coordinated automation using the internet things together with artificial intelligence and another technology.

The concept of cyber physical system was first defined by Dr. James Truchard, Based on the virtual representation of a manufacturing process in the CEO Software of National Equipment in 2006. On January 2012, the German Federal and education and research ministry established the working group of comprehensive strategic recommendation to implement industry 4.0 on the word created by the group. The industry 4.0 project is now part of the German government's official high-tech strategy, who is actively working in with private sector partners discussed the industry 4.0 at the April's Hanover fair, which is why we are suddenly hearing about it. Industry 4.0 is more than a sight in comparison to a reality at present. But this potentially one with far - reaching consequences, and the concept is evolving because people think of the innovative ways of implementing it, though some things are all ready clear-

- 1) The sensors will be involved in every stage of the manufacturing process in which the raw data, as well as the necessary response by the control system, will be provided.
- 2) Industrial; control system will be distributed so far and widely flexible will enable stain process control well.
- RF technologies 3) will tie together the distributed control modules in wireless mesh networks, enabling systems to be reconfigured on the fly in a way that is not possible with hardwired centralized control system. 4) Smart connected embedded devices will be everywhere, and designing and programming them will become that much more challenging not to mention interesting and rewarding.
 - Programmable logic will become

5)

increasingly important seems it will be impossible to anticipate all the environment changes to which control systems will need to dynamically respond.

The prospect of Industry 4.0 in today's digital India:

- Internet of things (IoT) To enable real-time machine to machine interaction.
- Big data analytics To facilitate real time decision making.
- Cyber security To ensure data security and secured communication.
- Cloud computing For ensuring computational, storage and network capabilities.
- Additive manufacturing To help reduce lead time and improve customization.
- Robotics To provide for automation of manufacturing process and help improve efficiency.
 - M2M To facilitate communication of machine and software.

The Impact of Industry 4.0 on micro, small & medium Enterprise's of Uttar Pradesh

India is the sixth largest manufacturing country; manufacturing sector becomes an integral part of the country's long term vision, as the government focus on a campaign to be carried out in India (make in India). The aim of the government is to increase the share of manufacturing in GDP from existing 17% to 25% by 2022. A number of initiatives and policy reforms such as implementation of the GST (Goods and Service Tax) and easing FDI policy (Foreign Direct Investment) has been taken by the government at present, India is missing its Global partners for adoption of industry 4.0. An important part of the Indian manufacturing sector is still in the electrification phase, which works independently from each other with the use of technology limited, the integration of physical system on cyber platforms, the basic premise of 4.0 is still act its infancy. A part from this, due to high cost constraints, there is very little access to Micro, Small & medium enterprise segment technology. It is said that India's moving ahead with progress that India is seeing to very important and competent 4.0 technologies IoT and big data is developing the right platform on the basic of our smart factories. As per the Report of the Working Group on Micro, Small and Medium Enterprises (MSMEs) Growth for 12th Five Year Plan (2012-2017), the sector contributes 45% of the manufacturing output and 40% of total exports of the country. Currently, the Sector consists of 36 million units, and as of this year, provides employment to over 80 million persons. More than 6000 products ranging from traditional to high-tech items are being manufactured by the MSMEs in the country. Two things that make the MSMEs crucial to 'Make in India' are the labor to capital ratio in MSMEs. More employment generation potential and the overall growth in the sector is much higher than in the large industries, and secondly, help in industrialization of rural & backward areas, thereby, reducing regional imbalances, assuring more equitable distribution of national income and wealth. Thus, growth in the MSMEs can directly lead to better equity and inclusion in the Indian Economy.

Make in UP – Leveraging the success of Make in India. The 'Make in India' program of the Government of India has been able to draw the global attention by driving investments, fostering innovation, developing skills, protecting Intellectual Property and building best-in-class manufacturing infrastructure. As a strategy to usher industrial growth in Uttar Pradesh and capitalise on the positive global sentiments generated by the progress of Make in India campaign, the UP will embrace this landmark initiative and strive to implement it in letter and spirit by launching a comprehensive program of 'Make in UP'. In lines with the 'Make in India' program, the 'Make in UP' program will adopt a strategy that inspires, empowers and enables in equal measure in making UP a manufacturing hub of India. Towards achieving this goal, Government of UP will implement the following:

- 1. Creation of a dedicated Make in Uttar Pradesh Department.
- 2. The Make in UP Department will identify and create industry and sector specific State Investment and Manufacturing Zones (SIMZ) with an aim to spur manufacturing, generate employment, raise living standards and meet national & international trends of sustained growth.
- 3. To boost the entire manufacturing value chain in the identified zones, the Government will ensure necessary timely interventions in consultation with all stakeholders in addition to the fiscal and non-fiscal measures mentioned in this policy.

Vision of the Policy

The vision of the Industrial Investment & Employment Promotion Policy of Uttar Pradesh. Nationally and internationally competitive investment department of MSME, generating employment and inclusive balanced economic growth of the state.

The Government of UP will strive to achieve the vision through the following strategies -

- Enabling infrastructure Developing new infrastructure and upgrading existing ones
- Employment generation Creating opportunities
- Fiscal incentives Attracting investments
- Ease of doing business -Creating a conducive industrial environment

- Make in UP Leveraging the success of Make in India
- Skilled Manpower Reaping the benefits of demographic dividend
- Innovation Promoting Start-Ups
- Micro, Small & Medium Enterprises – Ensuring all round industrial growth
- Sector approach Benefitting from sectors of strength
 - Sustainable & Inclusive growth – Ensuring clean & balanced distribution of economic growth
- Investment Promotion and marketing 'Brand Uttar Pradesh'
- Domestic & Global Environment – Gaining from external factors and being responsive to them

Mission

.

- Increase capital investments in the state.
- Provide quality infrastructure for industries to flourish.
 - Promote ease of doing business to create business friendly environment.
- Generate maximum direct and indirect employment and selfemployment opportunities for both skilled and unskilled workforce.
 - Skill the workforce of the state to ensure employability and empowerment.
- Provide pro-active support to micro, small and medium enterprises.
- Promote the spirit of innovation and incentivize entrepreneurship among youth.
- Ensure balanced, sustainable and inclusive economic development.
- Ensure effective implementation of the policy.

Uttar Pradesh Government Schemes

1. Prime Minister Employment Generation Programme (Pradhanmantri Rozgar Srijan Karyakram), ASIDE, Industrial

4.

5.

Infrastructure Upgradation Scheme, Quality Improvement, 2. Scheme for establishing Pollution Prevention Plants, registration of Intellectual Property Rights and Geographical Indicators, Credit Guarantee, Marketing Assistance, Skill Development, Management Development, Bar Coding, etc. and in the area of classified industries, such as textile, hosiery, leather footwear, food processing, etc. maximum benefits of the Central government schemes will be channelized to the entrepreneurs in the State. Through this, it will also be ensured that MSME sector of Uttar Pradesh gains a competitive edge in exports. A special cell will be created in the Directorate of Industries for the implementation of the 3. Central government schemes, under which an officer in-charge will be appointed for every scheme. In this cell, as and when required services of external experts would be obtained for financial management, project

management and monitoring.

- To augment the effectiveness marketing system of the handicrafts sector, direct of purchasing schemes under the arrangement of exhibition of manufactured goods will be implemented by corporation and private sector. Skills of handicraft artisans will be improved and new designs would be made available to them. Under the State scheme, based on proper valuation of handicraft products, their selling price would be determined and they would be sold on the basis of commission. Under this scheme, provision will be made for artisans to provide advance amount proportionate to their goods produced so that they do not face working capital scarcity. Modernisation and technological development of micro, small and medium enterprises would be encouraged. In this regard, schemes will be implemented to provide loans at lower interest rates to entrepreneurs.
- State level financial institutions will be revived for financing Micro, Small and Medium Enterprises (MSMEs), through which implementation of the Central government and the State government schemes will be ensured.
- Efforts would be made to obliterate regional imbalance in the State and to provide more employment opportunities to young men and women of less developed regions. (Eastern Poorvanchal U.P.), Madhyanchal (Central U.P.) and Bundelkhand regions will be given special concessions, such as Capital Investment Scheme for small enterprises, Interest Subsidy Scheme and other Capital Subsidy Schemes. Implementation of such schemes would lead to eradication of regional imbalance in the State, increase in the productivity of these regions and availability of employment opportunities for the workforce.

Constraints MSME, s focus. Mass customization and X-To-Order environment. Economic, Ecological, Legal and Social Sustainability. Obsolete technology.	SMART MANUFACTURIG Design of highly adaptable manufacturing system for MSME.s	SMART LOGISTICS Design of smart and lean supply chain for MSME, s	ORGANIZATION & MANAGEMENTS MODELS FOR SMART MSME, s Business models for smart MSME, s	Promoter IoT: - Internet of Things Advance technology sensors, CNC/ NC machines, Digitalization. Automation, Mechatronics (PLC, SCADA) Design
Obsolete technology. Lack of Managerial competence. Inadequate market linkage. Lack of infrastructure. Inadequate finance.	system for MSME,s Intelligent MSME, s manufacturing through ICT and CPS Automation and man, machine interaction for MSME s	Intelligent MSME,s logistics through ICT and CPS Smart and automated logistics system and vehicle for	MSME, S Organization and network models for smart MSME,s Implementation strategies to become MSME,s 4.0. industry 4.0	Mechatronics (PLC, SCADA), Design Software. Cyber- Physical system. Big Data Smart Manufacturing Process.

Figure 2: MSME 4.0-Industry 4.0 for Micro Small and Medium Enterprises

Constraint of MSMEs

Inadequate Infrastructure: The sector must be availed infrastructural technology and skilled manpower in tune with the global trends. Most of the MSMEs are either in decades old industrial estates, or functioning in the urban areas or have come up in scattered fashion in rural areas where the state of infrastructure like power, water, roads, etc are in poor condition or unavailable. The scale of manufacturing must also be focused upon.

Obsolete Technology: Except a few industries, the MSME sector is characterized by low and outdated technical practices, making it a handicap when compared with other emerging markets technological levels. Also the sustainability gets jeopardized with an increased competition in the domestic market from imports. The government should focus on technical imports from technologically developed countries so that our products should get an indirect association with an established label which is already recognized in the export market.

Finance: Banks, trade promotion organizations and other support institutions can take measures to help overcome such problems. Also due to high risk perception among the banks about the sector, there is a problem of access to adequate and timely credit at a reasonable cost. The transition costs for the loan appraisal are also high for the sector.

Limited Access to Global Markets: The inward performance of foreign companies has been highly successful in India but the outward performance of the Indian companies is not a success story as a result of globalization. Same is the case with Indian MSME sector, which is a serious threat to the sector. Reasons cited can be technological obsolescence, scale of operations, lack of promotional marketing, inability to access institutional credit and intense competition are some of the shortcomings of the sector while addressing the global market.

Branding and Marketing: The branding and marketing activities of the MSMEs are extremely low due to low exposure of the market, low promotional outputs, and the high costs involved in the branding of the products. Though Provenance Paradox is observed in case of products from emerging economies (BRICS) to developed nations, branding strategies should be developed in such a way that offers minimal resistance for the acceptance of the products from the emerging economies in the export markets. A tie-up in contract manufacturing with a foreign branded manufacturer & marketer, a strategic alliance with a technology provider, a stake sell out to a foreign partner, a merger or an acquisition with a foreign entity, etc. can help the MSMEs in this regard to enhance their brand image in the overseas market.

MSME, s Promoter for Industry 4.0

Industry 4.0 starts from smart factories. Digitization, standardization, intelligence and control, and smart manufacturing. This includes smart mobility, power, building, logistics, etc. New technologies, such as analytics, big data, IoT, cloud, etc. has made us switch to Internet based thinking. The product, process, information, services and platform, integrates all of this.

- Real time, believable data about your factory, leading to data driven decisions.
- Better lot planning, more in depth understanding of line flow.
- Better product traceability.
- Reduced manufacturing cycle time, Smart and automated logistics system and vehicle for MSME, s
- More accurate/meaningful manufacturing and engineering data.
- Better understanding of

equipment utilization and OEE.

- Reduced rework and scrap.
- Reduced manufacturing costs, and smart manufacturing process.

Conclusion

•

As we discussed earlier fourth industrial revolution is on its way to occupy the world and likely provides large opportunities. Through Industry 4.0 it is feasible to create prolonged ecosystem with qualified employees and to bear on India's edge in manufacturing and can orchestrate to large scale customization. Although it is very tough to manage the process centrally if players in the system apply right levers there will be reinforced effects. Thus it is imperative to communicate the ideas that players in government and corporate sector will profit most if an initiative of Industry 4.0 goes together. By adopting Industry 4.0, we will have a major competitive advantage over global competitors in economy. But first and foremost we need to have the essence of speed in order to capture this opportunity and to achieve our goal. India ready to embrace the new industrial revolution, the government need to invest heavily in the country's education system and bring the literacy rates to respectable number. Currently, India's literacy rate is a shade more than 70 percent. That surely has to change. Further, localisation of production should be promoted, and startups should be given enough freedom. It is only then that the fourth industrial revolution would bring about a meaningful change in the lives of Indians. The present study mainly focus on MSME,s micro small and medium enterprises in Uttar Pradesh and ready to adopt the changes in MSME,s in UP such as the Fourth Industrial Revolution. To make changes in the MSME,s we have to adopt new technology and smart manufacturing process, smart production, machine modular system, process, smart embedded device start working together wirelessly either directly or IoT the internet of things (Internet cloud), AI artificial intelligence, machine learning, robotics, etc. MSMEs over the years have assumed greater significance in our burgeoning national economy by contributing to employment generation and rural industrialization. This sector possesses enough potential and possibilities to pushbutton accelerated industrial growth in our developing economy and well poised to support national programme like 'Make in India'. In lines with the 'Make in India' program, the 'Make in UP' program will adopt a strategy that inspires, empowers and enables in equal measure in making UP a manufacturing hub of India. Towards achieving this goal.

References

- Digital finance models for lending to small businesses. http://blogs.worldbank.org/ psd/india-digital-financemodels-lending-small-businesses
- Guidelines "Digital MSME" Scheme for Promotion of Information and Communication Technology (ICT) in MSME Sector A Component of National Manufacturing Competitiveness Programme Development

Commissioner Micro, Small & Medium Enterprises Nirman Bhavan, New Delhi, (2017). www.dcmsme.gov.in

- Ghouse, Suhail M (2014). Export Competitiveness of India MSMEs play the Role. *IJMRR*, *4(11)*, 1069-1084.
- Industry 4.0 India INC (2018). Gearing up for changes all India management association resources. aima.in.presentations.
- International Journals of Management Studies, 5(2), paper-03. https:// www.researchworld.com.
- Neeraj Arya, (2013), MSME,s and the growing role of India clusters. www.ibef.org.
- Pillai Lalitha Srinivasan, Rashtrasant Tukadoji Maharaj, NagpuProf. Kailas Kadu, Professor, Central Institute of Business Management Research and Development Nagpur University, India.
- Provisions for MSME Policy in up policy white paper Knowledge Partner 10 June 2017.
- http://www.businessworld. in/article/Industry-4-0-Towards-Smart-Manufacturi ng/26-05-2017-118968/

- http://iia.ptpl.co.in/mkb/ MSME_Iindustrial%20Policy-Research%20&%20White%20 Paper.pdf
- https://www.researchgate. net/publication/321302383industry-4.0-for-micro-smalland-medium-enterprise-msmes. 15 October 2018.
- https://www.ibef.org/states/ uttar-pradesh-presentation.
- https://wwwmyuttarpradesh.
- https://www.indovacation.

.

.

- http://pib.nic.in/ PressReleseDetail. aspx?PRID=1513711
- https://www.eletimes.com/isindia-ready-for-industry-4-0

INDUSTRY 4.0 AND INDUSTRIAL INFORMATION SERVICES IN INDIA: A PROPOSAL

Prabhat Ranjan Librarian, Jagat Taran Girls Degree College

Abstract:

Industry 4.0, the fourth industrial revolution has arrived globally. The present study describes that Industry 4.0 not only affects to industry in general and nation as whole but also all the sectors of our lives viz. personal, organisational, physical, social and psychological aspects. The main objective of the study is to describe the role of suitable subject wise industrial information service/systems in the development, support and implementation of the latest industrial revolution i.e. Industry 4.0. and also to present opportunities and challenges due to it and accuracy of data/information to achieve the industrial goal i.e. accuracy, early detection of mistakes, higher, qualitative, cheaper and faster production using modern internet, ICT, robotics, AI, cloud computing, big data, etc. The article deals with how information/data is power and needs in every walk of our life so as to growing needs and implementation of Industry 4.0 especially large multinational industries, where industrial information services play a vital role to support Industry 4.0 by providing pinpointed, proper information to proper users (consumers) at proper time i.e. any time (24x7) irrespective for form, format, language, and geographical location (anywhere) to obtain competitive advantages effective and efficiently. Due to revolutions in information services and Information Communication Technologies (ICTs) has availed 'machine-to-business' connectivity giving rise to machine-as-a-services. Service Life Cycle management and customer satisfaction are two components of it, both of which need support of ICT based information services to industry. Pre-built information centres and libraries (ICLs) and data flow enhancement support of such information services to achieve its outcomes. Real-time data and its analysis are not enough for smart enterprises with techniques of industry 4.0. Increasing digitalisation of data needs instantaneous sharing of information using library 4.0 technologies. Such ICLs need for resource sharing to avail subscription-based information available on Internet. Collaboration and networking of ICLs at world level is well known and need of such ICLs at present day is need of the time to serve industries and information society. The present paper tries to suggest ways to industrial ICLs have to keep pace with such needs to implement Industry 4.0. However, it is limited to Industry 4.0 and industrial information services/ systems to implement it. A descriptive method has been used for the study and detailed literature search has been carried out on the needs of industry 4.0 and probable uses of industrial ICL services/systems based on interactive web technologies and cloud-based data and services. Key components of library 4.0 services have also been arrived to support the Industry 4.0 with help of data/information, literature available and trends of developments of web 4.0 technologies and higher. Each industry should have a strong industrial information system to implement Industry 4.0. It concludes that industrial information services are the need of the time to have Industry 4.0.

Keywords: Industry-4.0, Library 4.0, Information Communication Technology (ICT), IT Industry, Clouds Computing, Big Data, Artificial Intelligence, Industrial Information System/Services, etc.

Introduction

The industry 4.0, the term first used by the German Government for a hi-tech project, is used for expected upcoming fourth industrial revolutions due to automation and data exchange in productions after three previous industrial revolutions. These three previous revolutions i.e. first, second and third were due to applications of steam engines, electricity and computers respectively (Srivastava, 2015). Revolutions in the information services and information

communication technologies (ICTs) have moved the cyberspaces towards being intelligent to capacitate 'machineto-business' connectivity giving rise to 'machine-as-a-services' (Grenachar, 2018) by continuous connectivity people, machines, of data and technology. It is based on information and communication technologies, cyber physical systems, networked communications, big data and cloud computing, real-time computing, etc. (Kusmin, 2016). It provides mass customization, flexible production,

increased production speed, higher product quality and less error during productions, data-driven decision making, better customer satisfaction, new value creation, etc. (Kusmin, 2016). Hence Industry 4.0 not only affects to industry in general and nation as a whole, but also all the sectors of our lives viz. personal, organisational, physical, social and psychological aspects.

Role of Information Services by Information Centres & Libraries

Information is pre-requisite to people and organizations for functioning of routine works as well as development of innovative and modern set up in an industry. Information resources in form of textbooks, reference books, data sheets, journals, standards, consumer studies, designs, maps etc. in electronic and print are essential to the industry people. Library and information centres always subscribe to information resources and participate in various types of networks and consortia for easy and economical access to information at right time to right individuals. ICL services needs up-dating regularly due to large scale changes in information communication technologies.

Objectives of the Study

Voluminous data availability on clouds in open and subscriptionbased access where Internet is not the only source of data and information, but also a link of people, things and services (Schlaepfer and Koch, 2014), presents new challenges to avail genuine information expeditiously and exhaustively to the information users to achieve the industrial goal i.e. accuracy, early detection of mistakes, higher, qualitative, cheaper and faster production using modern internet, ICT, robotics, AI, cloud computing, big data, etc. The present study is intended to study new roles and methodologies suggested for the information and library professionals to cater to such

new information needs of industry professionals.

Need of the Study

The article deals with how information/ data is power and needs in every walk of our life so as to growing needs and implementation of Industry 4.0 especially large multinational industries, where industrial information services play a vital role to support Industry 4.0 by providing pinpointed, proper information to proper users (consumers) at proper time i.e. any time (24x7) irrespective for form, format, language, and geographical location (anywhere) to obtain competitive advantages effective and efficiently. Due to revolutions in information services and Information Communication Technologies (ICTs) has availed 'machine-to-business' connectivity giving rise to machine-Service Life as-a-services. Cycle management and customer satisfaction are two components of it, both of which need support of ICT based information services to industry. Prebuilt information centres and libraries (ICLs) and data flow enhancement support of such information services to achieve its outcomes. Real-time data and its analysis is not enough for smart enterprises with techniques of industry 4.0. Increasing digitalisation of data needs instantaneous sharing information using library 4.0 of technologies. Such ICLs need for resource sharing to avail subscriptionbased information available at Internet. Collaboration and networking of ICLs at world level is well known and need

of such ICLs at present day is need of the time to serve industries and information society. The present paper tries to suggest ways to industrial ICLs have to keep pace with such needs to implement Industry 4.0.

Scope and Limitations

The study is limited to Industry 4.0 and industrial information services/ systems to implement it by information centres and libraries.

Research Methodology

A descriptive method has been used for the study and detailed literature search has been carried out on the needs of industry 4.0 and probable uses of industrial ICL services/systems based on interactive web technologies and cloud-based data and services.

Information Services Required to Industry 4.0

The Industry of today is moving towards Industry 4.0 where data, information, people, things and technology are interconnected by the Internet. The Internet itself is in a growing stage in terms of number of data available on clouds and the interaction of data and people. The history started from 'web of documents' in web 1.0, which has reached into semantic web in web 3.0 via social web in web 2.0 (Aghaie et al., 2012). Table 1 clarifies some of the differences that are referred generally. Web 4.0 is also imagined as next to web 3.0 expected to be based on intelligent systems (Aghaie et al., 2012; Sharma, 2012).

Web 1.0	Web 2.0	Web 3.0	
1996-2004	2004-2016	2016+	
The Hypertext Web	The Social Web	The Semantic Web	
Tim Berbers Lee	Tim O'Reilly, Dale Dougherty	Tim Berners Lee	
Read Only	Read and Write	Web Executable Web	
Millions of users	Billions of Users	Trillions of Users	
Echo System	Participation and Interaction	Under- standing Self	
Directional	Bi-Directional	Multi-User Virtual Environment	
Companies publish contents	People publish contents	People build application through which people interact and publish content	
Static content	Dynamic content	Web 3.0 is curiously undefined. AI and 3D,The web learning	
Personal Websites	Blog and Social Profile	SemiBlog, Haystack	
Message Board	Community Portals	Semantic Forums	
Buddy List, Address Book	Online Social Networks	Semantic Social Information	

Table 1: Comparison of Web 1.0, Web 2.0 and Web 3.0

Based on developments in the World Wide Web, Library 1.0 to Library 4.0 is also defined and imagined, as libraries of modern electronic age is based on availability of information on World Wide Web. Industry 4.0 is imagined which needs Web 3.0 and above, hence Library 3.0 and above. Some modified sources of information and related services are listed that are probable in near future.

Intelligent Library

Due to not only user specific needs of information for Industry 4.0 but availability of information as web 4.0 in future, intelligent libraries will be a reality in future information services. A number of researchers have agreed with the fact that such library systems will be able to analyze user needs and information embedded in the documents (Aghaie et al., 2012; Sharma, 2012; Chauhan, 2009). Software is in process to solve the problems of proper indexing, query processing, evaluation of query results to maintain precision in the information retrieved (Shah & Finin, 2018). Semantics based digital library software with faceted search; enhanced access possibilities and a proof-of-concept implementation are proposed to bridge the gaps between social webs and online libraries (Garcia-Crespo, 2011).

Library Collaborations and Relations with Publishers

Big data and clouds are the reality of the future web. Retrieval of information through library collaborations for online subscriptions and information sharing will be determined by better availability of tools on big data online. Manyika et al. (2011) put their worry that the size of data will be beyond the capabilities of devices and storage, collection, management and analysis of data can prove hard. Contrary to this, Lehong & Laney (2013) states big data as cost saving. Lee (2013) sees advantages to the libraries after expansion of the big data. Role of publishers and its relationships with libraries will prove more transparent where the role of libraries will be only in channel of information, at the place of real stacking of information (Natarajan, 2009).

User-Friendly Context-Aware Services

Information is enormously available on web and clouds, expansion of which needs filtering information as per user needs. Context aware services in libraries serve with specifications of its users regarding their location, time, device being used by them, data inputted and user behaviour etc. (Noh, 2013). Cognitive searches based on the users attitude and information behaviour may include user-librarian conversation matching with the authors' work, and cognitive work analysis in terms of search strategies followed by the users (Pejtersen, 2017). Books status information and my library management service and context aware technology may be very helpful to the library users (Lee, 2013; Noh, 2013). Results of such researches may be more fruitful to the information users of industry 4.0 people, and libraries can be in a better position to avail resources online as per user attitude, information behaviour and demand.

Knowledge Networks

Knowledge networks are prominent tools for developing knowledge society in a country and in world. Library services should be available individuals on such networks with some rules of payment systems for documents retrieved. Online unified catalogs of library may support such services.

Other Aspects of Information Services to Industry 4.0

Information services may have based on maximum online clouds resources and use of print for information search may be minimised, in age of industry 4.0. Modifications in quick printing devices, augmented reality, virtual reality, open source platforms, semantic web technologies, products like Google Glass, Markerspace, etc. enhance interactive communications and services among information users of ICLs in near future. Librarians and information professionals have a duty to avail right information to its users from enormously available information on the web.

Conclusion

Information retrieval, sharing and access are being modified due to applications of Web 3.0 and Web 3.0+ technologies. Online information with interactive web and technologies have to play a prominent play to avail right information to the right individuals properly at the time when manufacturing processes will be integrated globally.

References

- Aghaei, S., Nematbakhsh, M. A., & Farsani, H. K. (2012). Evolution of the world wide web: From web 1.0 to web 4.0. International Journal of Web & semantic Technology, 3(1), 1-10.
- Chauhan, S. (2009). Library 4.0. Retrieved from http:// key2information.blogspot. kr/2009/11/library-40.html
- Garcia-Crespi, A., Gomez-Berbis, J. M., Colomo-Palacious, R., & Garcia-Sanchez, F. (2011, July). Digital libraries and web 3.0. the Callimachus DL approach. *Computers in Human Behaviour, 4*, 1424-1430.

- Grenachar, M. (2018). Industry 4.0, smartfactory and machines-as-a-service. Retrieved October 25, 2018, from Forbes Community Voice: https://www.forbes.com/sites/ forbestechcouncil/2018/04/11/ industry-4-0-the-smart-factoryand-machines-as-a-service/
- Kusmin, K.-L. (n.d.). Industry 4.0. Retrieved October 15, 2018, from Texas Lutheran University: www.tlu.ee
- Lee, J. M. (2013). Understanding big data and utilizing its analysis into library and information services. *Journal of the Korea Biblia Society for Library and Information Science, 24(4)*, 53-73.
- Lehong, H., & Laney, D. (2013). Toolkit: Board-ready slides on big data trends and opportunities. Stanford, CT: Gartner.
 - Manyika, J., Chui, M., Brown, B.,
 Bughin, J., Dobbs, R., Roxburgh,
 C., & Byers, A. (2011). Big data:
 The next frontier for innovation,
 competition, and productivity.
 Retrieved October 15, 2018,
 from McKinsey Global Institute:
 http://www.mckinsey.com/
 Insights/MGI/Research/
 Technology_and_Innovation/
 Big_data_The_next_frontier_
 for_innovationN.
 - Schlaepfer, R., & Koch, M. (2014). Industry 4.0: Challenges and solutions for the digital transformation and use of exponential technologies. Retrieved from http://www. industrie2025.ch/fileadmin/ user_upload/ch-en-delloitendustry-4-0-24102014.pdf

- Shah, U., Fini, T., & Mayfield, J. (2018). Information retrieval on the semantic web, 7. Draft.
- Sharma, R. (2012). Web 2.0, Web 3.0, Web 4.0. Retrieved October 15, 2018, from http://www. scribd.com/doc/99678417/ Web2-0-Web3-0-Web4-0
- Srivastava, S. (2015). Industry 4.0. Souvenir, BHU Engineer's Alumni. Lucknow, Uttar Pradesh, India. Retrieved October 25, 2018, from https://www.researchgate.net/ publication/295302950
- Pejtersen, A. M. (2017). A library system for information retrieval based on cognitive task analysis and supported by an icon-based interface. *ACM SIGIR Forum*, *51(2)*, 116-123.
- Noh, Y. (2013). A study of next generation digital library using context-awareness technology. *Library Hi Tech News, 31(2)*, 236-253.

E-COMMERCE GROWTH IN INDIA

Shailendra Kumar, Sadhana Singh & Deepti Gaur Assistant Professor, New Delhi Institute of Management

Abstract:

India is at the cusp of a digital revolution. Declining broadband subscription prices, aided by the launch of 3G services followed by the launch of 4G services, have been driving this trend which has led to an ever-increasing number of "netizens." The changing lifestyles of the country's urban population and the convenience of shopping from the comfort of one's home have also led many people relying on the internet for their shopping needs. The trend of online shopping is set to see greater heights in coming years, not just because of India's rising internet population, but also due to changes in the supporting ecosystem. B2C players like Snapdeal.com, Amazon.com and Flipkart.com have made intensive efforts to upgrade areas such as logistics and the payment infrastructure. Furthermore, the Indian consumer's perception of online shopping has undergone drastic change, and only for the good. But this industry as other industries in India also faces tough challenges ahead in terms of profitability and thus stability and sustainability in the market in long run. This paper provides an insight into India's e-Commerce market in terms of its rebirth, growth and challenges in the world market in general and in a diverse country market like the Indian market in particular. The paper focuses on the various sub-segments of the e-Commerce market and highlights factors driving growth across these segments.

Keywords: Netizen, 3G, 4G, etc.

Introduction

The E-Commerce market has seen unparalleled growth since last year. It is expected that E- Commerce will become \$20 million by the end of 2018. With increased use of smart phones tablets and internet, e-commerce has become widely accessible to both urban and rural users. Foreign companies are investing huge sums of money into Indian companies. Experienced international players are taking interest in Indian companies. E-commerce is growing in rural areas with most of the traffic coming from tier-2 and tier-3 cities. In July 2014 Amazon invested \$2 billion in India, following the news of Flipkart raising \$1 billion in funding. There are a lot of bigger companies in e-commerce market like Snapdeal, Flipkart, Amazon, Shop clues, Jabong, etc. With numbers of companies increasing the competition is bound to happen for the first position. The retail industries have recorded annual growth of 40-50%, huge investments is expected to flow into logistics sector in future. Many offline brick and mortar companies are slowly moving to online business and those who are not in

online commerce business will be forced to come online. The commerce industry is in nascent stage, more niche e-commerce companies are joining the competition. The customer is winning and there is pressure to deliver the best to the customer.

What is E-Commerce?

E-Commerce is buying and selling of goods and services or transmitting of funds or data, over an electronic networking, primarily the internet. These transactions occurs either business to business, business to consumer, consumer to business and consumer to consumer. E-Commerce is done using applications EDI, email, shopping carts, etc. Digital commerce makes possible purchasing for transaction over the web and supports creation and constant growth of online relationship with customers across multiple channels like retail, mobile, direct and indirect sales, etc.

Current Scenario of E-Commerce in India

1. Mobile to be the Most Influential Aspect of E-Commerce: With

mobile apps being developed by most e-commerce websites, Smartphone's are increasingly replacing PCs for online shopping. In 2013, only 10% of the mobile users used Smartphone's, and only 5% of the e-commerce transactions were made through a mobile device. This figure has more than doubled, and more than 13% of all e-commerce transactions today happen via mobile3. According to some industry players, over 50% of the orders are being placed through mobile apps, which is not only leading to substantial customer acquisition but also building customer loyalty for various brands. However, most mobile transactions so far are for entertainment, such as booking movie tickets and music downloads. This trend will change soon with more and more merchandise being ordered online.

Factors that Will Fuel Growth: A significantly low (19%) but fast-

2.

growing internet population of 300 (approx) million in 2014 is an indicator of the sector's huge growth potential in India. It is evident that in absolute terms India's internet users are short by only 36 million as compared with 279 million in the US and higher than that in Japan, Brazil and Russia. However, in relation with its population, only 19% of Indians use the internet. This indicates the potential of internet use in India and as internet penetration increases, the potential of growth for the ecommerce industry will also increase.

- Mobile to be the Most Influential 3. Aspect of **E-Commerce:** with E-commerce mobile being developed apps by most ecommerce websites, Smartphone's are increasingly replacing PCs for online shopping. In 2013, only 10% of the mobile users used Smartphone's, and only 5% of the e-commerce transactions were made through a mobile device. This figure has more than doubled, and more than 13% of all e-commerce transactions today happen via mobile3. According to some industry players, over 50% of the orders are being placed through mobile apps, which is not only leading to substantial customer acquisition but also building customer loyalty for various brands. However, most mobile transactions so far are for entertainment, such as booking movie tickets and music downloads. This trend will change soon with more and more merchandise being ordered online.
- 4. More Business Coming From Smaller Towns: E-commerce is increasingly attracting customers

from Tier 2 and 3 cities, where people have limited access to brands but have high aspirations. According to e-commerce companies, these cities have seen a 30% to 50% rise in transactions.

5 Exclusive Partnerships with Leading Brands: Over the year or so, there has been a trend of exclusive tie-ups between eTailers and established boutiques, designers, high-end lifestyle and fashion brands. For instance, in 2014, Jabong added international fashion brands such as Dorothy Perkins, River Island, Blue saint and Miss Selfridge, along with local fashion brands through Jabong Boutiques. Similarly, Myntra benefited from exclusive tie-ups with brands such as Harvard Lifestyle, Desigual and WROGN from Virat Kohli.

Key Market Factors to be Evaluated Before Entering into New E-commerce Business: To achieve their vision, Ecommerce companies will need to understand the intricate landscape of new markets in addition to their own internal capabilities and limitations. The following factors must be considered:

- a. Market Size: Before moving too aggressively into a new market, it is important to consider how sizable the overall opportunity is.
- b. E-commerce Readiness: It is essential to fully understand the payment and logistical infrastructure, consumer behaviour, retail opportunity and technological developments.
- c. Barriers to Entry: Players should understand the regulatory environment and connect with solution providers, content distribution networks, and digital agencies.
- d. Competition: There is also a need to do an in-depth assessment of what competitors are doing, their

online strategy and the nature of each offering.

Key Concerns in the Field of e-commerce

Certain E-commerce players and observers have raised industry concerns that deep discounts, free shipping, intense competition and higher rejection rates due to cash on delivery (CoD) have impacted online eTailing adversely. Some of these concerns are specific to India and are more difficult to overcome than issues such as internet penetration and getting more people to shop online.

- a. Generation and sustenance of traffic: Competition from established E-commerce players is making it difficult for private label brands to generate traffic on their white-label websites.
- High customer acquisition cost: The customer acquisition costs have been rising due to intense competition by the relatively better off companies with more funds.
- c. Last-mile delivery: Poor last-mile connectivity, especially in remote areas with larger population, is another problem faced by Indian eTailers.
- d. High payment cost: CoD services impose substantial financial cost. In India, unlike in developed markets, CoD continues to be a preferred route of payment.
- e. Low profitability: Profitability is negatively impacted by high customer acquisition costs, free shipping and high rejection rate of CoD orders.
- f. Regulatory barriers: Regulatory barriers in the Indian E-commerce market are higher as compared to more mature markets.
 - Skilled manpower: Lack of talent availability and high attrition are causing manpower crunch, which is fast becoming a hurdle.

g.

Challenges Before E-commerce External challenges:

External forces impact how E-commerce companies plan their growth strategy and provide seamless customer experience onsite and post transactions.

- a) Product and market strategy: E-commerce companies have to address issues pertaining to rapidly evolving customer segments and product portfolios; access information on market intelligence on growth, size and share; manage multiple customer engagement platforms; focus on expansion into new geographies, brands and products; and simultaneously tackle a hyper competitive pricing environment.
- b) Customer and digital experience: Companies have to provide a rich, fresh and simple customer experience, not geared towards discovery; manage inconsistent brand experience across platforms; manage proliferation of technologies; and handle time-to-market pressure for new applications. In the recent past, social media has become more influential than paid marketing.
- Payments and transactions: c) E-commerce companies may face issues around security and privacy breach and controlling fictitious transactions. Further, RBI restrictions for prepaid instruments or Ewallets act impediments. From as а transactions perspective, crossborder tax and regulatory issues, backend service tax, and withholding tax can have serious implications.
- d) Fulfillment: Companies will need to check if the physical infrastructure gets affected by the internet speed. Also, the lack of an integrated endto-end logistics platform and innovation-focused fulfillment option could cause delivery

issues. Challenges around reverse d) logistics management and third party logistics interactions could also act as barriers to growth.

Internal challenges:

Internal forces impact how E-commerce companies can organize to drive and sustain growth.

- a) Organisation scaling: E-commerce companies will have to make sure organization design keeps pace with the rapidly evolving business strategy, along with fluid governance, strong and management leadership development. From a growth perspective, identifying acquisition opportunities, fund raising and IPO readiness becomes necessary. From a technology perspective, it is important to transform IT as an innovation hub and address the lack of synergy between business, technology and operations functions of the enterprise.
- Tax and regulatory structuring: b) Companies will need to address issues around sub-optimal warehouse tax planning; imbalance between FDI norms vis-à-vis adequate entity controls; inefficient holding, IPR or entity structures; and international tax inefficiencies. Future challenges include the new Companies Act, policy on related-party transaction pricing, and the uncertainty around GST roadmap.
 - Risk, fraud and cyber security: From perspective, а risk E-commerce companies could face issues around brand risk, insider threats and website uptime. Issues around employeevendor nexus, bribery and corruption make companies vulnerable to fines. Cyber security also raises some concerns around website exploitation by external entities.

c)

Compliance framework: E-commerce companies have to comply with several laws, many of which are still evolving. Potential issues around cyber inefficient law compliance, anti-corruption framework, legal exposure in agreements or arrangements, indirect and direct tax compliance framework and FEMA contraventions and regularization could pose problems. Also, uncertainty around VAT implications in different states due to peculiar business models could cause issues.

Future of e-commerce

Mobile commerce is finding increased infiltration in e-commerce market. Mobile transactions are increasing every year, the value of these transactions are estimated to be Rs. 36,000 crore according Forester to research. According to Google India managing director India adds five million internet users a month which are mobile users. Recently Myntra decided to shut down its website and moved all its operations to its mobile app. Gartner says that digital business means co-opetition; which means companies interact with competitors with partial congruence of interest. They cooperate with each other to work in same market to acquire global reach. In coming years more high profile mergers and acquisitions are expected to take place in digital commerce sector. Future of e-commerce looks promising because more and companies will be investing in small business startups. E-Commerce investment list was big in India last year, more investment are expected in coming years. Social media has become marketing place for merchants where they can advertise and promote their product freely. The expansion of mobile networks and social media in commerce will take ecommerce to new horizons that will change online retail markets in future.

Conclusion

We live in a world where we communicate with each other over mobile phones than we do face to face. For keeping in touch, shopping, hailing a cab, or ordering food everything begins and ends with that Smartphone new technologies, especially mobile, in India has sparked a social change that's difficult to quantify. While mobile, internet, and social media penetration and growth can be quantified; describing the changes in social values and lifestyles that have accompanied those trends is far more challenging. Internet connectivity has become basic obligation not only in urban cities but also in rural ones. The rapid growth of e-commerce is challenged by legal hassles, logistics and many factors which need to address early.

- Companies that want to expand their business need to spend resources on advertisement, branding, logistics, reverse logistics, supply chain management and customer services.
- There is a need of depth understanding of security requirements such as confidentiality, privacy of data.
- To maintain loyal customers companies need to provide superior website experience coupled with customer service.
- Companies who want to reach more consumers and want to cater need of local population should develop website in local languages.

E-commerce growth is inevitable as Indian e-commerce industry is having access to funds both local and international investments. The e-commerce industry will be faced with challenges as it matures but there is potential for growth owing to rising internet users and advancement in technology. New technologies such as virtual walls and virtual mirrors will further help improve the retail customer experience, thereby encouraging greater consumption. Virtual mirrors let shoppers 'try on' clothes and accessories virtually before making buying decisions. Virtual walls help customers scan barcodes for items on an electronic wall using their mobile phones and place orders with

retailers. Tesco in South Korea was an early adopter of this technology. In India, HomeShop18 has launched India's first virtual-shopping wall. Scan N Shop at New Delhi's international airport uses a similar technological interface. A key outcome of the technology revolution in India has been connectivity, which has fuelled unprecedented access to information. Millions of people who had little means to join the national discourse can now gain new insights into the world around them. Farmers know crop prices Consumers understand global standards of product and service quality. Rural Indians recognize the differences between the opportunities available to them and those available to their urban counterparts, and citizens have a mass forum for expressing their political opinions.

The upshot of this connectivity revolution has been the empowerment of Indians. Increases in the number of smartphones and 3G subscriptions are further driving this growth. Thanks to rising internet penetration, the gross number of online users in India now exceeds the number of people who have completed primary education. This shift emphasizes the increasing relevance of India's digital economy. In our view, there is humongous potential for E-commerce companies owing to the growing internet user base and advancements in technology. However, this will not be without its share of challenges, be it operational, regulatory, or digital. Companies will need to work harder to provide better service to the customer as more companies will be foraying in commerce business in future.

References

"PwC" refers pwc.in to PricewaterhouseCoopers Private Limited (a limited liability company in India having Corporate Identity Number or CIN U74140WB1983PTC036093). which is a member firm of PricewaterhouseCoopers International Limited (PwCIL), each member firm of which is a separate legal entity.

- T. Davenport, (1998). Putting the enterprise into the enterprise system. *Harvard Business Review*. 76(4), 121–131.
- A. Ragowsky and T. M. Somers, (2002). Special section: Enterprise resource planning. *Journal of Management Information Systems*, 19(1),11.
- M. Markus and C. Tanis (2000). *The enterprise system experience - from adoption to success.* In R. Zmud, editor, Framing the Domains of IT Research - Glimpsing the Future Through the Past, pages 173–207. Pinnaflex Educational Resources, Cincinnati, OH.
- Jastroch, N., (2003). Wissensmanagement - Darstellung und Transfer von Wissen -Potenziale und Grenzen. GI Lecture Notes in Informatics, Vol. P-28. Bonn, http://ceurwsorg/ Vol-85/
- A.-W. Scheer, (2000). ARIS - Business Process Modeling. 3rd Edition, Springer-Verlag, Berlin.
- J. A. Zachman (1987). A framework for information systems architecture. *IBM Systems Journal. 26(3)*, 277–293.
- J. Becker, P. Delfmann, A. Dreiling, R. Knackstedt, and D. Kuropka; (2004). Configurative process modeling - outlining an approach to increased business process model usability. In Proceedings of the 15th Information Resources Management Association Conference (IRMA 2004), 615–619, New Orleans, LA.
- M. Rosemann and W. van der Aalst, (2005). A configurable reference modelling language. *Information Systems*, In Press.
- P. Soffer, B. Golany, and D. Dori, (2005). ERP modeling
 a comprehensive approach. *Information Systems Frontiers. 28(6)*, 673–690.

TRANSFORMATION OF EDUCATION INDUSTRY USING BIG DATA

Somna Mishra Associate Professor, Mewar Institute of Management

Abstract

Big Data is having an impact in all the industries and education industry has no exception. Big data analytics assists organizations to effectively utilize their data to identify new fields in their business to create opportunities and make smart business moves. Data analytics automatically results in more efficient operations, more profits, and a happier customer base. In this paper, we are trying to understand how Big Data in the education sector offers unprecedented opportunities for educators to reach out and instruct students in new ways and help them to evaluate the state of the education system.

Keywords: Big Data, Education Sector, etc.

Introduction

Public expectations for accountability and transparency have increased in every sector, including education. Through the implementation of big data analytics, students can track their academic and behavioral progress and faculty visibility into student performance can also be improved [1]. Big Data analytics can resolve all the issues of the education sector. Georgia State University, for example, adopted new data analytic tools to deliver solutions to the long pending problem of student retention [2]. Big data analytics assists organizations to effectively utilize their data to identify new fields in their business to create opportunities and make smart business moves. Data analytics automatically results in more efficient operations, more profits, and a happier customer base.

Schools, universities, colleges, and other educational bodies hold very large amounts of data related to students and faculty. This data can be analyzed to get insights that can improve the operational effectiveness of educational institutions. Students' behaviour, students' exam results, and the development of each student as well as the educational needs based on changing educational requirements can be processed through statistical analysis. Big data paves the way for a revolutionary system where students will learn in exciting ways [3]. This is an important development for teachers because it will strengthen our ability to address any unconscious biases we might have towards the engagement or performance of our students [4].

It stands for extremely large sets of data and information that are analysed to study behaviour patterns, trends and associations. In an educational context, Big Data doesn't deal with the information given to students. Rather, it focuses on information about students. This includes their academic strengths, weaknesses, learning speeds, memory, assimilation skills, and retention and recalling abilities [5].

This paper is a conceptual cum review paper defining the various analytics and factors of Big Data that can transform the Education Industry.

Education Industry Analytics (1) Teacher Analytics:

In education, the pedagogical decisions made by a teacher to measure a student's understanding of the material or organize the structure of a course may possibly have the greatest impact on student learning. High-quality instruction may decrease the time a student takes to learn certain material, allow students to acquire more information in the same amount of time and help students to make better decisions about what they should actually study.

Educators can reap the maximum benefits of big data analytics due to the processing of data-driven systems that can help institutions create learning experiences according to a student's learning capability, ability, and preference [3].

The tool, most useful for supporting the flexible decision making that teachers need to increase the quality of the learning experience is Big Data Analytics. It gives educators and students an edge in understanding where and how improvements can be made in the learning process. Big Data Analytics creates new opportunities to improve the education process by helping teachers and learners make smarter decisions earlier in the learning progression.

Big data in the education sector offers unprecedented opportunities for educators to reach out and instruct students in new ways. It will give them a deeper understanding of students' education experience, and thereby help them evaluate the state of the education system.

(2) Student Result Improvement: With big data in the education

sector, it is possible to monitor student actions, such as how long they take to answer a question, which sources they use for exam preparation, which questions they skip, etc. These and similar to these questions can be answered automatically and instantly, giving each student instant feedback. When students are closely monitored, receive instant feedback and are coached based on their personal needs, it can help to reduce dropout rates.

(3) Enhanced Learning Outcomes:

In a broader way, information derived from each student can be used to analyze the student's academic performance, patterns attendance and involvement in other extracurricular activities like sports or cultural programmes. The results can be used to predict which students are likely to become detached, drop out of school or have the potential to excel in extracurricular activities so that an intervention from the authorities is auctioned at the right time.

(4) Reduction in Dropouts:

In the education sector, Big Data would help improve student results, dropout rates at schools and colleges would also reduce. Institutes can use predictive analytics on all the data that is collected to give them insights on future student outcomes.

(5) Real Time Monitoring and Learning Experience:

In this, the study material, that have to appeal to all students

from different levels, can be done online and by themselves. The educators can monitor all students in real-time. When students are monitored in realtime, it can help to improve digital textbooks the and course outlines that are used by the students. Algorithms can monitor how the students read the texts. Which parts are difficult to understand, which parts are easy and which parts are unclear. Based on how often a text is read, how long it takes to read a text, how many questions are asked around that topic, how many links are clicked for more information etc. If this information is provided in realtime, authors can change their textbooks to meet the needs of the students thereby improving the overall results

(6) Career Forecasting:

As we know that e-learning is not only limited to classrooms for studies, but it also benefits to the corporate world for the improvement of employee skills within least time span. The conventional classrooms are also becoming e-classrooms which provide e-learning, helps students to easily grasp knowledge as it is available in pictorial forms. Big Data is fruitful in e-learning as learning material is analyzed based on usefulness and acceptability to make it readily available for all at the same time.

Digging deep into a student's performance report will help the responsible authority to understand a student's progress and their strengths and weaknesses. The reports will suggest the areas in which a student is interested and he/she can further pursue a career in the same field.

Conclusion

In this paper, we have discussed the

big role of 'BIG DATA' in Education Industry. Big Data provides valuable information about the education world. We can see Big Data as chance for tailoring education to students. Big Data cannot be processed through traditional application software. The tools like Apache Hadoop, Microsoft HDInsight, NoSQL, Hive, Sqoop, PolyBase, Presto, Big Data in Excel and platforms like cloud based technologies are used to handle a large amount of data.

References

- Lovett, M. C., Wagner, E. (2012), Analytics for Teaching, Learning, and Student Success. EDUCAUSE Sprint.
- "How do universities use Big Data", https://www. timeshighereducation.com/ features/how-douniversities-usebig-data.
- Parakh Manohar (2018), "How Is Big Data Influencing the Education Sector?", https:// dzone.com/articles/how-is-bigdata-influencing-the-educationsector.
- Three ways educators are using Big Data Analytics to improve the learning process, https:// master.edhec.edu/news/threeways-educators-are-using-bigdata-analytics-improve-learningprocess.
- "Children learn differently: The role of Big Data in transforming education", https:// www.financialexpress.com/ education-2/children-learndifferently-the-role-of-big-data-intransforming-education/920749/. Archana Rao P N, Kishore
 - Baglodi (2018), Role of big data in education sector: A review, International Journal of Advances in Science Engineering and Technology. 6(1), 2321-8991.
- Anirban Shikha (2014), Big Data Analytics in the Education Sector: Needs, Opportunities and Challenges, International Journal of Research in Computer and Communication Technology, 3(11).

THE STUDY OF THE ROLE OF HUMAN RESOURCE DEPARTMENT IN THE MANAGEMENT OF CHANGE IN THE ORGANIZATION

Renu Bhardwaj Research Scholar, Mewar University

Abstract:

The Organization faces continuous pressure of updating and upgrading themselves at par with the global standards. The process is stressful for the employees working as they are accustomed to the earlier methods and processes. The quick adaptation to the new changed scenario is very crucial for the survival of each and every segment of an organization.

Organizational change is an episodic activity. That it starts at some point, proceeds through a series of steps, and culminates at some point- in some outcomes that participants hope is an improvement over the starting point. It has a beginning, middle and an end.

Human Resource Management plays a strategic role in the process of change in an organization. It assesses the readiness and preparedness of organization to embrace the change management. The paper emphasizes on the key factors that are instrumental for the success of the entire process of change management.

Some experts have argued that organizational changes should be thought of as balancing a system of five interacting variables within the organization -people, tasks, technology, structure, and strategy. A change in any one variable has repercussion on one or more of the others. The perspective is episodic in that it treats organizational change as essentially an effort to sustain equilibrium .A change in one variable begins a chain of events that, if properly managed, requires adjustments in the other variables to achieve a new state of equilibrium.

The study highlights the vital role of the Human Resource Department by enhancing the proactivity and vitality of employees in the smooth transition of change management of an organization.

Keywords: Human Resource Management, Change Management, Proactivity, Vitality, etc.

Introduction

As of now, organization need to maintain on changing in control to stay focused and have upper hand as they are working in a domain that is quick paced and evolving ceaselessly (Biedebacha and Spimlderholma, 2008). Change in representative execution can help support the creation and increment offers of an association. Dowling and Welch (2004) propose that development in mergers, procurement and coalitions, rebuilding, hierarchical worldwide rivalry and quickly changing innovation are the acknowledged powers of progress. Organizations that need to go worldwide are probably going to look for Human Resource Development (HRD) experts for help and counsel (Short and Callahan 2005). Workers are the implementers/drivers of any coveted change in an association and ought to in this way be engaged with

the getting ready for the change. As per Ulrich and Brockband (2005) it is the obligation of Human Resource (HR) experts to secure the representatives against the symptoms of unavoidable changes and to facilitate the impact of changes in the organization change specialists. The indispensable job of boosting association's human asset is played by the HR specialists as it is basic for achieving key authoritative process through the help of representative conduct and appropriately continue to have a fruitful organization (Nel, Werner, Poisat, Sono, Du Plessis, and Ngalo, 2011; Stone 2008; Rennie 2003; Wright and Boswell, 2002). At the point when the workers are included, they will possess the change. HR Practitioners have been relegated numerous jobs, for example, authorities in administration arrangement, arrangement of direction and guidance, colleague, a strategist

additionally and change operator (Armstrong, 2006). The change operator proves to be useful on the grounds that he/she encourages this change through the work force. He/ she can pick up responsibility from the workers. He/she can encourage change by potentially affecting workers in every significant task (Caldwell, 2003). Lunenburg (2010) in his paper Managing Change: The Role of the Change Agent just examined the general job of progress specialist yet did not talk about the job of HRD as a change operator. This paper hence goes for examining the job of Human Resource Development officers as change operators.

Objective of the Study

1. To study the important contribution of Human Resource Department in the Management of Change in an organization.

- 2. The Role of Human Resource Management as a Change Agent in the organization.
- 3. The Importance of Change Management for an Organization to keep up with the global trend.
- 4. The Steps involve in Change Management.

Research Methodology

The paper is written with the extensive analysis of the process and practice of digital human resource management based on reference collected from the previous research studies mentioned in Research articles, Journals, Books and Internet.

Literature Review

Hierarchical Change Management

Hayes (2002) characterizes hierarchical change administration as the change and adjustment of entire organization, or parts, with an end goal to keep up or enhance the adequacy inefficiency, income, showcase intensity and Kotter J., interior arrangement. (2011)demonstrates that change administration is a way to deal with progressing people, groups and organization to a coveted future state. He proceeds and sets that change administration is the use of essential structures and instruments to control any authoritative change exertion. It is an authoritative procedure went for helping workers to acknowledge and grasp changes in their present business condition as they are the backbone of an organization as per (Du Plessis., 2009 and Rennie, 2003).

As per Nel, P. S., Werner, A., Poisat, P., Sono, T., Du Plessis, A. J. and Nqalo, O. (2011), the earth of the 21st century is fierce and indeterminate and organization which oversee change viably by ceaselessly adjusting their frameworks, systems, societies, items and organizations are marked as bosses of reestablishment. Fellow, Beaman and Weinstein (2005) assert that the century is pushing ahead at a quick pace; individuals are winding up more mechanically progressed, have higher desires, open to globalization and developing more inventive with each passing day. Carnall (2003) depicts organization that change as esteem adding organizations because of their reliably developing needs to stay aware of clients' needs. He keeps on saying business ought to constantly reframe their methodologies, corporate culture, advancements, preparing an organization and their initiative or administration styles to stay significant. Purcell (2001) presented that HR can have a most vital impact in change as Human Resource Management systems are worried about the future, the obscure, considering and figuring out how to do things another way, performing things diversely and taking care of its execution. Organization that have incorporated their human asset administration arrangements with the systems and the vital change process, preparing, and worker relations deal with their change effectively (Armstrong, 2006).

As indicated by Jamrog and Overhold, (2004) HR Practitioners in past have been labeled as directors however firms needs HR capacity to go past the conveyance of financially savvy regulatory and give mastery on the most proficient method to use human capital. As indicated by Rennie, (2003); Walker and Stopper, (2000) significant thoughtfulness regarding HR specialists' jobs as colleagues and pioneer of progress has likewise been gotten. Hobeche, (2006) sets that throughout the years the capacity of HR has turned out to be more multifaceted as the pace of progress revives, requiring a progress toward more esteem included jobs, for example, the job of progress specialist. Nel et al., (2011) says that HRD professionals have basic task to carry out to guarantee that the change procedure runs easily as change in itself causes an abnormal state of disturbance in the organization.

Models of Change

The change operators can found change by following Kurt Lewin's three stages change model and Kotters eight stages display.

Normandin (2012) in his article "Three Types of Change Management Models" clarify Kurt Lewis' Model of progress as pursues: Kurt Lewin made this change models in 1950s where he saw that individuals wanted to work in safe place. As per George and Jones, (2002), a three-advance process for fruitful hierarchical change was proposed which are unfreezing, moving, and solidifying.

Unfreeze

To maintain a strategic distance from protection from change the primary phase of progress includes setting up the association to acknowledge that change is important, which includes separating the current business as usual before you can develop another method for working. Schein, (1992); that representatives demonstrates are persuaded to unfreeze when they comprehend the emergency the firm is experiencing or have a decent vision to propel them. Separating of the norm is the unfreezing Burns, (2004) shows the favored condition ought to be made for change to happen so the new thoughts and dreams can be framed in individuals' brain.

The unfreezing procedure goes through three stages. Right off the bat, there must be pointers that current conditions are not perfect. Besides, this indispensable data must be conveyed to authoritative individuals lastly an answer must be found to diminish individuals from uneasiness. This first period of progress is the most troublesome and unpleasant. A time of defrosting or unfreezing must be started through inspiration.

Progress/Change

In this stage, individuals have settled

their vulnerability and are anticipating better approaches for getting things done and bolster the new course. Morrison, (2010) points out that since change is dynamic it will certainly include a progress period on the off chance that it will be compelling. He keeps on saying that change can begin when individuals open their brains. The second stage empowers individuals to move from a less worthy circumstance to the coveted future as it is more intelligent Barnstable (2012). For the procedure to be effective, consolation from initiative is required. Likewise, correspondence is imperative for the accomplishment of progress and individuals should be offered time to comprehend the change and expense.

Kotter's 8 Step Change Model

As indicated by Kotter and Cohen (2002) there are eight basic stages an association needs to experience for an effective change. Pioneers who effectively change organizations complete eight things right and they destroy them the correct request! (John Kotter).

Make a Sense of Urgency

Individuals will act instantly on the off chance that they are persuaded and see the requirement for change. The initial phase in effective change exertion is to ensure adequate individuals act with adequate desperation. For change operators to have power and validity to start the required change program the requirement for change must be understood (Kotter, 1997). The utilization of experts as a strategy for making feeling of critical and to challenge existing conditions is suggested by Kotter (1996). This is likewise connected to looking at the substances, recognizing and dialog emergency, potential emergencies or real chances.

Making the Guiding Coalition

Appelbaum S. H., Habashy S. Jean-Luc Malo S. J., Hisham S. (2012) in

their Journal "Back to the future: returning to Kotter's 1996 change demonstrate", refers to Kotter (1996) and places that nobody individual is equipped for without any help driving and dealing with the change procedure in an association and assembling the right "controlling alliance" of individuals to lead a change activity is basic to its prosperity. Subsequently, it is basic for the change administrators to collect a social affair with enough capacity to lead the change and get the get-together to participate like a gathering. A convincing controlling get-together has two characteristics. It's contained the opportune people, and it shows collaboration. The "perfect people" are those individuals with appropriate capacities, organization constrains, definitive legitimacy, and the relationship with handle various levelled change like the change experts. As per Kotter (1996), the early on embraced of the controlling alliance is to characterize a fantasy for the change effort and to ensure that it is passed on all through the affiliation.

Building up a Vision and Strategy

As per Kotter, (1996) workers can comprehend and follow up on a dream on the off chance that it unmistakably А decent change characterized. operator should assist the people with asking themselves these inquiries; What change is essential? What is our vision for the new association? What ought not be adjusted? What is the most ideal approach to make the vision a reality? What change systems and unsatisfactorily risky? On the off chance that they can answer these inquiries they can travel change exceptionally well.

Conveying the Change Vision

Correspondence is extremely indispensable for any association in all viewpoints. As indicated by Bordia et al, (2004) correspondence is a basic component of the authoritative change process as it can lessen vulnerability, diminish vagueness and even influence the sort of positive or negative reaction to the change. (Nelissen and Van Selm, 2008). The vision ought to be comprehended and acknowledged by however many individuals as could reasonably be expected. Change messages conveyed ought to be basic not mind boggling for simple perception.

Engaging Broad-Based Action

As per Kotter (2002), barriers ought to be destroyed when individuals start to comprehend and follow up on a change vision. Structures and snags that undermine the vision ought to be evacuated and frameworks changed.

Producing Short-Term Wins

Appelbaum. et al. (2012) refers to Pietersen, (2002) in which The previous President of Lever Brothers' Foods Division in the USA, Willie Pietersen, says that expansive scale change can be a long, considerable endeavor, so it is essential to make here and now wins. Accomplishments that can without much of a stretch be unmistakable ought to be arranged.

Solidifying Gains and Producing More Change

Assurance and constancy ought to be sustained and supported by utilization of expanded believability to change structures, frameworks and arrangements. As per Pfeifer et al. (2005) the primary objective for social affair first victories is confirming the believability of vision and methodology using quantifiable outcomes. He proceeds and says that these first triumphs will be required to get ready for further change.

Tying down New Approaches in the Culture

Change specialists need a help structure for supportability of progress. The structure should offer preparing and tutoring. Correspondence and acknowledgment of progress activities ought to be utilized like pamphlets, casual gatherings workshops, sites among others (Massey and Williams, 2006).

Change Agent Role

Lunenburg (2010) sets that there are three particular jobs of any change specialist; counselling job where the operator helps representatives to create information from inside the firm or from outside sources, and thorough investigation of legitimate information causes the labourers to take care of issues. Preparing job in which the specialist trains authoritative individuals to learn new strategies by furnishing them with new abilities. Research job where he/she may prepare representatives as well as plan an assessment segment that can be utilized in tackling the momentum issue as well as take care of future issues (Carnall, 2008; Dawson, 2010; Stephen, 2010; Tidd, 2010).

The Human Resource Development Change Agent's Role

Change operators are the people who start change and oversee change in the organization. They have had some expertise in principle and routine with regards to overseeing changes (Varghese et al., 2012). As per Lawler and Boudreau, (2009) the HRD can bolster the presentation of new innovation through staff preparing of the tasks of the new innovation. A man in charge of arranging and organizing the general change exertion can be a change specialist as indicated by Carter McNamara (2005). He/she can either be an inward change operator who is habitually a sub set for authoritative pioneers or an outer change specialist, who are well on the way to be advisors or directors acquired to summon change (Blewett 2000). The job of HRD as change specialist may fizzle in the event that it doesn't emphatically characterize the procedure and needs of progress exertion as the job of HR in driving changes shifts among various organizations (Kesler, 2000).

Holbeche, (2008) contends that amid enlistment of staff when an association needs to utilize new representatives, the HR ought to have the capacity to assist this undertaking with proceeding easily effortlessly. This is on the grounds that they can hold the undertakings identified with change. Client needs and desires are likewise assessed. This is utilized to assess the business fulfillment to the clients.

The pretended by the HRD proficient has similarly changed with the adjustment in the hierarchical condition. Gilley, Quatro, Lynham, (2003) explains that in the past the prime duty of HRD experts was to recognize, select and assess preparing programs which could be outer or inward and manage the execution of the representatives through planning or modifying preparing mediations (Gilley et al., 2003). In this way, preparing intercession was the fundamental focal point of HRD (Gilley, et al., 2003). Notwithstanding, at present, the HRD Professionals goes about as strategic consultant to help the chiefs on issues related with HRD (Du Plessis., 2009; Rennie, 2003; Walker and Stopper, 2000). They likewise assume the job of a HR frameworks fashioner and designer by helping the HR administration in outlining and creating HR frameworks in an association to build its execution (Rennie., 2003; Walker and Stopper., 2000). They additionally go about as authoritative change operators by helping the administration in planning and actualizing change methodologies to change the association (K. J. Singh, 2013). Ulrich and Brockbank (2005) propels that HR specialists involves both vital accomplice and change operator jobs and subsequently as per Caldwell, (2003). HRD Professionals may execution a proactive job in change administration as they are in a decent position. As indicated by Green, (2001) HRD experts are exceptionally situated to assume liability for this job in the association as it manages the

way of life of a firm. As indicated by (CIPD, 2005, Ulrich, 2005; Kenton and Yarnall, 2005; McLagan, 1996; Nijhof, 2004; Tjepkema et al., 2000). HRD jobs have been changed to key colleague, inward expert and change specialist which is the primary concentration for this investigation.

The Human Resource Development Specialist as Change Agent

Armstrong, (2006) refers to Caldwell (2001) who classes Human Resource Development change operators in four measurements which are transformational, incremental, Human Resource vision and Human Resource mastery. Transformational change is a noteworthy change that dramatically affects HR approach and practice over the entire association. Incremental change is slow alterations of Human Resource approach and practices that influence single exercises or different capacities. HR vision is an arrangement of qualities and convictions that assert the authenticity of the Human Resource work as vital colleague. Development Human Resource aptitude is the learning and abilities that characterize the novel commitment the Human Resource expert can make to compelling individuals administration (Caldwell, 2001). Caldwell proceeds to propose that the change operator jobs that can be completed by Human Resource Development proficient are change champions, change connectors, change advisors and change synergists. Caldwell (2003) portrays these jobs as pursues.

Change Champions

Change management is a core, but challenging, aspect of working in HR. Being a change champion often involves dealing with issues arising from employees' lack of enthusiasm or confusion. it is vital that change champions communicate what the vision for the transition is; and what it will help the business to achieve. They should adjust HR to the business procedure and give 'sponsorship for vital change'.

Change Adapters

HR generalists who actualize the adjustment in specialty units and utilitarian regions "Make an interpretation of the vision into functional activities" and are associated with the usage procedure. Need to energize, influence, engage and challenge the line (Armstrong, 2006).

Change Consultants

As indicated by Carnall, 2008; Dawson, 2010; Stephen, 2010; Tidd, (2010), as Consultant the change operator helps the laborers to create information from inside and outside the association. Caldwell (2003) then again sets that work on a task or particular phases of a HR venture require specific learning or specialized mastery, managerial aptitudes, counseling abilities, venture administration encounter and aptitudes and in addition the "capacity to meet requesting timescales".

Change Synergists

The exercises worried in co-working the exertion that commonly bolster the achievement and association of assorted assets energies and individuals is alluded to as collaboration (Barnstable, 2012). Caldwell (2003) showed that Human Resource Development change specialists are prepared to do deliberately planning, incorporating and conveying intricate, huge scale and different change extends over the entire association. Need coordination. reconciliation, venture administration and authority abilities work deliberately and go about as impetuses for change.

Significance/Reasons Organizational Changes

Change is critical for any association in light of the fact that, without change, organizations would almost certainly lose their focused edge and neglect to address the issues of what most want to be a developing base of steadfast clients

of

(Richard L, 2011). It is critical on the grounds that business is a progressing procedure of progress like everything else. Authoritative changes can happen as a reaction to current emergency circumstance or as a response to a consistently evolving condition. A dynamic and proactive supervisor can likewise trigger change. Exchange of official power in association can likewise trigger authoritative change (Haveman, Russo and Meyer, 2001).

New Technology

Innovation is changing quickly and it is judicious for association to distinguish new innovation and more effective and practical techniques to perform work to have upper hand. Mechanical development has made the requirement for change in organization (D'Agustino, 2011). As indicated by Francis (2010) organization need to receive new innovation to be savvy and have upper hand. In spite of the fact that there is interruption at first because of selection of new innovation, the change at last prompts expanded profitability and administration (Swaim, 2011).

Mergers and Acquisitions

Mergers and acquisitions make change in various regions frequently adversely affecting workers when two organizations are consolidated and representatives in double capacities are made excess. A few costs are cut while a few assets are reallocated to the generation of new items or administrations (Swaim, 2011).

Response to Internal and External Pressure

Inward originates pressure from administration and representatives, especially those in sorted out organization frequently apply weight for change. Then again outside pressure originate from numerous territories, including clients, rivalry, government changing directions, investors, money related markets, and different factors in the association's outer condition Lunenburg (2010).

Globalization is another viewpoint that rolls out association improvement.

Financial Changes

Brimley and Garfield, (2009) sets that the mentalities and confidence of representatives endure amid time of swelling and retreat as influenced by monetary changes which can eventually influence authoritative execution.

Government Laws and Regulations

Change can happen because of progress in government laws and directions. For example the equivalent work opportunity and the third control (Constitution of Kenya, 2010) must be implemented (Robinson, 2010).

Client Needs

Clients' needs and inclinations continue changing For instance clients who were happy with regular stoves numerous years back are now and then restless with the microwave today. As the world develops, client needs change and develop, making new interest for new sorts of items and administrations and opening up new regions of chance for organizations to address those issues (Swaim R., 2011).

Aptitudes and Competencies Required For Human Resource Development Change Agents

The capacity to increase the value of business is alluded to as Competency; to accomplish maintainable upper hand fitness must spotlight on the procedure prompting changing business conditions (Ulrich et al., 2008). Competence shows adequacy of learning and abilities that empower somebody to act in a wide assortment of circumstances (Business lexicon). Choi Sang Long (2013) records the accompanying as the capabilities for HR proficient as change specialists: effective relationship aptitude, Human asset improvement (HRD) expertise, Performance administration, Value chain information, and Conflict administration.

Powerful Relationship Skill

The capacity to enhance business is alluded to as competency as per Ulrich et al. (2008). To accomplish manageable upper hand, the operators must spotlight on changing business conditions and help lead the procedure of progress utilizing their capabilities.

Proficient Competency

Long and Ismail, (2008) states that expert abilities are unified to worker champion and managerial master jobs which involve believability of the operator. As HR experts or line administrators, their validity ought to be picked up by their working accomplices as representative bosses. On the other hand they ought to have the capacity to convey customary task HR exercises in their business (Long and Ismail, 2008) rebuilding, ability and execution administration, giving exhortation and support on vocation and hierarchical advancement, assessing the HR practices and projects' effect could be incorporated into these exercises.

Human Resource Development (HRD) Skill

As indicated by Ketter (2006) Human Resource Development proficient need to make an empowering domain for learning and grasp the way toward learning as change specialists. Representatives are helped by Human Resource Development aptitudes to enhance hierarchical and individual information, aptitudes and capacities.

Execution Management

HR Practitioners as change specialists need to caution representatives to enhance work execution and efficiency. Glendinning (2002) characterizes execution administration as a procedure that joins objective setting, advancement and execution examination, not a solitary, basic framework whose design is to guarantee that the company's vital targets are upheld by representatives. Dessler (2008) insists that this competency is fundamental to HR operators to ensure representatives' execution is estimated with appropriate instruments and apparatuses.

The Right Attitude

Change is a complex and work escalated process that stirs sentiments and feelings and in this way, change can't prevail with awesome diligence (Tan and Kaufmann 2010). Without the correct state of mind, supervisors can't lead the group through troubles and difficulties of disappointed colleagues, irate individuals unanticipated issues among others with stamina and incredible assurance.

The Necessary Skills

Assortments of abilities are mandatory for change specialist to succeed. For instance peace promotion and overseeing difficulties of progress. They ought to likewise have the capacity to remain exceedingly powerful under outrageous weight. Expository aptitudes are likewise required which (Balogun and Hailey, 2005) shows that they help the change operator in dissecting entangled circumstance in the firm and furthermore encourages them to be sufficiently adaptable to work around barricades and handle up and coming issues. Relationship building abilities are an absolute necessity as the change includes staff and this will have the capacity to specialty solid relational relationship and speak with various gatherings to make preparation for change (Balogun and Hailey 2005). The change specialist needs to raise understanding for the need to change by making disappointment with business as usual (Gerlick's, 1991; Armenakis et al., 1993; Raineri, 2008). Great listening aptitudes are a need to assist them with empathizing and furthermore have great listening abilities. As per Becker et al., (2001) expanded view of adequacy of Human Resource Development change specialists is contributed by their validity. Then again Long and Ismail (2008) stresses the establishment for Human Resource Development

proficient is his/her own validity aptitudes which help with managing workers amid change process. To wrap things up relational abilities are an unquestionable requirement as correspondence is the paste that keeps the association together and moves to the coveted future. They have to convey viably and productively at all levels of the whole association (Tan and Kaufmann, 2010).

Kinds of HRD Change Agents

Nameer (2008)depicts change specialists as outside change operators, inner change specialists and outer inward change operators. Outer specialists are outside advisors transiently utilized to direct the change procedure. The outer specialists are typically required when the progressions are of complex nature with restricted limit or ability inside and when there is requirement for an outside intercession by individuals without any irreconcilable situations, preference or devotion (Green 2012). Interior change operators are people utilized by the firm who knows its issues and has the ability of enhancing or settling the problem (Nemeer, 2008). The inward specialists are sent when there is an inner driver to utilize or depend upon inside limit or capacity or when there is conviction that proprietors ought to unmistakably be internal (Green, 2012). As per Nameer (2008) then again outer inner change operators are people or little gathering inside.

Conclusion

Vast or little firms require change specialists when they need to change either their structure, present new items/administrations or new innovation. А change specialist encourages an association to travels to the better approach for getting things done and we can hence say that a change operator is any individual with power and abilities to encourage and direct change exertion. Change operators can either be outside or inner who assumes distinctive jobs, for example, change champions, change adopters, expert and synergists. They can push change through various change models which are embraced by the organization. At the point when HRD assumes the job of progress operator, they can effectively deal with the change in light of the fact that the HR knows how to manage the human asset who are authoritative important resources and who are the movers of progress.

Proposals for Further Research

The present paper concentrated on the Role of Human Resource Development as a change specialist. Future research should center around the job of cutting edge human asset advancement as a change operator and each pattern influencing HRD as change specialists. The creator prescribes that future investigations should investigate how human asset advancement can be custom fitted for an assorted workforce. There exists sparse writing on human asset advancement in India; more investigations ought to along these lines be completed.

References

- Armenakis, A. A., Harris, S. G., & Mossholder, K. W. (1993). Creating Readiness for Organizational Change. *Human relations: studies towards the integration of the social sciences, 46* (6), 681.
- Armenakis, A.A. and Harris, S.G. (2009), Reflections: our journey in organizational change research and practice, *Journal of Change Management. 9(2)*, 127-42.
- Armstrong M, (2006). *Human Resource Management Practice*. 10th Ed, London & Philadelphia, Kogan Page Ltd, 71-76.
- Balogun, J., & Hailey, V. H. (2008). *Exploring strategic change*. Edinburg Gate: Pearson Education Limited.
- Barnstable A., (2012). Organizational Change Management: What is the

process for? Implementing organizational change? Retrieved on 8/7/2014.

- Becker, E., Huselid, M. A. & Ulrich, D. (2001). *The HR Scorecard: Linking people, strategy and performance.* Boston, MA: Harvard Business School Press.
- Biedenbacha, T. and Soumlderholma, A. (2008), "The challenge of organizing change in Hypercompetitive industries: a literature review", *Journal of Change Management*, 8(2), 123-45.
- Blewett V.L.,(August, 2000), Workers Changing Work: The Influence of Worker Power.
- Bordia, P., Hunt, E., Paulsen, N., Tourish, D. and DiFonzo, N. (2004), "Uncertainty during organizational change: is it all about control?" *European Journal* of Work and Organizational Psychology, 13(3), 345-65.
- Brimley, V., & Garfield, R. R. (2009). *Financing education in a climate of change*. 10th ed., Boston, MA: Allyn & Bacon.
- Buchanan, D., Fitzgerald, L., Ketley, D., Gollop, R., Jones, J.L. and Saint Lamont, S. (2005), No going back: a review of the literature on sustaining organizational change. *International Journal of Management Reviews, 7(3)*, 189-205.
- Burns, B (2004). Kurt Lewin and the Planned Approach to Change: A Re-appraisal. *Journal* of Management Studies, 41(6), 22-2380.
- Burke, W. W. (2011). Organizational change: Theory and practice. Thousand Oaks, CA: Sage.
- Caldwell, Raymond (2003). The changing roles of personnel managers. Old Ambiguities, New Uncertainties. *Journal of Management Studies*, 40(4), 983-1004. ISSN 0022-2380.
- Caldwell, R (2001). Champions, adapters, consultants and

synergists: the new change Agents in HRM. *Human Resource Management Journal*, 11(3), 39–52.

- Carnall, C. A. *The Change Management Toolkit.* London: Thomson, 2003.
- Carnall, C. A. (2008). *Managing change in organizations*. Upper Saddle River, NJ: Prentice Hall.
- Carter McNamara (2005), Field Guide to Consulting and Organizational Development.
- Constitution of Kenya, 2010.
- D' Augustino, S. (2011). Adaptation, resistance, and access to instructional technologies: Assessing future trends in education. Hersey, PA: IGI Global.
- Dawson, P. M. B. (2010). *Managing change, creativity and innovation*. Thousand Oaks, CA: Sage. Retrieved on 26/06/2014.
- Dessler G, (2008). Human Resource Management, 11th ed., Upper Saddle River, NJ: Prentice Hall International. Retrieved on 25/06/2014.
- Divya Varghese, Jai Jasmine, Neelam, Neha Marwah, Neha Raj, (2012). HRD as a Change Agent.
- Dowling, P.J. & Welch, D.E. (2004). International Human Resource Management: Managing people in a multinational context. 4 ed, United Kingdom: Thomson.
- Du Plessis, A.J. (2009). An overview of the influence of globalization and internationalization on domestic Human Resource Management in New Zealand. *International Review of Business Research Papers*, 5(2), 1-18.
- D. Ulrich and W. Brockbank
 (2005), *The HR Value Proposition*.
 Boston, MA: Harvard Business
 School Press. Retrieved on 11/6/2014.
- D. Ulrich, W. Brockbank, D. Johnson, K. Sandholtz, and J. Younger (2008), HR Competencies: Master at the Intersection of People

and Business, The RBL Institute, The Society for HRM.

- Francis A., (2010). Factors Affecting Organizational Change. Retrieved on 8/7/2014.
- Gilley, J. W., Quatro, S., A., & Lynham, S. A. (2003). Strategic HRD and Its Transformation. In A. Maycunich Gilley & J. Callahan, L. & L. Bierema, L. (Eds.), Critical Issues in HRD: A New Agenda for the Twenty-First Century. Cambridge, MA: Perseus Books Group, 23-48.
- George, J. M., & Jones, G. R. (2002). Understanding and Managing Organizational Behavior. 3rd Ed. New York: Pearson Education, Inc.
- Green M, (2012). Internal or External Change Agents? Retrieved on 27/6/2014.
- Greene, R.J. (2001). Effectively Managing Intellectual Capital: Critical Challenge for Human Resources. SHRM White-Papers.
- Glendinning P. (2002), "Performance management: Pariah or messiah," *Public Personnel Management*, 31(2), 161-178, retrieved on 25/06/2014.
- Guy, Gregory R, Karen V. Beaman, and Carole Weinstein, (2005). Effecting Change in Business Enterprises Current Trends in Change Management. New York, NY: Conference Board. Bibliography. Retrieved on 12/6/2014.
- Haveman, H. A., Russo, M. V., & Meyer, A. D. (2001). Organizational environments in Flux: the impact for regulatory punctuations on organizational domains, CEO succession, and performance. Organization Science, 12, 253-273.
- Hayes, John (2002). *The Theory and Practice of Change Management*. New York: Palgrave.
- Holbeche, L., (2008). Aligning Human Resources and Business Strategy. 2nd ed. New Jersey: Butterworth-Heinemann.

- Holbeche, L. 2006. Understanding change: Theory, implementation and success. Great Britain: MPG Books Ltd. Retrieved on 12/6/2014.
- Jamrog, J.J., & Overholt, M.H 2004. Building a strategic HR Function: Continuing the Evolution. *Human Resource Planning, 27(1)*, 51-62.
- Kesler, Gregory. (2000). Four steps to building an HR agenda for growth: HR strategy revisited. HR. Human Resource Planning. 23(3), 24-37.
- Kesler, G. and Law, J. (1997). Implementing Major Change in the HR Organization: The Lessons of Five Companies. *Human Resource Planning, 20(4)*, 26-38.
- Ketter, P (2006) "Investing in learning: Looking for performance," *Training & Development, 60(12)*, 30-33.
- Kotter, J.P. (1996), *Leading Change, Harvard Business School Press*, Boston, MA.
- Kotter, J.P. (1997), *Chaos, Wandel, Fu"hrung – Leading Change*, ECON, Du"sseldorf.
- Kotter, J. (2011). Change Management vs. Change Leadership – What's the difference?
- Kotter J. and Cohen D. Kotter J (2002). The Heart of Change: Soundview Executive Book Summaries, P.O. Box 1053, Concordville, Pennsylvania 19331 USA.
- Long, C. S., & Ismail W. K. (2008). Understanding the relationship of HR Competencies & Roles of Malaysian Human Resource Professionals. *European Journal of Social Sciences, 7 (1)*, 88-103.
- Lunenburg F.C. (2010). Managing Change: The Role of the Change Agent. International Journal of Management, Business, and Administration, 13(1).
- Lunenburg F.C., (2010). Forces for and Resistance to

Organizational Change. National Forum of Educational Administration and Supervision Journal, 27(4), Retrieved on 8/7/2014.

- Nameer, (2008). Change Agent Who in organizations is responsible for managing planned Change activities? Retrieved on 27/6/2014.
- Massey, L. and Williams, S. (2006), Implementing change: the perspective of NH Schange agents. *Leadership & Organization Development Journal, 27(8)*, 667-81.
- Nelissen, P. and Van Selm, M. (2008), Surviving organizational change: how management communication helps balance mixed feelings. *Corporate Communications: An International Journal, 13(3)*, 306-18.
- Morison, M. 2010. Kurt Lewin three step model change theory, retrieved on 8/7/2014.
- Nel, P. S., Werner, A., Poisat,
 P., Sono, T., Du Plessis, A. J.
 & Nqalo, O. (2011). *Human Resources Management*. 8th Ed.,
 South Africa: Oxford University Press.
- Pfeifer, T., Schmitt, R. and Voigt, T. (2005), "Managing change: quality-oriented design of strategic change processes", *The TQM Magazine*, *17(4)*, 297-308.
- Purcell, J. (2001). The meaning of strategy in human resource management, in Human Resource Management: A critical text. 2nd Ed.
 J Storey, Thompson Learning, London.
- Normandin B. (2012). Three Types of Change Management Models" Retrieved on 30/6/2014.
- Ramos J.L., (2011). Change Management Lewis 3 Step Model of Change.
- Rennie, W.H. (2003). The Role of Human Resource Management and the Human Resource Professional in the New Economy. University of Pretoria, Pretoria.

- Ritchie. B., (2006). Mind tools Newsletter – Retrieved on 8/7/2014.
- Richard Leigh, Why Is Change Important in an Organization? Retrieved on 11/6/2014.
- Robinson, R. (2010). Employment regulations in the workplace: Basic compliance for Managers. New York, NY: M. E. Sharpe.
- Short, D., C., & Callahan, J., L. (2005). 'Would I Work for a Global Corporation?' And Other Ethical Questions for HRD. Human Resource Development International, 8(1), 121-125. Retrived on 11/2/2014.
- Singh K.J., (2013). What is role of HRD Professional? Retrieved on 13/6/2014.
- Steven H. Appelbaum, Sally Habashy, Jean-Luc Malo, Hisham

Shafiq, (2012), Back to the future: revisiting Kotter's 1996 change model. *Journal of Management Development*, 31(8), 764 – 782.

- Storey, J. (1992). Developments in the Management of Human Resources. Oxford: Blackwell Publishing.
- Swaim R., (2011). Nine Reasons Organizations Need To Change. Retrieved on 18/6/2014.
- Tan A. & Kaufmann (2010), Making Good Change Agents: Attitude, Knowledge, Skills. Retrieved on 25/06/2014.
- Thota, H. (2012). *Key concepts in innovation*. New York, NY: Palgrave Macmillan.
- Tidd, J. (2010). Managing innovation: Integrating technology, market and organizational change. New York, NY: Wiley.

- Ulrich, D., & Beatty, D. (2001). From Partners to Players: Extending the HR Playing Field. *Human Resource Management*, 40(4), 293-307.
- Ulrich, D., & Brockbank, W. (2005). *The HR Value Proposition.* Boston, MA: Harvard Business School.
- Walker, J. W., & Stopper, W.
 G. 2000. Developing human resource leaders. *Human Resource Planning*, 23(1), 38-44.
- Washington, M. and Hacker,
 M. (2005). Why change fails:
 knowledge counts. *Leadership & Organization Development Journal,* 26(5), 400-11.

WHAT IS THE VALUE OF A FACEBOOK LIKE: THE TRUTH ABOUT FACEBOOK ROI

Ritu Talwar Associate Professor, NDIM

Abstract:

Facebook is an ideal environment for studying human behavior. Every click, like, friend acceptance (or rejection), and peek at an ex's profile is tracked for millions of people every day. Facebook's value as a "petri dish for the social sciences. "Brands spend billions of dollars a year on elaborate efforts to establish and maintain a social media presence. Facebook is the preferred platform: 80% of Fortune 500 companies have active Facebook pages. Each day enormous amounts of brand-generated content—articles, photos, videos, and so on—appear on those pages and on other social media platforms, all designed to entice people to follow, engage with, and buy from brands. Marketers often justify these investments by arguing that attracting social media followers and increasing their exposure to a brand will ultimately increase sales. According to this logic, recruits who socially endorse a brand by, for example, liking it on Facebook will spend more money than they otherwise would, and their endorsements will cause their friends (and friends of friends) to shop—creating a cascade of new business. At first glance the evidence seems to support this rationale: Many brands have discovered that customers who interact with them on social media do spend more money than other customers. A recent influential study by Facebook found that compared with the general population, people who liked Starbucks's Facebook page or who had a Facebook friend who liked the page spent 8% more and transacted 11% more frequently over the course of a month.

Merely liking a brand on Facebook doesn't change behaviour or increase purchasing. But that study and others like it contain a fatal logical flaw: They confuse cause and consequence. It's possible that getting people to follow a brand on social media makes them buy more. But it's also possible that those who already have positive feelings toward a brand are more likely to follow it in the first place, and that's why they spend more than non followers.

Keywords: Facebook, Like, Social, Marketing, etc.

Introduction

The more Facebook Likes our business Page has, there would be more people who will have a chance to see your company's content. If our company's Facebook Page has 300 Likes, and our competitor's Page has 3,000 Likes, our target audience has a greater chance of seeing updates from our competitor than from us. A company that has a Facebook Page with a respectable number of Likes appears to be a wellestablished business in the eyes of a future customer.

Some Recent Trends:

• Over the last six months, 40% of sharing through Facebook occurred on the event page (pre-purchase) vs. 60% of sharing which occurred on the order confirmation page (post-purchase). This shows that the motivation to share is higher once the purchase is made and the attendee is committed.

The BSR (Browsing Share Rate) is 1% — meaning that of the people who look at an event page before purchasing a ticket, 1% of them share that event. Conversely, the TSR (Transaction Share Rate) is 10%, which means 10 times more people share an event from the order confirmation page.

- Not only is the motivation to share post-purchase higher, that share is more meaningful than a pre-purchase one. A postpurchase share on Facebook drives 20% more ticket sales per share than a pre-purchase one.
 - Facebook vs. Twitter: Sharing activity on Facebook equalled almost 4 times the amount of sharing on Twitter. This is attributed to Facebook's reach (right now there are simply more people that use Facebook than Twitter (600 million vs. 225 million) and the fact that

connections on Facebook more closely mirror real-world, personal relationships.

- A Facebook "Like" (the closest comparison to a tweet) drives on average \$1.34 in ticket sales, compared with a tweet that drives on average \$.80.
- Facebook's hyper-targeted Custom Audiences feature lets you advertise so specifically that advertisers have seen their new customer acquisition costs decline by as much as 73%.
- When it comes to building awareness, the average cost per thousand impressions (CPM) for Facebook ads is around \$7.29 versus upwards of \$35 for television commercials.
- Facebook is also useful in the B2B realm—73% of people say they use Facebook for professional purposes.



Figure 1: Browsing Share Rate

Social media doesn't work the way many marketers think it does. The mere act of endorsing a brand does not affect a customer's behavior or le ad to increased purchasing, nor does it spur purchasing by friends. Supporting endorsements with branded content, however, can have significant results. Given that social media pages are gathering places for loyal customers, they can offer brands a unique source of customer intelligence and feedback from a crucial cohort. Armed with this knowledge, marketers can build new, more successful social media strategies.

Testing the Effects of Likes

Basic psychological principles give reason to suspect that liking a Facebook page could indeed change behaviour and increase sales. It is seen that people experience "cognitive dissonance" when their actions don't reflect their beliefs, so it would stand to reason that a social media user who endorses a brand on Facebook would be more likely to buy it.

Measuring the Return on Facebook Likes

When people like a brand on Facebook, their endorsement is typically broadcast to a subset of their network. Any subsequent engagement with the brand—likes, posts, comments, and shares—also appears in some of their friends' news feeds. In classic marketing, word-of-mouth endorsements by peers have been shown to increase sales. But the value of endorsements may be lower on social media, for a couple of reasons. First, on many platforms, including Facebook, Twitter, and Instagram, following does not guarantee brand exposure for either endorsers or their friends. Facebook's algorithms determine what content appears in a user's news feed, and a user's liking of a brand is broadcast to only a very few friends (without this intervention, users would be exposed to an average of 1,500 posts daily). Second, some Facebook users appear to like brands indiscriminately or for various one-off reasons-to get a discount, say. There is a way to convert likes into meaningful behaviour: advertising. Facebook's algorithms will probably filter it out. There is no difference in behaviour; those who had been invited to like the Facebook page accumulated no more points than the others. Once again, merely liking a page did not change behaviour. Put another way, liking a company that offers flu shots does not translate into getting a flu shot.

Unlocking the Power of Likes

The good news is that there is a way to convert likes into meaningful behaviour, and it's straight out of the 20th-century marketing playbook: advertising. Each vear Facebook collects more than \$22 billion in ad revenue. Most of that comes from brands seeking to circumvent the platform's algorithms by paying to guarantee that their content will be prominently displayed to large numbers of users. What does all this mean for marketers? As social media swelled in popularity over the past 10 years, many predicted a revolution in marketing strategy. It wasn't uncommon to hear about the end of "push marketing" (in which brands promote and advertise their goods and services) and the rise of "pull marketing" (efforts to draw customers in through social media and other channels). "More judo, less

karate" became a popular aphorism. But it is suggested that marketing on social media will be ineffective if it uses only pull tactics. The modern social media marketing playbook should combine new and traditional approaches.

Make Likes Work

Facebook does not currently give companies the option of paying it to highlight the posts of engaged customers, something our research suggests could provide significant value by influencing behavior. Savvy firms could overcome this obstacle by monitoring their social media channels for eloquent endorsements and integrating those endorsements into their marketing messages. The athletic apparel brand Lululemon collects favorable customer-generated content by tracking hashtags (such as #thesweatlife) and retweets it. The fashion retailer Free People adds customers' Instagram photos to its product pages. And in a holiday promotion, Lamar Advertising's billboards displayed photos that people had tagged with #ThankfulThisHoliday. More brands could also adopt the increasingly common practice of "seeding" social endorsements by paying influencers to try the brand and send endorsements to their followers. This tactic has spawned several new platforms, such as ReadyPulse, that automatically match brands with appropriate influencers.

Make Endorsements Meaningful.

Another reason why liking a brand does not influence online friends is that liking is a very weak endorsement; it is seen that it doesn't carry the same weight as a real-world recommendation. Yet it is seen that endorsements and referrals more generally, can spur action. It is demonstrated that people were more likely to download and use an app if a friend recommended it than if they were merely told that their friend had downloaded it. Other indicates that "deeper" social media endorsements could close the effectiveness gap between real-world and digital recommendations. For example, a study found that Facebook posts indicating that a Facebook friend is using a product—not just that he or she likes it-increase the chances that a member will use the product too. The effect is pronounced when product users send their friends personal messages of recommendation. However, encouraging this level of engagement with a brand can be difficult and expensive. Further when it comes to highlighting customers' engagement, brands will find it fruitful to choose online postings and other user-generated content that are more creative and meaningful than simple likes. For example, TripAdvisor informs users browsing a hotel which of their Facebook friends have booked there. In the political realm, a campaign to increase voter turnout found that telling people a friend has voted makes them more likely to vote. A word of caution, though: This tactic can raise privacy issues. Facebook discontinued its social ads-ones showing the profile pictures of friends who like the product at hand-in part because of privacy concerns.

Social Proofing & Competitor benchmarking

There is also very real value in what I refer to as "social proofing." This essentially means that Likes, comments and shares provide a sense of legitimacy around your brand. Our credibility goes out the window when you only have a few Likes for our branded Pages and page posts. Quite often, one of the first things a consumer will do is look at our social pages. The various things consumers look for include whether we have a high number of followers; whether our page posts are getting lots of (positive) engagement; whether we have brand evangelists, reviews and so on. When we're hitting a favourable level of perceived credibility, the psychological "warm and fuzzies" are

built up in the form of social proofing. There is valuable brand positioning that occurs when you're the most popular brand in our competitor set.

Use "pull" marketing to find our best customers, and listen to them. One reason Facebook advertising can be effective is that a brand's social media page reaches a highly desirable audience; likes illuminate a path for targeting ads. Yet even if a brand decides not to spend money advertising, it can use its social media channels to gain intelligence from its most loyal customers. This need not entail recruiting new followers through flashy content and other lures; in fact, such tactics might backfire by attracting people who are not strongly attached to the brand. Companies pursuing this option should favor organic growth, letting customers seek out the brand. Almost by definition, the people who go to the trouble of finding a brand on social media will be its most devoted, and thus most valuable, customers. As a group, these customers are a great asset: they will enthusiastically provide feedback to improve product development, management, and delivery; defend the brand against unjustified complaints; and be early adopters of and evangelists for new offerings. For example, Lego uses its social media channels to gather customers' ideas for new products and to tout new product lines. MyMuesli, a German maker of customizable granola, asked customers to publish images of their own granola mixes on Instagram and subsequently sold some of the customer-created products through its website. The Dutch airline KLM clearly uses its Twitter account as a customer feedback tool; in addition to responding to customers' tweets, the airline shows that it is listening by prominently posting its estimated response time in its Twitter header (and updating it every five minutes). Knowing that their voices will be heard can make customers more willing to

offer information and might even cause them to be more civil when they (inevitably) have complaints.

Turning Likes into Loot

Likes as While а standalone endorsement do not provide a high return, meaningful dollars can be made when you take a pragmatic and holistic approach. Remember to always test and measure, and then test again. I like to say that your social media presence is a direct extension of every single channel and department of your organization. Make it the central hub of your marketing focus, where all earned, owned and paid efforts are combined. Spend our social dollars wisely on tactics and strategies that produce real, measurable results for our brand. An important thing to note is that not all customers take the same journey on their path to purchase. This journey is increasingly complex and unique for all brands, and social offers an opportunity to nurture consumers in a customized way. We cannot look at pull and push social efforts in isolation. Branding and paid efforts need to do a delicate dance within our organization. Promote positive brand interactions, endorsements and experiences consumers will respond more favorably when presented with a direct response message.

Conclusion

As social media has grown as a marketing channel, so too has enthusiasm for its potential to drive sales. Amplifying efforts with advertising can provide higher returns on investment while creating an opportunity to connect with the most-loyal customers. The 'like' itself has a weak value for social media users. Optimizing campaigns and measuring success with 'likes' is not an indicator of future success with business objectives. To achieve success with Facebook it is recommended brands focus on the following:

Paid Social Content: The number of posts created on Facebook and the algorithm makes it so paid efforts have to appear on user's feeds. Brands should focus on creating paid content that is targeted not only to current customers but also potential users of the brand.

- Thumb-Stopping Moments: Creating high-quality content will earn the user's attention as they quickly scroll down the feed. Specifically, brands should focus on creating motion content including videos, animations and cinemagraphs.
 - Align **KPIs** Business to Objectives and Tactics: Vary success KPIs according to business objectives, whether they are sales, traffic or branding. Additionally, brands should adjust the measurement to each tactic. For example, in video, views could serve as a primary KPI.
 - Change How You Measure Engagement: Old engagement rate formulas heavily weighted likes, resulting in skewed results. Today, engagement metrics should include views and clicks. Keep in mind that content shouldn't be optimized for engagement, but this metric is still useful to measure a user's attention.
 - 'Likes' as Customer Intelligence: While 'likes' are not a good indicator of performance, they can be useful for gathering information about potential customers. Brands can use this information to create lookalike audiences for advertising. There's also an opportunity for brands to understand sentiment by taking a closer look at reactions (wow, sad and angry) instead of just 'likes'.

Thus a Facebook Like is the beginning of an information journey that will make us a better marketer and a more successful salesperson.

References

- Curme C, Preis T, Stanley HE, Moat HS., (2014). Quantifying the semantics of search behavior before stock market moves. *Proceedings of the National Academy* of Sciences, 111, 11600–11605.
- Kenett DY, Morstatter F, Stanley HE, Liu H. (2014). Discovering social events through online attention. *PLOS ONE. 9*: e102001. pmid: 25076410.
- Eysenbach G., (2011). Can Tweets predict citations? Metrics of social impact based on Twitter and correlation with traditional metrics of scientific impact. *Journal of Medical Internet Research.13*: e123. pmid: 22173204.
- Bollen J, Van de Sompel H, Smith JA, Luce R. (2005). Toward alternative metrics of journal impact: A comparison of download and citation data. *Information Processing and Management, 41*, 1419–1440.
- Baek K, Holton A, Harp D, Yaschur C., (2011). The links that bind: Uncovering novel motivations for linking on Facebook. *Computers in Human Behavior, 27*, 2243–2248.

WORK LIFE BALANCE: OPPORTUNITIES AND CHALLENGES

Monika Gulia Assistant Professor, Gitarattan International Business School Pratistha Assistant Professor, Delhi School of Professional Studies & Research

Abstract:

Work life balance means attaining a proper balance between the job and personal life. If there is balance between these two, the employees will be more satisfied and will behave in a favourable manner. Changing demographics of workforce i.e. more participation of female employees in the organizations has made it more challenging for them to set their priorities between their jobs and personal lives. So there is a strong need to identify how to maintain this work life balance in order to smoothen the functioning of organizations. This is a descriptive research paper which includes secondary sources of data collection. This study focuses upon the understanding of managing work life balance and the various measures which will help in the attainment of the work life balance for the employees working in the organisations. This study will provide significant measures to help the organizations in adopting such work patterns which will enhance employee satisfaction by providing a balance between their jobs and lifestyle.

Keywords: Work Life Balance, Satisfaction, Lifestyle, Work Patterns, etc.

Introduction

Work life balance means attaining a proper balance between the job and personal life. A 'work life' balance refers to an employee's ability to maintain a healthy balance between their work roles, their personal responsibilities, and family life. Companies are increasingly recognizing the importance of helping their employees to achieve this balance as more staff is experiencing conflict between their work and personal roles. In today's age, many workers are seeing their personal responsibilities increase, from childcare and elderly care, to volunteer work, and family commitments. This comes at a time responsibilities when their work are also increasing, resulting in a conflict between personal and work commitments and an increase in stress.

Another factor which is contributing greatly to the difficulty in achieving a work life balance is the changing landscape in how and where employees are expected to work. As more and more companies embrace the technological age and move into globalization, work is no longer restricted to the workplace. Employees can work from almost any location with the use of laptops, tablets, and smart phones; and telecommuting is on the increase. Employees can access work emails and assignments 24/7, meaning that they can also be accessible to employers and clients. Although there are multiple benefits to this flexible working pattern, it can run the risk of blurring the lines between work and personal life. Remote working also means that staff may now find that their typical work week is no longer restricted to the traditional 40 hours a week.

The result of a poor balance between work and personal life not only affects employees, but it also affects the companies that they work for. Employee stress can increase to the level of burnout, resulting in lower productivity at work, a higher potential for stress related health problems and absenteeism, with the associated costs related to these being passed on to the company. In addition to this, employees may also experience poor personal and co-worker relationships and reduced job satisfaction.

There are several ways in which companies can help to encourage a work life balance for their employees, both in the policies that they implement and in ensuring that managers actively encourage employees to take advantage of these policies. Offering employees working options helps flexible employees design their work pattern to fit their personal commitments, ultimately reducing conflict between work and personal responsibilities. Flexible working options include allowing employees to work from home, adjust their working hours to meet personal commitments, use remote working, compressed work weeks, and job sharing. Managers should encourage staff to use annual leave and help employees to set boundaries by encouraging staff not respond to work related emails and calls during nonworking hours. Some organizations are also implementing wellness programs, which include offering stress reduction and time management workshops, while others are creating wellness centers on the work site, helping to connect employees with physicians, mental health counselors, or on-site gyms.

An employee's satisfaction in their personal life and their ability to meet personal commitments greatly affects their success as a worker, which greatly benefits any company. Helping employees to achieve a good work life

ABS International Journal of Management

balance increases work satisfaction, increases their loyalty to their employer, and helps employers to achieve career longevity. A company which recognizes these benefits and implements policies to promote a work life balance is one which will not only see an increase in the productivity of their workforce but which also sees increased retention of staff and reduction in costs associated with high turnover.

With this increasing industrialization and education, employment opportunities for women have also increased. Due to increasing economic conditions, it has become a necessity that both husband and wife need to work to have a normal life. In this fast growing and competitive world, as every possible opportunity for employment is increased, the organizations need to create a congenial atmosphere where employees can balance their professional and personal life. Only when an employer has a positive Work Life Balance (WLB) can be productive and give the best to the organization. Hence industries are working out schemes which can attract as well as retain their employees. A successful work-life balance helps in the attainment of personal goals. It helps in striking a balance between workplace, family and friends, community, hobbies, sleep and sport/exercise. If an organization integrates work-life balance, it will be a good tool to retain the employees and increase their quality of life. Today, work is widely viewed as a source of personal satisfaction. A good balance in work and life can play a phenomenal role in the attainment of personal and professional goals.

Genesis of Work-Life Conflict

With the gender divide bridged and gender stereotypes invalidated, work life conflict is emerging as one of the major distractions impacting employee efficiency. In days of yore when gender roles were implicitly defined, the male hunter provided for the family while the gatherer woman stayed at home to tend the flock and warm the hearth. Advancement in technology triggered the transition of work from mechanical brawn-based to sophisticated brain based activity thereby breaking down barriers for entry of women into the workforce. With advancing technology we now see the last male bastion of soldiering also fall before woman power. A case in point is the US Navy opening its nuclear submarines to female crew members, and women in combat roles in the Canadian Army.

The flip side of the emancipation of women, however, has been its impact on the family. With both genders becoming 'hunters,' there is nobody at home to discharge the function of a fulltime wife. As a result, the home has pervaded the workplace and the phrase work-life conflict has gained currency. The symptoms have been further aggravated by the mobility of today's workforce and the resultant loss of extended family support structure. Add to that increasing instances of single parents and work-life conflict takes epidemic proportions.

Work-Life Conflict is, therefore, a clear and present danger and organizations that deny it do so at the peril of accepting suboptimal employee performance. Some organizations accept the existence of work-life conflict but dismiss it as a personal matter of the individual to juggle home and work. What they fail to appreciate is that the final impact will be felt on the organisational efficiency, productivity and suboptimal shareholder value.

Any organization that strives to be reckoned as 'a great place to work' needs to pay special attention to minimize and facilitate resolution worklife conflict of their employees. The challenge however is in knowing and doing things that facilitate and support work life balance without intruding into the personal lives of employees. The HR department of such organizations is often stretched for creative solutions that are practical to implement, yet are effective in impact. Successful organizations in this space have taken work-life-balance to even higher levels by not merely restricting themselves to addressing domestic pressures on their employees but facilitating self actualization of these individuals.

Work Life Balance for Women Employees

Today's career women are continually challenged by the demands of fulltime work and when the day is done at the office, they carry more of the responsibilities and commitments to home. The attitude of female workers has also changed. Women are growing more ambitious as they become key players in the world of work, contributing to major company successes. Majority of women work lives are a juggling act that included multiple responsibilities at work, heavy meeting schedules, and business trips, on top of managing the daily routine responsibilities of life at home. Traditionally the role of women used to be of cooking, cleaning etc. They were looked upon as a care giver or as home keeper and were denied access outside home. Today's women have made their mark in every field. Be it arts, literature, sports, corporate etc women are ready to take up challenges. People want to be able to have a good quality of life, an enjoyable work life and career progression, training and development, good health, affordable childcare or eldercare, further education more money, time to travel, time with friends and family, time to do sports and hobbies.

Benefits of Work Life Balance

Many leading organizations in overseas countries such as IBM, Merrill Lynch, Pfizer and Accenture have introduced work-life programmes within their organizations to help their employees achieve an effective balance in their work and family/personal life. These companies believe that it makes good business sense to provide such programmes to their employees due to the financial and non-monetary benefits that can be reaped.

In general, the implementation of family-friendly policies is associated with positive outcomes (Poelmans, 2001). Some of the benefits in the implementation of family friendly policies are associated with less workfamily conflict (Goff, Mount & Jamison 1990), reduced turnover intention (Grover & Crooker, 1995) and reduced stress (Johnson, 1995). Efforts by managers to enhance organizational commitment are likely to have the additional benefit of helping workers cope better with the competing demands of work and family (Berg, Kalleberg & Appelbaum 2003).

In addition, many overseas studies have also shown that there is a symbiotic relationship between work and person/ family life. It is understandable that employees who are able to effectively balance the demands of work and their personal/family life are motivated to give their best a work. In short, worklife strategy can align the corporate and individual goals to attain a winwin scenario for all by addressing the business needs of the organizations and the individual needs of the employees.

While the direct financial payback of Work-Life Programmes is difficult to quantify, there has been already ample research evidence gathered on experience of firms in reaping the intermediate benefits of Work-Life. These intermediate benefits, in turn, contribute to the better performance of companies. Major intermediate benefits are:

1. Reduced stress, absenteeism 5. and health costs:

Employees today are generally more stressed which reduce performance levels. Absenteeism due to family commitments and stress could be a major reason for low performance levels. Work-Life initiatives improve employee performance by reducing absenteeism, lateness, health care and sick-leave and hence their related costs. People who are free of worry about what is going on at home can be more productive at work.

2. Improved staff morale and engagement:

Work-Life helps employees lead a healthier and more balanced life by allowing them to better concentrate at work, improving the work environment by increasing motivation and job satisfaction. Other studies have shown that improved staff morale leads to more committed staff and better performance.

Improved customer satisfaction:

3.

Better customer response is possible through telecommuting and the longer operating hours that can be arranged by giving employees flexibility. At the same time, more motivated employees who have their personal needs are more addressed likely to go the extra mile to keep customers happy. Turnover, and the subsequent need for reestablishment of relationship and rework, is also listed as a major factor contributing to the loss of customers.

4. Reduced costs:

Office rental and utilities savings due to telecommuting are the strongest quantitative researches to show the financial benefits of Work-Life Programmes.

Improvedrecruitment,retentionandreducedturnover:Work-Lifeinitiativesgive

organisations a human face that

allows prospective employees to distinguish one employer from another. To attract employees and hold on to them, forward thinking companies are letting their employees know that they are just as concerned about their employees lives outside work and about helping them to manage their work and personal commitments and aspirations. Work-Life Programme's kev advantage is therefore positive branding in recruitment and retention of talent. Employee referrals also increase.

Issues and challenges at workplace for Women

Finding an excellent explanation of work-life balance is challenging. Increase and generation define work-family balance, one type of work-life balance, as "the level to which an individual is able to concurrently balance the sequential, emotional, and behavioral difficulty of both remunerated work and family responsibilities." There are numerous challenges to work-life balance demanding to physicians' life. In tablets, people's life and happiness swing in the balance. Patients want to be seen in actual time in the office or hospital and hospitalized patients want to be minded for approximately the clock. Calming concern contributors are regularly organization-based and wanted to think about problems of employee link in the regularly small stages they are working with employees and families, where relationship building and link are essential. Employees, like many other professionals, are regularly likely to work 50 or more hours per week. Employees in academic product and productivity have mostly long work weeks.

HR Challenges in Balancing Work with Life

As organizations increasingly lean on the skills, knowledge and customer orientation of their employees to gain competitive advantage, the HR departments are emphasizing more than ever before on employee motivation and measurement of parameters such as job involvement, job satisfaction and job engagement. It is being universally accepted that happy employees will be focused on their jobs leading to higher productivity and 'Great places to work' will attract and retain the best Human Capital and consequently maximize output. The entire arsenal of employee engagement initiatives ranging from lucrative compensation packages to employee-friendly policies and including periodic fun activities get deployed to ensure that employees love their work environment. It should therefore be a key management objective to insulate work from undue distractions and Work-Life-Conflict needs to be a key focus area.

Conclusion

For every organization, it is necessary to manage the work life balance for its employees. In fact, it requires the efforts from both the organization and the individual employee. Every organization focuses on reducing the cost of products and maximizing the wealth which is only possible if the employees are satisfied. Satisfaction of employees depends upon how successfully they manage their work life and personal life. Thus, the application of work-life Balance strategies can help organizations in generating stress free environment for working people & therefore help organizations in the achievement of goals.

References:

- http://www.iracst.org/ijrmt/ papers/vol5no12015/6vol5no1. pdf
- http://www.forbesindia. com/blog/business-strategy/ definitive-steps-to-maintainwork-life-balance-foremployees/
 - https://osha.europa.eu/ en/tools-and-publications/ publications/e-facts/e-fact-57family-issues-work-life-balance

- http://www.allresearchjournal. com/archives/2015/ vol1issue11/PartJ/1-10-177.pdf
- http://www.unicornhro.com/ blog/importance-of-work-lifebalance
- Poelmans, (2001). Work family conflict as the mediator of the work stress- mental health relationship. University of Navarra, Spain.
- Grover & Crooker, (1995). Who appreciates family-responsive human resource policies: the impact of family-friendly policies on the organizational attachment of parents and non-parents.
INDUSTRY 4.0: A CONNECTING JOURNEY IN MARKETPLACE

Chetna P. N. Client Solutions Lead, Infosys

Abstract:

The 4th industrial revolution is about how new technological solutions like IoT, Cognitive computing, Automation, Cloud technologies, Analytics etc are improving the efficiency and output of manufacturing firms. Industry 4.0 is paving the way for the new relationship between the firm and its market. The adoption of industry 4.0 is inevitable for manufacturing firms as far as value creation & competitive advantage remains top priority among the firms

The objective of writing this paper is to create an understanding & awareness of Industry 4.0 ecosystem and how it is transforming the manufacturing ecosystem paving the way for innovation, product excellence, and customer centricity.

This paper will depict what does digital transformation means to the organization, how the adoption of Industry 4.0 will benefit in short term & long term, emerging trends, strategic element, challenges, implications and potential threats involved in embedding the 4th industrial revolution in manufacturing systems / processes.

This paper will also bring out key insights on Why India should adopt Industry 4.0, Key sectors who are leading the way in the adoption, How India is preparing to adopt Industry 4.0.

Keywords: Awareness, Manufacturing Systems, Transforming Manufacturing Ecosystem, etc.

Introduction

The manufacturing domain is undergoing rapid technological transformation enforcing organizations to adopt technologically driven new techniques in their value chain to explore and internalize technological advancements in their systems and processes. The revolution in the manufacturing domain is expected to increase productivity, enhance efficiency, boost growth, shift economic gears, change workforce management. However, all these changes will ultimately lead to the competitive positioning of the companies with higher sustainability advantage.

The existing manufacturing ecosystem and technological innovations are causing a revolution in the global economy which is called 4th Industrial revolution and is currently transforming manufacturing ecosystems in phases. Industry 4.0 is expected to create greater efficiencies and change the relationship between producers, suppliers, and customers. Key technologies which are transforming the manufacturing firms include big data / analytics, RPA, Horizontal and vertical system integration, the Industrial Internet of Things (IoT), Cloud, Cybersecurity, Augmented Reality, etc.

What Is Industry 4.0

Industry 4.0 is nothing but computerization of industrial manufacturing process(originated from Germany) wherein blend of technological forces like advanced analytics, Big Data, Robotics & Automation, Artificial Intelligence, Internet of Things (IoT) will come together to digitize the process across the business value chain which promises consequence in terms of better predictive maintenance, enhanced customer experiences, improved asset management and innovative business models which will disrupt the existing ecosystem.

The key business objectives which

are expected to be addressed by the ongoing industry 4.0 transformation basically revolves around 2 parameters operational excellence and expanded services which will pave the way for new markets and higher revenues from digitally refined products.



Figure 1: Journey towards Connected Manufacturing Ecosystem – Industry 4.0



Figure 2: Current State of Digital

Table	1:	What	Does	Digitalization
Mean	to	Organ	izatio	ns?

Asset Utilization	30-50% reduction of total machine downtime		
Quality	Cost for quality reduced by 10-20%		
Service / Aftersales	10-40% reduction of maintenance cost		
Inventories	Cost of inventory holding decreased by 20-50%		
	40-55% increased		
Labour	productivity through automation		
Labour Supply / Demand	productivity through automation Forecasting accuracy increased to more than 85%		
Labour Supply / Demand Processes	productivity through automation Forecasting accuracy increased to more than 85% Overall productivity increase of 3-5%		

Key Technology Contributors in Industry 4.0

The below mentioned framework of key technologies will contribute towards reinvention of business models which will lead to better customer access, integration of horizontal and vertical value chains and digitization of offerings in terms of product & services. The entire value chain will be enabled by the track and trace devices to real time integration and execution.



Figure 3: Key Technology Contributors in Industry 4.0

How Smart Factory will empower the manufacturing ecosystem

The concept of Industry 4.0 indicates mitigating the typical challenges faced

by manufacturing sector like machine failure / downtime, defective products, scraps etc. as 4th industrial revolution is expected to enable manufacturing firms to operate more efficiently mitigating the loss associated with it. Many technological innovations in the past have positively impacted the manufacturing; but with the advent of advanced communications, ever growing demand of production efficiency, business leaders, suppliers and consumers are always looking out for newer solutions for maximizing output with more accuracy, insights, efficient production techniques, innovative distribution channels and connected consumer experiences. However, I feel there are five elements through which industry 4.0 will become empowering connected experience for the entire value chain of the business ecosystem which are listed as below;

- Connected Products: Adoption of industry 4.0 will ensure product competitive advantage because 4.0 holds the potential to increase the customer lifetime value by identifying the most used features of the product / much needed product features.
 - Connected Demand: A reinvented business model with increased customer centricity, new revenue models, cost reduction by using real time data as a means to drive customer satisfaction and development of new products.
- Connected manufacturing: Manufacturing sector has immense scope for improvising plant efficiency and product quality by resolving the issues that lie in the ecosystem by leveraging data points from thousands of sensors.
- Connected service: Empower the timely replacement of defective parts and minimize the downtime of machines & equipment's.
- Connected Value Chain: Enable

the development of specialist / customized products rather approaching the market with "one fit size".

How Can you assess the readiness for Industry 4.0

As per the current understanding industry assessment of 4.0 / the manufacturing firms can be categorized under 4 categories - pre conceptualization, conceptualized, evolved and revolutionary (who adopted end-end industry 4.0 best practices). However, to completely transform into smart factory there are few strategic elements which need to embedded in the operational / enablement layer of the manufacturing process which consists of -

- Interoperability machines, devices, sensors and people that connect and communicate with one another.
- Information transparency Systems which will create a virtual copy of the physical world through sensor data in order to contextualize information.
- Technical assistance Development of two-way systems which has the ability to support humans in making decisions and solving problems and also the ability to assist humans with tasks that are too difficult or not viable for humans. Decentralized decision-making —The ability of cyber-physical systems to make simple decisions
 - on their own and become as autonomous as possible.

Who Can Reap Benefits: First Movers will have competitive Advantage

Over the last couple of years, we have seen how Amazon, Google, and Facebook had been retaining dominant mindshare & market share in their respective market zones primarily because they invented new business models with significant data ownership compared to other players in the industry. The same rationale applies in manufacturing domain also since they thrive on data rich environment and if they can tweak their business models which will make use of the data powerhouse available in manufacturing space then they can truly benefit from the value industry 4.0 delivers. "According to PwC within the next 5 years, an advanced implementation of Industry 4.0 will become a "qualifier to compete" and the companies who will not invest will find themselves struggling to maintain market share, on top of facing higher capital funding costs."

The "wait & watch" firms will find it difficult to cope with rapid technological transformational change in the manufacturing sector and can be called as short sighted players in crafting their adoption strategy as the challenge is not only technology revolution as the biggest impediment lies in organizational & cultural transformational programmes which will impact the benefits to be reaped from the industry 4.0.

Key Impediments in Adoption of Industry 4.0

Any industrial disruption is not easy to be adapted and along with opportunities / benefits brings in challenges also. Most of the organization will foresee formidable challenges in the adoption of innovative technologies. Every mandatorily organization needs to broaden their knowledge with regards to the new technologies and also its applications and then should accordingly come up with customized digital strategies / process specific to their nature of the business. However, there are few challenges which can be foreseen as a part of ongoing digital transformation phase which includes:

• Data security: Integration of external systems and more frequent access to data systems will lead to the data security issues. Intellectual Property of the company may be affected due to onset of the data sharing economy.

- Heavy digital investments especially when there is a lack of clear vision with regards to the digital operations blueprint.
- Automation will lead to loss of human jobs which can impact the economic cycle.
- Slow expansion of infrastructure systems especially India may deter the firms from realizing the full potential value of Industry 4.0.

However, these challenges can always be mitigated by adopting the following practices

- Robust encryption: Embedding strong encryption and security features in the product design will mitigate the loss from data security issues.
- Consensus among vendors and companies on acceptance of commonly established standards will help in setting up standards and process.
- Chart out a viable digital strategy for the organization and make the investment in phases and create scorecard for measuring the impact.

What does Industry 4.0 symbolizes for India

India is one of the largest internet markets with 500 million users and with the advent of Industry 4.0 India is actively participating in digital transformation journey with few companies already exploring industry 4.0 applications and majority of them are yet to access technologies like IoT, Artificial Intelligences, RPA, etc.

Currently, India is running behind the pace compared to its peer regions in the adoption of Industry 4.0; the integration of cyber physical systems is still at a very insignificant proportion. India is hub MSME (Micro, Small Medium Enterprises) and they have limited access to technological innovations due to high cost associated with it. However, India is preparing itself to accelerate the technological adoption process by charting out few strategies which includes:

• One of the largest manufacturers of two-wheelers (Bajaj Auto) in India has installed co-bots at its plant to automate the assembly lines.

•

- The largest two-wheeler manufacturer (Hero MotoCorp) of India is using additive manufacturing for product designing of all two-wheeler parts for fitment and functional testing leading to reduction time -to-market.
- A Bengaluru-based packaging company has connected machines over a network that provides a monthly dashboard about the machines.
- India's first Smart factory is being set up at Bengaluru Indian Institute of Science's (IISc). This smart factory powered by data exchange in manufacturing and the Internet of Things (IoT).
- The heavy industries and public enterprises ministry are facilitating the establishment of four centres in the country to help SMEs implement Industry 4.0.
- Make in India Programme is one of the other initiatives undertaken by the Government to face the competition and showcase smart factory capabilities of the country.

Blueprint for Successful Industry 4.0 Adoption

1. Map Out the Strategy: Assess the digital maturity of your organization and set a target for the next 5 years in phases. Do a thorough viability study of technologies which are triggering Industry 4.0 to understand the areas of strength, weakness and areas of improvement for your organization.

- 2. Run Pilot Projects: As the concept of Industry 4.0 is receiving overwhelming response from all corners of the world, challenges and issues will also arise accordingly. It may not possible to get funding immediately so it becomes mandatory to run some pilot projects and validate the fund to be received.
- 3. Define the capabilities: Understand the nature of your business, and capabilities it will require to run those functions. Develop an agile IT function that will respond to flexible business demands.
- 4. Become Data efficient: Just gathering of data will not suffice adoption of Industry 4.0 but analyzing it efficiently will enable decision making skills of the organization which requires solid single integrated solution / data analytics platform.

Conclusion

There is lot conversed and written about Industry 4.0 across various technological and industrial forums. Most of the countries are taking initiatives to lead the world in smart manufacturing and some countries are almost there in getting converted into smart manufacturing countries. However, the wider audience is yet to quantify the impact of its implementation. There is no doubt that there is no full proof technology available in the world however the real smart countries will be those who can mitigate the challenges which Industry 4.0 carries along with it.

References

- 2018 IDG Survey of 702 IT and business management decisionmakers
- Mckinsey report on digital in industry
- https://www.bcg.com/enin/capabilities/operations/ embracing-industry-4.0rediscovering-growth.aspx -2018

- https://www.forbes.com/sites/ bernardmarr/2016/06/20/ w h a t - e v e r y o n e - m u s t k n o w - a b o u t - i n d u s t r y - 4 -0/#1a7a85e4795f - 2017
- http://resources.aima.in/ presentations/AIMA-KPMGindustry-4-0-report.pdf - 2018
- https://www2.deloitte. com/insights/us/en/focus/ industry-4-0.html: 2018
- https://www2.deloitte.com/ insights/us/en/deloittereview/issue-22/industry-4-0-technology-manufacturingrevolution.html: 2018

EFFECTS OF SOCIAL MEDIA MARKETING ACTIVITIES ON BRAND PREFERENCE AND CONSUMER RESPONSE IN FMCG COMPANIES

Kritika Jain & Pallavi Saxena Management Student, Asian Business School

Abstract:

Industry 4.0 is a blend of advanced analytics, big data, robotics and automation, artificial intelligence, across the business value chain.

The current study analyzes the effects of social media marketing activities on brand preferences and consumer response in FMCG (Fast Moving Consumer Goods) Companies. A survey is conducted for who used social media marketing websites for buying products. The data was collected via an online survey. The result is showed that trendiness is the most important social media marketing activities components, as well as corporate image, service quality and price is also important which provides consumer satisfaction and consumer loyalty, that effects on brand preferences.

Keywords: Social Media Marketing Activities, Brand Preference, Consumer Response, Trendiness, Corporate Image, Service Quality, Price, Consumer Satisfaction, FMCG(Fast Moving Consumer Goods), etc.

Introduction

The term 'Social Media' according to the Cambridge English dictionary, is defined as 'websites and computer programs that allow people to communicate and share information on the internet using a computer or mobile phone'. The accessibility and scalability of social media make it a lucrative option for the purpose of marketing. Social media has already revolutionized marketing. Most of the companies claim they have benefited from Social Media Marketing. Effective use of social media networking sites can be a promising means of not only finding a new potential customer, but also providing an avenue to get feedback from the already created customer. The following figure illustrates the potential enormity of the audience at one's disposal via social media. Facebook has 2.23 billion registered account (October 2018), Twitter 335 million (June 2018) and LinkedIn 562 million (September 2018). According to a study in 2018, India had the largest growth in terms of social media users. There are 294 million Facebook users and 30.4 million Twitter users in India (2018). The term social media marketing according to the word stream 'Social media marketing is a powerful way for businesses of all sizes to reach prospects and customers.

Your consumer is already interacting with brands through social media, and if you're not speaking directly to your audience through social platforms like Facebook, Twitter, Instagram, and Pinterest.' Marketing experts predict that social media is becoming more and more integrated in the organization and gaining significance as a means of communication. The Explosive growth of personal computers and smartphones is making social media connectivity easier.

FMCG industry is the most prominent and the largest category on social media today. Use of social media can benefit business by improving sales, consumer base and penetrating new markets. However, reputation management has become a critical issue to manage as social media can instantly spread both negative as well as positive traits of the product and also the response of the customer. Companies have to be alert to potential risks of negative feedback and respond immediately. Many companies took a serious hit to their reputation simply because they took too long to respond to issue raised on social media.

Objectives of the study

 To study about consumer preference on brand.

- To assess the role of social media marketing as an emerging marketing tool.
- To study about what factors consumer consider before buying a product.



Figure 1: Conceptual Framework

Literature Review Social Media Marketing

According to Lisa - the buyer group, "Social Media is today's most transparent, engaging and interactive form of public relations. It combines the true grit of real-time content with the beauty of authentic peer to communication". According peer to Michelle Chmielewski- Synthesio "Social media is not about what each one of us does or says, but about what we do and say together, worldwide, to communicate in all direction at any time, by any possible (digital) means". According to Dave Kerpen - Likeable Media 'Social Media is online text, pictures, videos and links, shared amongst people and organizations.

Brand Preference

According to Ashley Friedlein- E consultancy, 'Brand preference is the sum total of how someone perceives a particular organization. Branding is about shaping that perception'. As Dave Kerpen –Likeable Media 'Branding is the representation of your organization as a personality. Branding is who you are that differentiated you'. As David Ogilvy, author of advertising 'A brand is the intangible sum of a product's attribute: its names, packaging and price, its history, its reputation, and the way it's advertised.

Consumer Response

In general language, Consumer response is the reaction by the organization to the queries and activities of the consumer. Dealing with these queries intelligently is very important as small misunderstanding could convey unalike perceptions. During the situation, if the supplier wins to satisfy the consumer by properly answering his queries, he succeeds in explicating a professional and emotional relationship with him.

Consumer response is the positive or negative feedback a company receives about its products, services or business ethics. A consumer response can be solicited by the company or initiated by a consumer. The Response can include a letter or answer to questions about a product or issue within the company.

Hypothesis

H1: Social media marketing has a positive effect on consumer's brand preference.

H2: Social media marketing has a positive effect on consumer loyalty.

H3: Social media marketing has a positive effect on consumer satisfaction.

Research Methodology

For getting a better understanding of the impact of social media on consumer response, the nature of the study is qualitative. The methodology that is followed includes primary data collection. Primary data collection includes a simple questionnaire. Such a questionnaire helps us to ascertain the difference in consumer response and brand preference towards positive effects of social media marketing on brand preference and consumer response.

The questionnaire items used in this study were developed based on the previous questionnaire. The questionnaire surveyed effect social media marketing on consumer response with five components - trendiness, corporate image, service quality and price. The data was collected through structured questionnaire. 120 questionnaires distributed among consumers and received back 93 questionnaires which were properly filled. 93 questionnaires are fairly attempted with 78% response by the consumer of FMCG (Fast Moving Consumer Goods) Companies.

Results Table 1: Demographic Characteristics

Gender Frequency		Percentage
Male	44	47.3
Female	50	53.8

Table 1 indicates the gender of respondents to the survey. This shows that FEMALE comprises the highest percentage of respondent of the study.

Table 2: Age Profile ofRespondents

Age	Frequ- ency	Percentage	
15 TO 20	36	38.79	
21 TO 30	51	54.89	
31 TO 40	2	2.29	
41 TO			
50 and	4	4.39	
above			

Table 2 indicates the age profile of respondents to the study survey.

This shows that 21 to 30 age group comprises the highest percentage of respondent of the study.

Table 3: Occupation of therespondents

Occupation	Frequ- ency	Percengate
Student	58	62.3%
Business	5	5.3%
Employee	17	18.27%
Household	5	5.3%
Professional	8	8.60%

Table 3 indicates the occupation of the respondents of the survey. This shows that students comprise highest percentage of respondents of the study.

Data Analysis

Data analysis focused on three major aspects of FMCG market:

- Use of social networking sites and brand preference.
- Factors affecting consumer's brand preference majorly that is trendiness, corporate image, service quality, and price.
- Which age group use more social media marketing for making buying decisions?

Most Familiar Social Networking Sites

This histogram shows that facebook is the most preferred social networking site among respondents followed by Twitter and LinkedIn. The reason Facebook is most mainstream Social Networking Sites. Since it gives a multistage to users, the client can share by means of blogging, pictures, videos, make pages and so on it is significantly easier to understand. Twitter is quickly picking up ubiquity, it is still contemporary and youth is still amped up for the new interphase.



Graph 1: Most Familiar Social Networking Sites

Help To Find Their Potential Consumer

Question was asked on three points that is Agree, Disagree and Neutral. According to this study, social media marketing help to find their potential consumer.



Graph 2: Help To Find Their Potential Consumer

Factors Consider Before Buying FMCG Product

This study shows that trendiness is not a single factor to consider before buying a FMCG product but also consider the corporate image, service quality and price.



Graph 3: Factors Consider Before Buying FMCG Product

Consumer Loyalty

This study shows that consumers are strongly loyal with their brand preference of FMCG products.



Graph 4: Consumer Loyalty

Ta	able 4: Age Gr	oup	w.r.t Mo	ore Use
of	Social Media	for	Making	Buying
	_			

D	•	•	
De	C19	310	m
20	U.L.	10	

Age Group	Social Media User	Percentage	
15 TO 20	29	80.56%	
21 TO 30	44	86.27%	
31 TO 40	1	5%	
41 TO 50	3	75%	

This table shows that 21 to 30 age group use more social media marketing for making buying decision that is 86.27% in respect of the survey.

Influence of Social Media Markeing on Demand of products of FMCG Companies:

By the help of social media marketing, the demand of products in FMCG companies was influenced with the share of 19.35% of homecare products, 56.98% of skin and haircare products and 23.65% of food and beverage industry.



Graph 5: Influence of Social Media Markeing on Demand of products of FMCG Companies

Conclusion

Social media marketing is a very powerful tool of marketing which is yet to meet its full potential in the Indian FMCG market. Today's business is more about consumer's orientation and consumer feedback and social media can be the channel to communicate with the consumers. It is more important to build a social relationship rather than a transactional relationship. The trendiness is a most important factor of social media marketing activities, as well as corporate image, service quality and price is also important which provides consumer satisfaction and consumer loyalty, those effects on brand preferences. The customer 21 to 30 age group use more social media marketing for making buying decisions.

References

- Eun-JuSeoJin, WooPark (2017). A study on the effects of social media marketing activities on brand equity and customer response in the airline industry.
- Ujjwal dave (2016) Impact of social media marketing on FMCG sector in India.
- Zulqurnain ali, Muhammad Aqib shabbir, Mashal rauf, Abid hussain (2016). To Assess the Impact of Social Media Marketing on Consumer Perception.
- Rajendra Nargundkar (3rd Edition) Marketing Research, The McGraw Hill Companies.
- M.I.M. Hilal (2018). Impact of social media marketing on purchase intention: Creation of brand equity for Sri Lankan brands.
- D. Rohatgi, Garima Malik (2017). A study on preference for Indian local/regional FMCG brands among Delhi consumers.
 - Helena Alves, Cristina Fernandes,
 Mario Raposo (2016). Social
 Media Marketing: A Literature
 Review and Implications:
 Implications Of Social Media
 Marketing.
- Mr. M. Marimuthu, Dr.C.Vijai (2016), Social Media Marketing In India.

THE CHALLENGES OF ENTREPRENEURSHIP IN INDUSTRY 4.0: A CASE OF ALIGARH DISTRICT IN UTTAR PRADESH

Meenu Research Scholar, Mangalayatan University

Abstract:

The fourth industrial revolution or industry 4.0 is impacting on the smart environment for entrepreneurship. The changes arising from the digital revolution in the production and value creation process are radical and pose a real challenge to enterprises. Companies need to develop strategies in good time to exploit the new challenges and the possibilities of digitalization, to improve established processes and develop new business models. The industrial 4.0 also impact on industrialization for Aligarh through information technology, internet, autonomous, integrated products and services, ecosystem of intelligence, entrepreneurship wants to use all technologies which help to solve the current challenges in new path that were not thought before. This paper mainly focused on upgrade technologies in Aligarh. It also explores the impact of fast-growing technologies on the transformation of socioeconomic and environmental systems, and technological change can generate sustainable economic growth and employment. It also explores the fast growing technologies on the transformation of socioeconomic and environmental systems, and technologies on the transformation of socioeconomic and environmental systems.

Keywords: Industry 4.0, Entrepreneurship, Technologies, Challenges, Environment, etc.

Introduction

Many years have passed and now we are standing on the cusp of another Indian revolution. The fourth industry revolution or industry 4.0 has become quite energized. Worldwide economy is ready to adopt it and India is also trading its path in its own way.

- The First Industrial Revolution has started in the mid of 1760 to 1840 about 18th century by James Watt who made new Mechanization through water and steam power. Through using machines of water wheal and steam engine helps to skilled artisans for making goods by hand. The transition was the most popular in the textile industry, but the effects of the first industrial revolution was felt in almost every aspect of daily life. So, that was industry 1.0. Second The Industrial
 - Revolution has started in end of 19th and starting of 20th century about 1870 to 1914 by Henry Ford's who invented the mass production and assembly lines powered by electricity. The second industrial revolution was better to do new using

technologies with improving existing ones.

The Third Industrial Revolution has started in 1970 to 20. The computerization system and automation system was produced. These progresses brought changes in the scale to enable levels of precision and accuracy introduced at the bottom of the world.

Industrial revolution	Basic Facts	Time Period
1.0	Mechani zation	1760-1840
2.0	Mass Production	1870-1914
3.0	Computer ization	1970-20??
4.0	Now	

Currently, the Fourth Industrialization Revolution is the smart modest route that called the future sometimes factory, which is the main foundation of the fourth industry revolution. The fourth industry revolution smart modest route includes extensive use of data exchange and autonomy

in monitoring processes, including areas likely- advanced analytics, cyber system, artificial intelligence (AI), internet of things (IoT), cloud computing. etc. the effect of several manufacturing companies in India has started implementing the power of the fourth industry revolution in the operation. The fourth industry revolution today's digital India in made in India. For example, today some of the few manufacturing factories are deploying advanced data analytics in some other way's some of which are also using addictive manufacturing, autonomous and robotics. The fourth industrial revolution is the unsurpassed way of production which is creating new ways, as well as new technologies in India, is called industry 4.0.

Indian economy with the high demographic benefit is being seen as a one of the world's fastest growing economies. Here, with the average GSDP (Gross State Domestic Product) growth rate of 7% for the last 3 years (2014-2017), India has remained the world leader. Moving forward the vision of the government of India, the Uttar Pradesh government has declared its industrial investment and employment promotion policy in 2017, which will lead to dynamic progress and investment in industrialization in the state. Uttar Pradesh is third economy and has the largest consumer market with more than 200 million populations. In Uttar Pradesh, 262 Prime Minister are at the Indian project centers which is the largest of the all the states. Uttar Pradesh is one of the top five manufacturing states of India and swelling in the state is the second largest number of Small and Medium Enterprises. India's Agriculture is the great source of Uttar Pradesh for its residents and along with agriculture; Aligarh is also famous for an industrial sector. Aligarh is a district of Uttar Pradesh (India). It is mostly known as a university town where the famous Aligarh Muslim University is located, it is also well known district internationally because of its locks industry.

Entrepreneur: it means a person who create new venture are called entrepreneur.

Entrepreneurship: it is a process of creating; designing, launching, new venture is called entrepreneurship.

Role of entrepreneurs in business:

- 1) Initiator
- 2) Risk taker
- 3) Reduce risk
- 4) Allocator
- 5) Adhering to the legal norms
- 6) Forecasting

Entrepreneur plays a vital role in a financial growth and standard of living of the country.

These are the six top most roles an entrepreneur that helps to developing the growth of the industry as well as country. Under the fourth industrial revolution the entrepreneurship process works like- horizontally as well as vertically with the help of internet that can manage actual time.



Figure 1: Challenges of Entrepreneurship for Industry 4.0

The fourth industry revolution sustains to keep change the way we connect with the world around us, and then new challenges grow. So here are many challenges-

1)

- Machine learning algorithms: The machine learning period incorrectly often changes with artificial intelligence but learning the machine is actually an area of artificial intelligence. Machine learning is often also considered as pre- estimated analysis or prediction modeling. Machine learning use algorithms programme which receives input data and analysis to predict output valves with in hunting range. Because these data is fed to new data, they learn and optimize their operations to improve the developing intelligence overtime. There are four modus of machine learning algorithms-
 - Supervised learning
- Semi- supervised learning
- Un-supervised learning
- Enforcement learning
- Actually choosing the right machine learning algorithms

depends on many factors likedata size, diversity, quality and also wants to answer the data with the data drive. It also comprises data points, accuracy, parameters, training time, and so on. So choosing the right algorithms is the combination of experimentation, business need, availability, specification. time machine Can sav learning algorithms are a cheat sheet that will help you to find one of the most suitable for your specific challenges.

2)

Cloud computing: The word cloud computing was famous by Amazon.com who released its elastic compute cloud product in 2006. The phase reveals cloud computing in the beginning of 1996 which is mentioned in a Compaq internal document with the first moon. Cloud computing has been used to represent the network of computer devices in the original. The main focus of cloud computing is to permit users to take advantage from all the technologies without knowing any expert knowledge about toadying. The main phase of cloud computing is to cut costs and help users to focus on their main business as obstacles to buying hurdles. For cloud computing the main technology is virtualization. This virtualization software helps to provide the duration required to speed ups its operations and overcome the cost by increasing infrastructure utilization. Automated automation computing process through which users can manage resources on demand. Reduction of users partnership automation increase the process, labor cost decrease and the likelihood of human error is reduced. The cloud computing utility computer leverages the concepts, so that metric software services can be used. Cloud computing concept take from service oriented architecture (SOA) which can helps to all users to break all phase problems into services can be integrated to the solution. Cloud computing provides all its research in the form of services and allow access to well established standard and best practices to access the cloud service in a global and easy way to obtain. ASO's domain cloud computing also leverages the concept of utility computing that provides metrics for services to be used. Cloud computing also confers the tools and technologies to make intensive parallel application with suitable prices comprised to traditional parallel computing techniques. There are three types of cloud computing-

- Public cloud (operate by third party cloud service provider).
- Private cloud (cloud computing used exclusively by a single business or organization).
- Hybrid cloud (combine public as well as private cloud together).
- Adopt new business model: A 3) business model is a conceptual surtax that helps the provision of a product or industry and involves the goals and purpose of the industry and how it intends to obtain them. A business processes and policies adopted by the industries are the part of business model. Thus, a business model is a rational description of our industry, which delivers itself as well as the value for the customers. The widespread use of business model came in to being with the advent of a personnel computer, which allows the people to test

and model different components of the business. Before that successful business model was mostly made by an accident, not by the design. In industries there are only two business modelthe first part deals with product design and manufacturing and second part of business models related with everything regarded to product selling by finding the right customers to sell the product. The types of business model-

- Manufacture
- Distributor
- Retailer
- Franchise
- Bricks and clicks
- Fermium
- Subscription
- High touch
- Low touch
- Aggregator
- Target potential customer: 4) Under the fourth industries revolution, there is one of the biggest challenges faced by small industries owners are informing that are talking to his target market. With the limited funding -fund, it is necessary that you talk your prospects with the right people. It may seem obvious that there are so many industries owners those who do not give a little thought about who will buy their products or services before starting their distribution, but without some main steps information and knowledge how can you grow a business successfully in the market. So firstly define these steps like-
 - Define your target market: It is clear that firstly you define your target market and also having a clear concept of your target customers that will helps industries to set marketing activities that are targeted and also cost effective.

- Reach near target market: Now you have to consider how you reach your target audience spent time and profiles in your target market, that will helps to find out steps as much easier than need to maximize the target market investments "fish where a fish is".
- Identifying what type of customer they are: The main aim of this industries owner's is that to search about all types of customers with each description outreach.
- Tailor your marketing to your customers: By using the marketing make sure that your marketing budget has the most impact and is more likely to go to the high value sales and loyal customers coming to the home. So can say dedicating time to specifying the main target market that will support in much focused, most effective in marketing activities for gained better return investments.
- Finance their business venture: Putting all the eggs in a basket is not a good trade strategy in future. So that is main truth comes when it comes to the finance in your business. While presenting the accounting track and financial information of your industry. Industry finance will help you to manage your money and to make your operation more useful. There are typical sources of financing for startups-
 - Personnel investment
- Angles

5)

- Business incubators
- Love money
- Venture capital
- Government grants and subsidies
- Bank loans

10)

- Entrepreneurs can exploit new 6) digital technologies to enter developing markets: Social, mobile, analytics, cloud, cyber system, etc. are the main phenomena which can be helpful to leveraging the new digitalization technologies in such a way. These all support to creating and doing much business in the digitalization era. Digitalization entrepreneurship can be explain as embracing by a order to improve business operation, new business models accelerate business intelligence in high intensity with the use of new digital technologies and connect with customers and interest holders through new channels.
- Better manage the administrative 7) burden: Owners of industry want to produce more work. Although they are trying to forget the amount the dealing with administration workers, productivity has a direct impact. In fact, there is an important situation to reduce less paper work more efficiently which helps to overcome the administrative burden. By the help of fourth industry revolution, lots of industries is dreaming of a simple and more efficient administration that helps to reduce workload and positively contribute to the quality of each customers relationship.

9)

- Use cloud base specialty HER software.
- Avoid postponing task.
- Billing should be outsourced.
- Seek the advice of a mentor.
- Prioritize and delegate.
- Hire competent staff.

These helps to manage the administrative burden shapely.

8) Digital transformation of labor market: Recently digital changes

have happened in India and a lot has been said deservedly. The so-called fourth industrial revolution has become an in effective rule for the last few years. Undoubtedly, this digital conversion promises to challenging and stimulating process for organization whose aim is to increase their productivity and performance to meet with their business models or goals. Cultural change, consequences are playing the lead role to transformation of labor market. Digital transformation is the main which is entering in a new era vision they have influenced by labor or customer trends and daily life. Now a day's digital transformation is stronger than ever and it will surely have a big impact on industries, economic and societies in the future.

Through digital transformation, many industries have adopt new tidies, into their business strategy to trace their consumers needs, desire and more effectively.

Improved availability of big data: The term of data availability is used by computer storage manufactures and storage service providers (SSP) which describe the products and services that as certain that data regularly to be available at a expected level of the performance in conditions ranging from normal through disasters. Integrity, confidentially non-reproduction and integrity information assurance are the main five pillars of availability of data. But information assurance is the one of the main part of availability. Information assurance affected with the storage, which can be at an official facility or can be local.

Open up enormous opportunity entrepreneurship for and business in the digital age: The internet is the main part of the digital era which made many tools and techniques to traditional entrepreneurs and it help also an opened ups new place to do business. Entrepreneurial activity is one of the main factors of digital environment. There are no lower or starting capital needed. There are several self employed people who take the internet to create portfolio careers. There are the internet is full with lots of opportunities to hiring the skills, search new market, export, work from home, it helps to people to attracting and making different types of choices related with how they work, the rapidly growth of entrepreneurs has connect with digital age.



Figure 2: The Biggest Impacts On Entrepreneurship Industry 4.0 Models

The fourth industry revolution or Industry 4.0 is consign to the main changes impacting the logistics, supply chain, and manufacturing industry. However, the fourth industry revolution consign as the assessment of a smart factory. However, the fourth industrial revolution impacting across lots of sectors. Under this research, there are some main and biggest impacts that matter on industry 4.0 -

- Reduction in the need for human labor is also necessary for a different skill set of force.
- Real time information and better decision making.
- Improved quality and improved innovation.

- The ability to understand what the customers really want to do.
- On demand manufacturing and customization.

Conclusion

We do not have to wait for the fourth industry revolution we already have between them. Its major technologies are in use now a day. Few sectors are using these advance technologies in their enterprises. Now the fourth industrial revolution is better than before. Can say, it is the key of success. The fourth industrial revolution will change the whole enterprise's modest route for future development, and economic growth also. It helps to leading global industries. It is the time of imagination and progress in enterprise sharply. In India, the fourth industrial revolution will help in- Storage system of resources within the cyber system, Innovation in the enterprise helps to emulate, Individual progression, Progress of the network and automated, Unique technologies transform the whole world, will Industries will connect their machines, Smart self-tuning for an enterprise, Communication and interaction with the people, enterprise, customer and industry, different types of products and machines, better industrial processes in production and new ways of working are the main origin of fourth industrial revolution in India, which helps to use unique technologies, changing in industrial environment overcoming the challenges.

References

 https://www.sages of tware.
 co.in/blogs/what-does-industry 4.0-revolution-means-formanufacturing.industry

- https://www.proschoolonline. c o m / b l o g s / w h a t . i s industry4.0and in India prepared for the change
- Entrepreneurship in India: a global perceptive, Dr. Anand Kulkarni, https://wwwquies. com/entrepreneurship-Indiaglobal-perceptive/
- Industry 4.0: building the digital enterprise, https://www.pwc.in/ assets/pdfs/publications/2016/ industry-4.0-building-the-digitalenterprise.pdf
- https://wwwibof.org/states/ utttar/pradesh-aspx.
- https:///wwwsas.com/engbinsights/articles/analytics/ machine-learning-algorithms. html.
- https://wwwen.wikipedia.org/ wiki/cloud-computing.
- https://www.talentedladiesclub. com/articles/four-siimplesteps-to-defining and reachingyour-target-market.
- https://wwwsmallbusiness. chorm.com/meaning-businessfinance-4108.html.
- https://wwwjournals.elservier. com/technological-forecastingand-social-hange/callforpapers/digital-entrepreneurshipcreating-and-doing-business-inthe.
- https://wwwsearchstorage. tectarget.com/definition/dataavailability/
- https://www.engineering. com/advancemanufacturing/ articlesID/16521/what-isindustry-4.0-anyway-aspx.
- Fundamentals of entrepreneurship by H. Nandan.
- Entrepreneurial of development by Dr. S.S Khanka.

- S. Jayadatta, (2017), Major Challenges and Problems of Rural Entrepreneurship in India, IOSR Journal of Business and Management (IOSR-JBM), E-ISSN: 2278-487X, p-ISSN: 2319-7668, Volume 19, Issue 9. Ver. II., PP 35-44.
- Ganly Kate, Mair Johana, (2009), Social entrepreneurship in rural India: A small step approach towards institutional change, Occasional paper-169 E, IESE Business school- University of Navarra.
- Opafuno O. Zacheus, Adepoju. O. Omoseni, (2014). The Impact of Small and Medium Scale Enterprises on Economic Development of Ekiti State, Nigeria, ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online), Vol. 5, No. 16.
- h t t p s : / / w w w , . telentedladiesclub.com/ articles/four-simple=stepsto-definingandreaching-your. targetmarket/
- Business development bank of Canada (IA) https://wwwbdc. ca/en.articles-tools/start-buybusiness/start-business/pages/ start-up-finacing-sources-aspx
- https://www.small.business. chron.com/meaning-businessfinance-4108.html

•

- https://wwwsagessoftware. co.in/blogs/what-does-industry-4.0-revolution-mean-for-indianmanufacturing-industry/
- https://wwwaligarhclassified. com/index.pdf/aligarh-history
- https://www.en.wikipedia.org/ wiki/economy-of-uttarpradesh

SUBSCRIPTION ORDER FORM

Please	accept	the	enclosed	Demand	Draft	Nodateddrawn
on				Bank in favo	our of As	sian Business School payable at New Delhi
for Rs	f	towards	the subscri	otion of " AB	S Intern	national Journal of Management".
Name						
Organisat	tion / Inst	itute				
Mailing A	ddress					
City			Pin/Zip		(.Country
E-mail						

Mail to Editor-in-Chief ABS International Journal of Management, Asian Business School, Marwah Studios Complex II, Plot A2, Sector 125, Noida – 201303 INDIA. Tel.: 0120-4594200

GUIDELINES FOR AUTHORS

ABS International Journal of Management of Asian Business School, Noida invites original and research based unpublished papers in the area of management. This journal publishes papers of interest to academic researchers and industry practitioners. It encompasses all the areas of management. Papers are hence accepted for publication on the understanding that these papers contain original unpublished work, not submitted for publication anywhere else.

- The paper should be typed in MS Word.
- Title of the paper should be followed by full name, e-mail, contact number, affiliation(s) of the author(s).
- Font: Main Body 11pt., Heading 18pt., Style Times New Roman.
- Manuscripts: Should be upto 4000 words (A-4 size, typed 1 paragraph spacing, 11 point font).
- An abstract of about 200-250 words must be present.
- Tables and Figures: To the extent possible, tables and figures should appear in the document near/after where they are referenced in the text.
- The paper must start with an introduction and subsequent sections should follow.
- The paper must end with a conclusion summarizing the findings of the paper.
- Referencing: It is the author's obligation to provide complete reference and follow a specific referencing style.
- Editor reserves the rights to modify and otherwise improve the manuscripts to meet the Journal's standard of contents, presentation and style.
- The Editorial Board reserves full and unfettered right and sole discretion to accept or refuse a Research Paper/Article/Case Study for publication; they would be under no obligation to assign reasons for their decision.
- Authors may revise the Manuscripts, if necessary, before the papers are accepted for publication.
- All Manuscripts and Editorial Correspondence should be addressed to

Editor-in-Chief

ABS International Journal of Management, Asian Business School, Marwah Studios Complex II, Plot A2, Sector 125, Noida – 201303. INDIA Tel.:0120-4594200

ABOUT ASIAN BUSINESS SCHOOL

Asian Business School popularly known as ABS was established with a vision of providing "Growth with Education". The mission of Asian Business School is to establish well researched and pragmatic business practices to enable the students to meet the challenges of a fast changing business environment in the new world economic order. Asian Business School aims at developing conceptual and practical skills to convert abilities of students into managerial competence, required in today's competitive environment.

We at Asian Business School strongly believe that a blend of relevant knowledge, skill and right attitude is essential for the overall development of students which determines their growth & success in the corporate world.

Asian Business School is one of the leading B-school in the country that offers full-time AICTE approved management programmes, with specialization in marketing, finance, human resource and information technology. The school also offers post graduate diploma course in Media and Entertainment.

The core advantage of studying at ABS is to get an internationally recognized qualification, by the finest academic minds who impart holistic knowledge through innovative teaching methodology. The support from the industry is immense in the form of internship and job placements. Asian Business School has international tie-ups with reputed institutions like Oxford Business College, Oxford, UK, Winchester University, Universities of Central Lancashire, Northumbria University, Academy of Arts University, Deakin Universities, that tends to provide an international edge to its students.

Asian Business School curriculum focuses on enhancing its students' capabilities so that they can manage and lead, by ensuring that they learn to adopt a systematic approach in identification of business problems, their solutions and use their analytical, problem solving and decision making skills to deal successfully with management issues across a range of functional areas.



Approved By AICTE, Ministry of HRD, Govt. of India Marwah Studios Complex II, Plot A2, Sector 125, Noida - 201303 www.abs.edu.in