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EDITORIAL

It gives me immense pleasure to bring before you Synergy-I.T.S Journal of IT and Management, Vol 16. No. 1

This issue of the Journal is unique in the sense that it brings together a variety of papers from diverse disciplines, capturing insights from analysis of stocks fund performance to factors influencing retails investment decision, going on to study challenges and strategies for supply chain of perishable products and moving further to the study of smart transportation. This issue also briefs on the ways digitalization is transforming HR and how AI is helping to deliver next generation HR experience to employees.

The journal is enriched with extensive analysis and research inputs from Dr. Jeelanbasha V on "Performance of selected Gold exchange traded funds in India in relation to their market indices for determination of under/over performance of funds", Mr Sanjeev Kumar on "the study of factors affecting Individual investors' investment decisions in Indian capital market", Mr Alok Singh and Dr Sandeep Mondal on "Supply Chain Performance evaluation of perishable products and critical challenges in existing frameworks", with noteworthy contributions on technology in HR from Mr Rahul Mehta elaborating the "Role of AI in enabling HR to deliver the next generation of "employee experience" and Ms Sonika Sharma & Dr Sunita Shukla on the "Impact of digitalization on HR transformation". Ms Harshita Bhatnagar offers new perspectives to ease traffic woes with her study of Smart Transportation, current reforms & developments in transportation sector in India, addressing the major pertinent issue of traffic jams in our growing cities.

As it is evident, the contributed papers delve into multiple aspects of management in different spheres of business and intellectual pursuits offering new perspectives and strategies to engage the reader and spur innovative thinking.

At Synergy, it has always been our endeavor to provide a framework for the furtherance of research into different aspects of Management and Information Technology. It is hoped that the present issue shall continue the tradition of aggregating path breaking research ideas from such diligent minds.

Prof (Dr.) Ajay Kumar
Editor-in-Chief
Synergy

Performance Evaluation of Selected Gold Exchange Traded Funds in India-An Analysis

Dr. Jeelanbasha.V[1]

Abstract:

An exchange-traded fund (ETF) is an investment fund traded on stock exchanges, much like stocks. An ETF holds assets such as stocks, commodities, or bonds and generally operates with an arbitrage mechanism designed to keep it trading close to its net asset value, although deviations can occasionally occur. Most ETFs track an index, such as a stock index or bond index. ETFs may be attractive as investments because of their low costs, tax efficiency, and stock-like features. By 2013, ETFs had become the most popular type of exchange-traded product.

Objectives of the Study are to analyze the performance of selected Exchange Traded Funds (ETFs) namely, Axis gold ETFs, Bankbees ETFs, Kotak gold ETFs, HDFCMF gold ETFs, and IDBI gold ETFs; to conduct a comparative analysis of selected Exchange Traded Funds (ETFs) in relation to their market indices for determination of under/over performing and to conclude based on findings. The data has been collected both from primary and secondary sources. Primary data is also drawn through responses from the questions on the topic from the concerned people. The secondary data has been extensively used for the analysis and was collected from official websites, journals, books, published documents and research articles. The Secondary data has been collected for a period of five years from 2013-14 to 2017-18. For analyzing the data, Sharpe, Jenson, and Treynor's Performance evaluation models of investment have been used.

Introduction:

An exchange-traded fund (ETF) is an investment fund traded on stock exchanges, much like stocks. An ETF holds assets such as stocks, commodities, or bonds and generally operates with an arbitrage mechanism designed to keep it trading close to its net asset value, although deviations can occasionally occur. Most ETFs track an index, such as a stock index or bond index. ETFs may be attractive as investments because of their low costs, tax efficiency, and stock-like features. By 2013, ETFs had become the most popular type of exchange-traded product.

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ETF distributors only buy or sell ETFs directly from or to authorized participants, which are large broker-dealers with whom they have entered into agreements—and then, only in creation units, which are large blocks of tens of thousands of ETF shares, usually exchanged in-kind with baskets of the underlying securities. Authorized participants may wish to invest in the ETF shares for the long-term, but they usually act as market makers on the open market, using their ability to exchange creation units with their underlying securities to provide liquidity of the ETF shares and help ensure that their intraday market price approximates the net asset value of the underlying assets. Other investors, such as individuals using a retail broker, trade ETF shares on this secondary market.

An ETF combines the valuation feature of a mutual fund or unit investment trust, which can be bought or sold at the end of each trading day for its net asset value, with the tradability feature of a closed-end fund, which trades throughout the trading day at prices that may be more or less than its net asset value. Closed-end funds are not considered to be ETFs, even though they are funds and are traded on an exchange. ETFs have been available in the US since 1993 and in Europe since 1999. ETFs traditionally have been index funds, but in 2008 the U.S. Securities and Exchange Commission began to authorize the creation of actively managed ETFs.

ETFs offer both tax efficiency as well as lower transaction and management costs. More than US$2 trillion were invested in ETFs in the United States between when they were introduced in 1993 and 2015. By the end of 2015, ETFs offered "1,800 different products, covering almost every conceivable market sector, niche and trading strategy".

Statement of the Problem:

In the recent past, financial markets have undergone revolutionary changes. These markets have witnessed a sort of anarchy, particularly due to market transaction, market expansion and changes in the games of market players. Capital market is frequently forced to work in the direction desired by vested interest groups and not according to economic fundamentals. An investment decision in such a situation becomes a risky proposition. The investors in such cases can have the benefit of portfolio from the professional investment management if they invest in mutual funds. Mutual funds industry is on the verge of expanding its product line by investing in Exchange Traded Funds. It is tradable securities which derived their value from a pre defined basket of securities which are involved in an index. These funds derive their value from the market portfolio and these funds are also managed by Asset Management Companies. Hence this paper examined the performance of ETFs by comparing the returns and risk of ETFs with the returns and risk of the index.

Significance of the Study:

This study has proven that the performance of ETFs, Index funds and Gold ETFs are the same as their benchmark indices. So an investor looking for a long-term passive investment strategy shall consider investing in Index funds to get optimum returns. This study has also proven that gold ETFs have earned highest average monthly return than index funds and equity ETFs. So an investor may consider this investment alternative for diversification and short term gain. Therefore a combined investment portfolio should be considered to yield a higher reward-to-variability ratio.

1.4 Objectives of the Study:

The objectives of the study are

- To analyze the performance of selected Exchange Traded Funds (ETFs) namely, Axis gold ETFs, Bankbees ETFs, Kotak gold ETFs, HDFCMF gold ETFs, and IDBI gold ETFs.
- To conduct a comparative analysis of selected Exchange Traded Funds (ETFs) in relation to their market indices for determination of under/over performing funds.

Research Methodology:

The data has been collected both from primary and secondary sources. Primary data is also drawn through responses from the questions on the topic from the concerned people. The secondary data has been extensively used for the analysis. Secondary data has been collected from their official websites, journals, books, published documents and research articles.

The Secondary data has been collected for a period of five years from 2013-14 to 2017-18. For tabulation of data, graphical representation and analysis of data statistical tools like ratios, standard deviation and average are used. For analyzing the data Sharpe, Jenson and Treynor's performance evaluation models of investment have been used.

Table1: Average Return of selected Gold ETFs						
Year	Benchmark Index	Gold Exchange Traded Funds listed on NSE				
	NSE NIFTY 50	AXIS GOLD	BANK BEES	HDFC MFGETF	IDBI GOLD	KOTAK GOLD
2013	0.050	0.050	0.050	0.050	0.050	0.050
2014	0.111	0.110	0.112	0.110	0.110	0.110
2015	0.150	0.150	0.150	0.150	0.150	0.146
2016	0.100	0.100	0.100	0.100	0.100	0.100
2017	0.084	0.083	0.084	0.083	0.083	0.083
Average	0.099	0.098	0.099	0.099	0.099	0.098
Deviation	--	-0.001	0.000	-0.001	-0.001	-0.001
Perfornamce	--	Under Performed	Out Performed	Under Performed	Out Performed	Under Performed
Rank		**3**	**1**	**4**	**5**	**2**

Table 1 depicts that average return of Bank bees is the only selected gold ETFs under study has outperformed against benchmark index – NSE NIFTY 50 during the study period other gold ETFs like –Axis gold, HDFCMF gold, IDBI gold, Kotak gold are under performed

Table 2: Standard Deviation of selected Gold ETFs						
Year	Benchmark Index	Gold Exchange Traded Funds listed on NSE				
	NSE NIFTY 50	AXIS GOLD	BANK BEES	HDFC MFGETF	IDBI GOLD	KOTAK GOLD
2013	0.0114	0.0109	0.0174	0.0114	0.0122	0.0112
2014	0.0080	0.0095	0.0133	0.0088	0.0106	0.0076
2015	0.0102	0.0073	0.0137	0.0066	0.0105	0.0574
2016	0.0096	0.0120	0.0122	0.0077	0.0114	0.0084
2017	0.0057	0.0060	0.0076	0.0060	0.0148	0.0068
Average	0.0090	0.0091	0.0128	0.0081	0.0119	0.0183
Deviation	--	0.0002	0.0039	-0.0009	0.0029	0.0093
Riskness	--	More	More	Less	More	More
Rank		**5**	**3**	**1**	**4**	**2**

Table 2 speaks that the risk (standard deviation) of HDFCMF gold is lesser than that of benchmark index. Rest of the gold ETFs understudy is more risky in comparison with bench mark index.

Table 3: Systematic Risk (Beta) of selected Gold ETFs

Year	Gold Exchange Traded Funds listed on NSE				
	AXIS GOLD	BANK BEES	HDFC MFGETF	IDBI GOLD	KOTAK GOLD
2013	0.005	1.453	0.018	0.008	0.031
2014	0.032	1.648	0.039	0.059	0.035
2015	0.000	1.337	0.010	0.010	0.091
2016	0.008	1.221	0.030	0.030	0.013
2017	0.032	1.143	0.027	0.038	0.072
Average	0.016	1.360	0.025	0.029	0.048
Rank	**1**	**5**	**2**	3	**4**

Table 3 discloses that systematic risk of Axis gold ETF is the lowest among selected gold ETFs under study. It is followed by HDFCMF gold, IDBI gold, Kotak gold and Bankbees.

Table 4: Sharpe's Index of selected Gold ETFs

Year	Benchmark Index	Gold Exchange Traded Funds on NSE				
	NSE NIFTY 50	AXIS GOLD	BANK BEES	HDFC MFGETF	IDBI GOLD	KOTAK GOLD
2013	0.251	-2.628	-1.653	-2.521	-2.344	-2.572
2014	0.556	2.337	1.859	2.529	2.093	2.913
2015	0.749	9.349	4.967	10.355	6.462	1.116
2016	0.501	2.365	2.309	3.653	2.488	3.363
2017	0.420	3.414	2.888	3.456	1.407	3.042
Average	0.496	2.967	2.074	3.494	2.021	1.572
Deviation	--	2.472	1.578	2.999	1.526	1.077
Performance	--	Out Performed	Out Performed	Out Performed	Out Performed	Out Performed
Rank	--	**2**	**1**	**4**	**5**	**5**

It is revealed from table 4 that as per Sharpe's index model, all the selected gold ETFs have outperformed in comparison with benchmark index- NSE NIFTY50. Among the outperforming

selected gold ETFs, HDFCMFG, has secured top rank followed by Axis gold, Bankbees, IDBI gold and Kotak gold.

Table 5: Treynor's Index of selected Gold ETFs

Year	Benchmark Index	Gold Exchange Traded Funds on NSE				
	NSE NIFTY 50	AXIS GOLD	BANK BEES	HDFC MFGETF	IDBI GOLD	KOTAK GOLD
2013	0.251	0.393	-0.024	0.215	0.323	0.162
2014	0.556	-0126	0.018	-0.114	-0.093	-0.121
2015	0.749	-3.950	0.059	-0.685	-0.673	-0.226
2016	0.501	-0.319	0.025	-0.160	-0.162	-0.249
2017	0.420	-0.114	0.019	-0.124	-0.106	-0.076
Average	0.496	-0.823	0.019	-0.174	-0.142	-0.102
Deviation	--	-0.328	0.515	0.322	0.353	0.394
Performance	--	Under Performed	Out Performed	Out Performed	Out Performed	Out Performed
Rank	--	**5**	1	**4**	**3**	**2**

Table 5 shows that among the selected Gold ETFs, Bank bees, Kotak gold, IDBI gold, HDFCMF gold, have outperformed as against benchmark index. They are ranked respectively. Axis gold is the only gold ETFs has underperformed in comparison with benchmark index.

Table 6: Jensen's Alpha Value of selected Gold ETFs

Year	Gold Exchange Traded Funds on NSE				
	AXIS GOLD	BANKBEES	HDFCMFG	IDBI GOLD	KOTAK GOLD
2013	-0.00022	-0.00063	-0.00020	-0.00014	-0.00019
2014	-0.00024	0.00066	-0.00018	-0.00015	-0.00019
2015	-0.00040	-0.00021	-0.00028	-0.00031	-0.00416
2016	0.00051	0.00018	0.00046	0.00041	0.00046
2017	0.00026	0.00037	0.00033	0.00058	0.00041
Average	-0.00002	0.00007	0.00002	0.00008	-0.00073
Performance	Under performed	Out performed	Out performed	Out performed	Under performed
Rank	**4**	**2**	**3**	**1**	**5**

It is understood from table 6 that According to Jensen's Alpha performance evaluation model, BANKBEES, HDFCMFG and IDBI gold have outperformed. AXIS GOLD and KOTAK gold has underperformed.

COMPARISION AMONG SHARPE'S V/S TREYNER`S V/S JENSEN'S MODEL					
MODEL	AXISGOLD	BANKBEES	HDFCMFG	IDBIGOLD	KOTAKGOLD
SHARPE'S	4	3	5	2	1
TREYNOR'S	1	5	2	3	4
JENSEN'S	2.5	4.5	2.5	4.5	1
TOTAL	7.5	12.5	9.5	9.5	6
RANK	4	1	2.5	2.5	5

Among all the models under study, BANKBEES has outperformed and secured First rank. It is followed by HDFCMF gold, IDBI gold, AXIS gold and KOTAK gold respectively.

Conclusion:

It has been summarized from the findings of the study that BANKBEES ETF is the best ETF. The other ETFs like, HDFC and IDBI are preferable investment destinations subsequently. Further research can also be undertaken using coverage of long term period, increasing the number of ETFs for the study to get appropriate results.

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Review and Challenges in Existing Supply Chain Performance Measurement Frameworks for Perishable Products

Mr. Alok Singh[1], Dr. Sandeep Mondal[2]

Abstract

The main objective covered in this research is to develop an extensive Review of Literature for Supply Chain Performance Evaluation of perishable products and identify critical challenges in existing frameworks of supply chain performance measurement for perishable products. There is ample research in the area of Supply Chain Performance Measurement. Most of the researches have been conducted in context of developed countries and for non perishable products hence research on Supply Chain Performance Measurement in developing countries like India especially for perishable product needs to be developed.

The scope of the research is to study the various levels of Supply Chain Performance Measurement System and distinct forms of Supply Chains in India. Literature Survey indicates that most of research has been conducted in the field of products having longer life cycles than the products having shorter life cycle like perishable Products. Hence in this research I have targeted my research area as the study and development of an empirical framework for supply chain performance evaluation of perishable product.

Keywords: Supply Chain, Supply Chain Performance Measurement, Perishable Product, Indian Context.

1. Introduction

Business organizations need to capitalize on supply chain capabilities and resources to bring products and services at the **lowest possible cost**, with the **appropriate product and service features**, with **faster delivery** to the market and the **best overall value** (Gunasekaran et al., 2001). It is an **emerging requirement to focus on the performance measurement of the Supply Chain** in which company is a partner (Charan et al., 2007). The interest of researchers in the area of performance measurement has notably increased in the last 20 years (Neely, 2005). Companies have understood that for **competing in continuously changing environment**

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it is necessary to monitor and understand firm performances. Measurement has been recognized as a crucial element to improve business performance (Neely, 2005). Various performance metrics are in place for measuring the effectiveness of Supply Chain having different perspectives of Supply Chain Performance Measures such as **cost and non-cost perspective; operational, tactical or strategic focus** (Gunasekaran *et al.*, 2001); **business process perspective and financial perspective** (Beamon, 1999). A shift has been changed to **non-financial perspectives** of performance measurement in place of only **financial perspective**. Most of the models for Supply Chain Performance Measurement have gone through some empirical testing and some of them have only theoretical developments (Taticchi et al., 2010). The most widely cited performance measurement systems are the **SMART (1988)**, the **performance measurement matrix (1989)**, the **Balanced Scorecard (1992)**, and the **integrated dynamic PMS (1997)**. In Indian context, there have been made many attempts to measure the performance at the organizational level, but a very few attempts have been made to measure the performance at inter-organizational level (Saad and Patel, 2006). A very little guidance is available in the literature reviewed and examined for the actual selection and implementation of Supply Chain Performance Measurement System.

2. Definition of Perishable Products

Here are some of the definitions of perishable products extracted from various sources and Gazettes of ministry:

1. "Perishable Agricultural Produce" means all produce and commodities that are of nature, and are likely to be subjected to natural decay, spoilage or destruction, whether processed or unprocessed, of agriculture, horticulture, livestock, marine produce, forest produce and or as declared through by notification from time to time. (Extracted from Appendices of Aayat Niryat Forms, Ministry of Commerce and Industry, Government of India).
2. "Perishable Food" means any foodstuff which on account of its composition, ingredients, moisture content and/or pH value, lack of preservatives and suitable packaging is susceptible to an uninhibited increase in microbes thereon or therein, when the foodstuff is kept within the temperature spectrum of 5°C to 60°C, and includes the perishable foodstuffs listed in Government Notice No. R.1183 of 1 June 1990, as amended, excluding unprocessed fruit and vegetables. (Extracted from Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972), Department of Health).

3. "Perishable Product" means any of the following products intended for export, and any by product derived from such product, where such product or by product requires storage in refrigerated chambers or requires to be conveyed under cold storage conditions, namely, vegetables, fruits, flowers, butter, deep frozen foods, eggs, cheese, fish (including shellfish and crustaceans), meat and any other product which the Minister may be notice in the Gazette declare to be a perishable product; (Extracted from Perishable Products Export Control Act 1983, South Africa).

3. Categories of Perishable Products

As per my research perspective I have considered following categories of Perishable Products.

1. Dairy and Milk Production
2. Poultry and Meat Production
3. Fisheries Production including Seafood
4. Horticulture Production
5. Others (Chemicals, Pharmaceuticals, Photography, Blood, Vaccines, news paper, magazines, Movies, Event Tickets)

3.1. Dairy and Milk Production

With an estimated 86.8 million tons of annual milk production from animals managed by nearly 70 million farmers, India is the top-most milk producing country in the world. The average annual growth is about 5.6%. With rapid industrialization, economic growth and millions of potential economically strong domestic consumers of milk and milk products, there is a very strong potential for future growth of the industry. In absence of properly developed infrastructure for preservation of raw milk in local areas many plants in government sector collect fresh raw milk from the far-flung rural areas (each producer having very small quantities) twice a day , send it over a long distance to towns for processing, incurring high cost on transportation. This erodes the profitability. As a result, many plants have become uneconomical, non-functional or they are working much below their potential capacities. Alternative strategies need to be developed to store raw milk in bulk coolers in the rural area and transport it in bigger volumes at a longer interval. There is also a need to use alternative and cheaper energy sources to store cool milk, and develop rural markets so that much of the milk produced in the rural areas finds consumption avenue in the nearby local markets. (Data extracted from freight forward federation of India)

3.2. Poultry and Meat Production

The annual growth rate is 8-10% in egg and 12-15% in the broiler industry. With the annual production of 33 billion eggs, India is the fifth world's largest egg producing country. It also produces 530 million broilers per year. According to a Kuwait based broiler Company, the demand in Gulf (West Asia) is approximately 60000 tons of frozen chicken per month. One of the challenging problems faced by the Indian exporters so far is that the export demands are in huge quantities while the quantity available for export per lot from India is very small due to fragmented small sized farms with little or no facility for processing, refrigeration and marketing with infrastructure for maintaining a cold chain during the transportation of products. (Data extracted from freight forward federation of India)

3.3. Fisheries Production including Seafood

India has a coast line of about 6100 km, export economic zone of 2.02 million sq km with a continental shelf area of 0.5 million sq km along with peninsula. India ranks third in world production with total annual fish production of about 5.65 million ton. Most of the production is in the coast line states. They have grounds for captive rearing of prawns and fish and have many processing plants some of which are 100% export oriented units. For that, resource specific vessels for exploitation of deep sea resources, development of fisheries infrastructure facilities on landing sites, harbors and establishing cold chain from production to consumption is required (Data extracted from freight forward federation of India)

3.4. Horticulture Production

Horticulture is the branch of agriculture that deals with the art, science, technology, and business of growing plants. It includes the cultivation of medicinal plants, fruits, vegetables, nuts, seeds, herbs, sprouts, mushrooms, algae, flowers, seaweeds and non-food crops such as grass and ornamental trees and plants. India may be among one of the world's leading producers of horticulture products but more than half the fruits and vegetable produce end up rotting as waste, even before it arrives in the market for sale. Poor post-harvest methods of warehousing, storage and unsafe transportation from point of production to point of sale are among most prominent causes of this avoidable value drain. The key issues in the Agri-logistics related to the development of the cold chain industry are of non-standard pricing, limited financial capabilities of the transporters, lack of scientific handling of produce, consequent high prices and limited choices for the consumers. (Data extracted from freight forward federation of India)

4. Existing Frameworks for Supply Chain Performance Measurement

The literature on Supply Chain Performance Measurement is relatively huge (Ramaa et al., 2009; Akyuz and Erkan, 2010; Kurien and Qureshi, 2011; Estampe and Lamouri , 2011; Lauras et al., 2011). Several attempts have been made to measure supply chain performance using conventional approaches. Surveying the literature revealed that there are generally two classes of Supply Chain Performance Measurement systems: Financial and Nonfinancial. Each class is explained in details below.

4.1. Financial Performance Measurement Systems

Financial performance measurement systems are generally referred to as traditional accounting methods for measuring supply chain performance. They mainly focused on financial indicators and hence were always criticized for being inadequate because they ignore important strategic non-financial measures. In literature (Lapide, 2000), two Financial Performace Measurement System methods highlighted as very popular are:

4.1.1. Activity Based Costing (ABC)

The Activity Based Costing (ABC) approach was developed in 1987 by Kaplan and Bruns (1987) in attempt to tie financial measures to operational performance. It involves breaking down activities into individual tasks or cost drivers while estimating the resources, such as time and costs, needed for each one. Costs are then allocated based on these cost drivers rather than on traditional cost accounting methods such as allocating overhead either equally or based on less relevant cost drivers.

4.1.2. Economic Value Added (EVA)

The Economic Value Added (EVA) is an approach for estimating a company's return on capital or economic value added. It was developed in 1995 by Stern et al. (1995) in order to correct the deficiency of traditional accounting methods which focused only on short-term financial results providing little insights into the success of an enterprise towards generating long-term value to its shareholders. The Economic Value Added measure attempts to quantify the value created by an enterprise basing it on operating profits in excess of capital employed (through debt and equity).

4.2. Non Financial Performance Measurement Systems

Upon reviewing the literature in the field of Supply Chain Performance Measurement (Ramaa

et al., 2009; Akyuz and Erkan, 2010; Kurien and Qureshi, 2011; Estampe and Lamouri, 2011; Lauras et al., 2011; Cuthbertson and Piotrowicz, 2011), currently available non-financial Supply Chain Performance Measurement approaches can be classified into nine different types grouped according to their criteria of measurement.

4.2.1. Supply Chain Balanced Scorecard (SCBS)

In 1992, Kaplan and Norton (1992) introduced the Balanced Scorecard (BSC) as an indispensible performance management tool. Since then, it has been recognized as the leading tool for performance measurement in both research and industry. It enables managers to observe a balanced view of both operational and financial measures at a glance. The four basic perspectives that managers should monitor as follows: Financial, Customer, Internal Business Processes and Innovation and Learning perspectives. Brewer and Speh (2000) demonstrate how a supply chain management framework is linked to the balanced scorecard.

4.2.2. Supply Chain Operations Reference Model (SCOR)

Supply Chain Operations Reference Model (SCOR) model was created by the Supply Chain Council (Stephens, 2001; Huang et al., 2004; Lockamy and McCormack, 2004). The first version was developed in 1996. It is a framework for examining the supply chain in detail through defining and categorizing the processes that make up the chain, assigning metrics to such processes and reviewing comparable benchmarks. The Supply Chain Operations Reference Model defines a supply chain as being composed of five main integrated processes: Plan, Source, Make, Deliver and Return. Performance of most processes is measured from 5 perspectives: Reliability, Responsiveness, Flexibility, Cost and Asset.

4.2.3. Dimension Based Measurement Systems (DBMS)

Dimension Based Measurement Systems (DBMS) concept is based on the premise that any supply chain can be measured on dimensions (Ramaa et al., 2009). Initially in 1999, Beamon (1999) identified three types of measures as necessary components in supply chain performance measurement systems, namely: Resources (R), Output (O) and Flexibility (F). She believed that each of these types is vital to reflect the overall performance success of a supply chain and that the result of each type affects the others. Examples of resource performance measures are manufacturing cost, inventory cost and return on investment (ROI). Output measures include total sales, on-time deliveries and fill rate, whereas flexibility measurements measure volume changes and new product introduction.

4.2.4. Interface Based Measurement Systems (IBMS)

Interface Based Measurement Systems (IBMS) was primarily put forward in 2001 by Lambert and Pohlen (2001). They proposed a framework in which performance of each stage is linked within the supply chain. The framework begins with the linkages at the focal company and moves outward one link at a time. This link by link approach provides a means for aligning performance from point of origin to point of consumption with the overall objective of maximizing the shareholder value for the entire supply chain as well as for each individual company.

4.2.5. Perspective Based Measurement Systems (PBMS)

Perspective Based Measurement Systems (PBMS) look at the supply chain in all possible perspectives and provides measures to evaluate each of them (Ramaa et al., 2009). They were developed in 2003 by Otto and Kotzab (2003) who identified six main perspectives as follows: System Dynamics, Operations Research, Logistics, Marketing, Organization and Strategy. The authors presented six unique sets of metrics, one for each perspective, to measure performance of supply chains. An example of a Perspective Based Measurement Systems is the Logistics Scoreboard (Lapide, 2000) in which recommended performance measures focus only on logistical aspects of the supply chain. They fall into the following general categories: logistics financial performance measures (ex: expenses and return on assets), logistics productivity measures (ex: orders shipped per hour), logistics quality measures (ex: shipment damage) and logistics cycle time measures (ex: order entry time).

4.2.6. Hierarchical Based Measurement Systems (HBMS)

In 2004, Gunasekaran et al. (2004) developed Hierarchical Based Measurement Systems (HBMS) in which measures are classified as strategic, tactical or operational. The main idea was to assign measures where they can be best dealt with by the appropriate management level, thus facilitating quick and appropriate decisions (Ramaa et al., 2009). The metrics are further distinguished as financial or non-financial. Such systems tie together the hierarchical view of supply chain performance measurement and maps the performance measures specific to organization goals.

4.2.7. Function Based Measurement Systems (FBMS)

Function Based Measurement Systems (FBMS) is one in which measures are combined to cover the different processes in a supply chain (Ramaa et al., 2009). It was originally developed in 2005 by Christopher (2005) to cover the detailed performance measures applicable at different linkages of the supply chain. Though easy to implement and targets can be dedicated to individual departments, it does not provide top level measures to cover the entire supply chain.

4.2.8. Efficiency Based Measurement Systems (EBMS)

Efficiency Based Measurement Systems (EBMS) are systems that measure the supply chain performance in terms of efficiency. Several approaches were developed in this context (Ramaa et al., 2009; Chan and Qi, 2003; Chan, 2003; Charan, et al., 2007; Sharma and Bhagwa, 2007; Chen and Paulraj, 2004]. Wong and Wong (2007) provided a framework to study supply chain performance by developing a Data Envelopment Analysis (DEA) model for the internal supply chain performance efficiency using case study applications. Chen et al. (2006) investigated the efficiency existing between two supply chain members. They proposed several DEA-based supply chain efficiency functions aimed at identifying the inefficiency among the chain members by developing two efficiency functions.

4.2.9. Generic Performance Measurement Systems (GPMS)

Since the early 1980s, a number of generic performance measurement models and frameworks, i.e. not necessarily specific to supply chains, have been developed. Each of which has its respective benefits and limitations. However, the literature review indicates that only very few of them (Tangen,, 2004; Kurien and Qureshi , 2011) are widely cited and referred.

5. Challenges with Existing Frameworks for Supply Chain Performance Measurement

1. Not connected with strategy;
2. Incompleteness and inconsistencies in performance metrics;
3. Lack of balanced approach that incorporates financial and non-financial measures;
4. Lack of holistic approach, i.e. a supply chain must be viewed as one whole entity and measured widely across the whole;
5. Being static and short-term, profit oriented;

6. Encourages local optimization and thus, fails to support continuous improvement.
7. Being too inward looking;
8. Insufficient focus on customers and competitors; and

Large number of metrics, making it difficult to identify critical few among trivial many.

6. Potential Issues to be addressed while considering Perishable Products

1. Self Life and Effect of Temperature on Perishable Product.
2. Trade-off among Quality, Time and Cost of Perishable Products.
3. Spot Market and E-Commerce for Perishable Products.
4. Perishable Inventory and Pricing.
5. Perishable Logistics.
6. Climate Change
7. Strategic and Environmental Issues.
8. Sustainability.
9. Application of Artificial Intelligence
10. Application of Big Data and Cloud Computing
11. Application of Robotics

7. CONCLUSION

The present research is based on three main questions, implicitly presented in the title: (1) What does perishable products mean? (2) What is currently known about supply chain performance measurement and what are the existing frameworks that are being used to measure the performance of supply chain? (3) What are the challenges associated with existing supply chain performance measurement frameworks and what will be next means potential research issues to be addressed regarding measurement of supply chain performance of perishable products? Throughout this paper we managed to provide answers to these questions. Although this study is primarily oriented towards academic audience, it may also be useful for practitioners, who will be able to obtain understanding of the focus of the extant research and gaining access to the most representative research areas proposed.

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Enabling HR deliver the Next Generation of Employee Experience with Artificial Intelligence

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Abstract:

Continuously changing social – economic – political environments, technological advances and climate change have disrupted the ways of life that we all knew. However, disruption is the opportunity for growth and technology is at the forefront of it. The first wave of digital technologies such as cloud, mobile, social and analytics led to transforming transactional aspects of the businesses. The second wave of technologies such as Artificial Intelligence (AI), Virtual Reality (VR) and Robotic Process Automation (RPA) brings the promise of higher productivity, increased efficiencies, safety, and convenience. These advances in technologies have highly impacted the HR function too. Technologyhas transformed HR transactions to conversations, employee engagements to collaborative decision making and from reactive compliance reporting to intelligence-based strategies. It is now more about employee experience, subjective interventions of HR, about qualitative aspects of employees and about leveraging unstructured data. AI in particular is set to play a significant role in transforming HR from a doer to a creator, from transactional to strategic, into a function that will have a muchhigher impact on business and employees than ever before. This paper discusses how AI can enable HR deliver that Next Generation of Employee Experience.

Key Words:

Artificial Intelligence (AI), Machine Learning, Employee Experience, HR, Digital, Talent Management

Introduction

We are living in a world that is witnessing a revolution that is continuous, disruptive, epidemic and exploding with data. It is now more about "the Experience" rather than just the "Outcome". Businesses are leveraging advances in technologies to take advantage of this revolution. AI is the rapidly evolving technology that is taking centre stage in this revolution now.

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As per AI Now 2017 Report "While the concept of artificial intelligence has existed for over sixty years, real-world applications have only accelerated in the last decade due to three concurrent developments: better algorithms, increases in networked computing power and the tech industry's ability to capture and store massive amounts of data." John McCarthy in 1965 began research on AI with the hypothesis that each aspect of learning and intelligence can be described in so much detail such that it can be replicated by a machine. Today, AI exists in form of digital assistants, chatbots, and machine learning. These AI technologies can Understand, Reason, Learn and Interact

AI is changing the way we work, the job profiles that we have and the skills required to perform these jobs. Moreover, competition for the right talent is fierce. In such an environment Employee Experience has taken the front seat. Enterprises are leveraging technologies that enables enterprises drive next generation employee experience, establish a collaborative work culture and effectively manage their talent base. To ensure consistency in assessing employees, their attributes and potential, enterprises are preferring an integrated competency-based talent management approach across the hire to retire employee lifecycle events. Solutions now enable enterprises to drive strategies for multi-channel sourcing, seamless onboarding, continuous feedback-based appraisals, collaborative learning and insight-based leadership development.

Solutions offer comprehensive functionalities through simple to use intuitive user interface, self-service enablement, collaboration features, mobile enablement and a portfolio of embedded reports and dashboards and can be deployed depending upon business priorities.
Just as businesses discovered the power of AI to drive exceptional customer experience, HR has begun piloting AI to transform Employee Experience. With a global multi- generation, connected and mobile work force the challenge for HR is even greater as organizations need to align with the experience they deliver to their employees. This requires HR to transform from "process support" to an "experience architect" by focussing on employee experience.

In a world where change is continuous, rather than mere static content and rules, AI solutions can read, interpret, create, organize and deliver HR content from multiple sources such that is it most accurate and relevant for employees. HR can leverage AI to deliver that next generation Employee Experience in an effective and efficient manner. HR leaders will need to begin experimenting with different facets of AI to deliver value to their organizations.

Literature Review

AI is evolving to enable HR to simplify this complexity with the ability to simulate, learn, solve and predict. AI is being leveraged by HR to simulate conversations throughout the interventions in Acquire to Retire employee lifecycle. This experience is being delivered using Virtual Assistants or Chatbots designed on complex business algorithms.

As per a PwC report, 67% of business execs believe leveraging AI will help humans and machines work together and combine both digital and human intelligences in the best ways possible.

According to Josh Bersin'Rewriting the rules for the digital age 2017 – Deloitte Global Human Capital Trends, 38% of enterprises are already using AI in their workplace with 62% expecting to use it by 2018. 33% of employees expect their jobs will become augmented by AI in the near future.

As per an IBM's Institute for Business Value Survey - Extending expertise: How cognitive computing is transforming HR and the employee experience 2017, when questioned about their understanding of AI led HR solutions, HR executives responded in the following ways:

- 46% of HR execs believe AI will transform their talent acquisition capability
- 42% believe cognitive will bring substantial operational efficiencies to Talent Acquisition
- 49% of HR leaders believe AI will transform their payroll and benefits administration
- 39% report that HR processes are overly complex and will benefit from AI
- 48% of HR execs report employee skill issues due to the digital transformation
- 40% believe AI technology is well suited to address the digital skill gap

As per forbes.com, a recent survey of 350 HR leaders conducted by ServiceNow, titled Chatbots and the Future of Employee Experience 2017, finds 92% of HR leaders agree that the future of providing an enhanced level of employee service will include chatbots. ServiceNow also estimates that Chatbot penetration in the workplace could reach adoption rates of as high as 75% with employees accessing a chatbot to resolve frequently asked HR questions and access HR solutions anywhere and anytime.

The majority believe employees would not mind working with an AI manager if it meant more flexibility and freedom to work from home (71%) and if it meant a more balanced workload (64%).

Worldwide spending on cognitive and artificial intelligence (AI) systems is forecast to reach $57.6 billion in 2021, according to a recent update of the Worldwide Semi -annual Cognitive

Artificial Intelligence Systems Spending Guide from International Data Corporation (IDC). It also states that spending is expected to achieve a compound annual growth rate (CAGR) of 50.1% over the 2016-2021 forecast period. Worldwide spending on cognitive and AI systems will total $12.0 billion in 2017, an increase of 59.1% over 2016.As per PwC report 2017, AI works in three ways – Assisted Intelligence (improves what people and organizations are already doing), Augmented intelligence (enables people and organizations to do things they couldn't otherwise do) and Autonomous intelligence (establishes machines that act on their own).

Objective

The objective this research paper is to identify and suggest probable uses cases of AI that can be leveraged by HR to deliver an enhanced employee experience.

Methodology

For the purposes of study under the scope of this paper the following HR processes are taken into consideration:

Talent Acquisition	Onboarding	Employee Life Cycle Events	Talent Development
Requisition Management	Pre - Joining	Employee Joining	Goal Setting
Sourcing Management	Pre - Employment Screening	Transfers and Deputations	Performance Evaluations
Application Management	Asset Allocation	Promotion	Learning Management
Candidate Evaluation	New Joinee Feedback	HR Query and case Handling	
Offer Management		Separation	

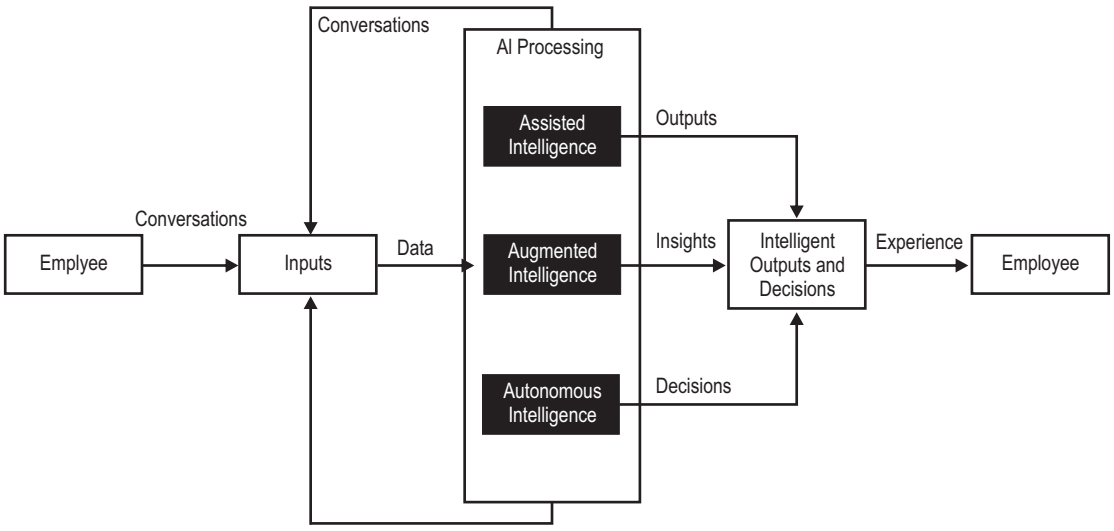
To identify how HR can leverage AI to enable a superior employee experience for each of the above processes, the paper identifies and suggests AI use cases under the classifications suggested by PwC in their research report stated earlier as:

Assisted Intelligence	Improves what people and organizations are already doing
Augmented intelligence	Enables people and organizations to do things they couldn't otherwise do
Autonomous intelligence	Establishes machines that act on their own

Secondary data has been collected from various published and publicly available material on the internet and is used for the articulation of this paper.

Findings

AI is transforming HR transactions into meaningful conversations that can be processed with intelligence to deliver outputs and decisions that enhance the experience being delivered to employees. The following diagram describes the understanding of how AI can deliver an enhance experience keeping in context the classifications of Assisted Intelligence, Augmented Intelligence and Autonomous Intelligence.



With the above model as a backdrop, let us now have a look at the various use cases of AI in Talent Acquisition, Onboarding, Employee Lifecycle Events and Talent Development.

A. AI in Talent Acquisition

In an era of opportunistic business growth, Talent is a bigger driver of organization' performance and profitability than ever before. Talent Acquisition is the first key function to attract and funnel the right talent (quality), at the right place, at the right time, and in the right quantity into the organization. Moreover, the Talent Acquisition function being the front face of the organization,is now responsible for driving the organization' brand messaging, core values and superior candidate experience.

This requires the Talent Acquisition function to be pre – emptive, efficient and effective in requisition management, multi-channel sourcing, applicant tracking, candidate evaluation and offer management. It needs to build and sustain a candidate pipeline that addresses the current and emergent needs of the organization, assigns and allocates selected candidates to roles that match their competencies, experience, expertise and behavioural attributes.

However, the Talent Acquisition function today is transaction oriented, with most of the bandwidth of recruiters going into managing job requisitions, publishing jobs, managing empanelled recruitment agencies and identifying candidates. In such scenarios it is completely dependent upon the recruiter which candidate fits the requirements both from a Job perspective as well as a cultural fit perspective.

With AI solutions, Talent Acquisition functions can transform themselves to become more of brand ambassadors and candidate relationship managers with the ability to get a comprehensive view of the candidate (and not only what is present in the resume), prioritise job requisitions, target talent pools, assess candidates in quantity and quality and optimising the turn-around times for fulfilment. From a candidate perspective the recruitment process becomes personalized based on the preferences specified. The Talent Acquisition function has been one of the early adopters of AI and has been successfully undergoing transformation.
Below is the table that discusses the various processes in Talent Acquisition and suggests ways in which AI can be leveraged.

Requisition Management			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**
Approved Requisition for publication	Auto creation of Requisition based on budgeted manpower plan or employee event such as resignation or retirement Auto requisition approval based on predefined rules and conditions	Recommendations to create requisitions based on probability (historical and current data) of attrition, employee movement due to promotion, transfer or succession planning, business seasonal forecasts and targets	Auto creation of Requisition based on probability (historical and current data) of attrition, employee movement due to promotion, transfer or succession planning, business seasonal forecasts and targets
Sourcing Management			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**
Publication of Jobs across multiple channels of sourcing	Auto communication to publication and sourcing partners	Multi – Channel sourcing simulation based on competencies required, geography, time	Decide on sourcing mix and auto creation multi – channel publication plan

Application Management			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**
Pre- Screened Candidate Applications – Search and Compare	Profile recommendations from Talent Pool Candidate Ranking based on predefined key words	Profile Video Resume Analysis	Auto short-listing of candidate applications based on multi format CVs, social recognition, Talent pool databases

Candidate Evaluation			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**
Candidate Profile – Selected and / or Rejected	Automated scheduling and communication of assessments and interviews to candidate and interview panels	Recommend a more suitable job to the candidate based on evaluation and feedback Provide insights on candidate based on Speech and or Video analytics	Conduct Interviews with Candidate

Offer Letter Management			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**
Offer Letter, Candidate Acknowledgment	Offer Letter Generation and communications	Auto generation of Offer options based on preferences and social media	Automated offer letter negotiations

By determining the Candidate Tribe (qualifications, experience, competencies, demographics), AI can enable decisions with regards to publishing requisitions, Video Analysis (parsing, screening, conversing, interviewing and providing insights on the Candidate based on body language, speech modulation and tonality of textual communication), resume search scheduling of interviews, candidate feedback and Offer negotiations. With AI, the Talent Acquisition function will be able to source quality talent, reduce recruiter bias, comprehensively evaluate candidates and reduce time to fulfilment.

B. AI in Onboarding

Post the recruitment cycle, the Onboarding process is the next critical experience for the new joinee in its association with the organization. Organizations for long have been plagued by the leakage happening between offer acceptance and actual joining of the candidate.

Monster.com reports 30 percent of external new hires turn over within the first two years of employment. Retention statistics from other organizations, including the Society for Human Resources Management (SHRM), show that turnover can be as much as 50 percent in the first 18 months of employment.

From welcoming the new joinee, to the documentation, to orientation programs, to mentors, to the clarification of roles and responsibilities onboarding processes can drive candidate delight and improve day 1 productivity. The onboarding process aligns the new joinee to the organization' culture, values brand and performance objectives. This enables the new joinee to blend with the organization better and become productive quicker. Engagement is one of the key aspects of the onboarding process. Communication and feedback form the backbone of this engagement process. AI can be leveraged during the onboarding process as follows :

Pre – Joining			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**
Completed Joining Documents Mentor Assignment Pre-Joining orientation program enrolment	Automated reminder communications for uploading documentation OCR based automated approvals for scanned documents and images Automated assignments to mentor Automated enrolment for next available and convenient orientation program Automated generation of Welcome Kit Query Assistant	Dynamic checklist for documentation based on profile Smart orientation curriculum builder based on profile Automated extraction and verification of statutory documentation	Onboarding Assistant Mentor of New Joinee Buddy for a New Joinee

Pre-Employment Screening			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**
Screened Profile results (Criminal record checks, Right to Work, Drug Testing, Health checks)	Automated communication of profile to empanelled background verification agencies	Automated extraction, reference and verification of statutory documentation from statutory bodies	Automated Profile Screening
Asset Allocation			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**
Allocated Assets	Automated approval, allocation and setup of assets Automated Access Management – premises, systems	Multi format access management – biometric, retina scan, user ID and passwords	Virtual Security and Access Manager
New Joinee Feedback			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**

New Joinee Survey Results	Event trigger based Conversations to capture feedback	Conversation Analysis based on new joinee survey, social media interactions and peer feedback	Actions based on Conversation analysis

With AI, organization can proactively drive insightful conversations with the potential employee and deter the number "no-show" at the time of joining. Based on the predesigned conversations, AI can auto nominate the offered employee to pre-joining courses, allocate appropriate mentor, proactively provide news feeds and send feedback to HR. This will enable organizations to ensure that the employee is ready to contribute to the business from day zero.

C. AI in Employee Life Cycle Management

Employee Lifecycle Management has been one of the most transactional, rule oriented and policy dependent activities that have to be conducted by HR. Right from joining to confirmations, probations to promotions, personal events, transfers to deputations till separation, there are a lot of transactions conducted by the employee during its association with the organization. Moreover, these transactions have been conducted over multiple channels. For example, if an employee is going on leave, the employee checks the leave policy, discusses with the manager, sends an email, raises a request in the leave application system, manager approves. data gets sent to payroll and attendance systems and then to the employee as a confirmation. All these transactions happening in a variety of different channels is difficult to analyse in terms of the consistency of experience that the employee had.

With AI, such transaction requests from multiple channels can be monitored and processed over a single interface providing the employee with a consistent experience of HR services. With AI mapping employee's progress, productivity, engagement towards work convert routine HR transactions such as joining, employee personal events, transfers, deputations, confirmations and probations, approvals, queries and cases to be more insightful conversations. AI interventions designed for these employee life cycle events provide organization with important feedback that can be co-related to attrition, performance and talent development. AI can analyse the bidirectional feedback and provide insights to developing

employees as future leaders. AI could also determine and recommend learning courses, career paths, succession plans, promotions, transfers or deputations and of course performance evaluations. The table below discusses the various processes in managing employee lifecycle events and suggests ways in which AI can be leveraged:

Joining			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**
Employee ID	Joining date reminder messaging Employee ID communications to different departments such as premise security, attendance systems, intranet, finance, payroll, reporting manager	Simulation of Organization structures	Organization redesign and restructuring
Transfers & Deputations			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**
Updated Employee Details	Automated creation of organization structures	Transfer recommendations based on	

Communications Event Letter	Automated internal job requisition creation Automated communications to transferring managers, support departments and systems Automated integration with other HR processes such as performance and learning	organization requirements, employee competencies, availability and preferences	
Promotions			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**
Updated Employee Details Employee and Stakeholder Communications Event Letter	Automated Promotion probable lists based on eligibility criteria	Promotion recommendations based on eligibility criteria, performance, references, social recognition and reviews	

Asset Allocation			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**
Updated Case Details Employee and Stakeholder Communications Case Letter	Query Assistant and FAQ responses	Dynamic case structuring – Steps, recommend statutory action, documentation, checklists, committees, approvals	Virtual Helpdesk and Case Manager
New Joinee Feedback			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**
Updated Separation Details Employee and Stakeholder Communications Separation Letter F&FS Processing Report	Automated Separation Discussion – interview Integrated responses to finance, payroll and other support departments	Probable Separation cases based on performance, social media activities Recommend Retention options	

	Automated No Dues communications	Recommend Retention options

From the above table, it is observed that for Employee Lifecycle Management transactions the Autonomous Intelligence aspects of AI have a high degree of human judgement and will require significant cultural change within the organization. However, it is also evident that AI can significantly improve both efficiencies and effectiveness of transactions across the employee lifecycle.

D. AI in Talent Development

Today, managers interact with their teams as and when their bandwidth permits, they rely on personal experience and bias to determine the needs of an employee. Career conversations are more often than not deferred or held annually during appraisal review cycles, while career path and training needs are theoretically drawn up HR. Organizations are being challenged to manage multiple appraisal scenarios across the business, with a variety of roles, complex hierarchy and relationship structures and facilitate holistic appraisal evaluations. To drive performance that is aligned to achieve business objectives it is necessary to enable collaborative and transparent performance management.

Collaborative and transparent performance management are enabled by balancing between organization objectives and personal goals, evaluating employees on multiple performance perspectives and feedback avenues and by driving forward looking and unbiased appraisals. Organizations are transforming the way they evaluate performance of employees with continuous performance management practices such as agile goal management and continuous feedback that advocate regular discussions and course corrections. With employees having to execute multiple roles during an appraisal cycle, cross functional feedback, peer review and external feedback enables organizations to get comprehensive feedback.

Qualitative Performance based on behavioural attributes, brand affinity, engagement levels, transparency, leadership quality, and ability to manage stress levels, team spirit, coaching and mentoring capability, and respect for colleaguesare increasingly becoming popular parameters for evaluating employees, peers and managers. As performance becomes bi-

directional employees are also providing feedback about the brand image, financial stability, customer perception, community development, security at work, office ambience, facilities offered (transportation, canteen, crèche), external partnerships for supplementary services (banks, mobile services, medical institutes and pharmacies, insurance, travel & hospitality, retail outlets, recruitment agencies, accountants, housing, automobiles, professional agencies) of the organization, about their peers, their managers, departments, leaders and organization itself.

With the shelf life of learnt skills decreasing at an ever-increasing pace, Learning and Development too has become a continuous practice. The adoption of video and mobility in Learning technology is also rapidly changing learning and development function. With organizations adopting continuous and wholesome learning and development practices, proactive identifying and developing employees that can upgrade their existing skills or those that can be reskilled is gaining focus. Evaluation of qualitative and quantitative patterns by AI can be used to articulate and recommend a personalized Employee Learning and Development plan. With AI, managers can have employee insights embedded in their routine live dashboards that will help them guide their teams toward the right learning opportunities. AI will integrate learner needs and industry knowledge to enable custom learning paths that are easily accessible anytime anywhere through any channel. This will enhance employee productivity while ensuring retention.

Goal Setting			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**
Goals for the Appraisal cycle	Dynamic allocation of role based goal templates Automated Goal Cascading	Dynamic Goal setting based on historical performance, business objectives and career aspirations	Conversation based dynamic goal setting

Appraisals			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**
Appraisals	Automated conversations based on employee transactions and events Appraisal cycle milestone communications Feedback prompter Integrated performance management with employee lifecycle events and talent development	Performance evaluation based on employee transactions, employee lifecycle events, market events and external factors	Conversation based Appraisals – Continuous Feedback
Learning Management			
Typical Output	**Outputs with Assisted Intelligence**	**Outputs with Augmented Intelligence**	**Outputs with Autonomous Intelligence**
Learning outcomes	Suggested course creations	Dynamic Relevant Curriculum / Program creation based on needs and available course	Virtual Faculty

Automated participant enrolments Automated communications for enrolment, participation, attendance and feedback throughout the learning cycle Automated collaborative/ community learning Recommended learning capsules or courses	Personalized Learning and Development plans for employees

With AI, organizations can improve execution of organization strategy by aligning employees to organizational goals and values, can focus on talent development through consistent and efficient objective-setting and transparent appraisal processes, increase employee productivity through continuous feedback, balanced business and aspirational objectives and focused leadership development.

With AI, enterprises are automating learning and training practices, processes, and content across the entire organization. With a single interface, AI is driving ease of administration and convenience for downstream participants with structured course catalogues, multiple options for enrolment, course assessment, feedback, certification and comprehensive dashboards for all stakeholders. Based on preferences of the participant, AI can offer a comprehensive, blended learning environment. It can measure and track the effectiveness of learning programs to facilitate continuous improvement and align learning objectives to corporate strategies.

Conclusion

Investments in business connectedness, collaboration and consolidation using technology are imperative for organizations of the future. By orchestrating data, analysis and intelligence organizations will be delivering the next generation employee experience that is a competitive advantage in attracting and retaining talent. Leveraging AI will be play a pivotal role in delivering this experience by enabling organizations to create an employee inclusive environment, establish transparent and collaborative work culture, improve existing services and drive leadership development. AI can enable HR better understand employee sentiment and more rapidly identify and address emerging issues. AI solutions process inputs from a variety of data sources, including internal collaboration – messaging platforms, employee surveys and internal or external social media platforms and zero in for potential issues or employee concerns. Along with structured information such as revenue, target achievements, and financial turnover, AI can identify emergent trends and plot patterns that could impact employee morale and performance. In the initial stages, AI Chatbots will digitize HR processes creating a seamless employee experience, that is real time responsive, conversational and personalized. For employees, chatbots deliver an exceptional level of employee experience, from real time answers for HR questions to personalized learning and development. For HR leaders, chatbots are well suited to improving talent acquisition and on-boarding processes by increasing speed and providing greater consistency in answering frequently asked HR questions, improving the talent acquisition process, and enhancing the online learning experience. As AI solutions evolve, innovation is likely to continue at a rapid pace, and it will be shaped by the persistent challenges that stem from a struggle to balance a large volume of repetitive tasks with a need to apply human skills. AI will enable to achieve an enhanced employee experience with a comprehensive coverage of internal, external and social touch points, intuitive user interface, self-service enablement, easy access from any mobile device, embedded collaboration, real time notifications and simple system administration capabilities. It will enable HR to focus on strategic HR activities and reduce administrative effort involved transactional HR activities with automated talent management processes, end to end process visibility, integrated talent management events and consolidated reporting.

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A study of the Factors affecting Individual Investors Investment Decisions in Indian capital market: Special reference to Delhi NCR Region.

Sanjeev Kumar[1]

Abstract

Individual investment behaviour is concern with decisions about purchases of tiny amounts of securities for his or her own account. Investment choices are typically supported by decision taking tools. If is assumed, that data structure and the factors within the market consistently influence individual's investment choices as market outcomes. The target of the study was to ascertain the factors influencing investment choices at the national capital region. The study was conducted on the forty two investors out of fifty investors. To gather information the investigator used a structured form that was in person administered to the respondents. The questionnaire established 28 things. The respondents were the individual investors. During this study, information was analyzed mistreatment frequencies, mean scores, customary deviations, percentages, Friedman's correlational analysis techniques. The investigator confirmed that there appears to be a particular degree of correlation between the finance theory and empirical proof the typical equity capitalist. The investigator acknowledged that the foremost necessary factors that influence individual investment choices were: name of the firm, firm's standing in trade, expected company earnings, profit and condition of statement, past performance, corporation's stock, value per share, feeling on the economy and expected divided by investors. The findings from this analysis would offer associate degree of the varied choices, which will be created by investors. Therefore the ultimate outcomes for every call would establish the foremost influencing company's investors' behavior, company's policies and methods on their future policies and methods will effect investment choices of the investors.

Key Words: Behavioral Finance, Investor Behavior, Factors Influencing Investment Decision

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Introduction

Investment is the flow of capital that is employed for productive functions. there's an excellent stress on investment for being the first instrument of economic process and development for a rustic. Investment suggests that a rise in capital payment helps in making a strong economy. Investment may be a part of mixture demand. There are an oversized range of investment instruments on the market these days.

The individual investment call in economic utility theory is viewed as a trade-off between instant consumption and late consumption. The individual capitalist evaluates the advantages of investment these days against the advantages that may be gained by finance unconsumed funds so as to get bigger consumption within the future. If the individual chooses to delay consumption he can choose the portfolio that may maximize his enduring satisfaction**.** Within behavioural finance it's assumed that characteristics of market people and knowledge structure influence investment selections of people and market outcomes additionally. Behavioural Finance says market behavior of capitalist for explaining the rationale why individuals sell and get stocks derives from the psychological principals of the choice creating. The most focus of behavioural finance is upon the ways in which individuals do interpret and touch on data for creating investment selections.

There are two completely different approaches for understanding the human behaviour in their investment decision : 1) Traditional finance and 2) behavioural finance. Ancient finance assumes that markets are efficient and investors are rational and think about all accessible data within the decision-making method, that they'll favour investment that maximise their wealth. As such, prices are right reflective all offered data. No investment strategy will earn excess riskless rate of come back bigger than that bonded by its risk. Hence, investment markets are economical and security costs replicate actuality, intrinsic values of the assets. That investors act promptly to new data and update costs properly at intervals a normatively acceptable method.

Many individuals find investments to be fascinating because they can participate in the decision making process and see the results of their choices. Not all investments will be profitable, as capitalist wills not perpetually create the correct investment choices over the number of years; but, you should earn a positive return on a diversified portfolio. Investing is not a game but a serious subject that can have a major impact on investor's future wellbeing. Virtually everyone makes investments. Even if the individual will not choose specific

assets such as stock, investments are still created through participation in pension, and worker saving programme or through purchase of life insurance or a home or by some different mode of investment like investing in Real Estate (Property) or in Banks or in saving schemes of post offices. Each of this investment has common characteristics such as potential return and the risk you must bear. The future is uncertain, and you must determine how much risk you are willing to bear since higher return is associated with accepting more risk. Today the field of investment is even more dynamic than it was only a decade ago.

Events that alter the values of specific assets the individual has so many assets to choose from, and the amount of information available to the investors is staggering and continually growing. The key to a successful financial plan is to keep apart a larger amount of savings and invest it intelligently, by using a longer period of time. The turnover rate in investments should exceed the inflation rate and protect taxes as well to enable you to earn quantity that compensates the risks taken. Savings accounts, money at low interest rates and market accounts do not contribute significantly to future rate accumulation. While the highest rate come from stocks, bonds and other types of investments in assets such as real estate. Nevertheless, these investments are not totally safe from risks, so one should try to understand what kind of risks are related to them before taking action. The lack of understanding as how stocks work makes the myopic point of view of investing in the stock market. To understand the characteristics of each one of the different types of investment you must have enough financial knowledge.

The turnover rate in investments should exceed the inflation rate and cover taxes as well as allow you to earn an amount that compensates the risks taken. Savings accounts, money at low interest rates and market accounts do not contribute significantly to future rate accumulation. While the highest rate come from stocks, bonds and other types of investments in assets such as real estate. Nevertheless, these investments are not totally safe from risks, so one should try to understand what kind of risks are related to them before taking action. To understand the characteristics of each one of the different types of investment you must have enough financial knowledge.

Objective of the study:

- To analyze whether or not the factors associated with self-image/firm image coincidence have an impression on the behaviour of the individual investor.
- To analyze whether or not the factors associated with accounting info have an impress-

ion on the behaviour of the individual investor.

- Difference in perception of investor in the decision of investing on the basis of income slab.
- To identify the effect of factors that are related to the neutral information on investor behavior.

To interpret the influence of factors that are related to the personal financial needs of investor on his behavior.

Literature Review:

Statman (1988) observed that people trade for both cognitive and emotional reasons. They trade because they think they have information, when in reality they make nothing but noise and trade only because trading brings them joy and pride. Trading brings pride when decisions made are profitable, but it brings regrets when they are not. Investors try to avoid the pain of regret by avoiding realization of losses, employing investment advisors as scapegoats and avoiding stocks of companies with low reputations. Harlow and Brown (1990) observes that psychologists tend to believe that an individual's choice is primarily determined by factors unique to the particular decision setting, whereas economists assume that there is some individual specific mechanism playing a common role in all economic decisions.(Mishra & Dash, 2010,)People living within the same society and having same financial gain level are completely different in their investment behavior. The analysis indicated regarding factors influencing the choices in India used 2 factors age and gender. They admit that numerous factors have an effect on the investor' s behavior. Individuals with different age and gender have different investment behaviors. Individuals with completely different ages and gender have varied persecutions. The chance level of individuals of various age differs still as gender additionally contributes to the amount risk tolerance in higher cognitive process of investments.

(Gnani, Ganesh & Santhi, 2012) Factors that have an effect on the investor's behavior have their intensity to have an effect on. The study used 5 factors self-image or firm-image, accounting info, neutral info, advocate recommendation and private money desires. They admit that each one these variables have an effect on the investors call makings however with totally different intensity. Accounting info has high intensity towards poignant investor's behavior and advocate recommendation have least impact on investors deciding.

(Anna, Andreas, George & Prasad, 2004) The empirical factors that influence the individual capitalist behavior have variable degree of effects on the investors. The variables accounting data, subjective/personal, neutral data, advocate recommendation and private monetary wants were divided into different twenty seven variables. Thisstudyindicated the factors that have vital influence and therefore the factors that have least influence on the Greek stock market investors. The analysis result showed the accounting data has vital and private monetary wants have least influence in Greek.

(Aduda, Oduor and Onwonga, 2012) The conventional finance theories place stress on theories like trendy Portfolio Theory additionally as economical Market Hypothesis. The advancement of those theories within the kind of behavioural finance focuses on the psychological feature and emotional factors that have an effect on the individual decision making process. This study used certainty, psychological feature dissonance, regret theory and prospect theory. The influence of those factors was checked on the investors of kenya (Nairobi Stock Exchange). Investors show rational additionally as irrational behaviors thanks to totally different emotional and psychological feature factors. (Pandiyan and Aranganathan, 2012) Saving and investment are created by differing types of investors. The study represented the perspective of the salaried person towards investments. Investment is incredibly necessary consider the economic development of any country. The salaried person wants security and warranty of the investments he created out of his remuneration. Several new salaried folks build wrong call concerning their investments. The necessity applicable tips for the correct investments. Government ought to use correct method to assure the investments and increase the saving habits among salaried persons.

(Jain and Mandot, 2012) The analysis in Rajasthan indicated that the investment call is accomplished by the demographic factors, they need completely different attitudes towards higher cognitive process, some risk seekers and a few risks disinclined. Individuals with completely different ages, financial gain level, knowledge, gender, legal status and occupation makes completely different choices.

(Iqbal and Usmani, 2011) The analysis conducted on Karachi exchange investors to urge the factors influencing the choice creating. The stock purchase call relies upon the wealth maximization. Investors take family and friends recommendations likewise as use accounting info however most of the investor's call relies upon their own can and aren't influenced by

anyone. Individual capitalist lacks skills because of that the choice creating of investors suffers. (Hayat, Awan and Arshad 2012) The analysis on the factors influencing the investment firm investment indicates various factors have an effect on the investment firm investor's call. Factors like past performance, facility of withdrawal of funds and therefore the name of the corporate have vital influence on investor's choices. These investors are victim of various activity biases leading the investors towards unhealthy choices.

(Lucey, 2005) The study analyzed the result of retail investor feeling on decision making} process. This study investigates the result of variations in feelings of investors deciding} process. He analyzed the capitalist feelings in 2 areas. 1st space deals with the mood misattribution. This analyzed the result of environmental issue like weather, social factors on equity rating. individuals in sensible mood take the additional positive call because of the great climatic conditions. The second space deals with the impact of stocks image on capitalist decision making. Image of stock provoke the emotions in investors to some extent. Study concludes that the capitalist someday invest during a company on the idea of whether or not he likes or dislikes a corporation.

The study investigates capitalist psychological science and completely different aspects of behavior in deciding. the essential purpose of this study is to search out the impact behavioural aspects and also the relationship between investors behavior and risk. He observed that investors don't seem to be continually rational in contrast to the theories of normal finance. They are subject to many psychological feature and emotional errors; they're affected by several biases whereas taking the investment call. Because of completely different investors biases their perception modification regarding risk taking. Results show that investors who are literally risk antipathetic in their characteristics show the chance seeking behavior by holding the losing investments.

(Kadariya, 2012) The analysis investigated factors impact on the capitalist call. These factors embody capital structure, political and media coverage, luck and money education and trend analyses within the Nepalese capital market. Findings of the study shows that majority of the investors are kids and that they take call considering the media coverage and friends recommendations nearly as good supply of data. Dividend, earning, equity contribution and government management ar thought-about the foremost necessary factors whereas taking the choice. Investors once bears the loss blame to the market and once earns profit take whole credit to their own talents.

In an dilated study by Williams [2007] surveyed on 5170 investors across 5 countries, specifically Australia, Canada, UK and United States, to investigate determinants of socially accountable investments. The results showed that investors took company environmental and social behavior into thought in creating investment selections, that is really mirrored although the stakeholders' perspective toward the corporate from totally different sides of company performance.

(Fares, 2011) In this study the four aspects that may influence the investor call at the Amman securities market are examined. This study analyzed the impact of the factors embody investor age, net usage, education and broker recommendation. They found that almost all of the commerce is dead personally; capitalist ought to have the judgment skills. Investors' age, education and net usage have the many positive impact on the capitalist decision making. On the opposite hand there's a negative impact of capitalist and broker interaction. Investors don't have any trust on the brokers because they are not giving the timely and correct data to the investors.

Research Methodology

Factors influencing Individual investment decision.
Demographic Factors: Investor's gender, age, legal status, education, income, occupation etc.
Stock Fundamentals: Beta, past come back, risk, EPS, firm size, share worth, share turnover and book to equity magnitude relation.

Life style Characteristics: Personal ability, confidence level and dependency level of investors.

Psychological Influences: wishes, goals, prejudices, biases and emotions that guide the investor's call. Risk Bearing Capacity: Parameters of safety, liquidity, capital appreciation, come back and risk coverage.

Personal Values: Socially and religiously communicatory characteristics.
Accounting info: Information regarding Stock state, Expected Company Earnings, monetary Position, Dividend Paid, Expected Dividend and also the Past Performance.

Self-Image/Firm Image coincidence: info relating to the merchandise and repair, name of the firm within the business, Expectation of obtaining wealthy Quickly, Firm standing.

Advocate Recommendation: recommendation or recommendation from the Broker, members of the family, Friends and Stock holder.

Personal Monetary Needs : Diversification wants, simple availability of the funds whenever Needed, have to be compelled to minimize the danger and loss and maximize the comeback.
Neutral info: Information regarding government holders, info from web, Fluctuations within the exchange, coverage in press.
Different Factors : Inflation, Social Responsibility.

SOCIAL - 1. Influence of people's opinion (friends or family), 2. Herding
Economic : - Past performance of the company. / Ownership structure/ Accounting information/ Expected corporate earnings/ Bonus payments/ Dividends/ Risk factor.
DEMOGRAPHIC :- Gender. Age, income, Education
Psychological :- Cognitive bias, Irrational thinking, Confidence (over or under), Get rich quick Overreaction

Uncommon factors:
Stock marketability, Expected losses in international financial markets, Perceived ethics of the firm
Diversification purpose, Tax consequences of an investment, Trading opportunity, Socialresponsibility, Composition of the board of directors of companies, Economic expectation,Brand perception, Publicity, Inflation.

Methodology
This chapter deals with whatever the analysis is designed the methodology wants to verify the factors influencing the individual investment selections on the national stock market. The survey analysis style was adopted with a sample of 50 investors who were randomly selected for study. Primary information was collected using questionnaires that were examined by the investigator in person and picked up data was coded and tabulated for analysis.

Research Design :
The survey analysis style was used for this study. Mugenda and Mugenda (1999) notes that a survey analysis tries to gather knowledge from members of a population and describes existing phenomena by asking people concerning their opinion, attitudes, behavior or values.

This style was appropriate for this type of study as a result of the researcher supposed to gather knowledge meant to establish facts about choices in Delhi NCR. This type of research methodology makes use of surveys to solicit investor's conversant opinion. It typically wants to study the final condition of individuals and organizations because it investigates the behavior and opinion of individuals sometimes through questioning them (Cooper and Schindler, 2003).

Sampling Design and Sample Size:

The names and addresses of investors from Delhi NCR was taken from brokerage firms. A straightforward random sample of 1 securities firm was selected from that fifty individual investors from it. Random numbers are often obtained employing a calculator, a programme, written tables of random numbers, or by the a lot of ancient strategies of drawing slips of paper from a hat, moving coins or rolling dice (Neville and Sidney, 2004). The researchers study adopted the random range tables. Easy sampling helps make sure that the sample represents the complete population, and isn't biased or prejudiced toward any explicit teams among the population. It conjointly helps eliminate the tendency to pick supported a basing issue (Cooper and Emory, 1995).

Data Collection Tools and Instruments : Primary information was collected using questionnaires that were examined by the research worker personally. The questionnaire painted 5 categories : self-image/firm-image coincidence, accounting data, neutral data, advocate recommendation and personal monetary desires. The questionnaires were administered to the individual investors in person. This methodology was acceptable since it inspired prompt responses from the respondents. The form was structured into 2 sections. Section one wanted to capture the overall information (Bio-Data) concerning the capitalist. Section II was involved with the information on factors that have an effect on individual investment choices. The developed form enclosed things that corresponded to self-image/firm-image, accounting data, neutral data, advocate recommendation and private money desires. Respondents were asked to point things on five point Likert scale.

The communality is that the square multiple regression constant for variable factors as predictors. The communality measures the proportion of variance in an exceedingly given variable explained by all the factors conjointly and might be understood because the dependableness of the indicator. it's the proportion of variance that every item or variable has in common with different things. as an example, 86.6% communality is that the highest varia-

bility within the issue “Development available index”, whereas because the lowest variability was captured for the issue “Information from internet” with a communality of 59.4%.

A total of 9 elements were extracted from the factors. The elements are orthogonal to one another, that means they're unrelated. For a part to account for a minimum of one variable, it ought to have associate Eigen worth (the add of squares of its issue loadings) of a minimum of one. This is often the purpose for deciding the amount of elements to be extracted with most or close to most loadings. Part one explains the best ascertained variance followed by part a pair of then on. Part one accounts for 15.202% of the whole ascertained variability whereas part a pair of explains 14.785%, part 3 12.155%, part four 8.316%, part 5 6.349%, part 64.983%, part 74.435%, part 84.289%, and part 94.021%. The 9 extracted elements justify 74.535% of the whole variability for all the 28 variables. Orthogonal Varimax rotation along with the Kaiser normalization entries within the initial issue to be close to 0 or 1. Such loadings show additional variables go along and therefore simply explainable. the ultimate matrix represents each a pattern and a structure matrix. The coefficients within the revolved matrix indicate each the parametric statistic and also the regression weights.

Factor selection

The revolved matrix indicates the coefficient of correlation and also the regression weights. element 1 (Firms position and performance) consists of corporations standing in trade, value per share and past performance of firm's stock. Element a pair of (Investment returns and economic conditions) consists of Dividends paid, Expected dividends by Investors, Development available Index, Current Economic Indicators, Recent value Fluctuation and Attractiveness of slippery. Element three (Diversification and loss minimization) consists of value per share, Attractiveness of non-stock, want for diversification, easy getting funds and Minimizing risk of loss. Elements four (Third party opinion) consists of friend opinion, Friend recommendations and other people Opinion on the stock. Element five (The goodwill of the firm and accounting information) consists of name of the firm, Expected company Earnings and Profit and condition of statements. Element six (Perception towards the firm) consists of Perceived ethics of firm and corporations involvement in Community. Element seven (Environmental factors) consists Coverage within the Press and Statement of state officers. Element eight (Firms feeling) involves of feelings for a firm. Element nine (Risk minimization) involves Minimizing risk of loss.

The factor loading heavily relies on a specific element that ought to have the best corresponding

entry across all the 9 parts within the turned element matrix.

The first 2 parts clearly indicate that the foremost vital factors influencing individual investment choices in NSE relate to companies position and performance, and investment returns and economic conditions. economic expert rank check was performed that assigns weights supported by the degree of importance of things (i.e. most important to least important). The factors that were known and stratified were classical wealth maximization criteria, like the "reputation", "firms standing in industry", "expected company earnings", "profit and condition of statements" "past performance of firm's stock" and "expected divided by investors". this can be per the findings of Merikas et al., (2003).

Conclusions and Recommendations

The objective of this study was to spot the factors influencing individual investment choices in NSE. This chapter presents the outline, discussions and conclusions from the analysis findings as per the target of the study. supported the findings of this study, recommendations are given on the factors influencing individual investment choices in NSE, the constraints of the study furthermore as suggestions for any analysis have additionally been mentioned

Discussions and Conclusions

The study was conducted on the 42 investors out of 50 investors that deep-seated the sample size. To gather information the researcher used a structured form that was personally administered to the respondents. The questionnaire entrenched 28 things. The respondents were the individual investors. During this study, information was analyzed via calculation frequencies, mean scores, normal deviations, percentages, Friedman's test and factor analysis techniques. The target of the study was to spot the factors influencing investment choices in NSE. Results of correlational analysis revealed that the foremost vital factors were: companies position and performance; Investment returns and economic conditions; Diversification and loss decrease; Third party opinion; The goodwill of the firm and accounting information; Perception towards the firm; Environmental factors; companies feeling and Risk minimization.

Friedman's ranking was accustomed to establish the foremost necessary individual factors that influence investment call in NSE. The factors were name of the firm, firm's standing in business, expected company earnings, profit and condition of statement, past performance firm's stock, value per share, feeling on the economy and expected divided by investors.

In conclusion this study tested the tenets of the finance theory on the factors that influence investment selections below conditions of uncertainty. The analysis performed on the information collected seems to present a reasonably correct read of the common equity capitalist within the NSE, full fledged and knowledgeable investors would admit that the structure and relative weights of the chosen classes replicate on the common, a still unsophisticated and immature capitalist profile. The results unconcealed by our sample of fifty respondents ensure that there looks to be a particular degree of correlation between the factors that activity finance theory and former empirical proof establish because the influencing factors for the common equity capitalist, and also the individual behavior of active investors within the NSE influenced by the trends prevailing at the time of the survey within the NSE.

Policy Recommendations

The researcher recommends that the investors have to be compelled to analyse the investment factors rigorously using the affordable business data before creating an investment call. The investors be able to interpret the market and economic indicators since they influence the performance of the share on the market. They ought to value all the variables within the surroundings rather than considering just one variable. Investors have to be compelled to diversify their investment in several firms by developing a portfolio of investments to reduce risks and maximize returns.

Suggestions for Future analysis

This study examined the factors that seem to exercise the best influence on the individual stock capitalist, and enclosed not solely the factors investigated by previous studies and derived from prevailing activity finance theories, however conjointly introduced further factors generated through personal interviews that are found to influence the stockholders' investment choices in Delhi NCR. First, future research ought to conceive to make a case for the relative importance of call variables have for individual investors creating stock purchase selections, Secondly, the study was conducted for the investors in Delhi. The findings are often verified by conducting a similar study within the rest of the country, and third, whether or not there are consistent clusters or teams of variables that form identifiable decision determinants that investors rely on once creating stock investment selections.

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Smart Transportation : A Study of Transportation Sector Reforms & Developments in India

Harshita Bhatnagar[1]

Abstract

The aim of this paper is to look at the current state of the transportation sector in India from the industry perspective. This document elucidates the policy framework measures and institutional structures being created by the Government of India to promote the transportation sector in the country. The holistic approach of the Government of India through policies and schemes such as National Urban Transport Policy 2014, Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Automobile Manufacturing Policy (AMP2026), Make in India scheme and Skill India program would transform the system into an efficient urban mobility and public transport system in the next decade.

Key Words: Smart Transportation, AMRUT, Smart City, Electric Vehicle, AMP2026

1. Transportation in India

Current State

As per the Government of India data, the automotive sector is a major contributor to the GDP. Currently its share is close to 6.7% which is expected to grow to about 12% of GDP in 2026. It would be one of the biggest sectors in providing employment. As per Automotive Mission Plan 2006-16, 25million jobs have been created in automotive sector in last decade and 10 million jobs are expected to be created till 2022(Automotive Sector Skill Council, National Skill Development Corporation). The total number of vehicles manufactured in India in 2014-15 was more than 23million units, an all time record (SIAM Report). As per Central Statistical Survey Organisation (CSSO), rapid urbanization is happening in India along with a sharp rise in the GDP per capita figures. Currently about 32% population resides in urban areas and is expected to grow to 40% by 2030 along with a contribution of up to 75% of GDP by urban population in 2030 (Source: Smart Cities Guidelines, Government of India). The graphs below depict urbanization trends over the last century and GDP per capita growth during the last decade.

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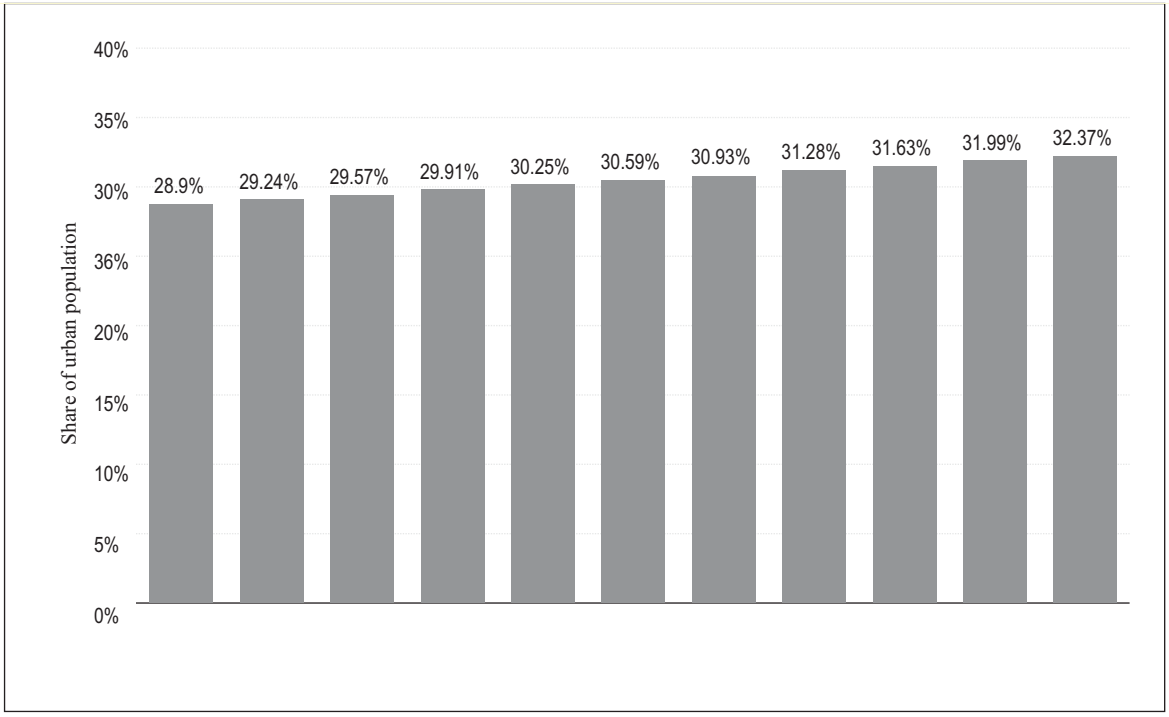
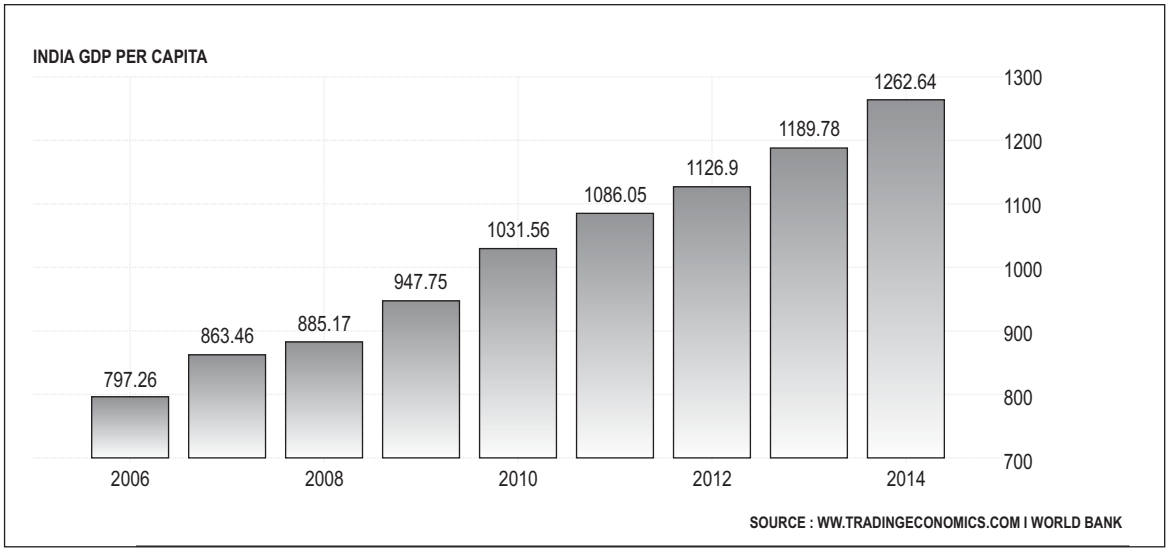


Rapid Urbanization in India in last decade. Source: Statista, 2016



Rising GDP per Capita (in USD)

Source: www.tradingeconomics.com

With low car penetration and rising incomes, India is showing great promise in auto and auto-component production, domestic consumption and exports. As per latest Automotive Component Manufacturers Association of India (ACMA) reports, 3.6% of national GDP and 25.6% of manufacturing GDP is contributed by auto component industry. Both these factors have resulted in a steady demand for automobiles, thereby giving a boost to automobile

manufacturing in India. As per the latest data published by Society of Indian Automobile Manufacturing Report(SIAM), 2014-15, total production in India has increased by 8.6% from 21.5 million units in 2013-14 to 23.3 million units in 2014-15.Following table summarizes the production figures in last six financial years.

Category	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Passenger Vehicles	23,57,411	29,82,772	71,46,069	32,31,058	30,87,973	32,20,172
Commercial Vehicles	5,67,556	7,60,735	9,29,136	8,32,649	6,99,035	6,97,083
Three Wheelers	6,19,194	1,99,553	8,79,289	8,39,748	8,30,108	9,49,021
Two Wheelers	1,05,12,903	1,33,49,349	1,54,27,532	1,57,44,156	1,68,83,049	1,84,99,970
Grand Total	**1,40,57,064**	**1,78,92,409**	**2,03,82,026**	**2,06,47,611**	**2,15,00,165**	**2,33,66,246**

Automobile Production Trends (Source: Society of Indian Automobile Manufacturing Report)

India has one of the largest road networks of approximately 47lakh kilometers. Around 65% of total freight and 90% of passenger traffic is carried by the roads, yet the quality of road infrastructure is a matter of concern. Apart from infrastructure, other challenges are road congestion, air pollution due to automobiles running on fossil fuels, inadequate means of public transportation, underutilization of water transportation and low technology usage in transportation systems.

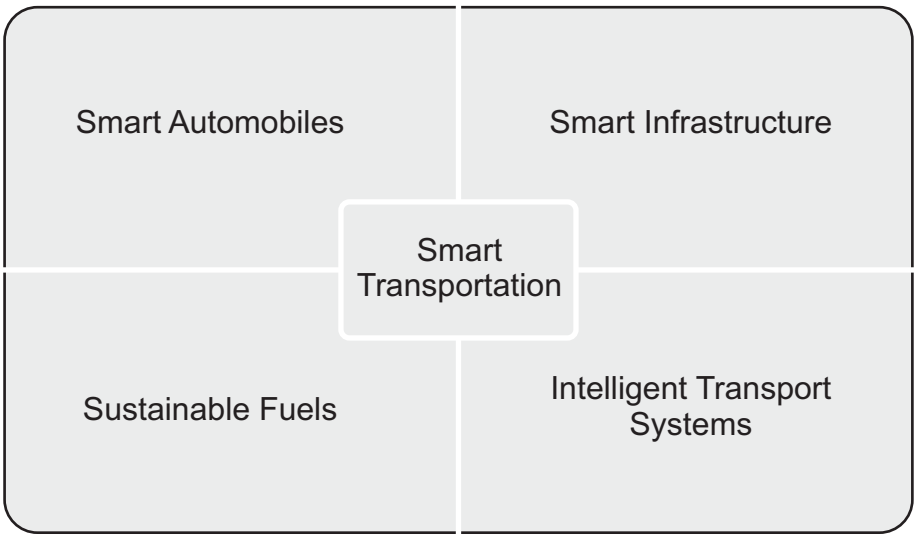
Improvement Areas

Automotive sector contributes about 6.7% of the GDP yet it has not received the focus it deserves. This sector is facing many challenges in India. The main areas of improvement are: physical infrastructure, adherence to latest fuel emission norms and use of intelligent transport systems for smart transportation.

Inadequate and inefficient public transport infrastructure	• Inadequate public transport • Road congestion
Transport Emissions & Air Quality	• Greenhouse gas (GHG) emissions • India ranks 3rd in annual CO2 emissions estimates, 2014 data by European Commission.
Inadequately implemented Intelligent Transport Systems (ITS)	• Electronic toll collection (ETC) and traffic monitoring • ITS & multi-level Parking Systems

To move into an era of Smart Transportation in India, thrust is on better infrastructure, legislative provisions towards sustainable fuels, CNG-based public transport vehicles, and successfully implementing urban mass mobility schemes to efficiently provide mobility services to ever-expanding cities. Smart Transportation can be ushered in through improvements in four major areas:

- Smart Automobiles
- Smart Infrastructure
- Sustainable Fuels



Smart Transportation

A total of 599 highways projects covering around 12,903 km of national highways have been sanctioned, incurring an expenditure of Rs 108,000 crore (US$ 16.2 billion) over the next 5 years. Under the Smart Cities Scheme, Govt. of India has already earmarked Rs. 50,802Cr to be utilized for developing first 20 Smart cities. A major component of the scheme is providing efficient urban mobility and public transport system. India plans to build National Highways, Expressways, Mass Rapid Transport(MRT), Bus Rapid Transport(BRT), pedestrian skywalks, walkways, and cycle tracks, in cities. Government has plans to develop 200 low-cost airports in Tier-II and Tier-III towns across the country. Plans are also in place to develop 111 river-streams as waterways for coastal shipping to achieve the twin purpose of reducing freight costs and as well as the road congestion.

2. Smart Automobiles

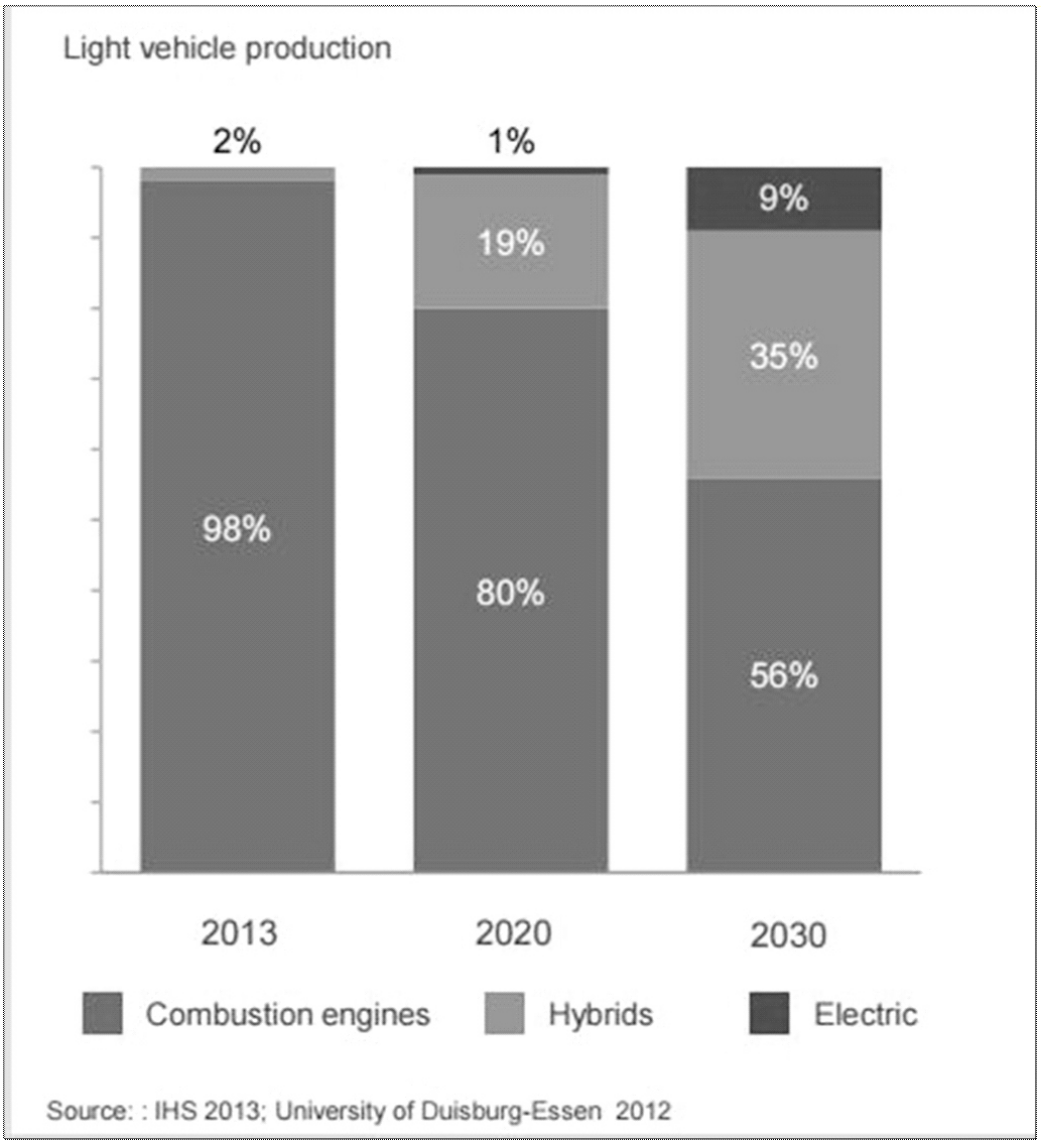
Technological advances are helping manufacturers offer many useful features in automobiles. Today emphasis is on refined engines with high performance, safe design, sustainable/green fuels, adherence to latest emission norms(Bharat Stage (BS) VI in India, Euro V Standard worldwide), connected cars/IoT, wearable devices, driverless vehicles, and fuel efficiency.

Vehicle Technologies

The focus is towards fuels efficiency and reducing Green House Gas (GHG) emissions. Hence, Electric Vehicles, Hybrid Electric Vehicles (dual fuel) and Fuel Cell Vehicles seem to be the future of vehicle technology. In India, dual-fuel vehicles running on petrol/diesel and CNG are becoming popular. In the electric vehicle segment only one brand Reva has a presence.

There is a need to expand fueling infrastructure for CNG vehicles as well as expand Electric vehicle charging stations in the country especially in metros.

As per a 2012 study by the Center of Automotive Research, University of Duisburg-Essen, Germany, the worldwide trend for light-vehicle production is a gradual shift towards Hybrid and Electric vehicles. By 2030, 56% vehicles produced would use combustion engines, 35% hybrid technologies and 9% electric power. Which means a whopping 44% of small vehicles would not use a combustion engine as power train. This would reduce GHG emissions to a significant extent.



Source: Center of Automotive Research, University of Duisburg-Essen, Germany, 2012

Electrical Vehicles

100% battery-driven electrical vehicles (EVs) are the ultimate goal of the vehicle alternative power train development in the next 15-20 years. These will be totally emissions free if the electricity comes from renewable energy sources. Indian Government has developed *National Electric Mobility Mission Plan 2020*. It proposes to incentivize adoption of green vehicles and facilitate domestic manufacturing capability in automobile sector. The annual sale of EVs touched 22,000 units in 2015-16 in India. The two major challenges in adopting electric vehicles in India are: lack of easy access to institutional financing for purchasing electric vehicle, and a grossly inadequate charging infrastructure.

Connected Cars/Internet of Things (IoT)

Connected Cars will provide seamless connectivity between different electronic systems such as infotainment, control systems such as AC, safety features and navigation features through internet. Connected Cars will provide seamless communication within the car as well as with outside systems through Internet of Things (IoT) technology. In near future mobile or wearable devices would be communicating with the electronic systems of the car through the internet. This concept is known as V2X connectivity (Vehicle to Vehicle or V2V and Vehicle to Infrastructure or V2I.

3. Smart Fuels and Better Emission Standards

Due to rapid urbanization, there is an increase in greenhouse gas (GHG) emissions. This is also contributing to an expanding carbon footprint. Hence the need arises for clean and sustainable technologies in transport sector.

Alternative Fuels

Bio-fuels, Ethanol, and Compressed Natural Gas (CNG) are clean fuels. Besides these, electric and solar powered vehicles are also being promoted. Vehicles running on hydrogen as fuel and using fuel cell technology are also a clean option. CNG is becoming very popular in India due to its low cost. Biodiesel is another alternate fuel with diesel like qualities. It is synthesized through simple chemical reaction of alcohols with vegetable oils. In India, oil from Jatropha and Karanjia seeds is used to produce biodiesel. First commercial flight using biofuel an ATF combination was flagged off in Aug 2018 from Dehradun to Delhi.

Clean fuel technologies are applicable in all modes of transport, viz. Roads/BRTs, MRTs, railways, freight, waterborne transport and aviation. In 2015, for the first time Indian Railways used CNG as a fuel for a passenger train.

Emission Standards

India follows Bharat Stage(BS) emission standards. These are emission standards instituted by the Government of India to regulate the output of air pollutants from internal combustion engine equipment, including motor vehicles. In April 2010, Bharat Stage IV standard for 13 Metro cities was implemented and the rest of the country moved to Bharat Stage III. Bharat stage IV has been further extended to additional 20 cities from October 2014.

The Second Auto Fuel Vision and Policy 2025 notified by Government of India lays the map for fuel emission norms up to2025.In order to adopt the latest emission standards, Govt. of India has decided to completely skip BS V norms and has announced to adopt and implement BS VI norms from April 2020.

4. Smart Physical Infrastructure

India has the 2nd largest road network and 4th largest rail network in the world. The sea port network is also impressive with 13 major ports and 187 minor/intermediate ports and the 9th largest civil aviation market in the world. Ten years ago, Jawaharlal Nehru National Urban Renewal Mission(JNNURM) established the base for smart infrastructure development in India. Its next phase is Atal Mission for Rejuvenation and Urban Transformation (AMRUT) launched by the Hon'ble Prime Minister in June 2015. It aims to provide holistic urban infrastructure services such as water supply, sewerage, urban transport and building of amenities in cities to improve quality of life. This is to be implemented over the next 5years. Under AMRUT, states will also invest an equal share for the development of urban infrastructure.

Smart infrastructure includes development of Express ways, Highways, Waterways and improved and efficient Sea and Air ports. However, the emphasis will be on surface and water transportation as these two are more cost-effective means. Major economic activity is generated through freight transportation. In India, the roads remain the primary infrastructure for freight movement (65% of freight moves through roads).

Besides heavy investment to the tune of around Rs. 100000 crore over next 5 years in large scale infrastructure development for urban mobility, the government is also building infrastructure to promote non-motorised transport (NMT) such as bicycles, cycle rickshaws and pedestrian walkways for city traffic.

Road Transport

Minister for Shipping, Road Transport and Highways has a target to achieve 2% of country's GDP through transportation sector and creating 15lakh jobs. Ministry has also set a target of constructing 30km of roads per day, which is 20km per day at the end of March 2016. Total length of national highways would be increased from 96,000 kilometers to 1.5 lakh kilometers. Besides national Highways, state highways and rural roads will also be improved

and increased in length. Pradhan Mantri Gram Sadak Yojna (PMGSY) will augment the road infrastructure in the rural part of India. Dedicated Freight Corridors (DFCs) have been envisaged to augment rail and road networks.

Waterways and Coastal Shipping

Also govt. will construct express highways on major routes; however, the highest priority would be given to developing waterways to reduce transportation costs. Ministry for Shipping, Road Transport and Highways is already working with union Ministry of Water Resources, River Development and Ganga Rejuvenation is to develop waterways along 111 rivers in the country.

To give boost to shipping industry, a network of ports is being developed. Twelve major ports and three small ports at Sagar Islands in West Bengal, Maharashtra and Tamil Nadu are coming up. In a first, in Feb 2016, domestic cargo was moved through coastal shipping from Chennai port to Pipava, Gujarat to transport 800 new units of a car.

Ministry is promoting coastal shipping as it reduces the cost by 25-30%, reduces carbon footprint and congestion on the roads.

Under the AMRUT scheme, focus of Urban Transport is on developing:

I. Ferry vessels for inland waterways (excluding port/bay infrastructure) and buses.
II. Footpaths/walkways, sidewalks, foot over-bridges and facilities for non-motorised transport (bicycles and cycle-rickshaws).
III. Multi-level parking.

Multimodal Integrated MRT/Bus Rapid Transit System (BRTS).

Smart Infrastructure					
Mass Rapid Transport (MRT	Multimodal Integrated MRT and BRT	Water Transport/ Freight	Regional and sub-urban connectivity	Non-Motorised Transport (Walk, Cycle, cycle Rickshaw	Aviation

Government of India has allocated Rs. 7290Cr allocated to two central schemes: Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and 'Smart Cities' mission in Feb 2016.

To provide efficient transport facilities and reduced peak time load on roads, government has plans to develop Roads/Highways/BRTs,Hi Speed Trains /MRTs, develop waterways along 111 River Streams and pedestrian/non-motorised traffic ways in urban areas, more feeder transport for last mile connectivity to mass transit systems.

5. Intelligent Transport Systems (ITS)

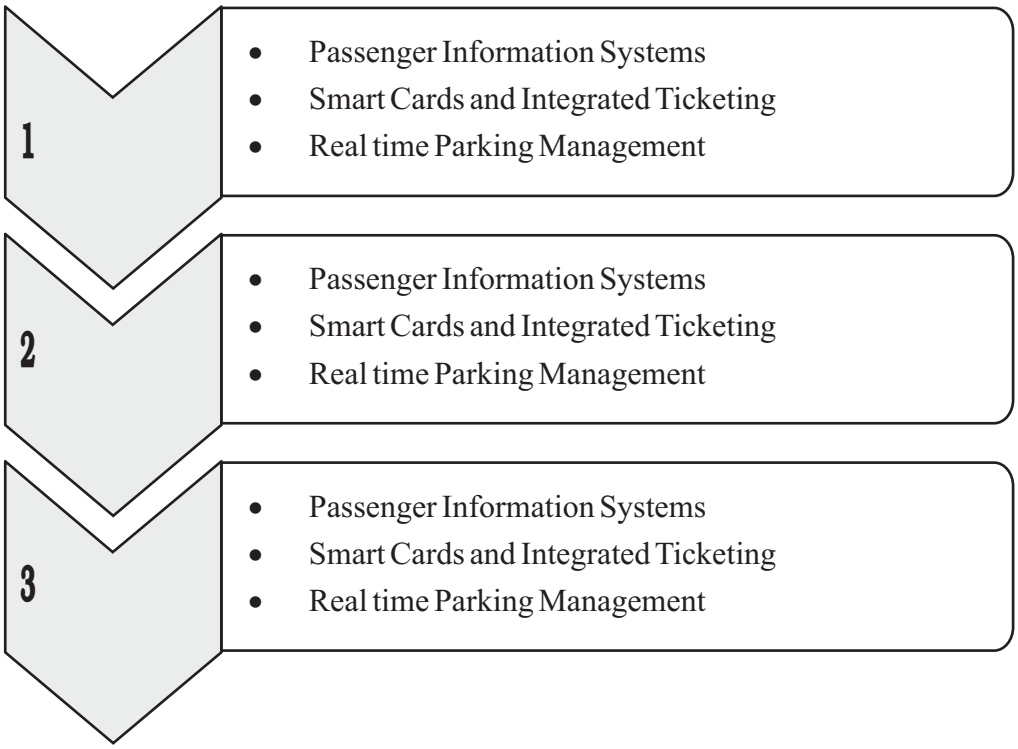
A number of Information and Communication Technology (ICT) interventions used for efficiently managing transportation needs can be called Intelligent Transportation System (ITS). Major areas in ITS are:

Passenger Information Systems

These systems provide real time information to passengers using a public transport system. Usually the Expected Time of Arrival (ETA) is displayed on electronic sign boards at the bus stands, MRT platforms or the Airports and Railway stations. This reduces the uncertainty about ETA and eases the congestion at waiting areas.

Real-time Parking Management

Real-time parking management systems also provide the information related to available parking lots through a publicly displayed electronic sign board. This facility is useful for the staff of parking lots as well as the end-users



Intelligent Transport Systems

Smart Cards

Smart Cards usage has already started in India especially in MRTs. Smart Integrated cards have been implemented by Delhi and Gujarat State Governments. Smart Integrated cards will allow citizens to pay for any type of public transportation through single smart card, ushering into seamless multi-modal transportation systems in large cities.

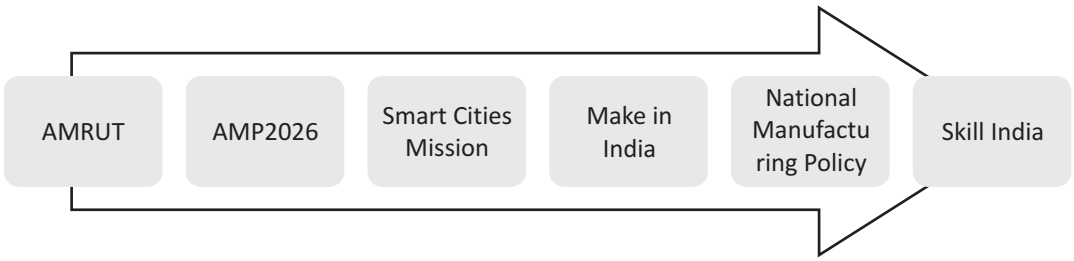
Electronic Toll Collection

Electronic toll collection systems are RFID based systems that read from a distance and automatically deduct the toll at each entry. This technology saves queue-time and fuel cost at the toll gates. It also results in better traffic management by reducing congestion. In India, Mumbai-Pune highway has this facility.

Smart Parking Assist

A latest development in vehicles technology is vehicles equipped with innovations in sensors, chassis, drive line and electronic devices to enable smart parking or assisted parking. This is a very useful technology for inexperienced drivers and learners. This technology will increase the safety, efficiency and comfort in driving and parking vehicles.

6. Policy Interventions



1. **National Urban Transport Policy, 2014 :** This policy document was prepared by Ministry of Urban Development. It paved the way for reforms in transportation sector to give it a big boost.
2. **Atal Mission for Rejuvenation and Urban Transformation (AMRUT) :** The focus of this mission is on capacity building, reform implementation, water supply, sewerage

and seepage management, storm water drainage, urban transport and development of green spaces and parks. An investment ofRs. 50,000cr will be done by the central government over 5 years, FY 2015-16 to FY 2019-20. One of its important components is improving urban transport.

3. **Automotive Mission Plan 2016-26 (AMP 2026):** A plan prepared by Ministry of Heavy Industries and Public Enterprise in consultation with ACMA and SIAM. Automotive industry is expected to boost domestic turnover from $35 Billion to $145 Billion, exports from $5billion to $35billion and provide employment to 25million people. Thereby contributing up to 10% of the national GDP by 2026.
4. **Smart Cities Mission:** Under this scheme, Rs. 48000Cr will be spent over 5 years. Names of the smart cities have been finalized through a competition named Smart City Challenge. The first phase of challenge concluded in Feb 2016 and names of top 20 cities were declared for the funding. Till now all 100 Smart Cities have been selected.
5. **Make in India:** India is a global hub of automobile manufacturing and ranks in the top ten countries in the world. Domestic vehicle sales of Indian Automobile industry has been growing at CAGR of ~9.6% over the period of FY05-FY15 while exports have grown at a CAGR of ~18.9%. However, in FY13-FY15, domestic sales grew at a CAGR of just ~4.4% mainly due to sluggish economy. Manufacturing for mass mobility sector is poised to grow at a high rate in the next few years. This would also give boost to manufacturing related to subsidiary auto components.
6. **National Manufacturing Policy (NMP**) with the objective of enhancing the share of manufacturing in GDP to 25% and creating 100 million jobs over a decade. A good percentage of jobs are likely to be created in transportation and automotive sector.

Skill Development: Currently Automotive sector provides direct and indirect employment to more than 25 million people. As per the Automotive Sector Skill Council under NSDC, there is a supply vs. demand gap of incremental 35 Million people by 2022. Automotive Sector Skill Council is already working with industry and academia to bridge this gap by developing industry relevant training programs.

Conclusion

India is poised for impressive economic growth with economy growing at 7.4% compared to shrinking western economies. India has emerged as most preferred investment destination in the world. This is backed by a 550 million young human capital base and strong policy environment

Greener technologies and India as a manufacturing hub provides opportunities for collaboration between auto manufacturers and subsidiary industries to reduce cost and improve quality.

The central government has already awarded projects worth Rs1.8Lakh crore in last two years and is expected to award road construction projects worth Rs 3Lakh crore by 2017. These developments have made the conditions just ripe for a giant leap in the transportation industry in India.

In the next decade, India will reduce carbon emission from vehicular sources, create huge job opportunities in transport and automotive industry and develop a sustainable and smart transportation system for its growing economic and public mobility requirements. The investments in surface transportation projects will create a world class transportation infrastructure; bring best vehicle technologies, sustainable choices and intelligent transportation system in India. The day is not far when India will showcase its transportation sector to the world. Sustainable choices for public transport coupled with greener fuels will greatly enhance the quality of life for the citizens and give a push to the economic activity in the long term.

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An Impact of Digitalization on H R Transformation

Sonika Sharma [1]

Dr. Sunita Shukla [2]

Abstract

Gone are the days when individual meetings were conducted for policy sharing and when HR people used to travel from one location to another, announcing new practices, promotions, and separations, but with the emergence of social media, a single update or a post on the Internet based organization management system serves as a public notice for any type of organizational change, throwing a wrinkle in the corporate communication process. Role of HR organizations are moving away from a 'service provider' role to become valued talent, design thinking and employee experience consultants. Businesses have recognized that they need data to figure out what makes people join, perform well and stay with an organization; who will likely be successful; who will make the best leaders; and what is required to deliver the highest-quality customer service and innovation. HR is becoming an innovative consultant with a broader responsibility to design, simplify, and improve the employee and candidate experience. This paper tries to explore the changing trends in HR functions due to the increasing dominance of digital media and IT applications.

Key Words: Talent Management, Recruitment, Selection, Human resource information system, Digital HR.

Introduction

In the contemporary scenario of modernization and globalization, organizations rely heavily upon technological advancement and innovation. Currently, the world is standing on the brink of a technological revolution that will fundamentally alter the way we live, work, and relate to one another. In its scale, scope, and complexity, the transformation will be unlike anything humankind has experienced before. We do not yet know just how it will unfold, but one thing is clear: the response to it must be integrated and comprehensive, involving all stakeholders of the global polity, from the public and private sectors to academia and civil society. The First Industrial Revolution used water and steam power to mechanize production.

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The Second Industrial Revolution used electric power to create mass production. The Third Industrial Revolution used electronics and information technology to automate production. Now the Fourth Industrial Revolution is built on the third, the digital revolution that has occurred since the middle of the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres. Slower to come to the table is Human Resource Management, but with a very less spam time has created a whole new sector of business known as Electronic HR or Digital HR.

Through the years as the world has undergone far reaching societal, cultural and economic changes based on the increasing dominance of digital media and tools. This has led to the current period been characterized as the "digital age". Digital HR is an evolving approach to business practice, customer interactions and employee behaviors. It is present throughout any business and in the everyday lives and interactions of employees. Business functions, where communication and customer dialogue is crucial, have been early adopters of digital technology such as marketing, communications and customer service. In line with these changes, digital technologies play an increasingly prominent role in Human Resource Management, which is affected in several ways we manage human resources. The widespread use of information technology has entirely changed the concepts of Human Resource Management.

In line with these changes, digital technologies play an increasingly prominent role in the lives of employees, which seems to be affected in multiple ways. The concept of Electronic Human Resource Management known as e-HRM meaning the adoption of technology in delivering Human Resource practices due to the digital revolution in the world is such a tool that organizations can employ to manipulate the performance and behavior of the people on whom they rely on to achieve business success. One of the largest breakthroughs in the work arena is automation, and digitalization of the work and near constant technological advancement, with a definite move towards the use of technologically sophisticated ways of getting things done, hence HR function of an organization cannot remain aloof and secluded and same pattern has got to be followed for human resource management practices, henceforth new, dynamic ways of managing HR are being seen every day.

Objectives of the Study

- To explore the changing trends in HR functions due to digitalization.
- To find out the extent and nature of IT applications in the HR function.

- To understand the importance and the benefits of Digital HRM.

Literature Review :

Irrespective of the kind of business, the deployment of information technology in one form or the other is a foregone conclusion. To manage and deploy technology in an effective way, all business organizations would need knowledge workers. Managing of these knowledge workers is the responsibility of the HR function. Hence, the integration of technology and HR is an absolute must. Integration of technology and HR would not only mean harmonious co-existence, but would also mean one enhancing and complementing the other i.e., technology is used to enhance effectiveness of HR and HR functions helps in adopting and managing change which technology deployment brings in. HR has the opportunity to revolutionize the entire employee experience by transforming HR processes, systems, and the HR organization via new digital platforms, apps, and ways of delivering HR services.

According to Kettley and Reiley (2003), computerized human resource information system consists of a fully integrated, organization wide network of HR-related data, information, services, databases, tools and transactions. Integrating technology and HR functions as a function is responsible for the deliverables like business strategy execution, administrative efficiency, employee contribution and capacity for change. All these are accomplished through what HR people do i.e., staffing, development, compensation, benefits, communicates organization design, high performing teams. Technology has only recently developed in a way that enables e-HRM to make its mark, especially the introduction of corporate intranets and web-enabled HRIS. The nature of the development path, however, varies considerably from organization to organization. Kavanagh and Thite (2008) reported that to improve effectiveness and efficiency in terms of service delivery, cost reduction and value-added services, HR departments came under pressure to harness technology that was becoming cheaper and more powerful.

First change in the digital HR is the emergence of the concept of “digital employees” figuratively refers to assumed larger changes in the core subject matter of the HR profession: labeled with various terms such as “digital natives”, “Millennials” or “net generation”. The generation of younger employees grown up in a digital environment is both considerably more complex and considerably more heterogeneous, while there are, however, obvious differences that have to be considered (Helsper and Eynon, 2010). The challenge for HRM therefore is to

identify actual digitally induced changes in attitudes, qualifications, behaviors and expectation of younger employees, while yet avoiding any stereotyping and considering heterogeneity of actual changes. In this way, "digital employees" constitute a first notable area of digital changes and challenges of the HR profession (D'Netto and Ahmed, 2012).

Second change in the digital HR is the emergence of the Concept of "digital work", refers way the organization work. In consequence, qualification demands placed on employees have continuously changed, and in particular "digital literacy" – understood as a broader set of technical as well as mental skills to systematically acquire, process, produce and use information.

A Third change in the digital HR is the emergence of "digital employee management" and it refers to the planning, implementation and in particular application of digital technologies to support and network the HR profession, a phenomenon also known as electronic HRM (Strohmeier, 2007). In the interim, not only administrative HR functions such as payroll processing, attendance management or record keeping, but also managing HR functions such as compensation, performance management or development are "digitally" supported and enabled, and thereby often deeply changed (Strohmeier, 2007). Moreover, digitalization has also affected HR organization, by establishing new actor categories, as, for instance, employees incorporated via digital self-service, and by establishing new kinds of cooperation subsumed as "virtual HR" (e.g. Lepak and Snell, 1998). This ongoing digitalization of HRM is basically assumed to offer large opportunities for the discipline. In particular, it is hoped to improve operational aspects, such as costs, speed and quality of HR processes, relational aspects, such as a corporation and trust among HR stakeholders, and also transformational aspects, such as the strategic orientation, organization and standing of the HR function (Strohmeier, 2009). HR profession is to identify, develop and utilized the positive potentials of digitalization, while avoiding or at least reducing the accompanying down sides.

Over the last decade, there has been a considerable increase in the number of organizations gathering, storing and analyzing information regarding their human resources through the use of Human Resource Information Systems (HRIS) software or other types of software which include HRIS functionality (Ball, 2001; Barron, Chhabra, Hanscome, & Henson, 2004; Hussain, Wallace, & Cornelius, 2007; Ngai & Wat, 2006). Tannenbaum (1990) defines an HRIS as a system that will acquire, store, manipulate, analyze, retrieve, and distribute information

about an organization's human resources. An appropriate use of HRIS, less people should be needed to perform administrative tasks such as record keeping and more time would be made available for HR managers to assist by providing data on a strategic level. Many of these authors believe the future to be bright for HRIS as it creates new paths for human resources and for the organizations that effectively use HRIS. Overman (1992) study indicates that the potential advantages of HRIS are faster information processing, greater information accuracy, improved planning and program development, and enhanced employee communications.

The use of an HRIS would reduce HR costs by automating information and reducing the number of HR employees; by helping employees to control their own personal information; and by allowing managers to access relevant information and data, conducts analyses, make decisions, and communicate with others without consulting an HR professional (Awazu & Desouza, 2003; Ball, 2001). Gallagher (1997) argues that HRIS can influence effectiveness in four ways: Firstly, with emphasis on increased productivity from the workforce, recruitment, short term working, temporary, and less redundancy. Secondly, it deals with the increasing demands made by legislation, which related to HR practices and the increased need to produce statistics for government. The third factor was the rate of the development of computer technology.

Internet is considered as the latest tool in hiring. It is a real revolution spreading over the world of job hunting and hiring. The term online recruitment, e-recruitment, cyber recruiting, or internet recruiting, imply the formal sourcing of job information online. The first references to e-recruitment appears in the articles of the mid-1980s (Gentner,1984; Casper,1985). Hoffman (2001) defined e-recruitment as the utilization of internet for candidate sourcing, selection, communication and management throughout the recruitment process. Schreyer & McCarter (1998) e-recruitment refers to the recruitment process, including placing job advertisements, receiving resumes, and building human resource database with candidates and incumbents. Organizational recruitment efforts have increasingly relied on computer technology and one area that has evolved is recruiting via the Internet, otherwise known as e-recruitment (Mottl, 1998 ; Hogler et al., 1998), gives the idea that employers can electronically advertise jobs, scan and store resumes, conduct test, and contact qualified applicants by using the power of the Internet to match people to jobs.

There is a need for companies to have a conceptually sound framework and a cost-effective, speedy and convenient system at their disposal to meet their personnel selection needs in a

highly competitive environment (Chapman, & Webster, 2003). These days, one way of doing so is via online recruitment, a method of attracting job candidates via the internet (Cullen, 2001). As a practice, it is agreed that e-HRM leads to considerable changes and therefore should be taken as an important development in the HR field (Lepak, & Snell, 1998; Lengnick-Hall & Moritz, 2003; Gueutal & Stone, 2005). In times of fierce competition, being able to attract high-quality human resources is considered a true competitive advantage for organizations (Gatewood, Gowan & Lautenschlager, 1993; Rynes, 1991; Turban & Greening, 1997). This attraction of potential employees and to get them to accept offers of employment has given recent recognition to the important role that recruitment plays in assuring organizational success (Barber, 1998; Grossman, 2000; Nakache, 1997; Pomeroy, 2000). Thomas and Datta (2007) indicate that besides passing on the job related messages, e-mail is also used for other activities like sending *birthday messages* to each and every employee by one of the senior most executives. The messages are highly customized and it is embedded in the letterhead, complete with signature.

As per Ulrich (1997), while attempting to make strategic changes within the human resource function, HR professionals must still deliver good HR services to their stakeholders who include employees and managers. According to Kettley & Reiley (2003), before embarking on e-HRM, organizations should review and optimize their business processes. The employee database acts a centralized repository of vital employee related information available to HR, employees and managers. Its inherent employee self-service capabilities ensure that this data remains current without tedious data entry by HR. The employee self service is the base on which all other functional modules can be added to create a comprehensive employee self service based HR system. The Employee Self Service pay an important role in working time and schedule, personal information, training and performance management, life events, benefits, careers, time off from work, with ESS employee can view and access pay slips, summary of year's earnings and deductions, loan statements, PF statements, reimbursement statement, income tax statement, IT declaration and IT calculator, reimbursement claim workflow, ticketing, leave workflows. Scroggin (2008) indicates that employee access is the main purpose of ESS systems. When an ESS product is setup, an HRMS software administrator will typically have the option to define field by field what information employees can view, not view, or update. Brockbank & Ulrich (2000) mentioned that companies with the most high-performing HR function behave differently when it comes to the use of HR technology and this may be the most convincing reason for HR professionals to

improve their knowledge and skills in this competency domain. Self-service technology appeared to play a role in these higher levels of efficiency and productivity. Scroggin (2008) indicated that Work Flow Management – is very important capability under the employee access option section. Gara (2008) stated that Applicant Tracking Systems (ATS) are increasingly moving online, i.e. web-based ATS, making it easier for customers to sign up and get started. Web-based applicant tracking system that aids organizations in keeping their incoming job applications and resumes neatly organized in one place, therefore increasing their HR productivity and helping them hire the right people for their organization. It is most easy-to-use; cost-effective, it lets organizations streamline their hiring workflow, resulting in a better and more efficient hiring process.

Organizations have begun to realize the importance of HRM in achieving a better competitive advantage (Greer 1995, Husleid, 1995 & Hussain, 2002). Technology has been cited as a critical driver of HR's transition from a focus on administrative tasks with a focus on serving as a strategic business partner. This strategic role not only adds a valuable dimension to the HR function, but also changes the competencies that define the success of HR professionals. Emphasizing the importance of IT and HR effectiveness, Faiz (2001) report that the HR department of any organization cannot function without IT solutions to make its task easier and more efficient. Organizations today see it as an effective tool for talent management and a means for increasing employee productivity and skills. The functions provided by HRIS that allow for the type and amount of the information provided to top management and the effectiveness of the HR department to make better decisions, are important in research of the system (Lengnick-Hall and Moritz, 2003). A general purpose of an HRIS is to provide decision support applications that help HR and non-HR managers, as well as employees, make better decisions, and the key is to make better decisions rather than simply produce data faster (Kovach and Cathcart, 1999). Leslie (2005) stated that advances in Web-based technology in particular and computer technology in general will continue to be a driving force behind advances in the knowledge economy.

HRIS would reduce HR costs by automating information and reducing the need for large numbers of HR employees; by helping employees to control their own personal information; and by allowing managers to access relevant information and data, conduct analysis, make decisions, and communicate with others without consulting an HR professional (Awazu & Desouza, 2003; Ball, 2001). Ideally, with an appropriate use of HRIS, less people should be needed to perform administrative tasks such as record keeping and more time would be made

available for HR managers to assist by providing data on a strategic level. Many of these authors believe the future to be bright for HRIS as it creates new paths for human resources and for the organizations that effectively use HRIS. One study even goes as far as to suggest that there is evidence that HRIS can improve shareholder value (Brown, 2002). Snell et. al. (2002) suggests that e-HRM technology is capable of more than simply automating business processes, enabling organizations to become more strategic and flexible as well as cost-efficient, by supporting people management. Several other writers including Gourley and Connolly (1996), Hannon et al., (1996), Liff (1997), Othman & The (2003) and Tyson and Selbie (2004) have argued the potential of a shift away from administrative applications towards supporting people management processes. Kossek et al., (1994) have noted the role of an HR Information System in strategic positioning that can practically and symbolically represent the transformation of Human Resources into a strategic business partner.

In the area of HR functions such as recruiting, training and performance management these functional areas have been changed via technology impact. In human resources has been significantly impacted by technology is in the area of recruiting. In this area, it is possible, though technology has made recruiting more efficient and, in the hands of the right recruiter, more uses very effectively to draw the best possible solutions. (Nawaz, 2014). The empirical research work explained that the human resource information systems are useful in HR processes and also acts as a strategic tool for organizational development. Anthony (2014) in his research explained that the technology acting as an enabler for performing, better and better through cloud based services, decision enabling analytics, borderless teams and real time talent management across the organization. Another function of training information technology makes it possible for human resources professionals to train new staff members in a more efficient manner. The ability to access company information and training programs from remote locations eliminate the need for trainers to work directly with new hires on all training programs. Some interaction will always be necessary on some level, of course, but training in virtual classrooms makes it possible for the HR professionals to train a large number of employees quickly and assess their progress through computerized testing programs. (Nawaz, 2014). The research revealed that those who are working with selected software companies are having right decision at the right time for the right problem in an easy way by using of human resources information system. In Performance Management sub function of HR. Enhanced performance management is another byproduct of technological improvement. Human resources professionals can use computer technology to assess employee

performance and also to get employee feedback to be used for the betterment of the organization. Various software programs make it possible for human resources professionals to examine employee performance through metrics to ensure that all of them obtain performance standards. Employees that don't measure up can be subjected to additional training or let go in favor a replacement that can come in and do the job. Technology has another advantage of database Storage and retrieval. Human resources professionals generally process a considerable amount of paperwork and also have to keep much of that paperwork on file for a considerable period of time. The use of electronic imaging has made it possible for companies to store and retrieve files in an electronic format. Even as ERP providers expand their HR product lines, a "third wave" of vendors is emerging with cloud based talent solutions that are user-friendly, inexpensive to buy, and built for mobile devices from the start. The recent recruiting technology works by collecting a bunch of potential recruits and chopping off those who don't meet certain qualifications, or don't use certain buzzwords in their resumes and cover letters of the applicants (Vaccaro, 2014). Automating the Recruitment Processes acquiring the best talent involves the planning, sourcing, assessing, hiring and on-boarding of top talent and helps companies in implementing the best practices of recruitment and hiring the best talent available in the market (Tyagi, 2012). The automation of HR enhances the professional development of HR professionals in the organization (Nawaz and Anjali, 2012). A research of (Kapse et al., 2012) explored the advantages and disadvantages of E recruitment such as wider access and geographical spread, larger audience, greater chance to find right candidate quicker/with greater effectiveness 24/7 no waiting for issue dates, quicker and time saving/cost saving relatively cheap, better match of workers vacancies, efficiency gains, cost saving/saving personnel costs, access passive jobseekers, reduction of unqualified candidates, more opportunities for smaller companies in advantage and in the area of disadvantages screening and checking the skill mapping and authenticity of millions of resumes is a problem and time consuming exercise for organizations. There is low Internet penetration and no access and lack of awareness of internet in many locations across India, Organizations cannot be dependent solely and totally on the online recruitment methods. In India, the employers and the employees still prefer a face-to-face interaction rather than sending e- mails. The companies have to concentrate on the selection of the right person otherwise it will pay high costly consequences; this is one of the area HR department come into the picture. In organizations has to rethink how to manage and supply right talent to the right place for the right work to solve right business solutions by using innovative technology solutions (Nawaz , 2014).

Conclusion

Technology and HR are enablers of business. Integration of the two would mean not only harmonious co-existence but also leveraging one for the other. Leveraging of technology for HR would mean digitizing the mundane HR activities and automating the back office and transactional activities related to recruitment, performance management, career planning, training, etc. HRIS as a strategic tool that may be used to optimize workforce and human capital costs to provide the organization with a glimpse of the skill gaps within the organization, help the organization to develop strategies that will bolster market value and make a positive impact on the bottom line. While both specialized HR software and HRIS, have its value, HRIS points the way to the future by not only improving process efficiencies, but making HR a true business partner, allowing one to help drive the organization toward sustainable, long-term business success. **The future challenges for the organization would be to enhance the working knowledge of the applications of e-HR among the HR practitioner without which e-HR cannot add value to the business.** The e -HRM can range from basic personnel records to sophisticated networks of sub-systems with definite purposes. HRM has developed, changed and aligned its strategies to this new labor market cohort, and ways to recruit, develop, compensate, etc. such "digital employees" and moreover to integrate them with previous generations of employees. In order to enable both individual employees as entire organizations to keep up with the digital change, HRM has systematically prepared, for this enduring change of work content and corresponding qualification demands in its multifarious facets.

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