

Rizvi Institute  
of  
Management Studies & Research

---

# Management Vision

A Compendium of Papers  
January 2017  
Volume 8  
Issue 1  
ISSN: 0975-7813

**RIZVI**  
[www.rizvi.edu.in](http://www.rizvi.edu.in)

---

# Management Vision

## EDITORIAL BOARD

Editor

**Dr. Kalim Khan**

Director

Rizvi Institute of Management Studies & Research

**Dr. C. G. D'lima**

Expert

HR & Psychometrics

**Dr. M.A. Ganachari**

Trainer & Consultant

Financial Management

**Dr. RB Smarta**

Managing Director

Interlink Consultancy

**Dr. Tanaya Mishra**

Sr. Vice President - Group HR

JSW Steel

**Dr. Suresh Kumar**

AVP HR

Aurobindo Pharmaceuticals

**Dr. Hemant Rajguru**

Associate Professor

YCMOU

**Murali Gopalan**

National Business Editor

Hindu Business Line

## EDITORIAL DEPARTMENT

**Dr. Garima Sharma**

**Bhaskar Sinha**

## ADMINISTRATIVE DEPARTMENT

**Swati Ghag**

## COVER DESIGN AND LAYOUT

**Mohd. Osaid Koti**

The views expressed in this publication "Management Vision" do not reflect the opinions of the institute.  
Copyright ©, Rizvi Institute of Management Studies & Research, Mumbai.  
All Rights Reserved. ISSN 0975-7813

### **Contact:**

Rizvi Institute of Management Studies & Research,  
New Rizvi Educational Complex, Off. Carter Road,  
Bandra (West), Mumbai – 400 050.  
Tel.: +91 22 2604 2180, 2604 0924  
Email: [managementjournal@rmi.rizvi.edu.in](mailto:managementjournal@rmi.rizvi.edu.in)  
Website: [www.rmi.rizvi.edu.in](http://www.rmi.rizvi.edu.in)

Dear Researchers and Readers,

On behalf of the management and the editorial team at Rizvi Institute of Management Studies & Research, it gives me immense pleasure to present the latest edition of Management Vision.

As has been the case with all our previous editions, we have always believed in the quality of research papers over quantum. Keeping in line with our philosophy of quality research publications this edition serves the purpose of enriching the readers with diverse and contemporary issues in management.

The institute firmly believes in the philosophy of Customer Centricity in all aspects of its functioning and this research publication is no exception. Our customer centric approach to this publication is thus to have research papers that add value to the reader and not only generate interest for the next edition but also drive the reader towards meaningful research. It is with this onus the research papers are scrutinized and published.

Management Vision is our humble attempt to expand the horizons for a better and enriched view of management perspectives. It is a platform for researchers across domains in management to put forth their attempt to widen the vision through their research and perspective.

We would like to thank all researchers, past and present who have contributed to Management Vision and made this endeavor of research publications a continual successful venture.

Thanking you once again. Happy Reading. Happy Researching.

**Dr. Kalim Khan**

# Contents

## RESEARCH PAPERS

---

<b>S&amp;OP in the VUCA world</b> <i>A. Nagendra</i>	1-15
<b>The Failure of Operations Management Principles in Execution of Demonetization</b> <i>Aijaz Jafri</i>	16-28
<b>Impact of Improved Creditors' Rights on Bank Competition and Credit Allocation: An Empirical Study</b> <i>Bhaskar Sinha</i>	29-39
<b>Credit Allocation and Bank Competition: Game Theoretic Approach</b> <i>Bhaskar Sinha &amp; Bhumika Trivedi</i>	40-50
<b>Evaluating Mutual Fund Performance using the Jensen's Alpha Framework</b> <i>Jamil Saudagar</i>	51-61
<b>Micro-segmenting a Population based on Individual Behaviour Using Statistical Machine Learning</b> <i>Mohd. Osaid Koti</i>	62-70
<b>The History and Evolution of HR in India</b> <i>Pradeep Gogte</i>	71-79
<b>Impact of Big Data Phenomenon on Banking Sector: A Practitioner's Approach</b> <i>Sanjay Gupta</i>	80-87
<b>Need to promote Micro Equity Finance in India</b> <i>Syed Zahid Ahmad</i>	88-96
<b>Summary Report of the Proceedings of Conference on Revisiting Financial Sector Regulations in India</b>	97-101
<b>Book Review : Building An Innovative Learning Organization A Framework To Build A Smarter Workforce, Adapt To Change, And Drive Growth</b> <i>Dr. Garima Sharma</i>	102-105
<b>Bibliography : Big Data</b> <i>Aparna Parab</i>	106-116

## GUIDELINES

---

Detailed Guidelines on Submitting Research Papers

## S&OP in the VUCA world

A. Nagendra<sup>1</sup>

---

### Abstract

*S&OP refers to Sales & Operations Planning – which involves supply and demand planning. The planning systems prevalent in a firm are becoming increasingly complex and irrelevant. They are based on optimistic projections which at most times vary due to the dynamics of businesses in the Volatile Uncertain Complex & Ambiguous (VUCA) world. The period of turbulence in a business environment is no more unidimensional. It has several multi-structural forces such as macroeconomic factors, commodity price volatility, policy instability, dynamic consumer behavior, the emergence of new competitors and new technology changes. Consumer preferences too are shifting rapidly due to increase in choice and access to information. Companies today confuse planning for uncertainty with risk management. It is because risk can be quantified and measured whereas uncertainty is intangible. All these factors have necessitated the need to redefine the current S&OP system existent in the organization. This modified S&OP should aim in providing the organization the ability to strategically direct its business to achieve a competitive advantage by focussing on a customer centric approach. Enhancing S&OP process has proven to provide 20-50% more accurate forecasts, 10-30% reduction in inventory, 5-15% reduction in manufacturing downtime and 5-10% increase in on-time delivery. In this paper we have tried to look at some of the uncertainties faced by industries, in particular the FMCG and Retail Sector and the risk mitigation strategies adopted by them. There is also focus on techniques such as big data and data analytics which are emerging as viable options for industries to achieve better demand forecasts and lesser inventory stock outs. We have also focussed here on some of the aspects that would enable an industry to deal with the volatile, uncertain, complex and ambiguous (VUCA) environment and emerge successful in the long run.*

**Key Words:** *Sales & Operating Planning, VUCA World, FMCG, Retail Sector, Big Data, Data Analytics, Risk Mitigation*

---

### 1.0 Introduction

Many firms today tend to leave enormous value on the table because of their approach to S&OP. There is a heavy dependence on the rule of thumb rather than rigorous mathematical techniques which result in a lack of coordination across departments. A successful S&OP hence should be able to bring together plans across all departments like sales, marketing, production, and finance and consolidate it as one integrated plan for the entire organization.

The main goal of the S&OP process should be to balance marketplace demand and resource supply. If demand exceeds supply, the company will be unable to meet marketplace requirements for goods and services. If demand is less than supply, then the business will suffer excess costs in the form of excess inventories and sub-optimized assets. S&OP not only improves the results/performance of each function within a company but it also brings a point of sale (POS) data and tailored operating model which help to integrate across the network of the manufacturer, retailer, and supplier. This paper aims at looking at some of the current S&OP practices in industries, identify the gaps existing and look at ways to develop a standardized S&OP that helps to integrate across all business functions to deal with uncertainties in the VUCA world

## **2.0 Research Methodology**

The data for the paper was collected across two stages. The first stage involved exploratory research where relevant research papers across industries and countries were looked at to gain insights into the S&OP practices followed across the globe. The research was primarily focused on FMCG, Retail and Project management sectors as these tend to be the sectors most affected by uncertainties in the business environment.

The second stage involved focus-group discussions where professionals in the mid-managerial cadre from the industries were interviewed to know about the systems in place in their firms to deal with uncertainties. The people chosen were spread across industries to understand if there are any common pattern in the strategies adopted across various sectors

There was also sharing of personal experience, where the experiences of working in risk management and the techniques adopted have been looked at in detail for specific projects.

## **3.0 Literature Review**

**Scott C. Ambrose** in his paper titled "Sales and Operation planning - A Performance Framework" has developed a framework for S&OP that focusses on group effectiveness theory. A survey was conducted from S&OP members across industries representing sales and operations functions.

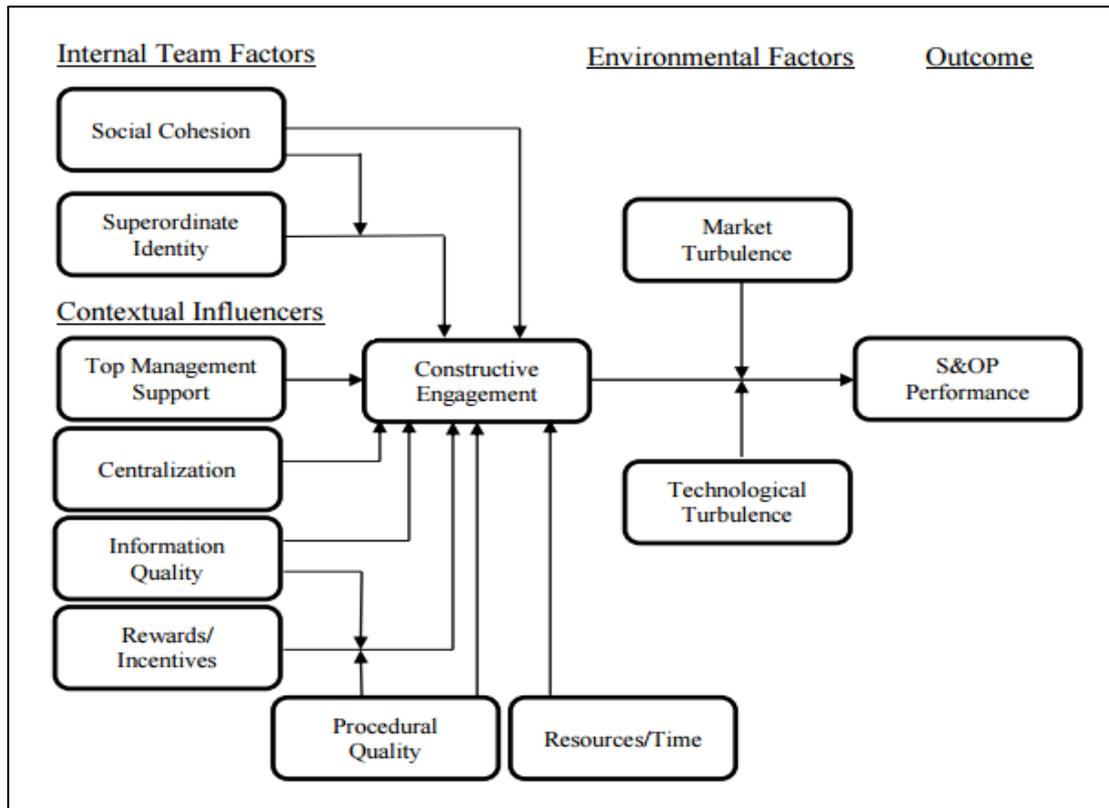


Figure 1: A Model S&OP Framework

The results of the statistical analysis indicate that managers should focus on teams to subordinate their identity which helps them to overcome functional biases and thereby constructively contribute to effective S&OP planning. Another finding was that it is imperative to have team based rewards and incentives to fully support overarching &OP goals of a firm. The study also emphasizes the fact that grounding S&OP principles in group effectiveness theory within a broad framework will help a firm to realize its efforts of achieving supply and demand harmony.

**Sayeh Noroozi** and **Joakim Wikner** have looked at the functioning of S&OP in process industries in their paper "Sales and operations planning in the process industry". The paper has focused on developing an integrated framework based on the practices of best-in-class industries covering all types of industries. The results show that factors such as maintenance plans integration, inventory capacity restriction, energy provision and consumption, and yield percentage have been adequately covered in the S&OP quantitative models. In addition, the authors have stated that the implementation and the benefits of S&OP related to the organizational context for Process Industries have not been adequately covered in the existing literature as the main focus has been on the aspect of quantitative modelling of the process. Thus the authors indirectly imply the need for more conceptual models to reiterate the needs and boundaries of PI which would serve as the first step for further improvements.

**Wallace, T. F. & Stahl** in their publication “Sales and operation planning: The how-to handbook” emphasize that S&OP implementation is primarily about people who participate in the process rather than just a set of mathematical models or software. Hence, there is a need to realize the benefits of this process which is to be imbibed in the cultural context of the organization. The process of integration of various functions involved in decision-making activity and breaking down the silos across departments of the organization also facilitates smooth S&OP implementation. The author states that it is easy to understand theoretically but difficult to implement due to issues that are people-related. In fact, navigating S&OP across the organization has been described as 60% change management, 30% process, and 10% technology showcasing the importance of social and process-related factors in successful implementation of S&OP.

In a paper titled “Exploring real world S&OP practices in supply chain and operations management “done by **APICS (American Production and Inventory Control Society)**, a survey was conducted across industry professionals to adjudge the perception of trends and the current trends in S&OP. The study states that Supply chain and operations management professionals, though are not formally involved in the S&OP process, understand how important S&OP is for the organization. Nearly about Sixty-seven percent of respondents selected customer service as a primary S&OP goal and about 29 percent selected it as a secondary goal. This iterates the fact that successful S&OP is not solely internal: customers observe the activities of the firm. The significance of customer service further reinforces the necessity for improving S&OP as a competitive advantage, not just in terms of supply and demand, but in customer relationships as well.

**Rakesh Kumar and Samir K Srivatsa** in their paper "Towards improving the Sales and Operations planning have identified five key factors which affect the successful implementation of S&OP in an organization namely people, process, technology, strategy, and performance. Firms should implement a rigorous program of documented plan to constantly challenge base assumptions, processes, and technologies. This can be achieved through benchmarking their performance against the best in the industry. Effective S&OP is not just about holding formal regular meetings. Firms should support common Key Performance Indicators (KPIs) across business units namely customer service, forecast accuracy, inventory, schedule adherence, and deployment adherence.

**Tapan Malik** in his paper “The evolution of Sales and Operations planning “suggests certain recommendations to ensure an effective S&OP like implementing a formal integrated business management process with clearly defined goals and outcomes that are aligned with business strategy, creating a cross-functional collaborative work culture that is primarily focused on achieving common business goals, Institutionalizing a culture of business execution guided by the S&OP plan and putting in a governance mechanism to prevent the organization deviating from the plan, Ensuring organizational readiness prior to implementation in all three dimensions - people, process, and technology, in that order as people and process have traditionally proved to be the biggest barriers, defining cross-functional business process, common metrics, reports before beginning with technology evaluation

#### **4.0 Primary Research:**

Larsen and Toubro has installed a system to deal with uncertainty in tracking individual components manufactured. The production line of a typical manufacturing plant in L&T has the following set of stages- procurement, planning, cutting, production (welding), assembly, Quality control and Financial. It was very difficult for the senior authority or any person in the hierarchy to track and find the product; since the tradition method used for recording is paper based. So L&T installed PDSS-(production design support system) in the year 2012. This system integrated the functioning of all departments online. The individual components entering each stage of production was updated by the concerned in-charge. This update was done for even smaller products like bolt and nut to enable efficient tracking. The materials entering into a system in each department need to be updated with special details of date and time. The product coming out of the production department would be allocated to particular contractor/in-charge. The final product would be invoiced only when every component passes through the system and every department approves this. This way L&T was able to track each and every component manufactured and was successful in mitigating the uncertainty because they have data availability which helped them to ensure efficient production and cost savings. The system also helps higher management present in any part of the country to track the progress of each component using software without having to physically visit the plant.

JSW Steel on the other hand has a systematic process to identify and mitigate various risks. These processes are reviewed in quarter-wise risk review meeting with concerned CEO. The methods deployed and initiatives taken are provided in the table overleaf:

	<b>Risks</b>	<b>Method of Identification</b>	<b>Mitigation process/ Methods</b>
<b>Social Risks</b>	Environment	Regular Audit under ISO 14001	Structured action plan / investments
<b>Market Risks</b>	New product development capability	Customer requirements in relation to process capability	Captured in customer feasibility report for all new production requirements
	Cheaper imports	Commodity pricing for carbon steel and other common grade steel	Introduction of newer technology to meet customer requirements
	Increased competition	Current market share	Structured target setting for increase YOY and the business in various segment
<b>Financial Risks</b>	Funding risk	Portfolio analysis	Reducing interest burden
	Liquidity risk	Stock analysis of finished goods, credit rating of customer	Fixing of norms for Finished Good stocks. System of approvals for credit proposals in-built into SAP
<b>Technology Risks</b>	Obsolesce of current technology	Benchmarking, customer feedback on requirements	Project review meetings mapping customer requirements to investors, annual capex plan
	Efficiency of operation	Knowledge sharing within the group	Review of targets on continuous basis
<b>Natural Disasters</b>	Rain	Weather forecasts	Providing effective drainage system with the plant and a rain water harvesting system

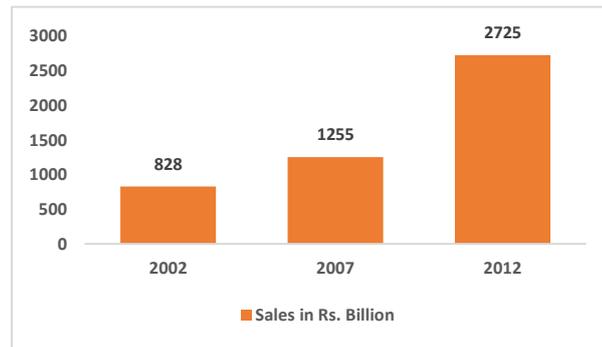
Table 1 : Systemic Identification and Risk Mitigation

## 5.0 Secondary Research

### *FMCG Sector*

FMCG sector in India has witnessed a steady growth of 17% CAGR in the last 5 years. In moments of uncertainty, FMCG has been resilient when compared to other industries and investors has viewed the industry as “safe haven” since 2008. With respect to the recent trend within the FMCG industry, personal and health segments are relatively booming accompanied by fall in apparel and footwear segments.

Also, sales growth and margins have been steadier than many other industries such as Banking, Oil & Gas, Auto, Telecom, etc. According to a survey of leading executives in FMCG and retail



**Figure 2 : FMCG Sales trend**

companies conducted by BCG and CII, 54% of respondents believe volatility in prices of raw materials will continue to remain a challenge. Also, 54% percentage of respondents expect a change in the composition of the top three players. This explains the highly dynamic environment prevailing in this industry.

### ***Retail Sector:***

Since 2008, organized retail has grown steadily by 25% (CAGR) annually which accounts for 10% sales of consumer category. This is expected to reach 21% by 2020. The retail segment is continuously dominated by unorganized sector. There are numerous challenges that are being faced by this sector such as poor supply chain network, challenging macroeconomic factor, increasing competition and the shortage of trained manpower. The retail sector needs to look into both internal and external factors of disturbance which are being created. The internal problems can be easily encounter compared to external because predicting the external factor is difficult.

Initially, it was thought S&OP was for manufacturing sector but it got evolved and penetrated in various sectors which made successive business models. Even though Retail S&OP has been recognized as a major factor in determining demand and supply planning, it needs to get evolved into an integrated business planning model for the present VUCA world. The need for evolution is driven further by the requirement to link strategic planning with operational aspects of the system and ensuring the alignment of various functions. There is also an urge to review the integrated business planning so that the firm can make sure that business plan is in alignment with long term strategy.

***The impact of demonetization on FMCG:***

The recent initiative of demonetization had a resounding impact on sales which declined by about 40%. HUL saw sales volume fall by 4% and P&G witnessed decline in sales following a marginal improvement in previous quarter. This resulted in unsold inventory being piled up with the wholesalers, who predominantly deal in cash to supply to traditional trade. Also, the buying patterns of consumers took a step back with consumers spending cautiously and preferring smaller sized SKUs to deal with the cash crunch. This resulted in production cuts in the FMCG firms, while the constant fixed cost eating away their margins. This describes the over-reliance on traditional trade. The impact of demonetization was varied in different parts of India with South and West being resilient whereas East being a wholesale driven region wilted. This period also witnessed increasing sales in modern trade such as Future Group which saw a rise of 20% sales in weekdays and 40% on weekends. Future Group negotiated with the FMCG firms for about 25% discount and thus encouraged consumer spending through cashless methods by providing marginal discounts. Thus the prevalence of cash based transactions prevalent in the supply chain was badly impacted during demonetization period.

***The impact of demonetization on Retail:***

**Offline retail:** Small traders and vendors were most affected (slump in sales). The small sellers due to lack of POS or provision of digital selling suffered a lot. Initially, large retailers had a large drop in store footfall but in the later stage, it increased. Sales grew by 15% weekly. Future group CEO Kishore Biyani has reported a 25% increase in the sales of retail segment of the future group.

What exactly happened that led to having an immediate positive effect on large offline retailers such as FBB group, Big Bazar, reliance, V-mart, etc. whereas small and medium scale retailers had a negative effect? It was mainly due to the fact that during demonetisation most of the small and medium retailers did not have the provision of digital payment and more than 20000 people across major urban cities have applied for machines (POS). The large retailers have already kept with them various modes of payment as a contingency measure, which is a risk aversion strategy. They have also collaborated with various banks such as State Bank of India, HDFC, Axis, etc. to provide some discount and reward points for the users. Some retailers like V-mart have also installed smart ATMs in their outlet so that customers can easily withdraw cash using their debit cards instead of standing in a long queue in ATMs. By this way, they adopted the cost leadership strategy to make sure they have maximum advantage.

The implementation of the above said ideas are a part of vendor management, demand and supply forecasting, scenario management which has to be implemented across all verticals of supply chain management. So from this example, it is evident to note how S & OP helped companies in an uncertain environment of a sudden regulatory change.

Online retail: Online retail sales have dipped drastically. Monthly sale in December 2016 was hit by approx. 50% than the previous month sales. The main reason was due to the effect on Cash on delivery (COD) segment, which went down by 60%. The industry does not take any major measure to encounter such a situation and risk assessment is lacking

### **Risk management in S&OP**

#### ***FMCG Sector:***

Risks can be broadly categorized into the following categories – Macroeconomic forces, commodity – price volatility, policy environment, changing customer dynamics, the emergence of new technology and competitors. A variety of strategies has been adopted by the players to mitigate the quantum of risk. Some of the popular strategies during the time of demonetization were extended credit time for distributors and mulling incentives to drive sales. The strategies can be broadly classified into two categories namely Supply side and Demand Side.

With respect to Supply side, players have resorted to local sourcing to protect against currency risks, moving to disposable factories with lower operating costs and dynamic allocation of trade spends across the supply chain. With respect to the demand side, to process real-time consumer data, many major players have extended their ERP interface across various levels of supply chain and also focussed on modular design processes. Also, BCG (Boston Consulting Group) has brought in the concept of uncertainty audit across different elements of value chain either on an annual or a biannual basis. Generally, what-if analysis needs to be carried out for the entire spectrum of possibilities that can arise in near future. For supporting all these initiatives, a highly adaptive and flexible organization structure is necessary so that the culture of winning in uncertainty percolates till the last level of the organization structure.

***Retail Sector:***

- Macro-Economic factors:

India's macroeconomic condition is highly uncertain. The GDP growth is slowing down while countries demographic profile still favours a decent consumption pattern. The Higher fiscal deficit is caused by increasing government expenditure, interest payment. But the main issue is that India's GNP is less than GDP which indicates our net exports are negative. This shows that the foreign players are trying to capture our market with their products. This will affect the majority of our industries. Thus implementing S& OP will benefit the industries as it contains the properties of risk assessment and mitigation, through which companies can easily track the reason for the failure and finding a solution becomes easier.

- Flexibility:

Retails shops have been flexible in the execution of their business strategy and also while dealing with the customers. Their business model should also be ready to change between backward and forward integration. The retailers should be capable of adapting to local sourcing as and when the supply from major sources has been limited. This would create a sense of strong brand image for the organization. Eg. Global retailers such as Walmart is adopting a similar approach as mentioned above which helps it to be a market leader.

- Right customer target:

Customer value proposition needs to be revised and should be dynamic by the company because the customer base and their needs evolve over time. Also, this evolution does not have a proper trend. Most of the retailers in India focus majorly on Tier I cities. By 2020 Tier II and III cumulative will contribute to 30 % of the retail customer base. The customer base also has a strong inclination on the quality of the brands, so they go for trusted brands. So there is a need for reassessment of consumer segment periodically.

## **Strategies for Risk Mitigation with Examples in Indian Context:**

### ***Acquisition***

The major players in this industry pursue acquisition strategies in overseas/domestic to improve their core competencies. Example: Godrej Consumer Products Ltd.-GCPL acquired Rapid, Tura, Darling Group to improve presence in African markets as a part of risk minimization. Asian Paints acquired SCIB Chemicals SAE to gain entry into Egypt. There can be strong synergistic benefits in case of acquiring complementary product lines.

### ***Ramp up distribution network in rural areas***

The rural consumption has already surpassed the urban consumption in certain segments and is attractive for future growth. Hence companies try to tap into unexplored markets to gain first-mover advantage. In case of rural penetration levels, talcum powder has a percentage of 45% in urban markets but only 25.2% in rural markets. The penetration trend for rural areas is almost half of that of urban markets in major categories of FMCG products. Hence companies focus on tapping into the rural markets to gain sales. Example: Dabur almost doubled its capacity in 2012 by extending its presence from 14000 to 27000 villages. 45% of Dabur's revenues comes from rural markets. Dabur spends significant amounts as incentives to the village representatives.

### ***Flexible Operating Models***

**Buying decisions:** Switching to local sourcing to reduce lead time and minimize supply fluctuations. Example: Auto MNCs develop indigenous spares to reduce the currency risk and monopoly of premium OEM spares. Hindustan Motors has specific targets YoY for indigenization of parts procured.

**Making decisions:** Employing lean processes with continuous monitoring through metrics such as OEE, Throughput, Inventory Days and other Value Stream metrics. Overall Equipment Effectiveness (OEE) tries to measure the performance of a process in terms of Availability, Productivity and Quality. All three aspects of process are critical and need to be improved incrementally. As per Eliyahu Goldratt, throughput, inventory and operating expenses are the three vital aspects an organization must look into. Maximizing throughput can help company earn money faster by converting inventory -on -hand to sales. In case of Value Stream metrics, key aspects such as Lead time, individual process time and percentage of value-add can be focussed for improvement. There are thus various approaches to improve manufacturing process. The company can choose the best fit among the above available alternatives.

**Transport decisions:** Employing a flexible supply chain design with dynamic routing decisions and modular pricing contracts. Entering into the long term strategic partnership with logistics suppliers and work on technology transfer for mutual improvement. In case of better control required, need to develop own network for logistics. Example: Ekart previously known as Flipkart Logistics to service the requirements of Flipkart and also other E-commerce players.

**Vendor Managed Inventory:** The classical example for Vendor managed inventory is that of Walmart, where the goods sold are owned by the suppliers till the product is billed against a customer. This has a huge impact on working capital. Maruti Suzuki was the first among auto OEMs to setup Vendor Managed Inventory to reduce inventory costs. Usually the suppliers have their warehouses/plants close to manufacturing unit of Auto OEM to minimize the lead time in terms of few hours.

**Big Data and Data analytics to reduce uncertainties in demand planning for FMCG and Retail businesses:**

Big data is the vast amount of data – structured or unstructured that is available today thanks to the constant global connectivity afforded by the advent of the Internet. An article in Forbes magazine suggest that, by 2020, approximately 1.7 MB of Data would be produced per person on the planet per second on the planet. There is an immense source of knowledge and information that can be mined from this humungous amount of Data. This Data if analysed right, could help businesses take the right moves in this VUCA world.

Data Analytics is the science by which this vast amount of data can be processed into insights which can help businesses take decisions in these VUCA times. Thanks to the vast computing power available today (parallel processing and cloud processing) analytics of this voluminous data can be done in real time yielding never–seen- before insights.

Interviews conducted by Supply Chain Insights LLC, a web -based magazine found that the top 2 concerns of executives in the supply chain area are: Access to data and actionable analytics. A study conducted by Mindtree of 310 companies in the US, Europe, and China found that Data Analytics was the second biggest factor in elevating the supply chain performance of the company.

These studies indicate strongly that those businesses which are able to leverage data availability through analytics would be able to achieve superior supply chain performance. These companies would also be better positioned to sense the customer demand in real time and manage inventories much better than competition. This would enable these businesses to meet customer demands more precisely and also free up working capital.

Many companies today, however, use Data for summary statistics and not for predictive analytics. Their business decisions are driven by the business intelligence offered to them by their Enterprise resource planning software. The ERP gives the SC planners a very basic methodology to guesstimate the future demand. Data analytics however offers a more precise and scientific methodology to predict the demand requirements. Also, Data analytics and Big data not only provide demand predictions for better inventory management but also give avenues for business decisions on pricing, discounts, and other offers to meet targets.

Many retail and FMCG businesses have incorporated data analytics into their businesses giving themselves a competitive advantage. Zara is one such business which uses advanced data analytics to accurately predict the level of inventory required at each retail outlet. Zara operates in the fashion industry, an Industry in which brands usually order the fashion products from their contract manufacturers and then ship them across the world to different retail outlets.

The quantity to manufacture is usually a guesstimate that is arrived by a watered down Delphi method. There are a lot of assumptions in the traditional method of demand forecasting in this industry and hence there are many instances of excess inventory or stock-outs. Excess inventory usually results in discount selling which not only hits the financial performance of these companies but also hurt the brand name.

To overcome these uncertainties, Zara uses big data analytics for its demand prediction. Zara manufactures through their contract manufacturers, just the base amount of each design. These items are then shipped to the different retail outlets across the world. The retail outlets serve as the data gathering points with the sales representatives also operating as data entrants. The sales pattern of these items are then gathered in real time and analysed providing the company with patterns and trends that predict the demand for different styles and fashions. This information helps the company plan its production very precisely in an industry that has always faced uncertainties. The Zara model can be replicated in industries which require agile supply chains faced with demand uncertainties.

An interesting anecdote that has made rounds recently is the case of Target – a discount retailer that is second to Walmart in the US. An article in Forbes magazine claimed that Target used data analytics to predict future customer purchases. Target's analytics were of such accuracy that it was able to predict the pregnancy of one of their customers based on the buying behaviour of the customer.

The capabilities and the predictive power of data analytics is expected to increase significantly each year. With Internet of Things (IOT) making real time data gathering very simple, access to data would no longer be a bottleneck. Retail and FMCG companies that embrace this technology would be able to have better consumer insights, leaner inventories and thus meet demand in the most economical way.

## **6.0 Recommendations**

Based on our primary and secondary research on Sales & Operations Planning in the VUCA world we would like to give the following recommendations to firms in dealing with uncertainties

- Initiate both supply side and demand side remedies. Supply side remedies could include local sourcing, lowering operating costs and judicious allocation of funds across the supply chain. Demand side remedies include using real time consumer data and using modular supply chain design process
- Ensure that the organisation has a flexible and adaptive structure running across its business and departments to deal with uncertainties. The success of S&OP is highly dependent on the people involved and thus there is a need to ensure organisational readiness to accept change
- The S&OP process of the organisation should be revised to cater to the needs of right customer segment. With more focus being given by industries to the bottom of the pyramid the S&OP systems of the organisation should be focussed on not just Tier -I but also Tier II and Tier III customers.
- Constantly benchmark the existing S&OP with the best in the industry using recommended tools and continuously upgrade the system
- Leverage the data available using tools like big data and data analytics to gain better knowledge on customer needs, predicting demands using accurate forecasts and reducing inventory bottleneck.

## Bibliography

- Lapide, L. (2006). Top-Down and Bottom-Up Forecasting in S&OP. *The Journal of Business Forecasting Methods & Systems*, Vol. 25, No. 2, pp. 14–16.
- Muzumdar, M. and Fontanella, J. (2006). The Secrets to S&OP Success. *Supply Chain Management Review*, Vol. 10, No. 3, pp. 34-41.
- Olhager, J. and Selldin, E. (2007). Manufacturing planning and control approaches: market alignment and performance. *International Journal of Production Research*, Vol. 45, No. 6, pp. 1469–1484.
- Olhager, J., Rudberg, M. and Wikner, J. (2001). Long-term capacity management: Linking the perspectives from manufacturing strategy and sales and operations planning. *International Journal of Production Economics*, Vol. 69, No. 2, pp. 215–225.
- Slone, R.E., Mentzer, J.T. and Dittmann, J.P. (2007). Are You the Weakest Link in Your Company's Supply Chain? *Harvard Business Review*, Vol. 85, No. 9, pp. 116-127.
- Wallace, T. (2006). Forecasting and Sales and Operations Planning: Synergy in Action. *The Journal of Business Forecasting Methods & Systems*, Vol. 25, No. 1, pp. 16–
- [www.mindtree.com/sites/default/files/mindtree-thought-posts-elevating-supply-chain-sc-planning-iq-via-data-analytics](http://www.mindtree.com/sites/default/files/mindtree-thought-posts-elevating-supply-chain-sc-planning-iq-via-data-analytics)

---

<sup>i</sup> A. Nagendra, Assistant Professor – Rizvi Institute of Management Studies & Research, [nagendraaswatha@rmi.rizvi.edu.in](mailto:nagendraaswatha@rmi.rizvi.edu.in)

# The Failure of Operations Management Principles in Execution of Demonetization

Aijaz Jafri<sup>ii</sup>

---

## Abstract

*This paper critically assesses the impact of demonetization and the processes adopted thereafter from an operational management standpoint. India lost 86% of its monetary base in few hours of Nov 8th, 2016. For a nation which is more than 90% cash dependent, this sudden freezing of high denomination legal tenders had a huge impact. The paper discusses the key operations principles that should have been adopted in planning and implementation. It lay bare all the point of contention which might impact future decision making of similar proportions in future. This lays an interesting framework on which further research can be done to establish the importance of operational efficiency to policy making.*

**Key Words:** *Demonetization, Operations Management, Operations Efficiency*

---

*“The biggest wild card in all of this [national issues], of course, is demonetization.”*

*–Kartik Hosanagar<sup>1</sup>*

## 1.0 Introduction

Through this paper, it is intended to highlight those aspects of operations management where the heat of demonetization was felt. Arguments are based on the fact that demonetization was not just a monetary decision but also a strategy and its execution was marked with predefined objectives with specific deadlines. Furthermore, it critically assesses and provides arguments which would highlight the operational aspect which have not be taken into consideration in policy decision making.

---

<sup>1</sup> (Professor in Wharton’s department of operations, information and decisions), (Source : <http://knowledge.wharton.upenn.edu/article/will-demonetization-affect-business-india-2017>)

### **The Event: A Primer**

On 8 November 2016, the Indian Government announced the scheme of demonetization of all existing ₹500 and ₹1,000 banknotes on the recommendation of the Reserve Bank of India (RBI). The sudden nature of the announcement and the prolonged cash shortages in the weeks that followed created significant disruption throughout the economy, threatening economic output. The move was heavily criticized as poorly planned and unfair, and was met with protests, litigation, and strikes. However, there was an argument in favour of the decision that it would reduce the black money in the society. The government opined that it was necessary that the decision to be put forth at a haste so that the shadow economic (banking) gets impacted with the highest intensity. This paper assesses the operating steps taken under the given scenario and what could have been done to cause lesser socio-cultural shock and the cost associated<sup>2</sup>.

The next section would touch upon the important concepts of operations management which would help the reader to understand how the two strands of monetary economics and operations are intertwined which each other. It would be followed by a section which would critically analyze and dissect the scenarios under which the whole demonetization process took place.

The concluding section provides certain suggestions and inference that can be drawn from this unfortunate event.

## **2.0 Operations Management: Checkpoints**

This section touches upon some of the critical aspects of operations management.

**Operations Goal:** The government initially claimed that demonetization would curtail the shadow economy and will end the omnipresent corruption and the black money which is being used to fund illegal activity and terrorism. Later, the long term goal was defined as to make India digital.

The long term goal completely ignored the fact that India is not all cosmopolitan but still a country of lakhs of villages who doesn't have smartphones, computers or internet. With only 46% banking penetration, only 22% internet connectivity, 19% of population without electricity connection, low level of digital literacy and only 1.2 million of 14 million merchants having point of sale devices, India doesn't have the base for a cashless economy.

---

<sup>2</sup> Source : <https://hbr.org/2016/12/indias-botched-war-on-cash>

It has been observed that still many sudden police raids had seizure of new ₹2000 notes in crores without accountability. The fact that one could withdraw just ₹4000 from the bank, such a huge cash volume indicates scrupulous bank activities and failure to curb black money through demonetization

According to reports, about 97% i.e. ₹14.97 trillion out of the ₹15.4 trillion that was demonetized notes are back in banks. This is against the government's initial estimate that ₹3 trillion would not return to the banking system. Please refer Figure 1 below for currency value.

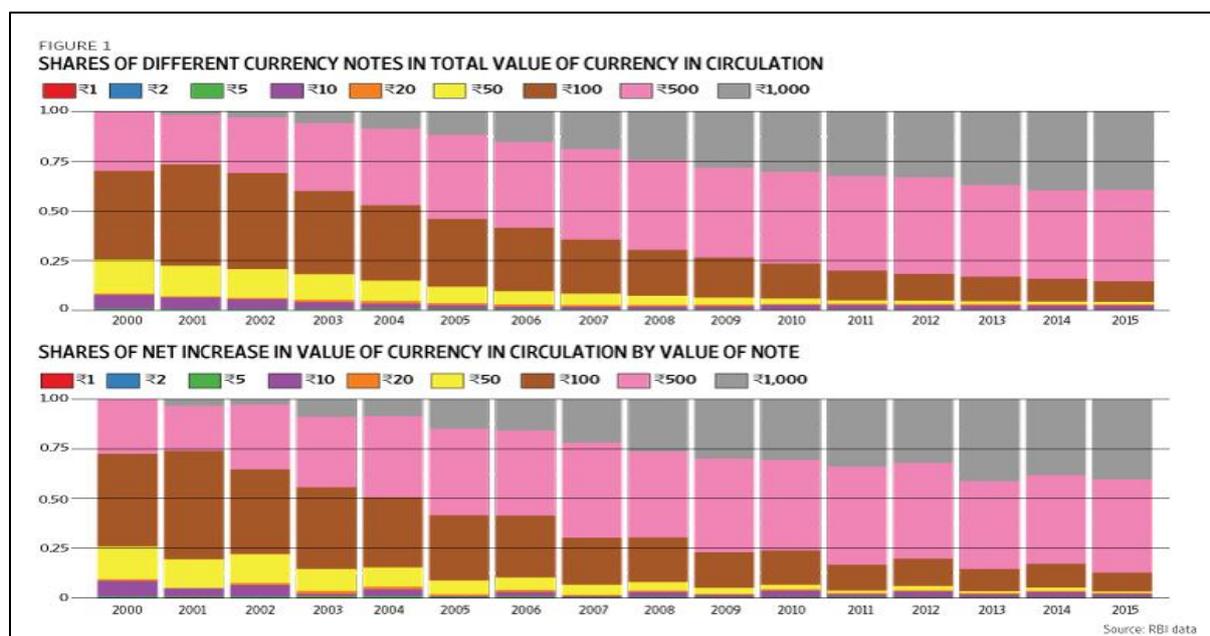


Figure 1: Currency Values over the years

### Forecasting

According to India Ratings and Research, Demonetization will destroy about Rs 4 lakh crore ( 4 trillion ) worth of cash out of 15.4 trillion held in black money and fake currency, which constitute about 12% of the black economy in India, leaving 88% of the black money to remain in the system.

The economic cost of the de-legalization will be Rs 1.5 lakh crore for 2016-17.

It is unlikely that fiscally the government will benefit from demonetization but on the contrary, government may face lower tax collections in the second half of FY17, due to the slowdown in economic activity.

The International Monetary Fund projected India's growth forecast for the current fiscal year to 6.6% from its previous estimate of 7.6% due to demonetization, days after the World Bank also cut India's growth estimates.

### ***Benchmarking***

It was the third time that India had attempted demonetization. Previous two attempts were successful but it had never attempted on such a huge scale of 86 % demonetized notes. Previously, many nations like Soviet Union, Zaire, Myanmar, Ghana, and Nigeria also resorted to demonetization but were unsuccessful and the respective governments faced coup or removal due to public backlash. North Korea had to apologize to the people and had to execute the ruling party head of the finance

Also, there are examples of successful demonetization in countries like US, European Union, Zimbabwe, Australia, United Kingdom and Philippines. Success of these countries was due to factors like being a developed nation, paper to plastic, magnitude of demonetized currency, extended deadline, etc. It can be inferred from this that developed nations showed more promising results of demonetization than compared to emerging markets.

### ***Planning***

After it was executed, one could get a feel that there was no planning and everyone, especially the execution team comprising of the finance ministry, the RBI, the commercial banks, the logistics providers, the ATM technology support, the note printing press were confused and in chaos. There were long queues in front of banks. ATMs were not filled with cash and most of them had not been reconfigured. Policies were being changed almost every day as a measure of knee-jerk reaction.

### ***Project Management***

Principles of risk management, communication, human resource, procurement, time, scope, quality etc. were neglected leading to the failure in efficient execution of the project. On referring the table attached, one can get a summary of failure of project management principles. The knowledge areas like communication, quality, time, scope etc. showed that key processes groups like initiating, planning, executing, monitoring and closing were all failures.

## Management Vision

Knowledge Areas	Project Management Process Groups				
	Initiating	Planning	Executing	Monitoring & Control	Closing
Project Integration Management	Develop Project Charter  No policy documentation or communication to the stakeholder except few members	Develop Plan  No plan was developed	Direct and Manage Project Execution  The whole event was poorly executed	Monitor and Control Project Work. Perform Change control Throughout the project cycle there was no proactive actions	Close Project The event ended on 30 <sup>th</sup> Dec 16 but impact is still strong
Project Scope Management		Collect Requirements Define Scope Create Work break down structure  Insufficient information regarding stakeholders, no documentation and no fencing on various reasons for cash accumulation. Announcing plan for attacking gold and real estate ( add scope) increased the confusion No work breakdown		Verify & Control Scope  No control activity done	
Project Time Management		Define, Sequence, Estimate resources, duration and develop Schedule  No sequential planning with frequent changes in policies and durations		Control Schedule No control on schedule was followed. Further deposit policy got strict before deadline adding to more chaos	
Project Cost Management		Estimate Costs Determine Budget No proper estimate for the exercise. It was predicted to be 1.28 trillion rupee or can be 43% if 3 trillion rupees is revealed		Control Costs No cost control exercise was done	
Project Quality Management		Plan Quality Our Priminister requested to bear inconvenience and Low level of quality service for period of 50 days	Perform QA Not done leading to chaos and panic	Perform Quality Control Not done resulting in death of more than 100 persons	
Project Human Resource Management		Develop Human Resource Plan  On account of being a sudden event, banks were not able to plan more bankers , officers	Acquire, Develop and Manage Team  Bankers, officers and staff were overworked by long shift hours and working on holidays without getting paid overtime.		

Knowledge Areas	Project Management Process Groups				
	Initiating	Planning	Executing	Monitoring & Control	Closing
Project Communication Management	<p>Identify Stake Holders</p> <p>Poor, daily wage earners and middle class were not identified</p>	<p>Plan Communications</p> <p>Sudden information lead to chaos and panic. No planning of communication was done</p>	<p>Distribute Information Manage Stakeholder expectation</p> <p>New policy announcements were made almost every day to address the chaos resulting in more confusion.</p>	<p>Report Performance</p> <p>Not done as busy fighting fires and to avoid replying to the event failure</p>	
Project Risk Management		<p>Plan &amp; Identify Risks Perform Qualitative Risk analysis, Risk assessment would have helped identify the risks and mitigate them to reduce the inconvenience of the people as removing 86% of the nation's currency is a high risk event</p>		<p>Monitor and Control Risks</p> <p>All the risk control actions taken were knee jerk reactions to the situations. for e.g., limits on withdrawal, use of black marker , etc.</p>	
Project Procurement Management		<p>Plan Procurements</p> <p>No planning was done regarding various services to be procured like ATM hardware and software recalibration, transportation and logistical services, etc.</p>	<p>Conduct Procurement Procurement of services was done ad-hoc with response to the bottlenecks</p> <p>Services from Petrol, CNG and gas stations, government hospitals, railway and airline booking counters, state-government recognized dairies ration stores, and crematoriums were rendered to take care of the inconvenience</p> <p>Later on retail stores like big bazar also participated in rendering their services for accepting old currency</p> <p>Digital wallet companies like Paytm, etc also aided the government</p>	<p>Monitor Procurement Monitoring was not performed and many services were misused to facilitate illegal exchange of currencies</p>	<p>Close Procurement After 2<sup>nd</sup> December various services were closed</p>

Table 1 : Process Group

### Inventory Planning

Inventory planning of ₹100 and other low value currency would have help ease the pain of exchanging notes but unfortunately people suffered running door to door for cash exchange of ₹2,000.

### Product Design & Aesthetic

The Reserve Bank of India (RBI) has designed the new notes internally at the central bank. At first look, the new design is not pleasant aesthetically and has no theme when compared to all other old Indian Currency notes. The new note has mash up of several unrelated features like Swachh Bharat Logo, Gandhi, Mars Mission, Elephants, Lotus, Peacock Patterns, and various ornaments. Tiger should have been chosen instead of Elephants as it is the national animal. From Bad Typography to color selection, the new ₹2,000 note has no steady aesthetic appeal or content layout. None of the 23 visual units on the front and 17 on the back seem to support with each other. However, on a positive side, the new notes are now braille-enabled. (Please refer *Figure 2 and 3*)



Figure 2 : Layout of a new 2000 Rupee Note

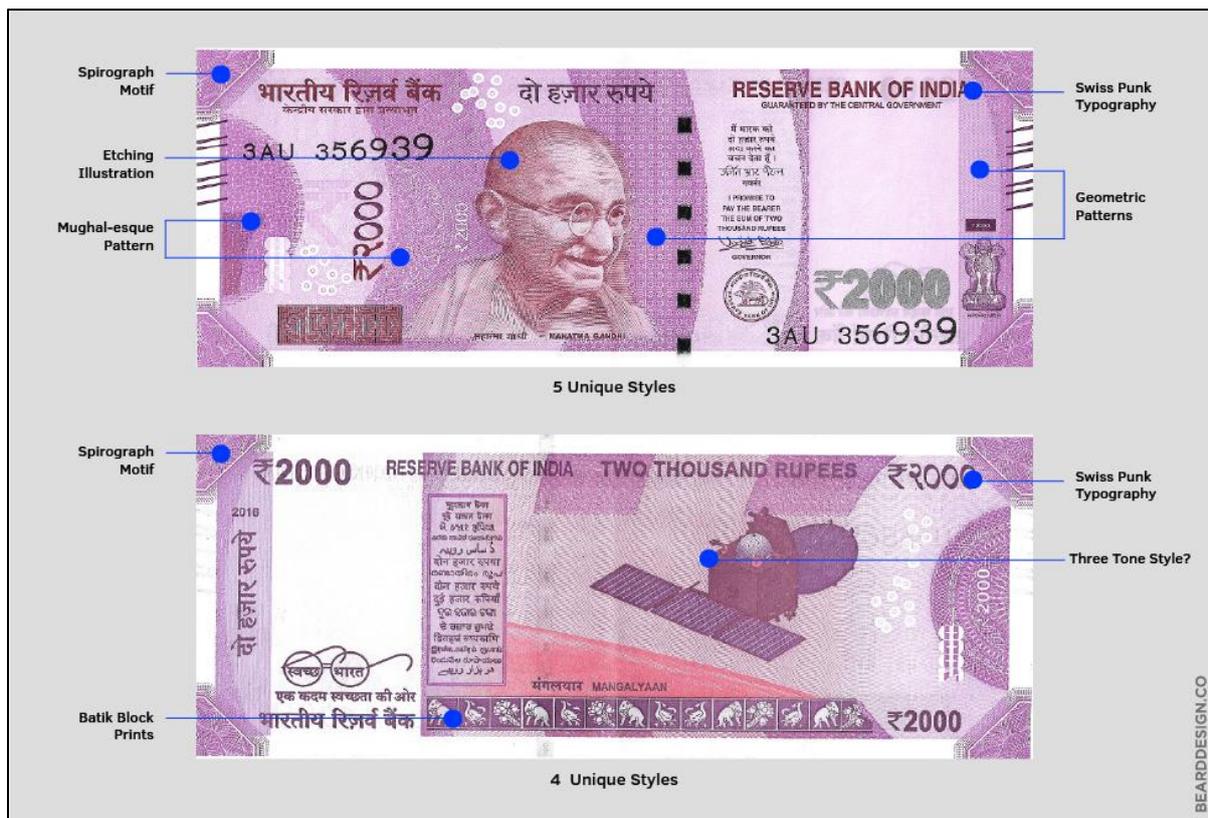


Figure 3 : Typography of a new 2000 Rupee Note

The ₹2,000 note is 66 mm tall, about 6 mm shorter than both the ₹500 and ₹1,000 notes. These new notes doesn't fit in the ATM machine notes slots and needs recalibration. It doesn't justify the massive logistical effort of recalibrating 200,000 ATM machines spread across the entire country. By introducing ₹2000 notes, it is easier to hoard black money in cash as they will need only roughly half the space they needed earlier for their ₹1000 notes. Thus, this move will give a boost to black economy.

### Capacity Planning

Capacity Planning involved four printing presses that printed and supplied banknotes. These are at Dewas in Madhya Pradesh, Nasik in Maharashtra, Mysore in Karnataka, and Salboni in West Bengal. The presses in Madhya Pradesh and Maharashtra are owned by the Security Printing and Minting Corporation of India (SPMCIL), a wholly owned company of the Government of India. The presses in Karnataka and West Bengal are owned by the Bharatiya Reserve Bank Note Mudran Private Limited (BRBNMPL), a wholly owned subsidiary of the Reserve Bank. The new Bank Note Paper Mill India Private Limited (BNPMIPL) in Mysuru is a joint Venture between BRBNMPL and SPMCIL, with a production capacity of 12,000 million tonnes.

Together, these four presses can print about three billion notes per month. Printing 17.5 billion notes at a rate of three billion notes per month will take almost six months.

Even if the mints began printing the replacement notes three months ago, i.e September they would still need around three more months to complete the printing. Either way, it would be longer than the 50 days deadline.

Cost of production in terms of printing, the government is taking a cost hit twice. One, it is effectively writing off the cost it incurred in printing the old lot: ₹5,932 crore. Two, it is incurring an additional cost in printing the new lot: ₹4,929 crore. Or, a total cost of printing of ₹10,861 crore.

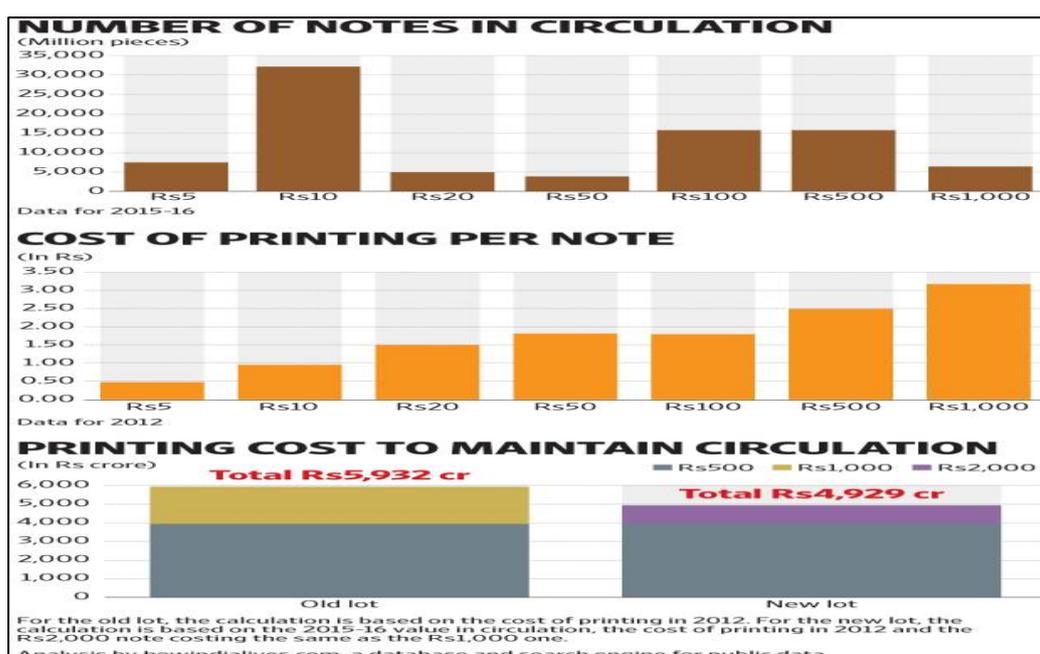


Figure 4 : Cost and Number of Notes in circulation

Scheduling and timing of the event should have kept in mind two great events namely marriages season & most importantly the farmer’s seeds sowing time. Also the GST rollout will be impacted due to the turbulence in the manufacturing world due to demonization. Moreover, when the economy was going full throttle, a sudden brake will have a detrimental effect on the economy.

The Government had two years with it to implement digitalization in sequence before demonetization, but unfortunately digitization became the long term goal when the implementation failure was realized.

By previously introducing JanDhan scheme the bank account penetration in the country reached from 35 percent in 2011 to 53 percent in 2014, but still almost half the country doesn’t have access to banking and 300 million people don’t have the required government identification.

By previously introducing JanDhan scheme the bank account penetration in the country reached from 35 percent in 2011 to 53 percent in 2014, but still almost half the country doesn't have access to banking and 300 million people don't have the required government identification.

### 3.0 Conclusion

It can be inferred that there was a severe failure of operations management principles like planning, implementation and execution, along with the failure in project management. One can learn for the futures do's and don'ts based on this fiasco and how operations management principles can simplify the gigantic task of policy implementation. Furthermore, such incidents could be avoided by making robust and systemic checks and processes in place which would make the central bank operative in the optimally efficient level.

Date	Chronological list of impact due to policy
9 Nov:	Banks and ATMs remained closed for the public on the first day of demonetisation
	The BSE Sensex ended about 339 points lower
	Govt announced deposits above Rs 2.5 lakh to face taxation, penalty on account mismatch
	Highway toll suspended till November 11 midnight
	Major banks extended working hours till 8 pm, also waived ATM charges.
10 Nov:	Long queues to exchange and deposit old notes witnessed at banks across India while ATMs continued to remain shut
	Bank stocks surged up to 12 percent as analysts speculated that banking sector is expected to benefit when more money flows into the formal sector.
11 Nov:	ATMs open for the first time But, most ATMs went dry in a few hours
	RBI assures public that enough currency is available with banks for exchange
	Govt extends exemptions for using old Rs 500 and Rs 1,000 notes till 14 November midnight
	Toll waiver on national highways extended till 14 November midnight by the govt.
12 Nov:	PM Modi hints at more steps to be taken unearth black money.
	Week-end rush adds to anger, impatience at banks; ATMs also ran dry on cash.
13 Nov:	Queues gets longer at banks, ATMs Sunday sees no let up in rush; long queues continue outside banks, ATMs
	RBI assures public that there is no need to be anxious and enough cash is available with banks. But that assurance can't be felt.
	Exchanged limit increased from Rs 4,000 to Rs 4,500
	ATM withdrawal increased from Rs 2,000 to Rs 2,500
	To augment cash supplies, newly printed Rs 500 notes were released in market
	The weekly limit of Rs 20,000 for withdrawal from bank counters increased to Rs 24,000. The maximum limit of Rs 10,000 per day on such withdrawals has been removed.

## Management Vision

14 Nov:	Government extended acceptance of Rs 500 and Rs 1,000 notes for public utility & fuel payment till 24 November
	Cash withdrawal for current account holders increased to Rs 50,000 in a week
	ban has led to 'financial chaos', said bank unions
	Charges on ATM transactions waived till 30 Dec
15 Nov:	No respite from long queues at banks, ATMs
	banks to put indelible ink on the finger of those exchanging 500 and 1,000 rupee notes
	SC refused to stay Centre's move to demonetize currency notes.
16 Nov:	Chaos continue at banks; most ATMs ran out of cash
	SBI collected Rs 1,14,139-crore in deposits in last 7 days.
17 Nov:	Government lowers the exchange limit for now-defunct 500 and 1,000 rupee notes to Rs 2,000 from the existing cap of Rs 4,500
	Cash withdrawal of Rs 2.5 lakh from bank account were allowed for wedding ceremonies
	Government eases cash withdrawal limit for farmers by allowing them to withdraw up to Rs 50,000 cash per week from bank.
	Don't hoard currency, sufficient notes in supply, RBI tells public
	Govt extended toll exemption on National Highways till November 24 midnight.
	Select petrol pumps allowed to dispense cash up to Rs 2,000 through debit card swipe.
	Some banks cut fixed deposit rates up to 1 percent.
18 Nov:	No respite from queues, chaos; ATMs still fight cash shortage.
	Demonetisation to lower GDP growth by 0.3-0.5 percent, CARE Ratings says.
	Congress party alleges 55 died due to demonetisation, seeks PM's apology
	Proceedings in Parliament were washed out for the second consecutive day.
19 Nov:	Queues got shorter at banks; long wait at ATMs continued
20 Nov:	With banks closed on Sunday, longer queues at ATMs
21 Nov:	Farmers allowed to use old Rs 500 notes for buying seeds
	Bank received Rs 5.12 lakh crore of deposits and exchanged Rs 33,006 crore, RBI said in a release
	Demonetisation effect: GDP to fall by up to 80 bps, said DBS Bank.
22 Nov:	82,500 ATMs out of 2.2 lakh ATMs recalibrated to dispense new notes
	Some relief for cash-starved public, queues shortened as about 40 percent of total ATMs have started dispensing new Rs 500 and Rs 2,000 notes.
	RBI doubles Prepaid Payment Instruments limit to Rs 20,000.
23 Nov:	Goldman forecasts deceleration in GDP growth to 6.8 percent in FY17
	Rs 1.20 lakh crore deposited in SBI.
24 Nov:	Government extends toll exemption on NHs till 2 Dec mid-night
	Notes ban to significantly disrupt economic activity, Moody's said in a release
	Government withdraws exchange facility of old currency notes and extends deadline for exemptions of using old Rs 500 notes up to 15 December midnight
	Queues get shorter at bank branches but continues at ATMs.
25 Nov:	RBI says the facility to exchange old Rs 500 and Rs 1,000 notes will continue to be available at its counters
	India growth to slow to 6.5 percent on notes ban, Deutsche Bank said
	Demonetisation to slow down personal computers, phone sales in Q4, according to research firm IDC
	Notes ban to have negative impact on growth in short run, Fitch says
	Queues at banks thin, but some branches still faces cash pain.
26 Nov:	Deposits in Jan Dhan accounts soars sharply by around Rs 27,200 crore to Rs 72,834.72 crore in just 14 days after the announcement of ban
27 Nov:	Rs 32,631 cr deposited in post offices since demonetization

28 Nov:	Banks get about Rs 8.45 lakh crore worth of scrapped notes, RBI says
	After 3 weeks, queues at banks, ATMs shrinks but cash crunch remained.
	29 Nov: Queues outside ATMs eases, but customers throng banks
	RBI relaxes withdrawal norms, nudges retailers to deposit cash.
30 Nov:	RBI limits withdrawal from Jan Dhan accounts to Rs 10,000 a month
	Queues at ATMs, banks grow shorter but wait for cash continues.
1 Dec:	Government says that old Rs 500 notes are valid till 2 Dec for fuel, air ticket purchase instead of 15 December announced earlier.
	Demonetisation takes a toll on manufacturing sector growth in November, according to PMI survey.
	BofA cuts FY17 growth forecast to 6.9 percent amid demonetisation
	Pay day rush: Banks resort to rationing of cash in order to handle the huge pay day rush at branches
	1.80 lakh ATMs re-calibrated to dispense Rs 500, 2,000 notes
	Cash shortage may slow down GDP to 6.5 percent in Oct-Dec quarter, Nomura says.
2 Dec:	India Ratings lowers GDP forecast to 6.8 percent post demonetization.
3 Dec:	Queues for cash on, toll collection resumes.
6 Dec:	Tax dept seizes Rs 130 crore cash, jewellery and Rs 2,000 crore of undisclosed wealth has been admitted by taxpayers post demonetisation
7 Dec:	RBI defends note ban and plays down its impact on economy. Demonetisation was not done in haste, says RBI Governor during the monetary policy presser
	Note ban impact on GDP growth only 15 bps, says RBI
	Rs 11.55 lakh crore or 76 percent of junked notes have come back into the system, RBI said.

**Table 2 : Chronology of Incidents during the time period of study**

## References:

- <http://www.businessinsider.in/PM-Modi-take-note-These-countries-failed-at-demonetization/articleshow/55460537.cms> Retrieved on 15th January,2017 )
- <http://www.spellerstep.com/information/demonetization-can-successful-6-countries-proved/> Retrieved on 15th January,2017 )
- <http://economictimes.indiatimes.com/news/economy/indicators/theres-bad-news-for-modis-digital-push-as-card-use-slows-and-cash-makes> Retrieved on 15th January,2017 )
- <http://epaperbeta.timesofindia.com/Article.aspx?eid=31804&articlexml=IMF-slashes-growth-estimate-to-66-17012017023020> Retrieved on
- <http://www.huffingtonpost.in/apoorva-pathak/10-reasons-why-bjps-demonetization-move-is-an-unmitigated-and/> Retrieved on
- <http://www.huffingtonpost.in/abhisek-sarda/demonetisation-the-new-2-000-note-is-an-unmitigated-design-dis/> Retrieved on
- <https://factly.in/capacity-currency-printing-presses/> Retrieved on
- <http://www.hindustantimes.com/static/demonetisation-2000-rupee-notes/> Retrieved on
- <http://www.livemint.com/Politics/u1kpLaYDnR3mDURNbaDMzM/Rs10861-crore-The-printing-cost-to-maintain-currency-flow.html> Retrieved on
- <https://www.cmie.com/kommon/bin/sr.php?kall=warticle&dt=2016-11-21%2015:12:31&msec=360>

---

<sup>ii</sup> Aijaz Jafri, Assistant Professor – Rizvi Institute of Management Studies & Research, [aijazjafri@rmi.rizvi.edu.in](mailto:aijazjafri@rmi.rizvi.edu.in)

# Impact of Improved Creditors' Rights on Bank Competition and Credit Allocation: An Empirical Study

Bhaskar Sinha<sup>iii</sup>

---

## Abstract

*This study empirically investigates the impact of SARFAESI Act on debt financing by foreign banks in India. Two-way error component model (fixed effect panel) was used for this within-country assessment. Taking advantage of a policy event (Securitization and Reconstruction of Financial Asset and Enforcement of Security Interests in India (SARFAESI), Act, 2002, which improved the creditors' rights (banks) in India ; we empirically examined its effect on firms in India. Specifically, we analyse if the entry of a foreign bank in a district, post SARFAESI has improved credit access for the firms. SARFAESI gives the banks a right to liquidate collateral in case of a default, therefore it should encourage lending. The impact is expected to be more in the districts where the foreign bank has entered for the first time compared to other locations where a foreign bank already existed. Theoretical literature suggests that enforcement of law should encourage more lending. Also, prior studies on credit allocation argue that use of collateral reduces credit rationing. Hence, combining these two strands of literature we can provide empirical evidence of the impact of stronger creditor's rights on reducing information asymmetry. Amount of bank borrowings pre and post event; after controlling for firm level factors, was the model used for the analysis. The estimates indicate that High tangible firms received larger share of bank loans, but that on average, younger firms (< 5 years) were less likely to get loans post-event.*

**Key Words:** Credit allocation, Creditor rights, Panel data Regression

---

## 1.0 Introduction

The central argument related to lending is that loans are liable to default. Therefore, any monetary policy which does not incorporate bankruptcy and default constraints will be an erroneous policy decision. Thus an important function of the bank is to determine default candidates and circumstances. Creditors' rights, like securitization law, provide protection to the banks to recover their loans if a firm defaults. Literature related to law in finance suggests that, such a law would encourage banks to extend credit to all deserving firms.

However, literature related to bankruptcy suggests that, creditors' rights would make the banks biased towards liquidation. The bank, to safeguard its investment, would prefer to liquidate the firm at any sign of default. Another related argument suggests that, post introduction of the creditors' rights; banks would have no incentive to undertake costly state verification of the firms to whom they would extend credit. Both the arguments suggest that creditor's rights may affect the banking system, especially their monitoring responsibility and efficient credit allocation.

Based on the above argument, question which remains unanswered is: how the firms would react to the implementation of Creditors' rights. Specifically, the argument that needs to be empirically validated is: does the entry of foreign banks improve credit access for the firms when there is an improvement in creditor' rights in the domestic market. This objective comes from the literature based on bank competition that improvement in the legal rights is expected to induce credit allocation by the foreign banks.

The study would highlight the firm level influence of a securitization Law across all the districts where foreign banks are present and also selected adjacent districts without foreign banks. We propose to use an exogenous policy reform, Securitization and Reconstruction of Financial Assets and Enforcement of Security Interests Act 2002 or SARFAESI Act that strengthens the rights of creditors in India to identify the effects of the change in the law on the volume of secured credit both from the demand and supply sides for different types of firms. This comprehensive analysis would allow the regulatory bodies to determine the differential impact of their policy decisions with respect to credit allocation to various firms.

### **SARFAESI Act, 2002: A Review**

Prior to the SARFAESI Act, secured creditors did not have the right to seize and sell the securities of the defaulting firms in order to recover their dues. The Act ushered a new era of creditor rights by allowing secured creditors to bypass the lengthy court process and seize assets of defaulting firms. With the enactment of SARFAESI Act, Banks and Financial Institutions could take over the assets and management of any company that defaulted in payments for over six months by giving a notice of 60 days. Further, the borrowers could only appeal against the creditor's decision after depositing 75 percent of the defaulted amount. *A sound secured transactions law was considered important for attracting funds from foreign banks thus promoting trade and growth. Further, a good creditor friendly system was considered essential for promotion of secured credit in India, which in turn was argued, would lead to economic prosperity in India.* Hence, if SARFAESI Act does not meet these objectives of the central bank then the purpose of the act is not fulfilled.

The corporate houses complained that such a law would give banks excessive powers which they would abuse. It was also argued that the law was unfair since the law gave the borrowers practically no rights to appeal. Their basic point was that if they (borrowers) had sufficient resources to deposit 75% of the total amount, they would not default on the interest payments to begin with. All these arguments indicate that the SARFAESI Act did have an impact on the credit allocation in India but it was not without opposition from the firms. This paper attempts to empirically capture this impact which will help in future policy decisions.

The rest of the paper is organized as follows. In section I, we discuss the related literature. Section II describes the methodology adopted in the study. Results and empirical findings are presented in Section III. Section IV concludes the paper.

## 2.0 Literature Review

### 2.1 Literature review on Collateral usage

Since the objectives of SARFAESI Act are (i) to encourage new banks to operate in the market (ii) to improve credit allocation, we reviewed literature on collateral based lending, bank competition and creditors rights. Moreover, SARFAESI Act is effective only if secured debt is involved a brief review of some empirical papers on collateral usage in credit allocation by banks is presented in **Exhibit 1**. These papers show that collateral use in bank lending is prevalent across different countries. The use of collateral (measured as %age of collateralized lending) varies from 13% (Spain) to 88% (Germany). Also, it may be noted that *collateralized loan as a percent of total loan is greater than or equal to 100 for countries such as Spain and Mexico*. The above results indicate the importance of SARFAESI Act on credit allocation as collateral is used for secured debt.



## 2.2 Literature Review: Bank Competition

Most of the existing literature analyses the competition among the banks and its effect on credit allocation. Zarutskie, Rebecca (2006) presented the evidence on the financial effect of bank competition using a panel of privately held firms. She studied *the firm level* impact of the Riegle-Neal Interstate Banking and Efficiency Act (1994) which increased the competitiveness of US banking market. The findings of the paper are: newly formed firms characterized by large information asymmetries have significantly less outside debts on their balance sheets post deregulation as compared to the older firms. For the study, data on firm level was used from Statistics of Income (SOI) Corporate Tax files for the period covering 1987-1998. The firms were divided in four age groups, age 1-5, 6-10, 11-15, and >15 years. The result showed the ratio (outside debt/ assets) decrease by 2.15% (1% significance level) post Riegle-Neal Interstate Banking and Efficiency Act (1994) only for the firms in the age bracket of 1 to 5 years.

In the paper by Petersen and Rajan (1994), the effects of competition among banks on the availability of bank credit to firms for the US market. Petersen and Rajan provide evidence on the impact of bank concentration on the availability of credit. Analyzing the data from National Survey of Small Business Finance (NSSBF) in 1988-89, and using financial market concentration (Herfindahl index), they showed that the younger firms (<10 yrs) pay 34 basis points more in terms of interest rates than the older firms in the most concentrated market. However in the most competitive market this difference is as high as 86 basis points.

Another strand of literature exploits cross-country variation in creditor rights in order to investigate the relationship between legal institutions and corporate debt structure. It is based on the premise that the rights attached to securities become critical when managers of companies act in their own interest. These rights give investors the power to extract from managers the returns on their investment. Shareholders receive dividends *because* they can vote out the directors who do not pay them, and creditors are paid *because* they have the power to repossess collateral. The paper by La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny (1998) examines how laws protecting investors differ across 49 countries. The author used an index aggregating different creditor rights. The index is formed by adding one point each to the following:

- The country imposes restrictions, such as creditors' consent or minimum dividends to file for reorganization of the firm;
- Secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay);

- Secured creditors are ranked first in the distribution of the proceeds that result from the disposition of the assets of a bankrupt firm; and
- The debtor does not retain the administration of its property pending the resolution of the reorganization.

Thus index ranges from 0 to 4. The result showed that the average score of the above four parameters together for countries following English Origin Law is 3.11 as compared to that of the French origin (1.58), German origin (2.33) and Scandinavian origin (2.00).

Further, the differences are significant for each of the above mentioned four parameters between countries of English and French origins. The mean-difference for each parameter is:

(1) Reorganization: 1.74 (1% SL), (2) Automatic Stay: -2.88(10% SL), (3) Secured creditors first : -2.34(5% SL) and (4) Management stay : -3.54 (10% SL).

Paper by **Sujata Visaria (2006)**, investigates the loan level data set of a large Indian bank to estimate the impact of Debt Recovery Tribunal (DRT). Based on loan level data Visaria analyzed the impact of DRT on the time taken to recover the loans. This was one of the pioneering papers which studied the micro economic impact of legal reforms in India. The sample consists of 15034 observations (borrowings from 1831 firms), which correspond to loans sanctioned before the DRT Act date. The dependent variable measures the probability that payment on an invoice occurs within 180 days of the invoice date. Her result showed that the establishment of DRT reduces delinquency in loan repayment by 11 percent (1% significance level) post DRT for loans above the amount of Rs 1 million.

Visaria (2006), analyzed the implication of a legal Act on credit allocation. Her analysis is limited to a with loan level data from Mumbai and Pune (Maharashtra).

Analyzing the trend of the capital structure of the firms from 1999-2006 (refer Exhibit-2), I find that there is a fall in the proportion of secured debt to total debt in the time period 2002-03 which coincides with the SARFAESI Act (21<sup>st</sup> June,2002). Also the graph indicates that the change in the proportion of secured debt to total asset is higher for the younger firms (firms less than 5yrs , represented as Age 5 in the Exhibits below) than the older firms(>10 yrs). Also, there is a decrement in the (total debt/total assets) during the same time period, except for the older firms (Age>10 yrs).

All this indicates a policy decision may have differential impact on the firms, which may defeat the very objective of the regulatory body. This microeconomic, firm level impact of a judicial process has not been analyzed in the existing literature.

Capital structure trend of the firms of different age category present in the districts where foreign banks are present.

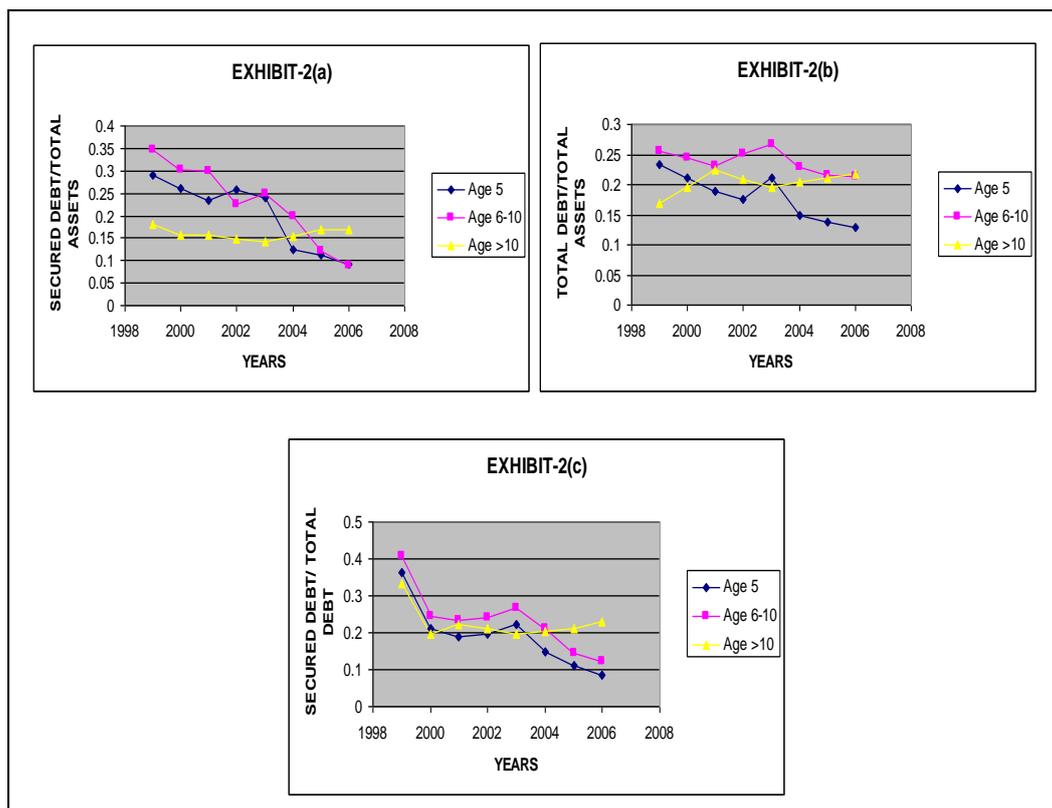


Figure 1 : Capital structure trend of the firms

Keeping these arguments in view, we propose to analyse the impact of SARFAESI Act on the firms demand for credit with due consideration for firm age, tangibility and past profitability.

### 3.0 Methodology and Research Description

How does the entry of foreign banks affect the firms, post SARFAESI is modeled as:

$$Y_{i,t} = \alpha + \mu_i + \delta_t + \beta_1 * FB_t + \beta_2 * (FB_t * X_i) + \beta_3 * X_i + \epsilon_{i,t} \dots \dots \dots (\text{MODEL I})$$

Where,  $Y_{it}$  is debt ratios for each firm  $i$  in year  $t$ ,  $FB_t$  is a dummy variable which is one if a foreign bank is present in the district in the year  $t$ . “X” is the firm level past performance variable like average ROA (ROAM) calculated three years before a Foreign bank has entered the district. The firm fixed effect is  $\mu_i$ .  $\delta_t$  is Year fixed effect (to capture any country level time trend in borrowing pattern of the firms may be due to any reforms or policy change).

Similarly, impact of SARFAESI on credit allocation to the firms of different age categories:

$$Y_{i,t} = \alpha + \mu_i + \delta_t + \alpha_0 SFI + \alpha_1 D_1 + \alpha_2 D_2 + \beta_1 SFI * D_1 + \beta_2 SFI * D_2 + \beta_3 X_{i,t} + \epsilon_{i,t} \dots \dots (\text{MODEL II})$$

Where, SFI is the dummy for SARFAESI Act (=1 for 2002 onwards 0 otherwise). Age of a firm (when a foreign bank entered for the first time in the district in which the firm is located) is computed and then classified into three age categories of <5 years, between 5 to 10 years and greater than 10 years.  $D_1$  and  $D_2$  is defined as  $D_1=1$  if the age of a firm is <5 years and 0 otherwise and  $D_2=1$  if the age of a firm is between 5 to 10 years else 0. X represents control variable.

#### 4.0 Results and Inferences

Results are tabulated in Table- 1 and 2 for ease of exposition.

Table 1 / 2 reports coefficients from regressions of bank loans districtwise, using OLS . The dependent variable is the various ratio of credit from column (1)-(3). Column (4) and (5) represents secured credit /total credit for high tangibility firm (75 percentile) and Group affiliated firms respectively. Observations from 2002-06 are included for non-financial firms located in a district with an entrant foreign bank. 'FB' is equal to one for firms located in a district with a foreign bank in the given year, and zero otherwise. 'ROAM' is a firm's 1999-2001 average return on assets. Standard errors are in parenthesis. \*\*\*,\*\*, and \* denote statistical significance at the 1%, 5%, and 10% level respectively . HTAN represents high tangibility firms , > 75 percentile of the sample (common for both tables).

Dependent Variable	Secured debt/total debt	Total bank debt/total asset	Total bank debt/total debt	HTAN (>75%tile)	Group Affiliated
	(1)	(2)	(3)	(4)	(5)
FB	-0.043***(0.021)	-0.054**(0.025)	-0.044***(0.023)	0.231***(0.011)	-0.11**(0.02)
FB*ROAM		-0.01(0.028)	-0.0021*(0.023)	-0.004(.007)	.0034(0.055)
#Obs	13055	13055	13055	3250	7885
R-square	0.55	0.57	0.53	0.62	0.67
Firm FE( $\mu$ )	Y	Y	Y	Y	Y
Year FE ( $\delta$ )	Y	Y	Y	Y	Y
ROAM * $\delta$		Y	Y	Y	Y

**Table 1 : Entry of Foreign Banks and Credit Access (Model –I)**

Dependent Variable	Outside borrowings/assets	Secured debt/total bank debt	Total bank debt/total assets
	(1)	(2)	(3)
SFI	-0.277**(0.99)	-0.984***(1.76)	-0.677**(0.023)
SFI*Ag_5	-2.112***(0.42)	-2.157***(0.411)	-1.41**(0.32)
SFI_Ag_5_10	-.292**(0.89)	-1.22**(0.27)	-8.1**(0.072)
Ag_5	0.157(0.11)	.817(.04)	-0.858(0.4)
Ag_5_10	0.187	0.71(0.11)	-0.108(0.35)
ln(asset)	1.171**(0.328)	0.182**(0.012)	-0.078(0.36)
TAN	1.16**(,218)	1.12**(0.772)	0.017**(003)
R-square(adj)	0.68	0.66	0.69
Firm FE( $\mu$ )	Y	Y	Y
Year FE ( $\delta$ )	Y	Y	Y

**Table 2 : Enforcement of SARFAESI Act on Debt Financing (Model-II)**

Table - 1 suggest that the entry of foreign bank in a district, post SARFAESI decreases credit access for the firms . Also, past profitability is not a significant factor for credit availability. However, group affiliated companies shows greater credit access post SARFAESI .

Table- 2 suggest younger firms(<5yrs) are credit rationed compared to older (>10 Years) firms. To elaborate, consider column (2) where the result suggest that post SARFAESI ratio of secured debt to total debt shows (-2.157) negative and significant coefficients as compared to the benchmark firms (i.e; firm >10 years of age). Similar results can be inferred for the firms aged between 5 to 10 years.

## 5. Conclusion

This study suggest that enhanced creditors' rights may not improve the credit allocation as expected by the policy makers. This is true for smaller, less tangible and independent (not affiliated to prominent industry-groups). This is because smaller and younger firms are reluctant to borrow as they lack collateral for secured debt. Also, SARFAESI provides more power to the creditors on collateral based lending that banks would prefer lending to firms with high tangibility so that they can recover the dues in case of default. Our experiment was based on the presence of foreign banks in a district, which, due to information asymmetry, may not have much information about local firms. This limits their lending decisions (as suggested by literature). But enhancement of creditor rights should encourage lending by foreign banks. Also, increased competition among the banks due to the entry of foreign banks in the oligopolistic market should be preferable for credit allocation to younger firms. But our analysis through Model II suggest otherwise. Younger firms didn't benefit from SARFAESI in terms of credit requirement.

This suggest that further studies are required to ascertain that stronger creditor rights may encourage better credit diffusion in an emerging market where information asymmetry between firms and banks is very high.

## References

- Berger, A.N., Udell,G.F.(1995),”Relationship lending and lines of credit in small firm finance” , Journal of Business,68,351-381.
- Boot,A.W.A., Thakor, A.V.,Udell,GF,(1991),”Secured Lending and default risk: equilibrium analysis, policy implications and empirical results”. Economic Journal 101,458-472
- Cressy, R., Toivanen, O., (2001).”Is there adverse selection in the credit market?”, Venture Capital 3,21-238
- Degryse,H., Van Cayseele, P. ,(2000),”Relationship lending within the a bank-based system: evidence from European small business data.”, Journal of Financial Intermediation 9,90-109
- Elas,R.,Krahen,J.P.,(2000),”Collateral, Default Risk, and Relationship Lending: An Empirical Study on Financial Contracting”, Universitaet Frankfurt-CFS Working Paper # 1999/13, revised September 2000.
- Harhoff , D., Korting,T.(1998), “ Lending relationships in Germany: empirical evidence from survey data”, Journal of Banking and Finance 22, 1317-1353
- Jimenez,G.,Saurina,J.(2004), “Collateral, type of lender and relationship banking as determinants of credit risk”, Journal of Banking and Finance 28,2191-2212
- La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny (1998), “Law and Finance”, *Journal of Political Economy* 106, 1113–1155.
- La Porta,R., Lopez-de-Silanes,Zamarrita (2003) “Related lending”. Quarterly Journal of Economics 118,231-268
- LeethJ,Scout,J.A. (1989), “The incidence of secured debt: evidence from the small business community”, Journal of Financial and quantitative Analysis 24,379-394
- Lehmann,E., Neuberger,D. (2001), “ Do lending relationships matter? Evidence from bank survey data in Germany”. Journal of Economic Behavior and Organisation 45,339-359
- Machauer,A., Weber,M, (1998), “Bank behavior based on internal credit ratings of borrowers”, Journal of Banking and Finance 22,1355-1383

- Menkhoff, Lukas, Neuberger, Doris and Suwanaporn, C. (2006), “Collateral-Based Lending in Emerging Markets: Evidence from Thailand”, *Journal of Banking and Finance*, Available at SSRN: <http://ssrn.com/abstract=485546>
- Petersen, M.A., and R.G. Rajan,(1994), "The Effect of Credit Market Competition on Lending Relationships", *Quarterly Journal of Economics*, 1995, vol 110, pp 407-443
- Rebecca ,Zarutskie,(2006), “Evidence on the effects of bank competition on firm borrowing and investment” , *Journal of Financial Economics* 81 (2006) 503–537
- Visaria, Sujata, (2006), *Legal Reform and Loan Repayment: The Microeconomic Impact of debt Recovery Tribunals in India*, forthcoming, *Journal of Financial Intermediation*.

---

<sup>iii</sup> Bhaskar Sinha, Assistant Professor – Rizvi Institute of Management Studies & Research, bhaskarsinha@rmi.rizvi.edu.in. An earlier version of the paper was submitted to SIMS Annual Research Conference, 2012. Furthermore, based on the feedback of esteemed professors few alterations were made to the paper. All the errors lies with the author.

## Credit Allocation and Bank Competition: Game Theoretic Approach

Bhaskar Sinha<sup>iv</sup>  
Bhumika Trivedi<sup>v</sup>

---

### Abstract

*Abstract: This compilation of work synthesizes the oligopolistic model of bank competition when a foreign bank enters the market. The result suggest that the most cost efficient bank would have a larger share of the market (deposit as well the credit market). If both the local bank and the foreign bank have the same efficiency then they can evenly share the market. However, if we use von-stackelberg game theoretic approach where a foreign bank has entered an already established market, the credit allocation may not be efficient. This also justifies the difference in outcomes of the various empirical findings.*

**Key Words:** Credit allocation, Duopoly, Game theory, Industrial organization

---

### 1.0 Introduction

Financial industry has always attracted a lot of interest of industrial organization economists. Specifically, the question of what is the appropriate regulation of the banking industry has always been one of the most controversial topics that has fueled many policy related debates about the future of the banking industry. One of the most important area of research deals with bank competition and credit allocation which has shown heterogeneous impact under empirical analysis. Frexias and Rochet (1997) enlists four main functions of contemporary banking theory:

- Access to payment system.
- Transformation of short term deposits to long-maturity loan
- To manage risk
- To process information and monitor borrowers.

In Brief, Freixas and Rochet<sup>1</sup> (1997), point out that bank transforms inputs (deposits) to output (in form of loans) as long as it has competitive advantage over the borrower. Moreover, as the banks provide costly services to the economic agents, they have an incentive to compete for better market position. The factors which influence their decisions are the quality of loans, quality of deposits, interest rates and the quality of services.

The Monti-Klien<sup>2</sup> (henceforth, MK) model (1972) was the first model that used the Industrial Organization approach to model the banking sector. The model considers a monopolistic bank with a cost function which captures the servicing of the loan and deposits. Bank determines the interest rate for deposit and loan that would maximize its profit. The decision variables are the amount of loan and the amount of deposit with the amount of equity as given. The MK model calculates the bank's profit and the sum of the intermediation margins on both loans and deposits. The MK model also suggested that the bank sets its interest rate such that the Lerner's index is inversely proportional to the demand. The intuitive result was higher market power of the bank would lead to better intermediation margin. Additionally, the market of deposits and loans are interrelated through the cost function.

### **The Monti-Klien Model : Revisited**

The Monti-Klien model considers a single, monopolistic bank that chooses its outputs in order to maximize profits. The bank operates on the market for loans as well as on the market for deposits. The difference between the volume of loans  $L$  and the volume of deposits  $D$  of the bank can be borrowed (or lent, if negative) on an Interbank market. The interest rates on the loan market and deposit market are represented by  $r_L$  and  $r_D$ , respectively.

The inverse demand function for loans is given by  $r_L(L)$ , with derivative  $r'_L(L) < 0$ , and the inverse supply function of deposits is  $r_D(D)$ , with derivative  $r'_D(D) > 0$ . The cost of managing an amount  $L$  of loans and an amount  $D$  of deposits is given by the convex management-cost function  $C(L;D)$ . Let  $r$  denote the exogenous interest rate on the interbank market, and  $\alpha$  be the exogenous fraction of deposits that is required as capital reserve. Both  $r$  and  $\alpha$  are set by the central bank.

The bank's decision problem is to maximize its profits  $\Pi(L;D)$ , i.e.:

$$\pi(L, D) = (r_L(L) - r)L + (r(1 - \alpha) - r_D(D))D - C(D, L)$$

---

<sup>1</sup> Freixas, X, Rochet, J. *Microeconomics of Banking*, The MIT Press 1997. (2<sup>nd</sup> Edition)

<sup>2</sup> Klein, Michael A. (1971), "A theory of the banking firm", *Journal of Money, Credit, and Banking*, 3, 205–218.

Where,  $\pi(L, D)$  is strictly concave. The first-order conditions are :

$$\frac{\partial \pi}{\partial L} = r_L'(L)L + rL - r - C_L'(D, L) = 0$$

$$\frac{\partial \pi}{\partial D} = -r_D'(D)D + r(1-\alpha) - r_D - C_D'(D, L) = 0$$

Now relating the First order conditions to the elasticity of demand and loan respectively, the MK model derive the equalities between the Learner's indices (price-cost divided by price) and inverse elasticity. There adaptation of the IO to banking sector suggested the following outcomes:

Intermediation margins are higher when banks have a higher market power.

A monopolist bank would set his loan and deposit volumes such that the Lerner's indices equal inverse elasticity.

When costs are separable, optimal deposit rate is independent of the deposit market.

MK model provide a very simplified approach to banking operations with a series of conclusions that can be confronted with empirical evidence (Freixas and Rochet, 1997). One of the more prominent researches that applied the IO model was that of Neuberger and Zimmerman<sup>3</sup> (1990) where they tested the validity of the MK model in explaining the "California Rate mystery". The Mk model suggested an explanation based on the sellers concentration which was higher in California than in other parts of United States. The original Klein- Monti model concentrates on the case of a single, monopolistic bank, which might apply in countries with only one (state) bank. But the situation of several banks is more interesting.

In fact, as Molyneux et al<sup>4</sup>. (1994) observe for the case of Europe, in many countries including India, the banking industry is very concentrated. This suggests that oligopoly models would be more relevant for the study than monopolistic model. We extend the Klein-Monti model to the case of more than one bank, In particular, towards a Cournot oligopoly, in which both the banks (local and foreign) are assumed to have a linear management-cost function. We assume that the foreign banks operating in LDC have access to cheaper funds due to their diverse exposure compared to the domestic bank.

---

<sup>3</sup> Neuberger, Jonathan A. and Gary C. Zimmerman (1990), "Bank pricing of retail deposit accounts and 'the California rate mystery'", *Economic Review* (Federal Reserve Bank of San Francisco), 0(2), 3–16.

<sup>4</sup> Molyneux, Phil, D.M. Lloyd-Williams, and John Thornton (1994), "Competitive conditions in European banking", *Journal of Banking and Finance*, 18, 445–459

## 2.0 Model Synthesis

In this proposal, MK model is sought to be extended in order to study the entry of foreign banks in domestic market. The entry of foreign banks (entrant) is modeled as a Stackelberg mixed-motive game with entry barrier due to information asymmetry. In addition, credit risk and collateral as screening technology in the MK model are incorporated. As in the von Stackelberg duopoly game, the incumbent (here the domestic bank) commits to a particular level of deposits and loans. This is due to the fact that the incumbent bank had been operating for some time and hence has better knowledge about the volume of loan and deposits it can expect. The banks are assumed to be risk neutral.

### Assumptions

In this section we present the assumptions related to the proposed model. The assumptions are adapted from other existing literature related to the Mk based models().

**[Assumption 1]** Local government control entry of financial institution. Only two banks are allowed to act as financial intermediaries: a foreign bank (as a wholly own Subsidiary) and an incumbent bank. Let  $i = F, L$ , where  $f$  denotes the foreign bank and  $l$  is the local bank.

**[Assumption 2]** Each bank offers deposits ( $D$ ) and Loans ( $L_i$ ). Further, economic agents save through the banks only which offers a deposit rate  $R_D$ . The demand for deposit is an inverse function of  $R_D$  with  $R_D'(D) > 0$ . Also, the larger companies do not offer market based obligations. Here,  $D = D_f + D_l$

**[Assumption 3]** projects can only be financed through loans with an interest rate  $R_L$  (where,  $R_L(L)$  and  $R_L'(L) < 0$ ) and,  $L = L_f + L_l$ .

**[Assumption 4]** the proportion of loan unpaid after their due date is  $\theta_i$  where  $i = F, L$

**[Assumption 5]** Interbank markets are assumed to be risk free with no exchange factor. The interest rate is  $R$  which is controlled by the central bank.

**[Assumption 6]** loans and the deposits have the same marginal costs  $C_i [D, L]$ . Due to constant cost there is no advantage for either bank related to economies of scope.

[Assumption 7] the banks have a fixed level of equity capital  $K_i$  and following the prudential norms (Basel) each bank maintains a risk-adjusted-capital ratio.

$$K_i \geq \gamma (1+\theta_i)L_i$$

[Assumption 8] banks are assumed to be risk neutral.

## 2.1 The Objective Function

The objective function can be determined based on the assumptions stated in the previous section. We consider a two period framework where the banks have the following balance sheet.

Domestic bank (Incumbent)	
Loan ( $L_l$ )	Deposits ( $D_l$ )
Interbank position ( $M_l$ )	Equity ( $K_l$ )

Which changes, after a time period such that :

Domestic Bank (incumbent)	
$(1 - \theta_l) L_l (1 + R_L)$	$D_l (1 + R_D)$
$M_l (1 + R)$	$C_l (L_l + D_l)$

Similarly for the foreign bank, the balance sheet can be shown as :

Foreign Bank	
Loan ( $L_f$ )	Deposits ( $D_f$ )
Interbank position ( $M_f$ )	Equity ( $K_f$ )
	Parent bank fund ( $F$ )

Balance sheet at the end of the period would be :

Foreign Bank	
$(1 - \theta_f)L_f(1 + R_L)$	$D_f(1 + R_D)$
$M_f(1 + R)$	$C_f(L_f + D_f)$
	$(1 + R_e)F$

The liquidation value of the banks at the end of the time period will be:

$$V_l = (1 - \theta_l)L_l(1 + R_L) + M_l(1 + R) - D_l(1 + R_D) - C_l(L_l + D_l)$$

and replacing  $M_l$  by  $D_l + K_l - L_l$  in the above equation, we obtain the profit function :

$$\pi_l = V_l - K_l = [(R_l - R - C_l) - \theta_l(1 + R_l)] L_l + RK_l + (R - R_D - C_l) D_l \dots\dots(1)$$

Similarly in the case of foreign bank, we obtain:

$$\pi_f = V_f - K_f = [R_L(1 - \theta_f) - R - C_f - \theta_f]L_f + RK_f + (R - R_D - C_f)D_f + (R - R_e)F \dots(2)$$

Equation (1) and (2) represent the objective function of the two players (banks) respectively. According to the stated assumptions, each player maximizes its objective function, subjected to the equity constraint:

$$K_i \geq \gamma(1 + \theta_i)L_i$$

as mentioned in the assumption. Thus the constrained maximization problem can be represented, for each player respectively, as:

$$\Gamma_l = [(1 - \theta_l) R_l(L) - R - \theta_l - C_l]L_l + RK_l + [R - R_D(D) - C_l]D_l - \lambda_l[K_l - \gamma(1 + \theta_l)L_l] \dots(4)$$

$$\Gamma_f = [(1 - \theta_f) R_L(L) - R - \theta - C_f]L_f + RK_f + [R - R_D(D) - C_f]D_f + (R - R_e)F - \lambda_f(K_f - \gamma(1 + \theta_f)L_f) \dots(5)$$

where,  $\lambda_l$  and  $\lambda_f$  are the Lagrange's multiplier for the domestic bank and the foreign bank respectively. The value of the multipliers are positive (or zero) if the constraint is binding (not binding)

## 2.2 Solution to the Function

Given the Cournot conjectures, the players maximize their objective function (4) and (5) respectively. The first order condition (F.O.C) for the banks:

$$\frac{\partial \Gamma_l(\partial L_l, D_l)}{\partial L_l} = (1 - \theta_l)(R_L + R_L' L) - R - \theta - C_l + \lambda_l[\gamma(1 + \theta_l)] = 0 \dots(6)$$

$$\frac{\partial \Gamma_l(\partial L_l, D_l)}{\partial D_l} = R - C_l - R_D - R_D' D_l = 0 \dots(7)$$

Similarly, for the foreign bank, the F.O.C will be :

$$\frac{\partial \tau_f(\partial L_f, D_f)}{\partial L_f} = (1 - \theta_f)(R_L + R_L' L) - R - \theta_f - C_f + (R - R_e)F + \lambda_f[\gamma(1 + \theta_f)] = 0 \dots(8)$$

$$\frac{\partial \tau_f(\partial L_f, D_f)}{\partial D_f} = R - C_f - R_D - R_D' \times D_f = 0 \dots(9)$$

equilibrium condition when the constraint is non-binding.

The equilibrium condition for the loan market can be derived from the equation (7) and (9). Similarly, the equilibrium conditions for the deposit market can be derived from the equations (6) and (8) respectively. But the banks generally lend less than the permissible limit i.e. they hold more than what is required under capital adequacy norm. An article in economist (1997) shows that thirteen banking system actually holds more than the stipulated capital. <sup>5</sup>Under such scenario, the constraint is not binding and hence the Lagrange's multiplier is zero. Under such conditions, the equilibrium in the market for deposits can be obtained by solving (6) and (8). We obtain:

$$D_f^{FB} = D_l^{FB} + \frac{C_l - C_f}{R'_D} \dots\dots\dots 10$$

The result suggest that the most cost efficient bank would have a larger share of the market (deposit). If both the local bank and the foreign bank have the same efficiency than they can evenly share the market. Under such symmetric cost (i.e.  $C_l = C_f = C^*$ ) we can determine the equilibrium of the deposit market is :

$$\frac{R - C^* - R_D}{R_D} = \frac{R'_D D}{2 \times R_D} \dots\dots\dots (11)$$

this can be arranged as:

$$\frac{R - C^* - R_D}{R_D} = \frac{1}{2\epsilon} \dots\dots\dots (12)$$

where,  $\epsilon$  is the elasticity of demand for the deposit market . The equation is similar to the Learner's indices; which is equal to the inverse of product of the elasticity and the number of banks (here, two). The index is positive.

The equilibrium for the other market (loans) can be obtained using the equations (7) and (9) . We consider the case when the banks don't take the restrictions on equity (both,  $\lambda_l = \lambda_f = 0$ ). The relationship shows:

$$L_f^{FB} = \frac{(1-\theta_l)L_l^{FB}}{(1-\theta_f)} - \frac{(C_l - C_f)}{R'_L(1-\theta_f)} + \frac{(\theta_f - \theta_l)(1+R_l)}{R'_L(1-\theta_f)} - \frac{(R - R_e)F'}{R'_L(1-\theta_f)} \dots\dots\dots (13)$$

The steps are shown in the proof (I). It can be inferred from literature that  $\theta_l \geq \theta_f$  and if the cost are symmetric ( $C_l = C_f = C^*$ ), then at equilibrium, foreign banks will lend more as compared to the local bank.

---

<sup>5</sup> Argentina, Brazil, Chile ,Columbia, India, Indonesia, Japan, Malaysia, Mexico, south Korea, Taiwan, Thailand and United States. It can be seen most of the countries in the list are Emerging Market Economies

**Proposition 1 :** *under the conditions (i) when banks chooses loan such that the equity constraint is not binding, (ii) default risk for the foreign banks are similar or less than their local counterpart and, (iii) both the banks have the same cost , then :*

[a] *at the equilibrium in the deposit market both the banks have the same deposit.*

[b] *Foreign banks give more loans compared to the local bank.*

Proof: the proof for [a] can be obtained from equation (10) when the cost is symmetric. For [b], consider the following scenario:

Case I : if  $\theta_l = \theta_f$ , i.e. the bank faces the same credit risk. We find that  $R_l' < 0$

as  $R_l' < 0$

Case II : when , if  $\theta_l > \theta_f$  we need to show that  $L_l^{FB} > L_f^{FB}$ .

From the equation (13) , we obtain :

$$R_l' (L_l^{FB} (1 - \theta_l) - L_f^{FB} (1 - \theta_f)) = (\theta_l - \theta_f)(1 + R_l) + (R - R_e) F' \dots (14)$$


the right hand side of the equation (14) is positive as  $R > R_e$  and also  $\theta_l > \theta_f$ . Hence the term in the bracket (highlighted above) must be negative. Hence, by rearranging the terms , we obtain:

$$\frac{L_l^{FB}}{L_f^{FB}} < \frac{(1 - \theta_f)}{(1 - \theta_l)}$$

or

$$L_l^{FB} < L_f^{FB} \text{ as } \theta_f < \theta_l$$

Proposition 1 suggest that , given our assumptions , *when both the banks start their operation at the same time* then a foreign bank would be better of in credit allocation, while they would be able to share the deposit market. The reason is two folds:

- (i) Access to less costly international funds from the parent bank.
- (ii) Better credit risk assessment skills due to their international exposure and thus the credit risk for local banks are more compared to the foreign banks.

Winton (1997) suggested that the above result is valid only when the foreign banks are able to overcome the information, cultural and political barrier of operating in a foreign region. Thus only when a foreign bank has overcome the initial difficulties and have similar branching network (size) then they would be in better position to allocate credit (Proposition 1).

### Second order conditions

This section describes the stability conditions for equilibrium and the reaction function of each bank I both the market. In order to get the global maxima for the banks the second partial derivative must be negative, when calculated at the optimal values.

For stability, each market must satisfy:

$$\frac{\partial^2 \pi_l}{\partial D_l^2} \cdot \frac{\partial^2 \pi_f}{\partial D_f^2} - \frac{\partial^2 \pi_l}{\partial D_l \cdot \partial D_f} - \frac{\partial^2 \pi_f}{\partial D_l \cdot \partial D_f} > 0$$

$$\frac{\partial^2 \pi_l}{\partial L_l^2} \cdot \frac{\partial^2 \pi_f}{\partial L_f^2} - \frac{\partial^2 \pi_l}{\partial L_l \cdot \partial L_f} - \frac{\partial^2 \pi_f}{\partial L_l \cdot \partial L_f} > 0$$

for each of the banks. The equilibrium for both the markets are stable when the direct effect is more than the cross effect. In our analysis the stability condition is met as the second term is negative as the marginal profit for one of the player decreases as other player receives more deposits (or allocate more loans).

The slope of the reaction function for both the banks can be obtained from the differentiation of the equation (7) and (9) respectively for the inverse demand function. Similarly, the differentiation of the equation (8) and (10) would give the slope of the reaction function for loans in each case.

The slope of the inverse demand function can be obtained using the implicit function theorem (refer Simon, Blume, page 339). We get the expression:

$$S_l^D = \left( - \left( \frac{\partial^2 \pi_l}{\partial D_l^2} \right) / \left( \frac{\partial^2 \pi_l}{\partial D_l \cdot \partial D_f} \right) \right) < 0 = \frac{-(2R'_D + R''_D D_l)}{(R'_D + R''_D D_l)} \dots\dots\dots 15$$

and for foreign bank the slope is :

$$S_f^D = \left( - \left( \frac{\partial^2 \pi_f}{\partial D_l \cdot \partial D_f} \right) / \left( \frac{\partial^2 \pi_f}{\partial D_f^2} \right) \right) < 0 = \frac{(R'_D + R''_D D_f)}{-(2R'_D + R''_D D_f)} \dots\dots\dots (16)$$

The slope of the reaction function of the local bank is steeper than that of the foreign bank. For a linear demand line, the reaction function would be as shown in the Figure 8.

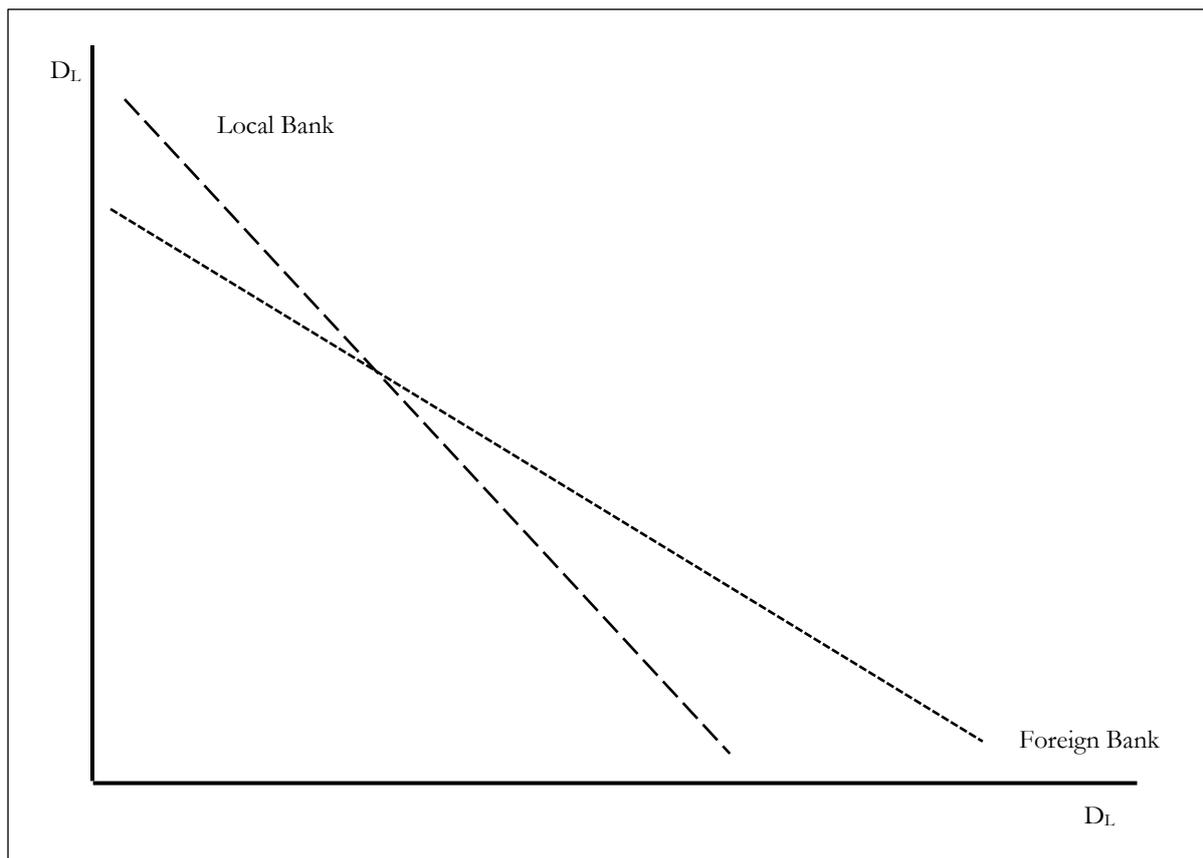


Figure 1: Reaction Functions in the Deposit Market

(I) first order condition for the equilibrium of Loan markets

$$\frac{\partial \tau_l(L_l, D_l)}{\partial L_l} = (1 - \theta_l)(R_L + R'_L L) - R - \theta_l - C_l + \lambda_l[\gamma(1 + \theta)] = 0 \dots\dots 6$$

$$\frac{\partial \tau_f(L_f, D_f)}{\partial L_f} = (1 - \theta_f)(R_L + R'_L L) - R - \theta_f - C_f + (R - R_e)F' + \lambda_l[\gamma(1 + \theta)] = 0 \dots\dots 7$$

$$\lambda_l = \lambda_f = 0 \dots\dots 8$$

the equation then can be expressed as:

$$(1 - \theta_l)(R_L + R'_L L_l) - R - \theta_l - C_l = (1 - \theta_f)(R_L + R'_L L_f) - R - \theta_f - C_f + (R - R_e)F'$$

Rearranging the terms, we obtain:

$$R'_L(1 - \theta_f)L_f^{FB} = R'_L(1 - \theta_l)L_l^{FB} - (C_l - C_f) + (\theta_f - \theta_l)(1 + R_l) - (R - R_e)F'$$

Which further gives:

$$L_f^{FB} = \frac{R'_L(1 - \theta_l)L_l^{FB}}{R'_L(1 - \theta_f)} - \frac{(C_l - C_f)}{R'_L(1 - \theta_f)} + \frac{(\theta_f - \theta_l)(1 + R_l)}{R'_L(1 - \theta_f)} - \frac{(R - R_e)F'}{R'_L(1 - \theta_f)}$$

or

$$L_f^{FB} = \frac{(1 - \theta_l)L_l^{FB}}{(1 - \theta_f)} - \frac{(C_l - C_f)}{R'_L(1 - \theta_f)} + \frac{(\theta_f - \theta_l)(1 + R_l)}{R'_L(1 - \theta_f)} - \frac{(R - R_e)F'}{R'_L(1 - \theta_f)}$$

Q.E.D

## Conclusion

In this paper we have focused on the issue of the reparability of the banks decisions about loans and deposits in the backdrop of industrial organization models derived from the Monti-Klein model. In the standard oligopoly version of the Monti Klein model, specifically, the stackelberg model synthesis, under appropriate assumptions about the banks cost functions, the decisions about loans and deposits are independent. In this paper, we were able to show that this independence is rather an exception to the rule because it depends on the entry time and difference in foreign banks and domestic banks and the affect is heterogeneous under the same policy treatment. This raises issues related to credit allocation and maybe able to answer the empirical difference in outcomes.

---

<sup>iv</sup> Bhaskar Sinha, Assistant Professor – Rizvi Institute of Management Studies & Research, bhaskarsinha@rmi.rizvi.edu.in

<sup>v</sup> Bhumika Trivedi, AVP –Broadbridge Financial services , Hyderabad, bhunikatrivedi@tataprojects.com

# Evaluating Mutual Fund Performance using the Jensen's Alpha Framework

Jamil Saudagar<sup>vi</sup>

---

## Abstract

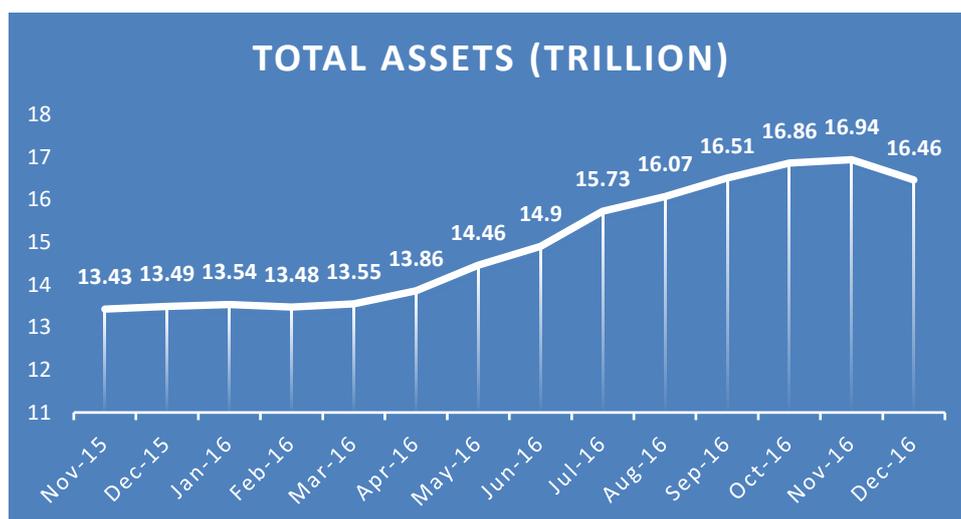
*This paper is an empirical assessment of the performance of mutual funds using the framework provided by Michael Jensen (Jensen's Alpha). Specifically, the study is based on a sample of 57 mutual funds spanning across various mutual fund companies in India. The study relies on secondary data and the selected period for the study is Jan 2012 to Dec 2016 (5 year period). The frequency of the collected data is quarterly. Based on the study carried out in the selected period, the results have been mixed. For instance, about 40% of the cases, there were statistically significant alphas available while in the remaining 60% of the cases the alphas were not statistically significant.*

**Key Words:** *Jensen's Alpha, Mutual Fund Evaluation, Regression*

---

## 1.0 Introduction

In the last few years the mutual fund industry in India has been growing at a rapid pace. As per data available from the Association of Mutual Funds in India (AMFI), the average assets under management have crossed a whopping ₹17 trillion (Dec 2016). The Assets under Management (henceforth, AUM) of the Indian Mutual Fund Industry has grown from ₹ 3.26 trillion as on 31st March 2007 to ₹ 16.46 trillion as on 31st December, 2016. The MF Industry's AUM has more doubled in the last 4 years from ₹ 5.87 trillion as on 31st March, 2012 to ₹ 12.33 trillion as on 31st March, 2016. The total number of folios as on December 31, 2016 stood at 5.28 crore [1]. In the last one year the assets have grown by over 26%.



**Figure 1 : Growth of Assets in the Mutual Fund Industry over the last one year<sup>1</sup>**

About 30.9% of the investment is in equity oriented schemes as of December 2016. Individual investors hold about 44.6% across various schemes while institutional investors hold about 55.4% of the assets of which 86.3% are corporates while the rest are Indian, Foreign Institutions and Banks. Individual investors are invested mostly in Equity, ELSS and Balanced Schemes (4.22 crore) and account for about 84% of the investment in the equity oriented schemes (as of December 2016). The value of assets held by individual investors across mutual fund schemes has increased by 23% over the last year while their share of investment in the equity oriented schemes has increased by over 22%.

Thus, from the above it will be clear that a) the mutual fund industry is seeing rapid growth and b) Retail investors (Individual and HNI's) are looking more and more towards mutual funds as an investment alternative. While institutional investors possess the requisite infrastructure and resources to monitor and evaluate the performance of their mutual fund investments, the same may not be true for individual investors who may not have the necessary skills to evaluate their investments in mutual funds. They rely solely on the investment management skills of the portfolio manager. Therefore, this paper evaluates the performance of mutual funds by using the Jensen's Alpha framework. The next section defines the objective of the paper followed by a section on the methodology adopted for this paper. Section 4 discusses the associated literature review and the last section concludes the paper.

<sup>1</sup> Source : (India, <http://www.amfiindia.com/Themes/Theme1/downloads/home/Industry-Trends-December-2016.pdf>, 2017)

## 2.0 Objectives

The objective of this paper is to study the performance of mutual funds and understand whether the faith reposed in the mutual fund industry by retail investors is justified.

## 3.0 Research Methodology

The study is done by picking up 57 samples of equity oriented mutual fund schemes which have the highest percentage by share (by AUM). For all the schemes, the 'growth' option has been selected. The selected schemes form about 47% (by % share – AUM) of the available schemes in the domain of equity oriented schemes. The data has been sourced from Accord Fintech. The time period for the study is Jan 2012 to December 2016 (5 year period). Quarterly Net Asset Value (henceforth, NAV) returns have been considered for the study. The NAV data has been adjusted for dividend and bonus. NAV returns have been calculated by using the natural log of the NAV's. 17 other schemes have been removed from the study (from the original 74) because of data inadequacy. Linear interpolation has been done for cases with missing data points.

The S&P BSE 500 index has been used as a proxy for the market mainly because the equity schemes being considered span across market capitalization and more over the S&P BSE 500 index represents 93% of the market capitalization as of December 2016 (Exchange, n.d.). It is also well spread out and captures about 20 sectors in the equity segment. This data has been sourced from Yahoo Finance. 91-day T-Bill weekly yields have been used as a proxy for the Risk free rate. This data has been obtained from the Reserve Bank of India's website. The yields have been adjusted for the tax impact.

Jensen's Alpha (Jensen, 1967) is one of the most popular evaluation measures used to study fund performance. This framework developed by Michael Jensen measures the excess return that the fund has been able to generate given the level of risk (systematic). The expected level of return, so as to measure excess return, is done using the Capital Asset Pricing Model. The excess return is known as 'alpha'. The measure is obtained by regressing the scheme returns (dependent) against the market returns (independent variable). The equation takes the following form :

$$R_p - R_f = \alpha_p + \beta_p \cdot (R_m - R_f) + \epsilon$$

Where  $R_p$  is the return of the scheme while  $R_f$  is the risk free rate.  $\alpha_p$  is the excess return,  $\beta_p$  is the systematic risk in the scheme and is the  $\epsilon$  error term.

The Null Hypothesis for the study is  $H_0 : \alpha_p = 0$ .

#### 4.0 Scope and Limitations of the Study

Only those mutual funds which are equity oriented have been taken into consideration. Only the Indian Mutual Fund market has been studied.

A five year study period has been used to study the market.

While there are many measures / tools to evaluate the performance of mutual funds, this paper limits the study to using the Jensen's Alpha framework.

#### 5.0 Literature Review

Historically, the rate of return was the unitary measure of performance. **Markowitz (1952) & Tobin (1958)** were the pioneers who suggested risk measure in terms of variability (or variance) of returns. This was followed by extensive work by **Treynor (1965), Sharpe (1966)** and **Jensen (1968)** where the researchers compared the returns of professionally managed portfolios to that of some standard benchmark. **Cumby & Glen (1990)** and **Lahbitant (1995)** suggested that funds underperform their benchmarks. In the same vein, **Murthi et. al. (1997)** proposed problems which associated with traditional measures as the benchmarks, did not account for the transactions cost and henceforth introduced Data Envelopment Analysis (DEA) as a performance measure.

There is a plethora of papers on international front which tried various empirical work. We concentrated on the known empirical evidence attained on Indian mutual fund scenario.

##### Literature Review: India Specific

In the research arena in an emerging market like India the results were dispersed and at best, mixed. For example, **Chander (2000)** found the funds outperform while **Singh & Singla (2000)** found that funds underperform their benchmark. Whereas, **Gupta (2001)** found mixed results.

**Galagedera & Silvapulle (2002)** found that funds were efficient in longer time period. . In

**Gupta & Gupta (2004)** and **Rao et al.(2004)** authors found that the funds outperforming their respective benchmark. .

**Madhusudhan & Jambodekar (1996)** revealed that investor expect better services while they invest for safety of principal, liquidity and capital appreciation. **Syama Sunder (1998)** found that the awareness was poor in small cities, Brand image and return were the prime factors for investment. **Panda and Tripathy (2002)** found that investors were unsatisfied except from UTI. **Singh and Chander (2004)** concluded that poor regulation and control, under-performance and inefficient management are the cause of non-investment.

**However,** little effort has been made to study investors' behaviour towards mutual funds based on Mutual funds excess performance in the last decade. This is important because Mutual funds were not very popular investment instrument before. Hence, it will not be easy to determine the performance when the markets are not efficient. Sudden advent and acceptance of systematic Investment Plans (SIP) by the retail investors has given us the opportunity to factually determine the performance of the mutual funds and if they actually outperform the market.

## 6.0 Conclusion and Inference

This section discusses the descriptive statistics related to the funds (fifty-seven) related to our analysis.

Table (Table 4) shows the summarized details for the samples in the study. The quarterly mean return across all select funds in the study ranges between -0.59% - 3.26%. However, 56 of the 57 funds report a positive mean return. If the only negative fund is removed from the list then, the minimum mean return goes upto 0.83%.

From	-2.56%	-1.56%	-0.56%	2.43%
To	-1.57%	-0.57%	1.57%	3.42%
MF Count	1	0	46	10

**Table 1: Summary of Quarterly Mean Returns**

If the mean returns are bucketed in to quartiles (Table 2), then the funds are more or less equally distributed amongst the four quartiles.

Quartile	1st	2nd	3rd	4th
MF Count	15	13	14	15

**Table 2: Quartile of Mean Returns**

Similarly, the median for the samples ranges from 0.45% to 4.84% barring one case with a median of -2.57%. The median range with the highest number of funds is the 5th range (1.43% to 2.42%).

<b>From</b>	-2.57%	-2.42%	-1.43%	0.43%	1.43%	2.43%	3.43%	4.43%
<b>To</b>	-1.57%	-1.42%	-0.42%	1.42%	2.42%	3.42%	4.42%	5.42%
<b>MF Count</b>	1	0	0	7	23	19	5	2

**Table 3: Median Returns of the sample**

The distribution is largely platykurtic<sup>2</sup> (ranges from -1.32 to 1.07) which basically means that the tails are thinner and the probability of extreme outcomes lower. Out of the 57 samples studied, 36 samples exhibit negative skewness<sup>3</sup> while the remaining (21) cases display a positive skew.

Sr #	MF Name	Mean	Median	Kurtosis	Skewness	Range	Min.	Max.	C.I. (95.0%)
1	Axis Equity Fund(G)	0.01	0.02	-0.88	-0.15	0.23	-0.11	0.13	0.03
2	Axis Midcap Fund(G)	0.02	0.03	-0.41	0.11	0.36	-0.15	0.21	0.04
3	Birla SL Advantage Fund(G)	0.02	0.01	-1.03	0.00	0.29	-0.12	0.17	0.04
4	Birla SL Equity Fund(G)	0.02	0.01	-0.59	0.31	0.30	-0.11	0.19	0.04
5	Birla SL Frontline Equity Fund(G)	0.02	0.02	-1.26	-0.05	0.22	-0.09	0.13	0.03
6	Birla SL Midcap Fund(G)	0.01	0.02	-0.45	-0.21	0.35	-0.16	0.19	0.04
7	Birla SL MNC Fund(G)	0.02	0.02	-0.95	-0.01	0.30	-0.12	0.18	0.04
8	Birla SL Top 100 Fund(G)	0.02	0.02	-0.81	0.15	0.25	-0.10	0.15	0.03
9	BNP Paribas Equity Fund(G)	0.01	0.02	-0.61	-0.15	0.26	-0.12	0.14	0.03
10	Canara Rob Emerg Equities Fund-Reg(G)	0.02	0.02	0.05	0.04	0.42	-0.19	0.23	0.05
11	DSPBR Equity Fund-Reg(G)	0.01	0.03	-0.76	0.17	0.32	-0.14	0.18	0.04
12	DSPBR Focus 25 Fund-Reg(G)	0.01	0.00	-1.32	-0.14	0.26	-0.12	0.14	0.04
13	DSPBR Micro-Cap Fund-Reg(G)	0.03	0.03	0.20	-0.23	0.40	-0.18	0.22	0.05
14	DSPBR Small and Mid Cap Fund-Reg(G)	0.02	0.01	-0.38	-0.03	0.37	-0.17	0.20	0.05
15	Franklin India Bluechip Fund(G)	0.01	0.02	-1.01	0.01	0.23	-0.09	0.14	0.03
16	Franklin India Flexi Cap Fund(G)	0.02	0.01	-0.95	0.11	0.24	-0.10	0.15	0.03
17	Franklin India High Growth Cos Fund(G)	0.02	0.03	-0.53	-0.18	0.30	-0.14	0.16	0.04
18	Franklin India Prima Fund(G)	0.03	0.04	-0.96	-0.17	0.28	-0.12	0.16	0.04
19	Franklin India Prima Plus Fund(G)	0.02	0.02	-1.20	-0.11	0.22	-0.09	0.13	0.03
20	Franklin India Smaller Cos Fund(G)	0.03	0.05	-0.69	-0.02	0.32	-0.13	0.19	0.04
21	HDFC Equity Fund(G)	0.01	0.02	-0.19	0.07	0.37	-0.18	0.19	0.04
22	HDFC Mid-Cap Opportunities Fund(G)	0.03	0.02	-0.33	0.10	0.33	-0.14	0.19	0.04
23	HDFC Top 200 Fund(G)	0.01	0.03	-0.57	0.06	0.32	-0.15	0.17	0.04
24	ICICI Pru Balanced Advantage Fund(G)	0.02	0.03	0.28	-0.14	0.20	-0.08	0.12	0.02
25	ICICI Pru Dynamic Plan(G)	0.02	0.03	0.36	0.04	0.29	-0.12	0.17	0.03
26	ICICI Pru Focused Bluechip Equity Fund(G)	0.02	0.03	-0.68	-0.22	0.24	-0.11	0.13	0.03
27	ICICI Pru Multicap Fund(G)	0.02	0.03	-0.38	0.08	0.27	-0.11	0.17	0.03
28	ICICI Pru Top 100 Fund(G)	0.02	0.03	-0.09	0.07	0.29	-0.12	0.17	0.03
29	ICICI Pru Value Discovery Fund(G)	0.03	0.02	0.64	0.60	0.35	-0.13	0.22	0.04
30	IDFC Premier Equity Fund-Reg(G)	0.02	0.03	-0.72	-0.37	0.27	-0.13	0.14	0.04
31	Kotak Select Focus Fund(G)	0.02	0.02	-1.02	-0.15	0.25	-0.11	0.14	0.03
32	LnT Equity Fund-Reg(G)	0.01	0.02	-0.98	-0.02	0.26	-0.12	0.14	0.04
33	LnT India Prudence Fund-Reg(G)	0.02	0.03	-0.43	0.16	0.23	-0.09	0.14	0.03
34	LnT India Value Fund-Reg(G)	0.02	0.03	1.07	0.41	0.38	-0.15	0.23	0.04
35	Mirae Asset Emerging Bluechip-Reg(G)	0.03	0.04	-0.57	-0.18	0.31	-0.13	0.18	0.04
36	Mirae Asset India Opportunities Fund-Reg(G)	0.02	0.02	-0.76	-0.17	0.26	-0.12	0.14	0.03
37	Reliance Banking Fund(G)	0.01	0.01	-0.14	-0.17	0.53	-0.28	0.25	0.06
38	Reliance Diver Power Sector Fund(G)	-0.01	-0.03	0.46	0.74	0.50	-0.21	0.29	0.06
39	Reliance Equity Opportunities Fund(G)	0.01	0.01	0.58	-0.12	0.37	-0.19	0.18	0.04
40	Reliance Growth Fund(G)	0.02	0.01	-0.41	0.04	0.36	-0.16	0.20	0.04
41	Reliance Mid and Small Cap Fund(G)	0.02	0.03	0.50	-0.21	0.43	-0.20	0.23	0.05
42	Reliance Reg Savings Fund-Equity Plan(G)	0.01	0.03	-0.09	-0.32	0.37	-0.19	0.18	0.05
43	Reliance Small Cap Fund(G)	0.02	0.02	0.85	-0.13	0.43	-0.21	0.22	0.05
44	Reliance Top 200 Fund(G)	0.02	0.02	-0.29	0.11	0.32	-0.14	0.18	0.04
45	Reliance Vision Fund(G)	0.01	0.00	-0.75	0.24	0.33	-0.14	0.19	0.04
46	SBI BlueChip Fund-Reg(G)	0.02	0.04	-1.15	-0.25	0.23	-0.09	0.14	0.03
47	SBI Contra Fund-Reg(G)	0.02	0.02	-0.81	-0.14	0.26	-0.11	0.15	0.03
48	SBI Emerging Businesses Fund-Reg(G)	0.02	0.04	-0.75	-0.46	0.25	-0.12	0.13	0.04
49	SBI Magnum Global Fund 94-Reg(G)	0.02	0.04	-0.87	-0.21	0.24	-0.11	0.13	0.03
50	SBI Magnum MidCap Fund-Reg(G)	0.03	0.05	-0.42	-0.36	0.31	-0.14	0.18	0.04
51	Sundaram Select Midcap(G)	0.02	0.03	-0.33	-0.07	0.35	-0.15	0.20	0.04

<sup>2</sup> Refer Table 4

<sup>3</sup> Refer Table 4

52	UTI Equity Fund(D)	0.01	0.02	-1.22	-0.11	0.24	-0.10	0.14	0.03
53	UTI Equity Fund(G)	0.02	0.02	-1.06	-0.09	0.24	-0.10	0.14	0.03
54	UTI Mastershare(G)	0.01	0.01	-1.24	0.00	0.22	-0.10	0.12	0.03
55	UTI Mid Cap Fund(D)	0.02	0.03	-0.67	-0.32	0.29	-0.14	0.15	0.04
56	UTI Mid Cap Fund(G)	0.02	0.03	-0.67	-0.32	0.29	-0.14	0.15	0.04
57	UTI Opportunities Fund(G)	0.01	0.02	-1.15	-0.26	0.23	-0.11	0.12	0.03

**Table 4: Summary Details (of selected samples)**

The main conclusions of the study are that while there was an alpha available for all the 57 funds, ranging from 3% to 7%, in 34 of the 57 cases (~ 60%), the alpha was not statistically significant while in the remaining 23 cases (~ 40%), the alphas were statistically significant.

From	2.94%	3.94%	4.94%
To	3.93%	4.93%	5.94%
MF Count	13	9	1

**Table 5: Count of distribution of statistically significant Alpha**

This, therefore implies that the markets are not fully efficient and there might be information asymmetry which has led to generation of excess returns or positive alpha. This positive alpha can also be used to determine the performance of respective fund managers and can be taken into consideration for compensation design. The below distribution table summarizes the mutual fund with statistically significant alphas and encourage portfolio churning to improve the alpha in the long run in favour of the investor.

Sr #	Fund Name	R-Square	F-Value	Alpha	Beta	P-value (Alpha)	P-value (Beta)
1	Axis Equity Fund(G)	0.21	4.82	0.03	0.56	0.06	0.04
2	Axis Midcap Fund(G)	0.33	8.67	0.05	0.95	0.03	0.01
3	Birla SL Advantage Fund(G)	0.24	5.73	0.05	0.75	0.04	0.03
4	Birla SL Equity Fund(G)	0.22	6.31	0.05	0.74	0.03	0.02
5	Birla SL Frontline Equity Fund(G)	0.23	5.49	0.04	0.60	0.03	0.03
6	Birla SL Midcap Fund(G)	0.26	6.19	0.05	0.84	0.06	0.02
7	<b>Birla SL MNC Fund(G)</b>	<b>0.11</b>	<b>2.17</b>	<b>0.04</b>	<b>0.49</b>	<b>0.08</b>	<b>0.16</b>
8	Birla SL Top 100 Fund(G)	0.26	6.30	0.04	0.65	0.02	0.02
9	BNP Paribas Equity Fund(G)	0.21	4.82	0.04	0.57	0.06	0.04
10	Canara Rob Emerg Equities Fund-Reg(G)	0.26	6.46	0.06	0.93	0.03	0.02
11	DSPBR Equity Fund-Reg(G)	0.23	5.47	0.05	0.78	0.06	0.03
12	DSPBR Focus 25 Fund-Reg(G)	0.26	6.26	0.04	0.74	0.08	0.02
13	DSPBR Micro-Cap Fund-Reg(G)	0.31	8.03	0.07	0.98	0.01	0.01
14	DSPBR Small and Mid Cap Fund-Reg(G)	0.25	5.89	0.05	0.89	0.05	0.03
15	<b>Franklin India Bluechip Fund(G)</b>	<b>0.15</b>	<b>3.17</b>	<b>0.03</b>	<b>0.46</b>	<b>0.08</b>	<b>0.09</b>
16	Franklin India Flexi Cap Fund(G)	0.24	5.64	0.05	0.63	0.02	0.03
17	Franklin India High Growth Cos Fund(G)	0.21	4.66	0.05	0.64	0.03	0.04
18	Franklin India Prima Fund(G)	0.30	7.61	0.06	0.79	0.01	0.01

19	Franklin India Prima Plus Fund(G)	0.21	4.78	0.04	0.55	0.03	0.04
20	Franklin India Smaller Cos Fund(G)	0.30	7.71	0.07	0.86	0.01	0.01
21	HDFC Equity Fund(G)	0.21	4.65	0.04	0.75	0.09	0.04
22	HDFC Mid-Cap Opportunities Fund(G)	0.25	6.00	0.06	0.77	0.02	0.02
23	<b>HDFC Top 200 Fund(G)</b>	<b>0.19</b>	<b>4.27</b>	<b>0.04</b>	<b>0.67</b>	<b>0.09</b>	<b>0.05</b>
24	<b>ICICI Pru Balanced Advantage Fund(G)</b>	<b>0.17</b>	<b>3.73</b>	<b>0.03</b>	<b>0.34</b>	<b>0.01</b>	<b>0.07</b>
25	<b>ICICI Pru Dynamic Plan(G)</b>	<b>0.12</b>	<b>2.41</b>	<b>0.04</b>	<b>0.41</b>	<b>0.06</b>	<b>0.14</b>
26	<b>ICICI Pru Focused Bluechip Equity Fund(G)</b>	<b>0.17</b>	<b>3.64</b>	<b>0.04</b>	<b>0.48</b>	<b>0.04</b>	<b>0.07</b>
27	ICICI Pru Multicap Fund(G)	0.22	4.95	0.04	0.60	0.03	0.04
28	<b>ICICI Pru Top 100 Fund(G)</b>	<b>0.15</b>	<b>3.08</b>	<b>0.04</b>	<b>0.47</b>	<b>0.05</b>	<b>0.10</b>
29	ICICI Pru Value Discovery Fund(G)	0.26	6.44	0.06	0.76	0.01	0.02
30	IDFC Premier Equity Fund-Reg(G)	0.24	5.63	0.04	0.64	0.03	0.03
31	Kotak Select Focus Fund(G)	0.23	5.25	0.04	0.60	0.02	0.03
32	LnT Equity Fund-Reg(G)	0.23	5.45	0.04	0.63	0.05	0.03
33	LnT India Prudence Fund-Reg(G)	0.23	5.44	0.04	0.50	0.01	0.03
34	LnT India Value Fund-Reg(G)	0.22	5.04	0.05	0.71	0.03	0.04
35	Mirae Asset Emerging Bluechip-Reg(G)	0.23	6.68	0.06	0.76	0.01	0.02
36	Mirae Asset India Opportunities Fund-Reg(G)	0.22	5.12	0.04	0.60	0.03	0.04
37	<b>Reliance Banking Fund(G)</b>	<b>0.18</b>	<b>3.90</b>	<b>0.05</b>	<b>1.00</b>	<b>0.14</b>	<b>0.06</b>
38	<b>Reliance Diver Power Sector Fund(G)</b>	<b>0.19</b>	<b>4.18</b>	<b>0.03</b>	<b>0.98</b>	<b>0.33</b>	<b>0.06</b>
39	<b>Reliance Equity Opportunities Fund(G)</b>	<b>0.19</b>	<b>4.13</b>	<b>0.04</b>	<b>0.66</b>	<b>0.09</b>	<b>0.06</b>
40	Reliance Growth Fund(G)	0.24	5.67	0.05	0.81	0.05	0.03
41	Reliance Mid and Small Cap Fund(G)	0.29	7.41	0.06	0.96	0.03	0.01
42	Reliance Reg Savings Fund-Equity Plan(G)	0.21	4.71	0.04	0.77	0.09	0.04
43	Reliance Small Cap Fund(G)	0.23	5.32	0.06	0.86	0.04	0.03
44	<b>Reliance Top 200 Fund(G)</b>	<b>0.18</b>	<b>3.84</b>	<b>0.04</b>	<b>0.59</b>	<b>0.06</b>	<b>0.07</b>
45	<b>Reliance Vision Fund(G)</b>	<b>0.15</b>	<b>3.19</b>	<b>0.04</b>	<b>0.64</b>	<b>0.16</b>	<b>0.09</b>
46	SBI BlueChip Fund-Reg(G)	0.27	6.54	0.05	0.61	0.01	0.02
47	<b>SBI Contra Fund-Reg(G)</b>	<b>0.18</b>	<b>4.05</b>	<b>0.04</b>	<b>0.56</b>	<b>0.05</b>	<b>0.06</b>
48	SBI Emerging Businesses Fund-Reg(G)	0.31	7.98	0.05	0.74	0.02	0.01
49	SBI Magnum Global Fund 94-Reg(G)	0.23	5.53	0.04	0.59	0.02	0.03
50	SBI Magnum MidCap Fund-Reg(G)	0.28	7.05	0.06	0.79	0.01	0.02
51	Sundaram Select Midcap(G)	0.29	7.20	0.05	0.86	0.03	0.02
52	<b>UTI Equity Fund(D)</b>	<b>0.19</b>	<b>4.10</b>	<b>0.03</b>	<b>0.53</b>	<b>0.09</b>	<b>0.06</b>
53	UTI Equity Fund(G)	0.21	4.64	0.04	0.55	0.05	0.04
54	<b>UTI Mastershare(G)</b>	<b>0.15</b>	<b>3.27</b>	<b>0.03</b>	<b>0.46</b>	<b>0.11</b>	<b>0.09</b>
55	UTI Mid Cap Fund(D)	0.26	6.38	0.05	0.79	0.02	0.02
56	UTI Mid Cap Fund(G)	0.26	6.38	0.05	0.79	0.02	0.02
57	UTI Opportunities Fund(G)	0.22	5.17	0.03	0.57	0.07	0.04

**Table 6: Regression Analysis (\* - F-Test is not significant for the funds shown in bold)**

## References and Bibliography

### Data Sources :

- Exchange, B. S. (n.d.). <http://www.asiaindex.co.in/indices/equity/sp-bse-500>. Retrieved January 20, 2017, from <http://www.asiaindex.co.in>:  
<http://www.asiaindex.co.in/indices/equity/sp-bse-500>
- Finance, Y. (n.d.). <https://in.finance.yahoo.com/lookup>. Retrieved January 20, 2017, from <https://in.finance.yahoo.com>: <https://in.finance.yahoo.com/lookup>
- Fintech, A. (n.d.). [www.acekp.in](http://www.acekp.in). Retrieved January 20, 2017, from [www.acekp.in](http://www.acekp.in):  
[www.acekp.in](http://www.acekp.in)
- India, A. o. (n.d.). <http://www.amfiindia.com/indian-mutual>. Retrieved January 20, 2017, from <http://www.amfiindia.com>: <http://www.amfiindia.com/indian-mutual>
- India, A. o. (n.d.).  
<http://www.amfiindia.com/Themes/Theme1/downloads/home/Individual-Investors-December-2016.pdf>. Retrieved January 20, 2017, from <http://www.amfiindia.com>:  
<http://www.amfiindia.com/Themes/Theme1/downloads/home/Individual-Investors-December-2016.pdf>
- India, A. o. (n.d.).  
<http://www.amfiindia.com/Themes/Theme1/downloads/home/Industry-Trends-December-2016.pdf>. Retrieved January 20, 2017, from <http://www.amfiindia.com>:  
<http://www.amfiindia.com/Themes/Theme1/downloads/home/Industry-Trends-December-2016.pdf>
- India, R. B. (n.d.). <https://dbie.rbi.org.in/DBIE/dbie.rbi?site=home>. Retrieved January 20, 2017, from <https://dbie.rbi.org.in>: <https://dbie.rbi.org.in/DBIE/dbie.rbi?site=home>

**Bibliography :**

- Arora, K. (2016). Stock Selection Skills of Fund Managers in India : An Empirical Investigation. Indian Institute of Finance, 527-540.
- Chander R., (2000) "Performance Appraisal of Mutual Funds in India", Finance India, vol. 14, no. 4, 1256-1261.
- Chander R.,(1999) "Performance Appraisal of Mutual Funds in India", Unpublished doctoral dissertation, Kurukshetra University, Kurukshetra,
- Chander S. and Singh J., (2004) "Performance of Mutual Funds in India: An Empirical Evidence", the ICAFI Journal of Applied Finance, vol. 10, no. 6, pp. 45-62,.
- Chander, S., & Singh, J. (2004). Performance of Mutual Funds in India : An Empirical Evidence. ICAFI Journal of Applied Finance, 10(6), 45-63.
- Cumby R. E. and Glen J. D., (1990) "Evaluating the Performance of International Mutual Funds", The Journal of Finance, vol. 45, no. 2, pp. 497-521,
- Galagedera D. U. A. and Silvapulle P., (Nov. 2002). "Australian Mutual Fund Performance Appraisal Using Data Envelopment Analysis", Managerial Finance, vol. 28, no. 9, pp. 60-73.
- Gupta A., (2001). "Mutual Funds in India: A Study of Investment Management", Finance India, vol. 15, no. 2, pp. 631-637,
- Gupta O. P. and Gupta A., (2004). "Research Methodology for Performance Evaluation of Mutual Funds", In P. P. Arya and Yeshpal (Eds.), Research Methodology in Management Theory and Case Studies, New Delhi: Deep and Deep Publishing Pvt. Ltd.,
- Jambodekar M. V., (1996) "Marketing Strategies of Mutual Funds – Current Practices and Future Directions", Working Paper, UTI – IIMB Centre for Capital Markets Education and Research, Bangalore,
- Jensen, M. C. (1967). The Performance of Mutual Funds in the Period 1945-1964. Journal of Finance, 389-416.
- Lhabitant F. S., (1995) "Mutual Fund Performance: Empirical Tests on Swiss Market", [http://www.fmpm.ch/files/1995\\_03\\_Lhabitant.pdf](http://www.fmpm.ch/files/1995_03_Lhabitant.pdf).
- Markowitz H. M.,( 1952). "Portfolio Selection", Journal of Finance, vol. 7, no. 1, pp. 77-81,
- Murthi, B. P. S., Choi, Y. K. and Desai P., (April 1997). "Efficiency of Mutual Funds and Portfolio Performance Measurement: A Non-Parametric Approach", European Journal of Operational Research, vol. 98, no. 2, pp. 408-418,

- Panda T. K. and Tripathy N. P., (Sep 2002). "An Application of Multidimensional Scaling Model Towards Brand Positioning of Mutual Funds: A Case Study of Tax Saving Schemes", Finance India, vol. 16, no. 3, pp. 991-1003,.
- Sharpe W. F., (1966) "Mutual Fund Performance", Journal of Business, vol. 39, no. 1, pp. 119-38,
- Singh P. and Singla S. K.,( 2000). "Evaluation of Performance of Mutual Funds Using Risk Return Relationship Models", The Indian Journal of Commerce, vol. 53, no. 3, pp. 54-59
- Syama Sundar P.V., (1998). "Growth Prospects of Mutual Funds and Investor perception with special reference to Kothari Pioneer Mutual Fund", Project Report, Sri Srinivas Vidya Parishad, Andhra University, Visakhapatnam,
- Tobin J., (1958) "Liquidity Preference as Behavior Towards Risk", Review of Economic Studies vol. 25, pp. 63-85,
- Treynor J. L., (1965) "How to Rate Management of Investment Funds", Harvard Business Review, vol. 43, no. 1, pp.63-75
- Yadav, R. A., & Mishra, B. (1996). Performance of Mutual Funds : An Empirical Analysis. MDI Management Journal, 9(2), 117-125.

---

<sup>vi</sup> Jamil Saudagar, Assistant Professor – Rizvi Institute of Management Studies & Research, jamilsaudagar@rmi.rizvi.edu.in

# Micro-segmenting a Population based on Individual Behaviour Using Statistical Machine Learning

Mohd. Osaid Koti<sup>vii</sup>

---

## Abstract

*This article is an attempt to assess individual behavior on online platform which is a challenge in itself. The study uses experimental design using a sample of students across institutes comprising both first time network users and veteran users. Pre-defined categories (classifiers) are used to determine under selected branches based on part observations. Three months of extensive research suggested that Naïve Bayesian classifier and Random Forest classification were able to capture the social interface up to some extent. This article is aimed at providing a systematic exploration with the help of research that will help companies target their products and services to the right set of customers.*

**Key Words:** *Naïve Bayesian Classification, Random Forest Classification*

---

## 1.0 Introduction

This paper is an empirical study to predict the behavior of individuals of a defined age group on an online platform. Understanding social behavior has been part of many studies since ages. Behavior comes in diverse forms. Eating, walking, sitting, reading, singing, greeting etc. *Important is what differentiates these with online social behavior.* This is done with help of computational tools which has the ability to record and measure the mannerisms of people in the virtual world as compared to the real world. (see, for example, Castells 2009; O'Reilly 2005; Tapscott and Williams 2006)

In today's world full of technology, people mostly get influenced and affected by the social sites such as Facebook, LinkedIn, Pinterest, Google Plus+, Tumblr, Instagram etc. (**Top 15 Most Popular Social Networking Sites**<sup>1</sup>). These social sites are extremely popular all over the world and have a significant role in affecting people's daily lives. This fact is evident from the huge amount of data that is collected through blogging, tweeting, sharing and writing on walls, posts, likes, comments and clicks on different websites.

---

<sup>1</sup> <http://www.ebizmba.com/articles/social-networking-websites> (Referred to as on 20<sup>th</sup> October, 2015)

The rest of the paper is divided in the following sections. Section two comprises of the related Literature and will address problem definition. The fourth section layouts the research design, objective, methodology adopted, sample size and the descriptive statistics. The fifth section concludes the paper.

### **Literature Review**

Goel and Goldstein (2013) highlighted in their study that individual behavior is complex while group of individual behavior is even more complex. One of the most important decision for Marketers is to target the right individuals. With the advent of electronic record keeping, retention of customer records and Market intelligence the marketers are using it not only for targeting the right audience but also micro-segmenting the population to attain optimal result.

Gradually newer avenues like ad servers, personal emails, etc. are serving as ways for more concentrated targeting and individual level targeting thereby helping firms to decide whom to engage (Rossi et al. 1996). Day by day social network data is just elevating the prevalent standards of behavioral predictions and targeting.

However this field has received little attention so far. One of the limited studies in social network marketing has shown that friends of adopters (Targets) of products are themselves more likely to adopt. (Bhatt et al. 2010, Hill et al. 2006, Provost et al. 2009). This area of research is in its nascent stage in India and other emerging market economies. Also, India due to its diverse and heterogeneous population can make better use of micro-segmentation in product promotion and sales. This makes the study highly effective and important.

This paper intends to fill this gap by analysing the usage and influence pattern of the new generation social media adopters. We make use of statistical machine learning for better exposition and assessment.

### **Problem Definition**

This survey based study aims at clinical-sample research related to online user behavior by micro-segmenting individuals by investigating traffic activity from an intranet network. This intranet tracking<sup>2</sup> of the individual's behaviour will record all possible information ranging from demographics to characteristics of social behaviour.

---

<sup>2</sup> Intranet network is the college based LAN. The research was done with the consent and full clarification of the participants.

The study also focusses on determining individual's browsing patterns, their attitudes when it comes to buying online or communicating with their peers. Tracking social media activity will help in predicting what an individual is most likely to undertake, which would help in analyzing the trends under various age groups and socio-economic status. The data is gathered using factors like clicks, direct or hyperlink, by individual on different websites and the time spend on various pages by them. An important factor which could also help in predicting online behavior of people, is the reason which leads them to visit websites or pages.

This paper will play an important role in providing a systematic exploration and triggering potentially significant research in helping the companies to target their products to potential customers. It is natural that the behaviour of an individual changes when it goes from real world to the online world. Users tend to forget some details about their experiences and report inaccurate information. One of the primary reasons for the study is that people like to talk more than listen. *Social media provides a platform for the views to be heard*, where consumers or the users post their feedbacks, comments, tweets etc.

## **Research Design**

### **Objective**

The intention of the convenient sample based research is to determine the individual behaviour of the respondents to the social network. Specifically, individual behaviour based on certain observable variables and to determine, which of the variable helps in the prediction of membership to any other social interface.

### **Data Source**

The respondents are participants of post-graduate program of the Rizvi Arts, Science & Commerce. The total respondents who have agreed to the research work is 250. Out of which 218 were complete and suitable for further analysis. We incorporated the undergraduate management students in the research after the model is formulated (trained, under Bayesian Classification). The time frame under study was be three months (September-December; 2016).

Rest of the Demographics and question details is as shown in the descriptive statistics.

Age	Gender	Family Income in lacs	No. of Siblings	Ownership	Minority
Min. :20.00 1st Qu.:23.00 Median :24.00 Mean :23.66 3rd Qu.:24.00 Max. :28.00	F:74 M:144	Min. : 3.0 1st Qu.: 5.0 Median : 6.0 Mean : 6.2 3rd Qu.: 7.0 Max. :10.0	Min. :0.00 1st Qu.:1.00 Median :1.00 Mean :1.38 3rd Qu.:2.00 Max. :3.00	N:61 Y:157	N:52 Y:166

**Table 1: Descriptive Statistics of the respondents(218) of the M.Sc. / M.Com. / M.A. / BMS and the MMS course.**

Descriptive Statistics of the respondents (218) of the M.Sc. / M.Com. / M.A. / BMS and the MMS course. Age is presented in years, Family Income is represented in Lacs per annum, No. of Siblings represent number of brothers/sisters exclusive of the respondents. If the respondent has an ownership house, then (Y), else it is (N). If the respondent belongs to the minority community (Y), else it is (N).

Course	Twitter	Whatsapp	Facebook	Emails	Network Present	Interface
BMS: 50 M.Sc. / M.A. :56 M.Com.:112	N: 83 Y: 135	N: 22 Y: 196	N: 39 Y: 179	N: 17 Y: 201	N: 17 Y: 200	F: 13 N: 22 Tr: 35 Wap: 148

**Table 2: Coursewise Bifurcation of the respondents**

Table 2: The first column represents the respondents of various courses, for example, BMS is for the undergraduate management course, M.Com., M.Sc., M.A. represents the candidates of the master’s program. Twitter, Whatsapp, Facebook, Emails, column represents the presence (Y=yes/N=no) of the respondents in the particular social interface. Last two columns: Network Present and Interface (here, F=Facebook, N=Network (local area network), Tr=Twitter, Wap=Whatsapp) summaries the Interface in general for the two hundred and eighteen respondents.

### Methodology Adopted

Since our objective is to prediction and identification of group membership using the latent assessment of the given dataset. Where clustering (or segmentation) is the process of identifying group membership, classification purports the *prediction* of membership. In this, paper we look at two ways of classification of our sample data:

- By predicting the segment group wise, and,
- By predicting who among them is likely to Interface over social network.

Classification is a supervised class prediction technique. It allows predicting class labels which should be nominal. Classification is a class prediction technique, which is supervised in nature. This technique possesses the ability to predict the label for classes, provided that sufficient numbers of training examples are available. In classification, the dataset is divided into two sets, namely the training set (dependent set) and a test set (independent set/ or predictive set as in our case). The data mining algorithm initially runs on the training set, then later the predicting model is applied on the test set. Since this falls under statistical learning, hence the control group was selected on a random basis from the data set obtained from the questionnaire. Thirty percent of the sample was selected at random (using Boolean classifier) for the control representative.

Naïve Bayes Classification is a type of classification which is commonly used in machine learning techniques. It falls under the easy probability classifier based on a metric which is free from one another among every class. Naive Bayes classifier classifies data in two steps: one is the training step and second is the prediction step to test future results.

#### **Datamining: Work Flow**

- **Data Selection:** Data selection is the first step where selection of the data from data warehouse is done for applying the process of data mining on it.
- **Loading Data:** In data loading process we need to load the dataset into our data processing tool so that further operation on this dataset can be applied. We load the collect student dataset (in the ratio of *training (70): prediction (30)* dataset).
- **Data Processing:** Data processing is the very important phase, in this we can process the data and remove unnecessary things from data. In other words, we clean our data in this phase. In our case, we can remove the missing quotes/values from the training dataset.
- **Variable Selection:** In variable selection phase we can select our useful variables from existing dataset. Variables are selected for training model.
- **Model Selection:** Model selection is the important phase in which the appropriate algorithms or methods for training the model can be selected. We have used Naïve Bayes algorithm.
- **Test Model:** When our model is trained, then we can test that model in test or new data so that the result can be analyzed.
- **Diagnostic:** This is the accuracy checking phase, in this part we examine the predicted result of the model can be examined result.

This paper makes use of Classification, which uses observations whose status is *known in order to* derive predictors which is then applied to new observations. While working with a single data set we split them into a *training* set which is used to develop the classification model, and a *test* set which is used to determine the performance of the model.

The paper uses *Naive Bayes* (NB) classifier. Naive Bayes uses training data to learn the probability of class membership as a function of each predictor variable considered independently (hence “naive”). When applied to new data, class membership is assigned to the category considered to be most likely according to the joint probabilities assigned by the combination of predictors. The software used is the R-software where several R packages provide NB methods; we use the **e1071** package from the Vienna University of Technology (TU Wien)<sup>3</sup>.

The first step in training a classifier is to split the data into *training* and *test* data, which will allow one to check whether the model works on the test data (or is instead over fitted to the training data). We select 65% of the data to use for training with the sample () function, and keep the unselected cases as holdout (test) data.

The model trains Naive Bayes (henceforth, NB) classifier to predict the Interface membership from all other variables in the training data. The NB classifier work with the observed probabilities of Siblings, Gender, Age, etc., *conditional on Interface* provided in the training data. Bayes’ Rule is used to compute the *probability of Interface*, conditional on variables like age, gender, siblings etc. The raw agreement rate, which is 83.33% agreement between predicted and actual segment membership suggests that NB was able to recover the 83.3% of the social interface in the test data perfectly.

	<b>Fb</b>	<b>N</b>	<b>Tr</b>	<b>Wap</b>
Respondent : 1	12.83%	0.00%	29.52%	57.65%
Respondent : 2	0.02%	0.00%	28.07%	71.92%
Respondent : 3	0.18%	0.00%	0.08%	99.74%
Respondent : 4	0.09%	0.00%	0.09%	99.82%
<b>Respondent : 5</b>	<b>44.95%</b>	0.00%	0.07%	<b>54.98%</b>
Respondent : 6	0.00%	0.01%	0.00%	99.99%
Respondent : 7	0.08%	0.00%	0.18%	99.73%
Respondent : 8	0.03%	0.00%	23.69%	76.28%
Respondent : 9	0.00%	0.00%	28.78%	71.22%
<b>Respondent : 10</b>	<b>8.12%</b>	<b>0.00%</b>	<b>35.11%</b>	<b>56.77%</b>
Respondent : 11	1.94%	0.00%	55.03%	43.03%
Respondent : 12	2.62%	0.00%	0.49%	96.89%

---

<sup>3</sup> Meyer, D., Dimitriadou, E., Hornik, K., Weingessel, A., & Leisch, F. (2014). *e1071: Misc Functions of the Department of Statistics (e1071)*, TU Wien.

Respondent : 13	0.05%	0.00%	37.46%	62.49%
Respondent : 14	6.89%	0.00%	9.42%	83.69%
Respondent : 15	5.16%	0.00%	11.88%	82.97%
Respondent : 16	0.08%	0.00%	0.03%	99.90%
Respondent : 17	0.01%	0.00%	26.74%	73.25%
Respondent : 18	28.36%	0.00%	0.02%	71.62%

**Table 3: Prediction Table based on Bayesian Framework**

Table 3 tells us Respondent 5 is estimated to be 54.98% likely to be a member of Whatsapp group (Wap), whereas yet he is 44.95% likely to move to Facebook Profile. Similarly, if we take the case of Respondent 10, 56.77% he is likely to be a member of Whatsapp (Wap) and yet he 35.11% likely to be on Twitter (Tr).

**Conclusion under Naive Bayesian Framework**

To conclude, Naive Bayes model works well for the data analyzed here, with performance much better than chance, overall 83% accuracy in segment assignment, and demographics that are similar between the proposed and actual segments. It also provides interpretable individual-level estimation of membership likelihood. Of course there are times when naive Bayes may not perform well, and it’s always a good idea to try multiple methods. For an alternative, we next examine random forest models.

The kind of individual-level details suggest which respondent to target according to the business objective and the degree of certainty expected. For instance, in high-cost campaigns, we might target only the most certain respondents in a particular segment; whereas for low-cost campaigns, we might target people for second-best segment in addition to primary segment assignment.

**Alternate Method of Classification:**

Since Machine Learning techniques attempt to over fit the data, we make use of another classification model which is known as the Random Forest Classifier.<sup>4</sup>

A random forest (henceforth RF) classifier, unlike most other classifiers, does not attempt to fit a single model to data but instead builds an *ensemble* of models that jointly classify the data<sup>5</sup>. Random Forest Classifier achieves this by fitting a multiple number of classification trees. With each tree is used to optimize only some of the observations using a selected predictors. The ensemble of all trees is known as the *forest*.

---

<sup>4</sup> Breiman, L. (2001), Random Forests, Machine Learning 45(1), 5-32.

<sup>5</sup> Liaw, A., & Wiener, M. (2002). Classification and regression by random- forest. R News, 2(3), 18–22

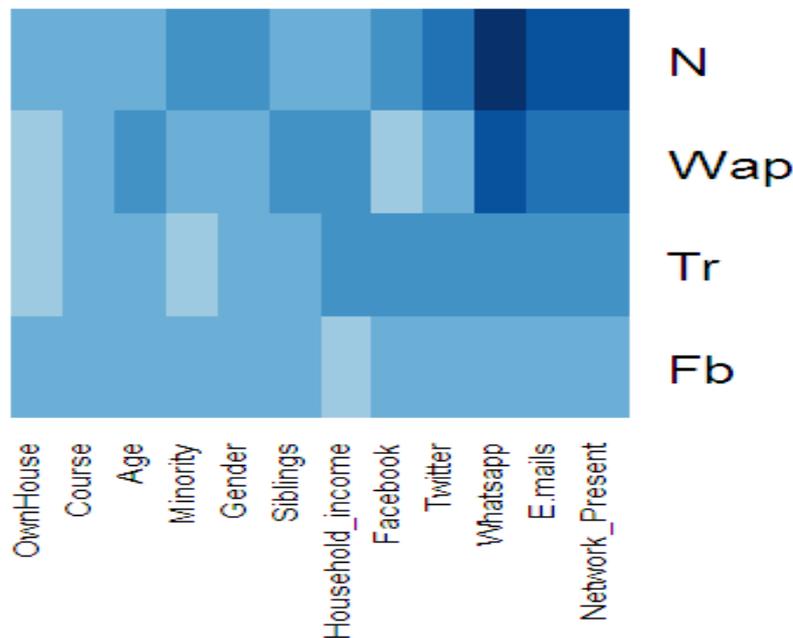
Type of classification: Random Forest			
Number of trees: 3000			
No. of variables tried at each split: 3			
OOB <sup>6</sup> estimate of error rate: <b>34.38%</b>			
Confusion matrix:			
	N	Y	Class Error
N	10	7	0.4117
Y	4	11	0.2667

**Table 4: Random Forest Classification (Confusion Matrix)**

Table 4 shows an error rate of 34.38% which is better than any random distribution.

**Use of Random Forest Assessment : Variable Importance**

Random forest models are good for assessing common marketing problems like estimating the importance of classification. This can be plotted by using the Heat Map as shown below:



**Figure 1: Heatmap – Variable Importance**

Heatmap (Fig. 9) A heatmap of variable importance by segment, produced with R-package, Random Forest (). Darker shades signify higher importance for the variable (column) in differentiating a segment (row). For example, age has greater impact for Whatsapp as compared to Facebook. Similarly, Whatsapp and Twitter are “related” compared to that of Whatsapp and Facebook.

<sup>6</sup> OOB – Out of Bag Error

## Conclusion

The initial study on the sample suggest that there are latent factors which can give better predictive analytics using machine learning procedures. Further we intend to model our analysis using Lasso Regression which incorporates more number of parameters and gives better predictions which would help the analyst to determine which factors impact the individual behaviour. This study would be beneficial for marketers to target customers and / or advertise based on the respondent's needs and other categories presented in the segment. Specifically, certain advertisements which are costly to post, it is better to target them according to the segments rather than posting a general advertisement.

## References

- Breiman, L. (2001). Random forests. *Machine Learning*, 5-32.
- Castells, M. (2009). *Communication Power*. Oxford University Press.
- Fernández-Delgado, M., Cernadas, E., Barro, S., & Amorim, D. (2014). Do we Need Hundreds of Classifiers to Solve Real World Classification Problems? *Journal of Machine Learning Research*, 3133-3181.
- O'Reilly, T. (2005, October 1). Web 2.0: Compact Definition? Retrieved June 5, 2015, from <http://radar.oreilly.com/2005/10/web-20-compact-definition.html>
- Tapscott, D., & Williams, A. D. (2010). *Wikinomics: How Mass Collaboration Changes Everything*. New York: Penguin Group.
- Wilson, C., Boe, B., Sala, A., Puttaswamy, K., & Zhao, B. (2009). User Interactions in Social Networks and their Implications. *EuroSys '09 - Proceedings of the 4th ACM European conference on Computer systems*, 205-218.

---

<sup>vii</sup> Mohd. Osaid Koti, Assistant Professor – Rizvi Institute of Management Studies & Research, [mohdosaid@rmi.rizvi.edu.in](mailto:mohdosaid@rmi.rizvi.edu.in)

# The History and Evolution of HR in India

Pradeep Gogte<sup>viii</sup>

---

## Abstract

*This paper traces the history and evolution of the HR role from being the business owner's trusted sycophant in the pre-Independence era, to becoming the champion of change in industry, business and commerce in the 2nd decade of the 21st century.*

*Identifying key milestones in this journey, one can notice the close connect between India's politics, society and economics, on the one hand, and the evolution of Indian industry in general and HR in particular, on the other. All change, as we well know, hits at the very crux of human sensitivities, emotions and feelings because it is a permanent departure from every person's well-established comfort zone. India's teeming multitude fought for freedom till 1947 and many of them found their moors in industrial employment, where their woes and aspirations were similar to the woes and aspirations of the entire nation.*

*In being an effective driver of this change lies the HR incumbent's primary competence and maturity, since most of India's working millions still see the pay cheque at the end of every month as the only reason why they work. Consequently, this is an attempt to establish a historical basis for HR's evolution from the raw beginnings of industrial revolution in the early 1750s, through the rough-and-tumble of teething troubles, growth pangs, childhood and maturity to the current age of hyper-technology*

**Key Words:** HR Evolution, History, Labour Laws, Jobber, Labour Officer, Welfare Office

---

## 1.0 Introduction

### The dawn of industry in India

In the days of the British Raj, i.e. for almost 350 years from the early 1600s till 1947, if you were an Englishman in India and were involved in any field of human endeavour, you would had the unbridled power to stamp your authority on all our forefathers, viz the teeming millions of downtrodden, deprived, depraved, neglected Indians, because you were the master and these were your obedient servants! If you did not (or would not, or could not), you were quickly branded a traitor. Some say that, even today, many managers like to believe and behave like the Englishmen except that these Indian managers are now known as "brown sahab" and the days of unbridled authority are distinctly passé.

---

The seeds of this authority and power were sown all over India by the way this country was administered by the rulers. Whether these establishments were the central, provincial, state or local governments, the railways, the municipal corporation, the rationing office, the electric supply, the police force, the road transport or any other such corporations, bureaucracies and utilities, they all drove Indian employees like slaves.

Times have indeed changed throughout industry from then till today when we think of most products which people use. These are made using the machineries of today – mass production processes operated by people and, sometimes, by robots, working on conveyor belts and assembly lines using power-driven machines. But this was not the case in ancient, medieval times. Then, people spent long hours indulging in hard, arduous labour using simple rustic tools and implements. The energy or power they utilised at work was invariably drawn from their own hands and/or animals' muscles.

In about the 1750s, as the industrial revolution set-in world-wide, the people of England, for example, began to use machines to make cloth and the power came from James Watt's steam engine. A little later, locomotives were invented and Thomas Alva Edison invented the electric bulb. The industrial revolution was the movement in which machines changed peoples' way of life as well as their methods of production. Productivity began a spectacular climb and, by the 1850s, most Englishmen worked in industrial towns and Great Britain became the workshop of the world. The most significant changes which came about were:

- The invention of machines to replace hand-operated tools
- The use of steam engines and, later, other types of power in place of the muscles of human beings and animals
- The adoption of the factory system

In the 1860s, i.e. at the beginning of India's industrial revolution, as in England, manufacturing was the cornerstone of business operations, which largely comprised textile and jute mills, railways, mining (coal, manganese and iron ore) and tea, coffee and rubber plantations. Hence, barring very few real trading houses, all serious business was manufacturing-oriented and every factory soon became a natural sweat shop, with low-end work methods and cheap labour. Anyone who said he was "going to work" meant that he was going to work in a factory and he was considered a "worker". Managing people in a factory meant managing workers because they comprised the vast majority of people working there. Most of the large factories were textile mills or textile-related, their owners were Englishmen and the workforce was entirely Indian. By definition, therefore, Englishmen were "managers" and Indians were the "managed".

## **The Jobber**

To manage people in those early days mainly meant administering their hiring, attendance, late-coming and wage payments. In the textile industry, the owners had assigned this task to what was called a “Jobber”, veritably an Indian by birth but who also enjoyed the owners’ trust and confidence. He was the owner’s primary henchman and to whom he was totally subservient. Consequently, he did the owner’s bidding at the snap of one finger.

The jobber’s main task was to hire “badli” workers (i.e. alternate workers hired on a daily basis for every shift, to cover for the absenteeism of permanent workers) from amongst the 100-200 people who thronged the gates of every textile mill in Mumbai, Solapur, Ahmedabad, Nagpur, Kanpur, Coimbatore and Chennai, in their desperate search for a day’s work and wage. The jobber was indeed the first avatar of an HR functionary in Indian industry. His strengths lay in his being able to (1) speak the local language, (2) manage/control labour with strong-arm tactics when and where needed, and (3) most important of all, be the owner’s “eyes and ears” which strengthened his crucial position as the ultimate sycophant.

When the jobber doled out wages at the end of each shift, the amount payable was entirely at his whim. He had his idiosyncrasies like any other sycophant and, so, he would often only hire his favourites because they looked after his wants, interests and preferences. Thus, people whom he did not fancy were summarily neglected. As the years rolled by, the jobber’s dubious reputation and reports against his autocratic style gained momentum and workers’ complaints began to mount.

## **The Labour Officer**

Because of the jobber’s domineering style, his bonafides, purpose and credibility came into serious question. Going ahead, several deprecating reports surfaced about his nefarious ways and the British government constituted the Royal Commission on Labour in 1929, to investigate these and similar allegations and illegalities. Here is what the Commission said in its preamble (Chapter 3, pp 24-25).

*“The jobber, known in different parts of the country by different names such as Sardar, Mukadam or Mistry, is almost ubiquitous in the Indian factory system and usually combines in one person a formidable series of functions. He is primarily a chargeman. Promoted from the ranks after full experience of the factory, he is responsible for the supervision of labour in the factory.....He is not, however, merely responsible for the worker once he has obtained work; the worker generally has to approach him to secure a job and is nearly always dependent on him for the security of that job as well as for a transfer to a better one. Many jobbers follow the worker even further than the factory gate; they may finance him when he is in debt and he may even be dependent on them for his housing.....”*

*It is to the jobber that the employer usually goes when he wishes to notify a change to the workers; it is from the jobbers that he derives most of his information regarding their needs and desires..... the temptations of the jobbers' position are manifold, and it would be surprising if these men failed to take advantage of these opportunities. There are few factories where a worker's security is not, to some extent, in the hands of the jobber. In a number of factories, the latter has the power to engage and to dismiss a worker. We were satisfied that it is a fairly general practice for the jobber to profit financially by the exercise of this power.....”.*

When the commission tabled its report in 1931, it sounded the death-knell of the jobber and simultaneously recommended the creation of a statutory Labour Officer, whose duties and responsibilities were spelt out as follows:

- “We advocate for all factories the exclusion of the jobber from the engagement and dismissal of labour. This can best be achieved by the appointment of a Labour Officer.
- This officer should be subordinate to no one except the General Manager and should be carefully selected. Integrity, personality, energy, the gift of understanding individuals and linguistic ability are the main qualities required.
- No employee should be engaged or dismissed without his consent, except by the General Manager himself after hearing what the labour officer has to say.
- It should be the business of the labour officer that no employee is discharged without sufficient cause.
- If he is of the right type, the workers will rapidly learn to place their confidence in him as their friend.

### **Politics, employers and labour – strange bedfellows**

Any study or discussion of the advent of HR as an evolving stem of Indian industry will be incomplete without reference to the close linkage which exists between it and India's socio-economic framework, culture, modern history and political evolution. By the 1930s, India's struggle for freedom from the British yoke had reached frenzy-point and there was a distinct air of consummate distrust and hatred for anything British, including the people who represented them, since they manifested the British Raj's dictats and perpetrated them. Into this turmoil of emotions came well-meaning political revolutionaries who played a dominant role in India's “Quit India Movement” and they simultaneously garnered mass support from large industrial undertakings whose publics were groping for recognition, on account of the inhuman treatment which the British owners and managers were inflicting on them.

The so-called reformists cobbled their equation perfectly when they mobilized mass support for the political movement and also fanned their own private ambitions of becoming union leaders – ostensibly adding numbers to the freedom struggle, as well as to furthering their own political cause.

In those days, when “management” meant British, labour easily unionised with a view to further their own agenda of challenging their employers against arbitrary decisions to wantonly penalise labour. Thus, employer-employee relationships became fragmented, adversarial, contractual and transactional. Prolonged strikes and lockouts, accompanied by regular doses of violence were the order of the day and many companies even closed down their businesses because of repeated, protracted labour trouble. While every Indian privately blessed these union strikes since they struck at the very root of the British rule, industry in general floundered badly and anyone gaining employment in a factory was generally considered unfortunate. This mindset prevails even now and a recent example in Mumbai was the textile strike called in January 1982 which really finished the textiles industry. Over 80 mills were shut down and more than 150,000 workers were rendered jobless in one fell strike.

### **Welfare Officer**

To espouse the health, safety and welfare of workers employed in factories, the Factories Act was first enacted in 1881, i.e. over 135 years ago. The first version protected women and children and provided more safety and health measures. In 1911, a new version regulated hours of work. Thereafter, in 1934, it was once again revised to implement some of the recommendations of the Royal Commission on Labour. Finally, in 1948, the current version was enacted which applies to every establishment having a manufacturing process and employing 10 or more workers, with the aid of power. Every factory employing 500 or more workers must also employ a Welfare Officer. This authority became the next formal manifestation of the HR role and its incumbent was mandated with the responsibility to administer health, safety and welfare facilities for all workers employed within the factory. In a schedule to the Factories Act, the welfare officer’s job description is also succinctly stated.

### **Labour laws in India**

Based on the directive principles of state policy and the principles of natural justice as enshrined in the Indian Constitution, several other statutes were enacted since independence. Moreover, all the laws which the British government had put in place before 1947 were broadly adopted by independent India after being suitably amended.

While it was obviously a time for rejoicing and the celebration of freedom from British oppression, everything British had to be destroyed, eliminated or deleted since it was either bad, or wrong, or patently anti-Indian. In this purge, many laws were either repealed or underwent suitable modifications/alterations to essentially sanitise and Indianise them. They now dominate the landscape of employer-employee relationships by legal enforcement. Since independence, the administration of these laws has been the key role and responsibility of the HR functionary. An illustrative but not exhaustive list of these statutes is as follows:

- Factories Act 1948
- Bombay Shops and Establishments Act 1948
- Port and Dock Workers Act 1948
- Mines and Plantations Workers Act 1952
- Working Journalists Act 1955
- Contract Labour (Regulation and Abolition) Act 1970
- Industrial Employment (Standing Orders) Act 1946
- Employees Provident Fund and Miscellaneous Provisions Act 1952
- Employees State Insurance Act 1948
- Employees Compensation Act 1923
- Payment of Wages Act 1936
- Payment of Bonus Act 1965
- Payment of Gratuity Act 1972
- Minimum Wages Act 1948
- Maternity Benefits Act 1961
- Apprentices Act 1961
- Indian Trade Unions Act 1926

In the 1950s, 1960s and 1970s, therefore, HR was all about managing labour laws and every HR practitioner had to know this subject backwards. If any candidate appeared for an HR job at any level, s/he was invariably asked questions about his/her level of familiarity/knowledge of various labour laws and the distinction between being selected or rejected often hinged on the candidate's answer to this question. Labour laws were introduced to regulate/control all aspects of employment primarily in view of the government's avowed socialistic and secular pattern of society, as protection against dominating, dictatorial employers for the protection of the downtrodden, deprived, depraved, under-privileged, cheated, neglected labour.

So, even today, the employment-related laws which were enacted as above mainly in the 1940s and 1950s still regulate and govern all aspects of the employment contract – terms and conditions of work, leave, holidays, salaries/wages, workplace benefits and facilities, restrictions on recruitment, termination, retirement, death, industrial relations, social security et al. Thus, ignorance of labour laws in the world of business was not an acceptable excuse for any HR practitioner because labour laws define minimum ethics. Statutory compliance is a necessary evil but it governs every aspect of organizational management. Till the decade of the 1980s, the role and responsibility of an HR functionary in any Indian company was therefore broadly distributed amongst the following three domains:

- Personnel matters – recruitment, selection, attendance, payroll, leave management, annual performance appraisals, increments, promotions, transfers, training and development initiatives, attrition, exit interviews, succession planning
- Employee welfare programmes – education, housing, transport, medi-care, health insurance, etc. in addition to compliance of statutory health, safety and welfare facilities/benefits/processes
- Industrial relations and statutory compliances – union-management negotiations, disciplinary actions, management of strikes, lockouts and litigation, dealing/negotiating with local, state and central government regulatory machinery

An HR functionary typically tended to specialize into one of these 3 domains, all of which were essentially maintenance functions, defined by industrial history, legacy and the statutes which dominated the Indian manufacturing business since its fledgling beginnings. Until the 1980s, HR's main task was consigned to managing only the unionized cadre of employees – work which was largely reactive, transactional, routine, tradition and maintenance-oriented. Thus, the business owners, CEOs, senior management and most other line managers perceived HR as an obstacle generator, detached rule-maker, activity-focused and, perhaps a confrontationist in approach.

### **A rude awakening – Indian economy in a tail-spin**

In mid-1991, India's economy experienced a cataclysmic avalanche – a crisis when India's business, commerce and industry was pitch-forked into a sink-or-swim cauldron. Soon after Rajiv Gandhi was assassinated, the Indian government headed by P V Narasimha Rao faced the challenge of survival due to large and growing fiscal imbalances during the 1980s. By 1985, India started having balance of payments problems and, by the end of 1990, the country was in dire economic straits and close to default, its central bank refused new credit and our foreign exchange reserves dwindled to a point where India could barely finance three weeks' worth of imports.

This led the government to airlift national gold reserves as a pledge to the International Monetary Fund (IMF), in exchange for a loan to cover these balance of payment debts. With India's foreign exchange reserves showing \$1.2 billion in January 1991 and these had depleted by half in June that year, there were just enough reserves to last about 3 weeks of essential imports. India's economy now stood on the edge of a precipice since it was defaulting on its external balance of payment obligations and was only 3 weeks away from a fatal slip downhill.

Suddenly, every Indian company worth its salt had to awaken from its slumber since it was forced to be, or become, either good enough to compete in the global marketplace or perish. TQM, quality circles, ISO standards, etc became the new mantras and cornerstones on the world's business battlefield and a company's product and/or service offerings had to consistently meet and exceed global quality standards, or else their customers would happily go elsewhere. It was a time when companies had to "shape up, or ship out" and HR and manufacturing joined hands in a concerted effort to bear the torch for every company's quality awareness bandwagon, along with all associated initiatives for training and education. This drove HR and manufacturing to become the true champions of business resurgence and play business partners, in order to help the business to grow and prosper. The almost concurrent and steep upward trajectory of technology also aided in creating several systems and processes which could be activated remotely. This eminently explains why and how mundane HR-related tasks like attendance, payroll, leave, etc could be conveniently outsourced.

### **Where to, from here?**

If we look at the role expectations of HR from the perspective of the CEO of any company, what must this incumbent really do? The CEO wants his/her company to achieve its business purpose by exceeding the needs of its stakeholders, by matching its resources to the business opportunities ahead, by being responsive to the environment in which it operates and by continuously innovating to remain competitive. HR has a prominent role to play here in terms of how the organisation's talent pool responds to these challenges and opportunities and could soon become the true Change Master – the torch bearer for the growth and success of the enterprise.

HR in India has faced several paradigm shifts in its journey from being a "Jobber", through "Labour Officer", "Welfare Officer", "Personnel Officer", "HR Executive", "Conscience Keeper" and, soon, to become a "Change Master". The 20<sup>th</sup> and 21<sup>st</sup> centuries have truly been eras of change and the flavours of the moment are designations like "Talent Manager", "Human Capital Manager" and "Internal Support Manager".

One of the most crucial and inherent competencies of a good HR incumbent will be his/her ability to quickly adapt to changed circumstances and environments and it has demonstrated its capability to mould itself eminently to suit the needs of the organisation however challenging it might be.

*“In times of change, LEARNERS inherit the earth, while the LEARNED find themselves beautifully equipped to deal with a world that no longer exists” –*

*Unknown*

---

<sup>viii</sup> Pradeep Gogte, Assistant Professor – Rizvi Institute of Management Studies & Research, pradeepgogte@rmi.rizvi.edu.in

# Impact of Big Data Phenomenon on Banking Sector: A Practitioner's Approach

Sanjay Gupta<sup>ix</sup>

---

## Abstract

*The Big Data analytics is a phenomenon that comes to the rescue of banking industry, considering the humongous amount of data that is stored in their repositories. It is helping banking industry in understanding the flow of money and customer's behavior. Due to big data analytics, banks can recognize the meaningful patterns and thus generate intelligence for the business. Banks are beginning to harness the power of data to understand fraud management and risk management. This paper aims to highlight the importance of big data and its analytics in banking sector.*

**Key Words:** *Big Data, Data Analytics, Banking Sector, Hadoop, HDFS, GFS, Query Language, Risks of Big Data*

---

## 1.0 Introduction

The banking industry is one of the largest adopters of Big Data technologies such as Hadoop and its ecosystem. Big data has been making all the headlines over the last few years and it is widely accepted fact that combining and processing all the internal and external data was simply not possible using traditional management and analytical tools before the age of Big Data. The technology behind Big Data is undeniably Hadoop, a software ecosystem designed to allow the query and statistical analysis of large and semi-structured data. Hadoop's ability and flexibility to handle increasingly complex data has unlocked new opportunities for extracting value and business insights from potentially massive amounts of organizational internal data. Big Data has also allowed the possibility to enrich the internal data with equally vast amounts of semi-structured external data from public sources and social media, maximising data value potential even further.

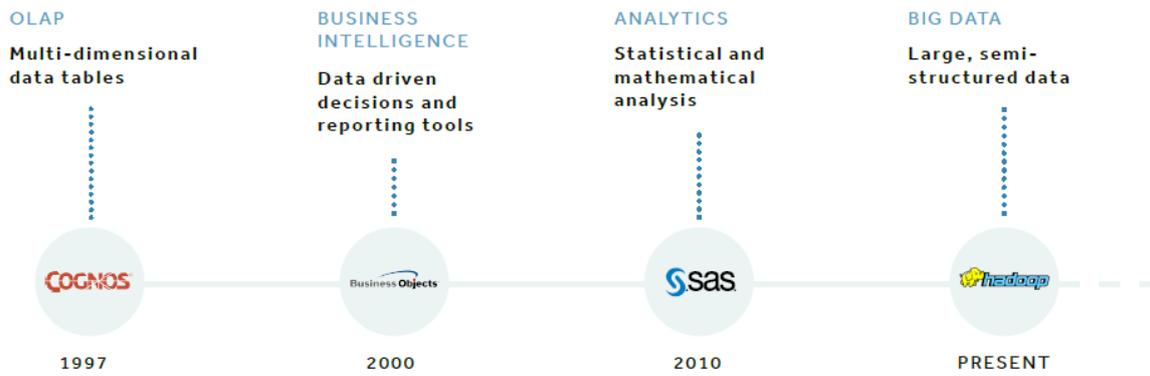


Figure 1: Source: Big Data in Banking for Marketers ([www.evry.com](http://www.evry.com))

## 2.0 Objectives

The main objectives of this article are as follows:

- To describe the concept and implications of Big Data.
- To show possible benefits of Big Data in Banking
- To highlight Risks associated with Big Data

## 3.0 Research Methodology

An exploratory research was undertaken to understand the impact of Big Data phenomenon on organizations in a chosen Industry. The thrust of the study is on Banking sector alone. Other Organizations are beyond the ambit of this research.

Case study has been used as a Research Design. Type of data used for the study is secondary. Sources of secondary data tapped for the purpose include research journals, company websites, online data sources etc.

The approach used for presenting and analysing information is as follows: Various secondary data sources were tapped to gather information on way Big Data has impacted organization on various parameters viz. costs, security, resource usage, organizational flexibility. The information collated from different sources is presented in the form of 2 case studies pertaining to 2 different banks.

## 4.0 Concept of Big Data

Big data is a term that describes the large volume of data – both structured and unstructured – that floods a business on a day-to-day basis. But it's not the amount of data that's important. It's what organizations do with the data that matters. Big data can be analyzed for insights that lead to better decisions and strategic business moves.

While the term “big data” is relatively new, the act of gathering and storing large amounts of data for eventual analysis is ages old. The concept gained momentum in the early 2000s when industry analyst, *Doug Laney* of META group (now Gartner) articulated the now-mainstream definition of big data as the 3 V’s (Volume, Velocity & Variety), described as follows:

**Volume** – Organizations collect data from a variety of sources, including business transactions, social media and information from sensor or machine-to-machine data. In the past, storing it would’ve been a problem – but new approaches (such as Hadoop Distributed File System) have eased the burden.

Banks are no exception, where petabytes of data is getting generated easily. Most of the data is coming from the humongous amount of online transactions, authentications, authorizations, logs, audits, data mining, data analysis, backups, mirroring and so on. With the way data is accelerating, the traditional ways of managing the data is fast becoming obsolete.

**Velocity** – Data streams in at an unprecedented speed and must be dealt with in a timely manner. RFID tags, sensors and smart metering are driving the need to deal with torrents of data in near-real time.

The situation for the Banks is grim, as the financial data and applications are mission critical, and not even one transaction should be lost. Banks must be prepared to accommodate such Big Data at all costs.

**Variety** – Data comes in all types of formats – from structured data in traditional databases to unstructured text documents, email, audio, video, stock ticker data, financial transactions and many more.

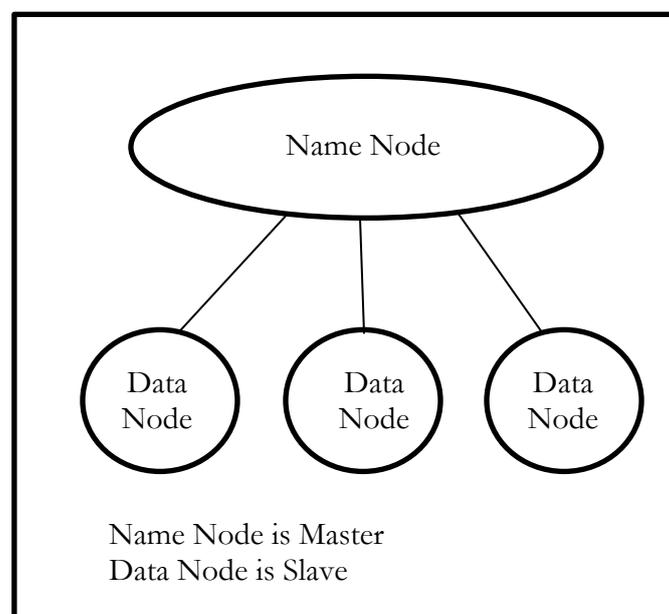
The Banks may be prepared for storing and processing the text data, but what if the incoming data is in different format such as XML, PDF, XLS, DOC, JPG, MP3, MP4, AVI and so on. Such type of structured and unstructured data may be generated from various sources. For instance, sometimes the authentication can be based on the finger prints or other bio-metric data. There are various cameras in the Banks premises, ATMs, and even the data in the form of video has to be stored.

## 5.0 Hadoop and Eco-System to solve Big Data problem

Hadoop provides two things: Storage & Compute. Storage is provided by Hadoop Distributed File System (HDFS). Compute is provided by MapReduce. Hadoop is an open-source implementation of Google's distributed computing framework (which is proprietary). It consists of two parts: Hadoop Distributed File System (HDFS), which is modeled after Google's Distributed File System (GFS), and Hadoop MapReduce, which is modeled after Google's MapReduce.

MapReduce is a programming framework. MapReduce organizes the multiple computers in a cluster in order to perform the required calculations. It takes care of distributing the work between computers and of putting together the results of each computer's computation. Equally important, it takes care of hardware and network failures, so that they do not affect the flow of the computation. Implementer in turn, has to break the problem into separate pieces which can be processed in parallel by multiple machines, and also provide the code to do the actual calculation.

No less important than Hadoop itself, is its ecosystem. The Hadoop Distributed File System (HDFS) provides unlimited file space available from any Hadoop node. HBase is a high-performance unlimited-size database working on top of Hadoop. Hive defines a simple SQL-like query language, called Query Language (QL) that enables users familiar with SQL to query the data. Pig allows manipulation of large volumes of data, analyse them, and create new derivative data sets. Internally it creates a sequence of MapReduce jobs, and thus enables using this simple language to solve pretty sophisticated large-scale problems.



**Figure 2: Hadoop Architecture**

As shown in the figure 12, in an HDFS cluster, there is ONE master node and many worker nodes. The master node is called the Name Node (NN) and the workers are called Data Nodes (DN). Data nodes actually store the data. They are the workhorses. Name Node is in charge of file system operations (like creating files, user permissions, etc.). Without it, the cluster will be inoperable.

### **Application of Big Data in Banking Industry**

Banks generate and compile exabytes of data a year, including structured data such as customer demographics and transaction history and also unstructured data such as customer behaviour on websites and social media.

Data sets have grown immensely in terms of size, type and complexity, and are impossible to work with using traditional database management tools. Many large financial and banking

Institutions are reaching the upper limits of their legacy systems and are now seeking fresh analytics and framework solutions.

The Big Data either acquired using external source or generated internally is to be used in a manner that it meets the objectives of the bank. The objective could be either to reduce the cost, minimize the processing time, retain customers, identify the most valuable customer and prevent the fraudulent transactions.

### **Risks of Big Data**

Knowledge is power and with Big Data comes the promise of equally Big Knowledge. Furthermore, Big Data means the mining and transmitting of information, and information of any kind, particularly regarding personal details, must be handled responsibly. Big Data has faced criticism for overstepping privacy boundaries. Ensuring Big Data projects retain their integrity and trust is critical to avoiding public embarrassment, mistrust, and liability.

## 6.0 Case Study

### 6.1 “JPMorgan uses Hadoop to leverage Big Data Analytics?”

*<https://www.dezyre.com/article/how-jpmorgan-uses-hadoop-to-leverage-big-data-analytics/142>*

#### **Organization Case**

With more than 150 petabytes of data, approximately 3.5 billion user accounts and 30,000 databases, JPMorgan Chase is definitely a name to reckon with in the financial sector. JPMorgan offers its financial services in commercial banking, private banking, investment banking, asset management, security services and treasury - in more than 100 countries across the globe. The corporate and investment banking giant offers a wide range of financial products and services to meet the banking needs of its customers - individuals, other financial institutions, governments and companies.

#### **Big Data Solution**

JPMorgan have millions of customers but can now operate effectively largely due to big data analytics leveraged on increasing number of unstructured and structured data sets using the open source framework – Hadoop. Big data analytics helps JPMorgan identify the best set of products they can deliver to their customers.

JPMorgan combined the transaction data of about 30 million customers with publicly available US economic statistics and could successfully read US Economy by leveraging Big Data analytics. JPMorgan is not only mining the trading data for analysis but is also tracking the phone calls and emails to identify the probabilities of any fraudulent activities that are impossible to detect. JPMorgan by using Big Data analytics could give clear perspective of credit market data, effective cash management and better customer service.

## 6.2 “Big data analysis a top priority for CBA chief executive Ian Narev”

*<http://www.smb.com.au/business/banking-and-finance/big-data-analysis-a-top-priority-for-cba-chief-executive-ian-narev-20140814-103zym.html>*

### Organization Case

As customer relationships are disrupted by technological upheaval in the banking industry, the analysis of “big data” has become one of the biggest strategic focuses for Commonwealth Bank of Australia (CBA) chief executive Ian Narev. Initially, CBA is using big data to analyse customer risk. “It can get better risk assessment by analysing businesses' ongoing cash flow performance, to have early warning of risk challenges,” Mr Narev said in an interview after delivering the bank’s record \$8.68 billion full-year profit. CBA has five million online customers and its applications are used by 2.6 million people. It is also planning to push new proprietary technology to point-of-sale customers.

## 7.0 Conclusion

Big data is the reality and is going to stay there for a long time. It is important to note that the enterprises and banks are taking big data seriously as the banks have to face the stiff competition not only from the public sector banks but also from the private and multinational banks. The banks needs to continuously adopt new technologies and system to remain ahead of the competition and big data is going to be a boon for this.

Big Data analytics is now being implemented across various spheres of banking sector, and is helping them

Deliver better services to their customers, both internal and external

Improve on their active and passive security systems.

Use spending patterns of their customers and identify potential customers for selling financial products.

## Bibliography

- ‘What is Big Data and Why Do Organisations Need It?’ Retrieved from <http://www.zettaset.com/index.php/info-center/what-is-big-data/> on 31 January, 2017
- (13-Jul-2015). JPMorgan uses Hadoop to leverage Big Data Analytics?, Retrieved from <https://www.dezyre.com/article/how-jpmorgan-uses-hadoop-to-leverage-big-data-analytics/142> on 2 February 2017
- Chandani, Arti, Mehta, Mita, Neerja, B., & Prakash Om (, March 2015) ‘Banking on big data: A case study’, ARPN Journal of Engineering and Applied Sciences, VOL. 10, NO. 5,
- Datameer 3 top big data use cases in financial services, Retrieved from [www.datameer.com/pdf/eBook-3-Top-BigData-UseCase-in-Financial-Services.pdf](http://www.datameer.com/pdf/eBook-3-Top-BigData-UseCase-in-Financial-Services.pdf) on 1 February 2017
- Deutsche Bank (16 October 2015) ‘Big Data, How it can become a differentiator’, Retrieved from
- EVERY Whitepaper, Big Data in banking for marketers, Retrieved from <https://www.evry.com/globalassets/insight/bank2020/bank-2020---big-data---whitepaper.pdf> on 1 February, 2017
- Eyres, James(15 August 2014) “Big data analysis a top priority for CBA chief executive Ian Narev”, Retrieved from <http://www.smh.com.au/business/banking-and-finance/big-data-analysis-a-top-priority-for-cba-chief-executive-ian-narev-20140814-103zym.html> on 1 February 2017
- <http://www.cib.db.com/insights-and-initiatives/flow/35187.htm#gsc.tab=0> on 30 January 2017
- Kerzner, Mark & Maniyam, Sujee, Hadoop Illuminated, (An online book). This book is freely available. It is licensed under Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License Retrieved from [http://creativecommons.org/licenses/by-nc-sa/3.0/deed.en\\_US](http://creativecommons.org/licenses/by-nc-sa/3.0/deed.en_US) on 7 February 2017
- Khambadkone, Krish., Big data technology use cases for banking and financial services, Tata Consultancy Services, TCS. Retrieved from , [http://www.tcs.com/resources/white\\_papers/Pages/Big-Data-Use-Cases-BFS.aspx](http://www.tcs.com/resources/white_papers/Pages/Big-Data-Use-Cases-BFS.aspx) on 1 February, 2017

---

<sup>ix</sup> Sanjay Gupta, Assistant Professor – Rizvi Institute of Management Studies & Research, [sanjaygupta@rmi.rizvi.edu.in](mailto:sanjaygupta@rmi.rizvi.edu.in)

## **Need to Promote Micro Equity Finance in India**

### **(Discussion Paper)**

**Syed Zahid Ahmad\***

---

#### **Micro Equity Finance as new product for financial reform:**

Though India is doing better in financial inclusion, still much more is expected from the Government and bankers side. Considering the specific needs of the financially excluded section of Indian economy, Micro Equity Finance should be introduced as USP in India to counter side effects of demonetization and denial for Islamic banking. The schemes like PMJDY may help connecting public with banks, but inclusive growth cannot be assured unless the poor are appropriately financed to allow poor increase their income. There are three basic modes of finance; debt, lease or equity. While debt based finances are mostly provided by banks and NBFCs; leasing are executed by asset finance companies and equities may be availed through stock markets. Equity in general is understood as tradeable stocks in the capital market. But recent positive trend in growth of private equities outside stock market to finance the unlisted companies is opening new dimensions to deal with equity business. Considering huge number of micro and tiny establishments in India, proposed '*Micro Equity Finance*' may be pivotal to help 50 millions micro and tiny enterprises existing in the informal sector. These establishments are deprived of equities; and also not favoured customers for Indian banks or MFIs.

#### **What is Micro Equity Finance?**

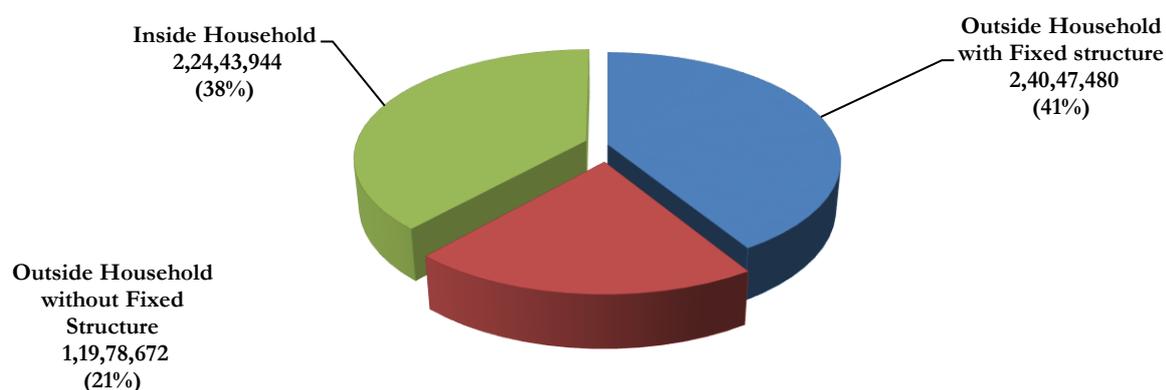
Micro Equity Finance may be defined as extending financial support to micro and tiny enterprises on terms of proportionately sharing associated profit / loss in enterprise existing in the informal sector. It may otherwise be categorized as equity financing with amount less than a certain limit (say Rs.10,00,000) to micro and tiny sized enterprises. The amount of finance and mode of repayment may be designed according to the cash flow of business catered by target customer. Under micro equity agreement; depending upon cash flow of particular business, the customer may be allowed to buy back investor's equities along with paying returns periodically, or otherwise be allowed to pay profit periodically and return the whole amount of investment at lump sum after expiry of agreement period.

### Target customer’s segment for Micro Equity Finance:

Basically the target customer’s segment for Micro Equity Finance may be micro and tiny sized establishments deprived of equities through stock market or private equity intermediaries. Their financial need in any case should not exceed Rs. 10,00,000. These establishment’s net-worth should not be more than Rs. 25,00,000. On liability side, all debts including trade credits etc. should not exceed more than fifty percent of the amount sought through micro equity finance. Preferably the establishments should have a track record of doing business for minimum 24 months.

### Fifty Nine percent establishments are home based or without fixed structure:

According to sixth Economic Census (2013) out of 58.5 million establishments, about 77.6% establishments (45.36 million) were engaged in non-agricultural activities (excluding public administration, defence and compulsory social security activities) while the remaining 22.4% establishments (13.13 million) were found to be engaged in agricultural activities (excluding crop production and plantation). In non- agricultural activities manufacturing is providing employment to 30.3 million (23.1%) persons followed by retail trade with 27.19 million persons (20.7%). So, when we endeavour for inclusive growth by calling Sabka Saath Sabka Vikas we should actually need to know how Indian work force are placed into our economy.



**Figure 1: Number and Percentage of Establishments by Type of Structure**  
 Source: <http://pib.nic.in/archieve/others/2014/jul/d2014073001.pdf>

Around 8 lakhs companies are registered under Ministry of Corporate Affairs (MCA). This figure is just 1.36 percent of total number of establishments reported by Sixth Economic Census of India. In terms of paid up capital 85% companies are poor and thus share less than 3% of total paid up capital of all registered companies worth Rs. 18,12,258.70 crores whereas less than one percent companies shares around 78% of total paid up capitals.

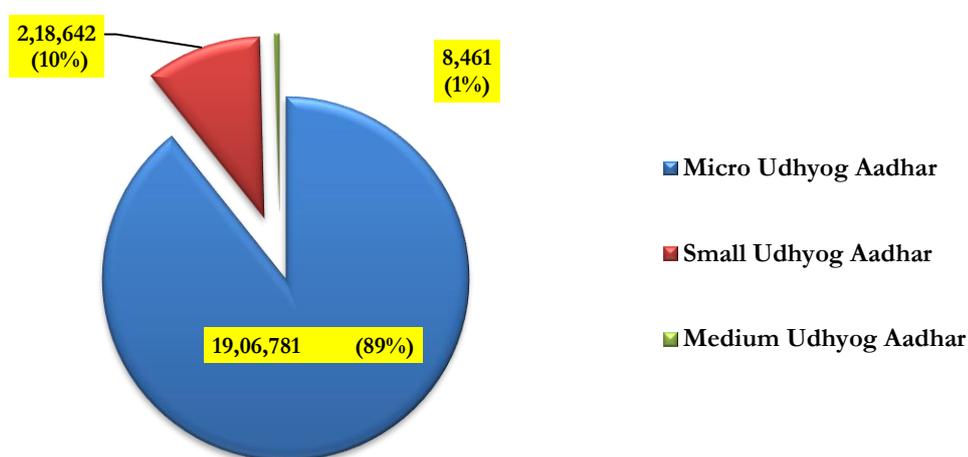
Capital Range	Number of Companies	Paid up capital	% of total Companies	% of Total capital
Less than Rs. 50 lakh	6,70,875	46,244.93	84.55%	2.55%
50 lakh to 1 crore	43,671	33,770.57	5.50%	1.86%
1 crore to 5 crore	54,573	1,27,131.33	6.88%	7.02%
5 crore to 25 crore	17,815	1,94,714.29	2.25%	10.74%
25 crore to 100 crore	4,567	2,19,988.04	0.58%	12.14%
100 crore to 300 crore	1,205	2,03,695.68	0.15%	11.24%
300 crore and above	740	9,86,713.85	0.09%	54.45%
<b>Grand Total</b>	<b>7,93,446</b>	<b>18,12,258.70</b>	<b>100.00%</b>	<b>100.00%</b>

**Table 1: Paid up capital range wise distribution of companies Limited by Shares**

Source: - <http://www.mca.gov.in/MinistryV2/paidupcapitalreports.html>

**50 millions neglected micro and tiny establishments:**

The Ministry of MSME’s Annual Report 2014-15 suggests that 84% establishments are MSMEs with market value (of their total assets) worth Rs. 13,63,700.54 crores. So, around 75% of paid up capitals for companies registered under MCA may be owned by MSMEs. Only 3.6% establishments are registered under Udh yog Aadhar. Out of total registered 21,33,885 Udh yog Aadhar as much as 89% (19,06,781) are Micro enterprises. As much as 56% (11,90,264) establishments registered under Udh yog Aadhar are not into Manufacturing but services. The findings of Sixth Economic Census suggests that 35.41% (1,60,66,507) establishments are into retail trade activities followed by 22.77% (1,03,31,385) into manufacturing. Whenever ministry of MSME declares specific scheme related to manufacturing, 56% MSMEs miss to get any benefit from that. Unfortunately no specific scheme is there to help India’s micro and tiny establishments dealing in trade activities.



**Figure 2: Registered Udh yog Aadhar in India**

### Allowing micro and tiny establishments to access equities:

To support Indian MSMEs Government of India helped establishing special stock exchange for SMEs. But the progress so far is not satisfactory. The guidelines and procedure in SME exchange are so difficult that not even one percent MSMEs succeed to avail equities. There had been no trading in SME exchange during 2015-16; nevertheless total 50 listed companies raised amount of Rs. 379 crores through SME platform compared to Rs. 278 crore raised through 39 issues in 2014-15, registering an increase of 36.6 per cent. Observing the SME stock exchange as unfavourable route to put equities into Indian MSMEs, the foreign investors started preferring the FDI route to invest equities into unlisted companies. While Indian stock exchange observed 6.5% withdrawal of market capitalisation during 2015-16 compared to 2014-15, there is 36% growth in FDI during April to September 2016. This shows that while stock market is failing to protect capital from stock markets, private foreign investors now prefer to invest equities into unlisted Indian companies on their own terms. Here we should feel the need to ease up the norms and regulation for drawing more private equities especially for micro and tiny enterprises.

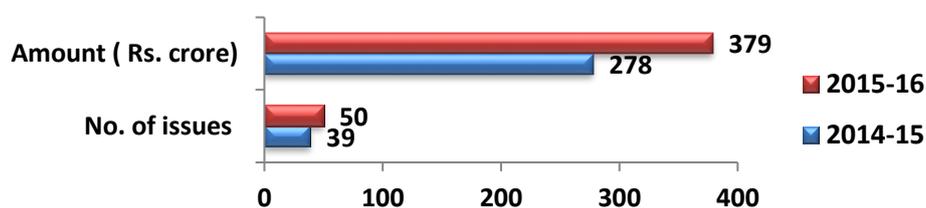


Figure 3: Resource Mobilisation through the SME Platform

If financial intermediaries can succeed drawing Rs. 1,44,674 crores in 6 months as private equities for unlisted Indian companies after Indian stock market lost Rs. 19,36,844 crores last year, we hope that liberalized regulations may support mobilization of required micro equity funds for more than 50 million micro and tiny establishments in India. This may also be a big opportunity for Indian banks to finance these establishments after observing lower NPAs through smaller industries and agriculture sector compared to medium and large industries. There is need that banks should also invent new financial product to focus upon micro enterprises, micro equity could be the most suitable product to help the micro establishments at one hand along with allowing the banks to earn more over investments without exploiting the poor through higher interest / usurious practices.

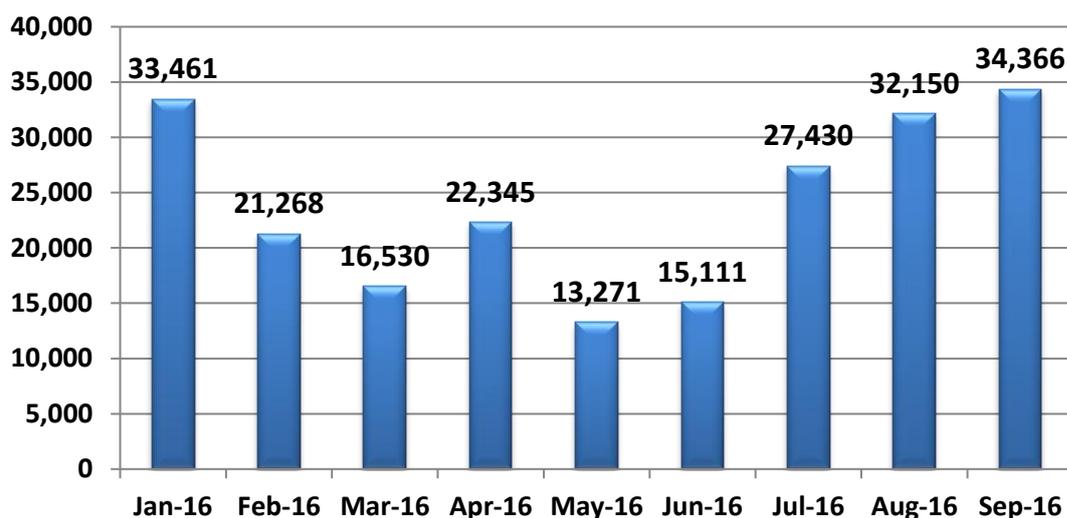


Figure 4: FDI Equity Inflow in Rs. Crores during January to September 2016

Government has done much to ensure financial inclusion and to support MSMEs in India, but still around 50 millions micro and tiny size enterprises are deprived of financial scheme announced by the Government. They are too small in size to approach the specified MSE stock exchange. In most cases, the financial need of millions of micro and tiny enterprises (ranges between Rs. 1 to 5 lakhs) is falling below average finance extended by banks and above finance limit for MFIs. So, they are neglected segment in Indian finance.

Hope the Government while promoting digital money, may also like to support these neglected enterprises. If Government could help them by mode of micro equity fund through available network of banks, MFI and BCs in India, we may see upsurge in registered Udyog Aadhar in near future. By now only 3.6% establishments are registered under Udyog Aadhar. Ideally this number should be at least 80% of existing establishments reported by Economic Census. Besides Government support through Micro Equity Fund, the Banks can initially pay special focus to support these establishments.

Two Different modes of Micro Equity Finance:

There could be following two modes to extend Micro Equity Finance –

- Banker may invest fractional share in micro enterprises owned by any entrepreneur with option to buy back investors share periodically. Till the time investor possess unit share in the enterprises, the entrepreneur is supposed to proportionately share the earned profit / loss. This would allow the banker / financier to earn profit through investments along with optional disinvestments on monthly basis or otherwise after expiry of agreement period.

- Any asset (say Shop) be jointly purchased by the entrepreneur and banker; allowing the entrepreneur use the shop after paying monthly rent to the banker against outstanding unit shares in that asset. The entrepreneur should be allowed by the banker to buy back bank's unit share in the asset at varied price on monthly / weekly basis. The entrepreneur should pay varied amount as rent to the banker according to bank's outstanding share in the shop at particular month. After selling out all unit shares in the asset, the banker should execute release deed to transfer all legal rights in favour of the entrepreneur; and thereafter the entrepreneur need not require paying any rent to the banker.

### **Is there any observation report about Micro Equity Finance?**

Yes! BASIX Social enterprise group has already taken lead into pilot for Micro Equity Finance in Mewat district of Haryana where actual repayment rate by bank customers are hardly 20%. Contrast to this fact, the repayment rate by customers served through Participatory Micro Finance model in same geography is 99%. BASIX group started the pilot of Participatory Micro Finance in July 2011. They directly finance the livelihood of target customers instead of sanctioning loan on interest. This process involves buying and selling of commodities (after adding profit) to the customers and allow repaying the whole amount in installments. There were investments in assets by mode of diminishing partnership also. Recently this group initiated pilot project of micro equity in enterprises by mode of diminishing partnership wherein customers are allowed to buy back investors' share on weekly / monthly basis. Though this pilot is too small and incomplete to cite, interestingly so far the outcome of this pilot is far better than actually projected. Though like any cash driven activity, demonetization has also adversely affected the repayment in this model; nevertheless the retrieved profit is much higher than scheduled profit during June to December 2016.

### **Can Micro Equity Finance be used for financial inclusion?**

On 9<sup>th</sup> December 2016, the State Minister of Finance has dejected RBI's proposal to open Interest-free banking windows in Indian banks with object to achieve financial inclusion among those who are excluded for reason of interest component in banks. It was told that according to technical report of inter-departmental group, even to introduce selective Islamic banking products we need legal changes. Interestingly that technical report do suggests that there is no legal obstacle to execute equity finance.

Notably equity is most genuine mode under Islamic banking. For bank there is no legal obstacle to test micro equity finance in India. This may help assuring financial inclusion of those who are excluded due to interest component.

### **Economic advantages of Micro Equity Finance:**

Micro Equity Finance has added economic advantage over lending on interest terms because under micro equity finance, banker / investor may get higher return over investment compared to stipulated rate of interest. The average expected rate of return from micro equity finance may range between 15 to 30 percent on annual basis depending on identification of potential business activity. Moreover there could be provision to sell out outstanding financier's unit shares in jointly purchased assets at increased prices if customer decided to extend period to buy back investor's unit share in the sought asset. This would provide time for customer to buy back investor's share in the asset at one hand; and compensate the financier with increased value of price for unit share in the asset against extended time. So banks and financial institution ambitious to earn better return over finance compared to fixed interest over loans, may better promote micro equity finance.

### **Political advantage through Micro Equity Finance:**

Since the micro and tiny sized establishments are as much as 84% of total establishments in India, there is huge opportunity for the Government to announce special financial scheme for such enterprises. Keeping in mind that 36.19% of all the establishments in the country are home based establishments and 18.44% are operating from outside household without fixed structure, Government may induce such establishments by proposing micro equity finance enabling these enterprises own specific fixed structure (commercial fixed assets) Such announcement would directly benefit more than 50% workers in India. And importantly neither the Government would require to subsidize finance in this regard nor banks or financial institutions would find it risky to recover the investments because sought asset may stand as collateral against sought finances through use of product like diminishing partnership. But the Government would need to make sought regulatory changes making it viable to execute such products. Most important would be to treat receivable rent by banks from tangible asset at par to interest income and relaxation in stamp duty and registration fee while banks need to execute release deeds.

### **Banks should launch pilot of Micro Equity Finance:**

Considering limitations of various financial inclusion products (including JLG and SHG model) to reach needy micro and tiny establishments with affordable finance in India, it is not a bad idea to kick a pilot to test Micro equity Finance in India. Since NPAs are lower by smaller customers, banks should better focus more upon micro establishments.

Banks intend to do so may need to support from experienced group who have tested such kind of products in Indian economy.

They may require knowing about procedure involved in designing of product, identification of target customers, origination and evaluation of proposals, documentation, sanctioning of required finance, monitoring of financed projects, book keeping and accountancy along with recovery through monitoring the profitability in the livelihood financed.

	Mar-13	Mar-14	Mar-15	Sep-15
1. Agriculture	8.2%	7.4%	7.5%	7.9%
2. Industry (Micro)	10.2%	10.0%	10.5%	12.3%
3. Industry (Small)	13.2%	13.3%	14.8%	16.8%
4. Industry (Medium)	20.2%	23.6%	27.0%	31.5%
5. Industry(Large)	16.2%	19.0%	23.0%	23.7%

**Table 2: All Banks Gross NPAs+ Restructured + Write Off Assets a % of total assets**

Source:- <https://rbidocs.rbi.org.in/rdocs/Speeches/PDFs/PPT1102166AB61D0F35C546539EF4DCD3C83B3668.pdf>

### **Digitalization of Money may be supported through Micro Equity Finance**

Government is making attempt to make India less cash economy by inducing majority of people to transact without cash so that maximum economic transactions could be recorded. If we like that micro and tiny enterprises should also disclose their all transactions and pay liable taxes, we need to evaluate the available institutional support for them. If we really want to make Digital India a success where corruption should not have any room, we need to first reform the tax structure, and arrange equity finance for them before inducing people transact through digital money. Micro enterprises are provided smaller amount of credits by micro finance institutions at interest rate over 24%; otherwise by private money lenders @ more than 36% annual interest. How can we expect that after paying so high cost for loans, these micro enterprises would be able to enough to meet their all expenses and earnestly pay all taxes? Until we propose easy tax structure along with supply of affordable finance, we would be otherwise forcing them to cheat the system by manipulating their transactional accounts and hide taxes. Unless majority of million micro and tiny establishments are allowed to avail micro equity along with tax reforms, it is very difficult that we can fight corruptions in India. When we would be able to support our millions of micro and tiny establishments through equity funds, we may ask them to make maximum transactions without cash and induce them to pay all liable taxes.

**Summing up:**

Hope invention of product like micro equity finance would help boosting financial inclusion mission to assure inclusive growth in India without socio-political conflict. Banks may hopefully find it most effective product to finance customer who have lower capital / asset base, but higher profitability prospects in their businesses. Micro equity finance may enable customers own higher value assets without adding debt burdens. It would also allow banks earn better rate of return compared to common debt based products where interest is fixed. So besides attaining better financial inclusion through Micro Equity Finance, banks are likely to earn better profitability compared to use of common loan products.

There is also chances that banks taking lead into piloting micro equity finance may seek attention of potential investors looking to invest in Islamic banking / finance in India because micro equity finance in core Islamic financial product designed in secular manner to suit Indian economy as well as draw attentions of investors seeking opportunity to invest in Islamic banking / finance in India. Banks may also propose this product to the investors with an assurance that their investment by mode of subscribing bank's own capital may be utilized to extend micro equity finance in India. Thus financial product like Micro equity Finance and Diminishing Partnership may be used as innovative tools to develop scope for bankers to raise capital investments from potentially larger investors based in gulf economies.

---

<sup>x</sup> Syed Zahid Ahmad, Founder – Economic Initiatives

## Summary Report of the Proceedings of Conference on Revisiting Financial Sector Regulations in India

Rizvi Institute of Management Studies and Research organised a high level conference on Revisiting Financial Sector Regulations in India on September 3, 2016. Many CXOs, scores of industry professionals and academicians from various institutes in Mumbai and outside participated in the conference. A lively interaction took place among the speakers and participants regarding the future architecture of India's financial system.

The conference started with a brief presentation by Dr. Shariq Nisar, Professor, Rizvi Institute of Management Studies & Research on current financial regulatory architecture in the country and traced its development over years. He highlighted three distinct phases of financial sectors development in India:

- Pre-Independence phase (i.e. till 1947). This period was characterised by mainly private ownership of financial institutions with focus on protecting British interest. This period also witnessed the rise of *Swadeshi* movement which led to foundation of financial institutions mainly catering to nationalist interest.
- Post-Independence Phase upto initiation of economic reforms (1947-1990). Post-independence the major concern of financial regulation moved to attain social justice and improved financial inclusion. Accordingly, there was large scale nationalization of financial institutions, both in the banking as well as insurance sector.
- Post economic reform period (from 1991 onward). Third phase of financial regulations began with the economic reform in 1990s when the focus moved back towards achieving efficiency with Liberalisation, Privatisation and Globalisation becoming the new mantra of financial sector.

Dr Shariq noted in his presentation that India's financial sector has undergone changes in ownership and objectives. He also explained the background and the aim for which Financial Sector Legislative Reforms Commission was established by the government in 2011. He briefly touched upon gap, overlap, regulatory arbitrage and conflict of interest issues faced in the current regulatory environment.

Keynote of the Conference was delivered by Justice (Retd.) B.N. Krishna – Chairman of the Financial Sector Legislative Reforms Commission (FSLRC). Justice Srikrishna began his speech by explaining the background in which the Commission was established and how his background in judiciary helped him look at this issue dispassionately and from the point of view of consumer protection and the process of law. Keynote Speaker emphatically pointed to the fact that financial sector exists to serve consumer and regulations exist to protect the consumer and not vice versa. He also believed his lack of familiarity or affiliation with any financial sector institutions allowed him to remain unbiased and inquisitive throughout his work.

Justice Srikrishna highlighted that Indian Financial System is governed by about 60 Acts. Majority of them were made years ago; some during British rule prior to independence. For instance, RBI Act was made in 1934, Insurance Act in 1938. Amendments were made thereafter just to patch the leakages or to plug in the loopholes. Regulatory agencies work independently without any linkage between each other, which has led to regulatory gap, overlaps and regulatory arbitrage. Ultimately, the consumer suffers due to this. The first set of questions that the Commission dealt with was about the purpose of the legal financial framework. Regulation according to him is not an end in itself but it exists in order to address market failures. From this point of view, nine components were envisioned: Consumer Protection, Micro-Prudential Regulation, Resolution, Capital Controls, Systematic Risk, Development and Redistribution, Monetary Policy, Public Debt Management, Contracts, Trading and Market abuse. FSLRC focused on Transparency, Independence and Accountability.

Justice Srikrishna also highlighted the exchanges he had with several very senior Indian finance experts and other regulators like FSA of UK and MAS of Singapore. He then moved on to highlight the key recommendations of FSLRC Report such as:

- Reserve Bank of India (RBI): As the monetary authority, banking regulator and payment system regulator.
- Unified Financial Regulatory Agency: Merging Securities and Exchange Board of India (SEBI), Insurance Regulatory and Development Authority (IRDA) and other regulators to make one financial regulator for the rest of the financial sector.
- Unified Resolution Corporation: A deposit insurance-cum-resolution agency by merging DICGC into it.
- Public Debt Management Agency: This function to be taken out from RBI and handled by an independent agency to avoid conflict of interest between government and central bank.

- Financial Redressal Agency: One stop shop to address consumer complaints against any type of financial institution.
- Financial Sector Appellate Tribunal: To hear appeals against any financial regulator.
- Financial Sector Development Council (FSDC): A statutory mechanism for attaining macro objectives such as inter regulator coordination, looking at systemic risk and attaining financial development goals.

Justice Srikrishna also spoke at length about the criticism raised against certain recommendations of FSLRC. He also shared that some regulators in private praised his report while their public posturing was different. He emphasised on the need to have a holistic approach to financial regulations as against present case of piecemeal approach. He strongly recommended Regulators consulting stakeholders in the public domain before passing a regulation. He ended his speech by pointing out that many of his recommendation are slowly being implemented by the government.

Mr. Haris Ansari, former member (Non-Life) IRDA and Chair Professor, National Insurance Academy (NIA), while representing insurance sector discussed the challenges faced by the Indian Insurance Industry. He said, insurance penetration and Development in India are abysmally low. India is facing loss of \$9-10billion annually due to extreme weather conditions. 80 percent of these losses remain uninsured. There is low level of financial inclusion in India. There is no unified law relating to Insurance. There are three different laws: Insurance Act, 1938; IRDA Act, 1999; Insurance (Amendment) Law, 2015 and there is a need for unification of these laws. He further added that every One percent increase in insurance penetration translates into an increased investment equivalent to Two percent of national GDP. He also touched upon the global best practices as cardinal benchmarks available in leading global insurance markets. He also discussed about the required policy agenda i.e. Insurance vision across government agencies and regulators; the essential pre-requisites and required policy agenda. Mr. Ansari also stressed upon the promotion of ease of doing insurance business in India.

Dr. G. Mallikarjun, GM-DNBR, RBI, discussed about the financial sector - banking, non-banking institutions, financial markets and payment and settlement systems - their evolution and regulation by RBI. He discussed the present role of RBI as envisaged in the preamble of RBI Act and the role earmarked for it in Indian Financial Code of FSLRC. He stated that Reserve Bank would continue "...to regulate the issue of Bank Notes and keeping of reserves with a view to securing monetary stability in India and generally to operate the currency and credit system of the country to its advantage."

The non-banking system is likely to be regulated by Financial Authority though the definition of banking leaves scope of regulation of some categories of NBFCs like Nidhis by RBI. Role of banker to Government would continue though Debt Management, which was a legacy from SBI would be hived off to Public Debt Management Agency. The appeals which were hitherto handled by Central Government would be handled by FSAT. The PCA framework presently in vogue for banks only would be extended to other systemically important financial institutions and financial service provider to ensure restoration and resolution before need for deposit insurance kicks in through the Resolution Corporation. The risk, however, is that the Resolution Corporation could extend deposit insurance to non-banks, which is fraught with moral hazard. The framework of FSDC would be made statutory to deal with inter-regulatory issues and also take the lead in managing systemic risk. The Financial Consumer Protection Framework recommended by FSLRC is largely in place for banks with the BCSBI Code, master direction on customer service, internal grievance redressal system and banking ombudsman system. IFC proposes Redressal Agency as the one stop destination for mediation and adjudication of all retail financial service related grievances. With RBI and all financial regulators ensuring that the non-legislative recommendations are being implemented, the only thing remaining would be to enact IFC and modify the regulatory architecture into RBI and FA. He felt that though FA would subsume IRDAI, SEBI, PFRDA and non-banking area of RBI, they would still function departmentally in the Financial Authority and would create HR issues. Therefore, to derive the benefit of implementation of FSLRC recommendations and to tune present laws to IFC, it would be better to consolidate and amend existing laws governing regulators, strengthen the existing regulators and bring in better reporting and accountability mechanisms as in IFC but allow them to continue in the present manner to make the change non-disruptive and more readily acceptable.

Nilesh Shah, MD-Kotak Mahindra AMC, shed light on the Capital Market segment. Capital Market is where savings are converted into Investments. Our market was inefficient and Regulators have done a great job to improve efficiency. Today the number of people investing in Indian capital markets is more than the population of a few countries. However, there is still scope for a lot of improvement. He explained the importance of capital markets by giving an example of gold. Gold Investments in India is about approximately \$1 trillion. If this money was invested in capital markets, the GDP would have doubled. According to him, investing in gold is also used as a ploy to deploy black money, as gold can be purchased for cash, unlike purchasing Mutual Funds or opening Bank Accounts, where KYC is required. He said, we have tonnes of Gold coming into the country each year which get lost in the Black Market. He stressed on the point that Technology needs to be adopted in the Banking system to take Banking to the people.

Also reach to the unorganised sector should be increased. A gist of his observations and recommendations thereof on Current Capital Market in India is presented as follows: Efforts should be made to introduce products that can be absorbed by the market. NIFTY trades more in Singapore than in India because our regulators have failed to create investments climate here. Also in India, there is a disconnect between the market participants and the regulators. There should be deeper connect between regulators and market players to create appropriate products. Capital Markets should be based on Rule of Law. In India, we have plenty of laws but we lack justice. Therefore, people don't trust Capital Markets. Financing is usually given to strong or bigger companies. Weaker companies are usually not given financial assistance. If we give assistance to the weaker companies, there are possibilities of these companies turning into stronger companies. 35 percent of Indian Capital markets are already owned by foreigners in less than 22 years of opening the market. Mr. Shah opined that if more than 51 percent of India's market goes to foreigners, we won't be able to call ourselves Independent. Therefore, we should deepen our Capital Markets for domestic investors.

After the speeches there was interaction from participants which saw active participation by Mr. V. Balasubramaniam Chief Business Officer of the Bombay Stock Exchange, Mr. Imtaiyazur Rahman, CFO UTI Mutual Fund, Mr. Arun Agarwal, Country head Lloyds General Insurance, Dr George Thomas, Insurance Institute of India and Mr. Aslam Khan, CMD Octaware Technologies. The Conference concluded with a vote of thanks by Dr. Kalim Khan, Director, Rizvi Institute of Management Studies and Research.

## Book Review

**Sarder, Russel; Building An Innovative Learning Organization A Framework To Build A Smarter Workforce, Adapt To Change, And Drive Growth; 2016, John Wiley India Private Limited, New Delhi, India, pp.262, Price Rs.599.**

The book titled “Building An Innovative Learning Organization: A Framework To Build A Smarter Workforce, Adapt To Change, And Drive Growth” (genre: general management-Learning and Development) is the third book from the author, Russel Sarder. All the three books- his earlier works being Learning: steps to becoming a passionate lifelong learner(Apr 2011) & Effective Learning Methods: How to develop the most effective learning method (March 2011)- dwell on various aspects of Learning viz. steps to become a lifelong learner, effective learning methods, frameworks for building a Learning Organization. The three books written within a span of five years couldn't have been timed better what with the business environment being tumultuous and the need on the part of organizations to be always on the learning curve as also individual's appreciation of the new business reality and the attendant imperative to become a lifelong learner. Sarder, Founder and CEO of NetCom Learning draws on his rich experience of providing managed learning services solutions, IT and Business Training and talent development advisory to thousands of unique companies globally. Sarder presents a compelling argument of how learning can be used for competitive advantage by firms of every shape and size; he buttresses his contention by way of presenting cases of these firms' journey to become learning organization and the resultant benefits in terms of enhanced growth, increased ability to adapt to change and building a smarter workforce ready to take up any gauntlet thrown in its way by competitors, regulators, technology advancements etc. Sarder is also credited with founding of Sarder TV with the avowed purpose of helping promote learning

Sarder's three books warrant comparisons with the books and works of the highly acclaimed Author, Business Strategy expert and Management Guru Peter Senge. Senge's seminal work, namely “The Fifth Discipline: The Art and Practice of the Learning organization”(1990) and other works viz. The Fifth Discipline Fieldbook (1994), The Dance of Change (1999), Schools that Learn: A Fifth Discipline Fieldbook for Educators, Parents, and Everyone Who Cares about Education (2000), Presence: Human Purpose and the Field of the Future (2004), Presence: An Exploration of Profound Change in People, 'Organizations, and Society' (2005), The Necessary Revolution: How Individuals and Organizations Are Working Together to Create a Sustainable World (2008).

Sarder acknowledges the guru – HBR recognizes him as an expert who 'had the greatest impact on the way we conduct business today'- by way of copious citations interspersed throughout the book. In fact Sarder is not only inspired by Senge but tries to build on the ideas presented by later in his works particularly those related to creation of learning organizations. If Senge has given us cornerstone and core disciplines of the Learning Organization in terms of Personal Mastery, Mental Models, Shared Vision, Team Learning and Systems thinking, Sarder takes the leit motif further by providing a framework for building not just a learning but also an Innovative Organization. Sarder puts forth the connection between learning, innovation and business transformation in a very cogent manner.

The book spread over nine odd chapters begins with a Preface bringing out similarities amongst Successful People and Successful Organizations. Sarder enumerates the attributes of successful people from different walks of life- business, politics, and entertainment- as hard workers, passionate believers, confident and competitive. A parallel is drawn with the listing of attributes of successful organizations viz. Google, GE, US Military and Coulmbia University and the commonalities are listed as: a flexible business model, strong leadership team, sufficient resources, clarity of purpose, a clear focus on profitability and above all displaying characteristics of learning organizations.

Chapter 1 seeks to answer the question 'Why become a Learning Organization?' Key changes affecting success as Technology change, Business Model Change, Job Role Change, Globalization impact are listed and elaborated upon. Seven Key technology trends in terms of Mobile, Social, Internet of Things, 3-D Printing, Big Data, Cloud, Security are presented with their myriad and far-reaching implications on the modus operandi and other aspects of business organizations. Differences between Learning Organizations and their Traditional counterparts are put forth. Lastly, Sarder Framework for Building the learning Organization with its three constituents namely Learning Culture, Learning Plan and Learning Operation is presented. Further the sub-components of these 3 constituents are also depicted. Components of Learning Culture are displayed as Right Leader, Right People, Right Behaviour, Right Resources; Components of Learning Plan are represented as learning Goals, Competency Models, Learning Methods, Learning Assessments; Modules of Learning Operations are portrayed as Content, Delivery, Technology and Administration and Marketing.

Chapter 2 describes the attributes to recognize a Learning Culture as also the mechanics of building a learning Culture. Chapter portrays an effectual portrayal of ‘The Right Leader’ with characteristics viz. inspiring people through their vision and cations, strong commitment to a clear set of values, intense passion for learning and a fervent belief that learning is crucial for organization’s growth. The chapter also includes an inventory to evaluate the level to which an organization possesses the characteristics of a learning organization.

Chapter 3 Titled ‘Developing a Learning Plan’ describes each of the four components of a Learning plan- namely, Learning Goals, Competency Models, Learning Methods and Learning assessments- in considerable details to be of actual use to L& D Practitioners. The nitty-gritty of developing plan viz. formation of a Team for development, its size and composition; establishment of Communication and Reporting Protocols , assessment of current situation to identify the organization’s needs and challenges; Collection of data to identify Organization’s learning needs are also dealt with in a manner to be of great use to practitioners.

Chapter 4 titled ‘Setting Learning Goals’ illuminates Learning Goals Cascade from organizational level to the level of individuals. Distinction between Performance Goals and learning goals is effectively brought out.

Chapter 5 on ‘Creating Competency Models’ throws light on the usage and application of competency models for myriad purposes like talent acquisition, identification of performance gaps, driving organization change and transformation efforts etc. Four broad categories of Competency models are elaborated upon: core, functional, job and leadership. A section is justifiably dedicated to ‘Competencies for Today and Tomorrow’. Handy tips are furnished for developing useful competency models. Comprehensive examples of competency models are also provided as a ready reckoner.

Chapter 6 aptly titled ‘Selecting the Right Learning Methods’ begins with pointing out the contrast between Formal and Informal Learning. Pros and cons of five primary learning methods are presented in an unbiased manner. The four primary Learning Method Selection Drivers- Learning Goals, Learners, Urgency & Time, Budget- are depicted. Lastly, challenges to application of Learning in organizational context are addressed.

Chapter 7 ‘Assessing the Results of Your Learning Plan’ offers a comprehensive list of key assessment questions to be posed to determine the extent to which learning plans are effective in achieving the desired goals or fulfilling the intent with which they start in first place. Kirkpatrick’s Four Level of Evaluation Framework and later addition of fifth level namely ROI is discussed from an implementation perspective.

Penultimate Chapter 8 christened 'Managing Your Organization's Learning Operation' begins by underlining the need for a comprehensive system to be able to manage your learning plan effectively. The four components of Learning Operation- Content, Delivery, Technology, and Administration & Marketing are explained and marketing tips are shared. The role and responsibilities of a Chief Learning Officer are outlined. Role and benefits of Learning Management Service are described. Further, the chapter tries to address the foremost question in any L&D Head or Manager's mind as to 'Which is a right technology to choose for the organization from amongst LMS, EPPS, LCMS or a CMS?' Tips are proffered for deciding appropriate technology to meet organization's unique needs.

Last Chapter 9 is aptly titled 'Call to Action' and culminates, so to speak, the crescendo being built in the previous 8 odd chapters. What can be more apt title for the last chapter of a book modeled as a primer for doers and executives? The author makes an impassioned plea to readers to build a learning organization and become a lifelong learner. The concept of Learning Tree is depicted with Learning value at its topmost point to impress upon the need to appreciate the efforts of becoming a Lifelong Learner. Steps to become lifelong learners are described and readers are implored to become education activist for the larger cause of society and mankind.

The book also has addendum by way of Excerpts from Sarder TV Interviews with Authors, Educators, Learning Managers and Learning Professionals-essentially documenting their experiences on creating a Learning Organization. References and Resources are provided with necessary details for anyone interested in further learning on the subject. Useful websites list is also given for ready reference.

The book is written in an easy to read, understand and practice modular format- a quality which is bound to strike an instant and tremendous rapport with its target audience- Learning and Development Heads, Learning Professionals, Trainers, CXOs etc. struggling with their learning plans and groping in the dark as to how to proceed. The language is simple yet effective- free of jargons prevalent in the domain. Each of the chapter is interspersed with real world examples, cases to build on and expound the idea being presented. Each chapter ends with the posing of some questions to egg on the readers as well as acts as a buildup of what follows in the ensuing chapter.

The book is in fact a must read for not just Learning & Development professionals, Management students and researchers but also anyone who would want to create a learning and innovative organization in tune with the times. The book would also be of immense use to Trainers, Consultant providing learning solutions and advisory to firms across industries/ sectors; businesses in industries marked with rapid obsolescence of Knowledge, skills and technology where the only way forward to survive is to learn and learn faster.

By Dr. Garima Sharma,

Associate Professor - Rizvi Institute of Management Studies & Research

## Bibliography On Big Data

- Abbasi, A., Sarker, S. & Chiang, R. L. (2016) "Big Data Research in Information Systems: Toward an Inclusive Research Agenda" *Journal of the Association for Information Systems*, 17(2), pp i-xxxii.
- Agafiței, Mihaela, Fabrice Gras, Wim Kloek, Fernando Reis, & Sorina Vâju (2015) "Measuring output quality for multisource statistics in official statistics: Some directions." *Statistical Journal of the LAOS*, 31(2), pp203-211.
- Ahmed, M. D. (2014) "Big Data and its opportunities" *New Zealand Journal of Applied Business Research (NZJABR)*, 12(2), pp iii-viii.
- Al Shaqsi, J., & Wang, W. (2013) "Estimating the predominant number of clusters in a dataset" *Intelligent Data Analysis*, 17(4), pp603-626.
- Alles, M. G. (2015) "Drivers of the Use and Facilitators and Obstacles of the Evolution of Big Data by the Audit Profession" *Accounting Horizons*, 29(2), pp439-449.
- Anna, K. and Nikolay, K. (2015), "Survey on Big Data analytics in public sector of Russian Federation", *Procedia Computer Science*, 55, pp905-911.
- Angrave, D., Charlwood, A., Kirkpatrick, I., Lawrence, M., & Stuart, M. (2016) "HR and analytics: why HR is set to fail the big data challenge" *Human Resource Management Journal*, 26(1), pp1-11.
- Appelbaum, D. (2016) "Securing Big Data Provenance for Auditors: The Big Data Provenance Black Box as Reliable Evidence" *Journal of Emerging Technologies in Accounting*, 13(1), pp 17-36.
- Baensens, B., Bapna, R., Marsden, J. R., Vanthienen, J., & Zhao, J. L. (2016) "Transformational Issues of Big Data and Analytics in Networked Business" *MIS Quarterly*, 40(4), pp807-818.
- Bello-Orgaz, G., Jung, J.J. & Camacho, D. (2016), "Social Big Data: recent achievements and new challenges" *Information Fusion*, 28, pp 45-59.
- Beygelman, M. (2014) "Cool New Uses of Big Data for HR" *Workforce Solutions Review*, 5(5), 33-34.
- Biswas, S. & Sen, J. (2016) "A Proposed Architecture for Big Data Driven Supply Chain Analytics" *IUP Journal of Supply Chain Management*, 13(3), pp7-33.

- Braaksma, B., & Zeelenberg, K. (2015) "Re-make/Re-model: Should big data change the modelling paradigm in official statistics?" *Statistical Journal of the LAOS*, 31(2), pp193-202.
- Braganza, Ashley, Brooks, Laurence, Nepelski, Daniel, Ali, Maged & Moro, Russ (2016) "Resource management in big data initiatives: Processes and dynamic capabilities" *Journal of Business Research*, 70 (2017), pp328–337.
- Brown-Liburd, H., Issa, H., & Lombardi, D. (2015) "Behavioral Implications of Big Data's Impact on Audit Judgment and Decision Making and Future Research Directions" *Accounting Horizons*, 29(2), pp451-468.
- Brynjolfsson, E., Geva, T., & Reichman, S. (2016) "Crowd-Squared: Amplifying the Predictive Power of Search Trend Data" *MIS Quarterly*, 40(4), pp941-A36.
- Bughin, Jacques (2016) "Big data, Big bang?" *Springer Journal of Big Data*,
- Carty, D. (2013) "Making the Connection" *Marketing Health Services*, 33(2), pp24-27.
- Cavage, M., & Pacheco, D. (2014) "Bringing Arbitrary Compute to Authoritative Data" *Communications of the ACM*, 57(8), pp40-48.
- Cavallo, A., & Rigobon, R. (2016) "The Billion Prices Project: Using Online Prices for Measurement and Research" *Journal of Economic Perspectives*, 30(2), pp151-178.
- Cegielski, C. G., & Jones-Farmer, L. A. (2016) "Knowledge, Skills, and Abilities for Entry-Level Business Analytics Positions: A Multi-Method Study" *Decision Sciences Journal of Innovative Education*, 14(1), pp91-118.
- Cervone, H. Frank (2016) "Organizational considerations initiating a big data and analytics implementation" *Digital Library Perspectives*, 32 (3), pp137 – 141.
- Charles F. Hofacker , Edward Carl Malthouse & Fareena Sultan (2016) "Big Data and consumer behavior: imminent opportunities" *Journal of Consumer Marketing*, 33(2), pp89 – 97.
- Chen, D. Q., Preston, D. S., & Swink, M. (2015) "How the Use of Big Data Analytics Affects Value Creation in Supply Chain Management" *Journal of Management Information Systems*, 32(4), pp4-39.
- Chen, K. (2014) "Optimizing star-coordinate visualization models for effective interactive cluster exploration on big data" *Intelligent Data Analysis*, 18(2), pp117-136.
- Clarke, R. (2016) "Big data, big risks" *Information Systems Journal*, 26(1), pp77-90.
- Clayton, R. (2013) "CFOs Take Notice Big Data May Be Your New Best Friend" *Financial Executive*, 29(10), pp22-25.

- Comuzzi, Marco & Patel, Anit (2016) "How organisations leverage Big Data: a maturity model" *Industrial Management & Data Systems*, 116(8), pp1468-1492.
- Date, S. (2016) "Should You Upload or Ship Big Data to the Cloud?" *Communications of The ACM*, 59(7), pp44-51.
- D'onofrio, S. (2015) "Guest editorial: strategies for integrating the most vulnerable populations into market systems, from the SEEP conference" *Enterprise Development & Microfinance*, 26(1), pp3-5.
- Erevelles, N. & Fukawa, L. Swayne (2016) "Big data consumer analytics and the transformation of marketing" *Journal of Business Research*, 69 (2), pp 897–904.
- Feinzig, S. (2015) "Workforce Analytics: Practical Guidance for Initiating a Successful Journey" *Workforce Solutions Review*, 6(6), pp14-17.
- Friedman, H., & Marley, A. (2015) "Big Data or Small Data: That is the Question" *Workforce Solutions Review*, 6(6), pp4-6.
- Gang-Hoon, K., Trimi, S., & Ji-Hyong, C. (2014) "Big-Data Applications in the Government Sector" *Communications of the ACM*, 57(3), pp78-85.
- Ghose, A., & Todri-Adamopoulos, V. (2016). "Toward a Digital Attribution Model: Measuring the Impact of Display Advertising on Online Consumer Behavior". *MIS Quarterly*, 40(4), pp889-A30.
- Giannakis, Mihalis & Louis, Michalis (2016) "A multi-agent based system with big data processing for enhanced supply chain agility" *Journal of Enterprise Information Management*, 29(5), pp706 – 727.
- Gillwald, A. (2016) "From Research to Policy Influence" *Information Technologies & International Development*, 12(2), pp iii-v.
- Girtelschmid, S., Steinbauer, M., Kumar, V., Fensel, A. and Kotsis, G. (2014), "On the application of Big Data in future large-scale intelligent Smart City installations" *International Journal of Pervasive Computing and Communications*, 10(2), pp168-182.
- Glatz, E., Mavromatidis, S., Ager, B., & Dimitropoulos, X. (2014) "Visualizing big network traffic data using frequent pattern mining and hypergraphs" *Computing*, 96(1), pp27-38.
- Göb, R. (2014) Discussion of "Reliability Meets Big Data: Opportunities and Challenges" *Quality Engineering*, 26(1), pp121-126.
- Gobble, M. M. (2013) "Big Data: The Next Big Thing in Innovation" *Research Technology Management*, 56(1), pp64-66.
- Goes, P. B. (2014) "Big Data and IS Research" *MIS Quarterly*, 38(3), pp iii-viii.

- Graves, G., & Vosicher, S. (2015) “Leveraging Big Data to Make Smarter Personnel Decisions” *Workforce Solutions Review*, 6(3), pp33-34.
- Greene, A. C., Giffin, K. A., Greene, C. S., & Moore, J. H. (2016) “Adapting bioinformatics curricula for big data” *Briefings in Bioinformatics*, 17(1), pp43-50.
- Griffin, R. (2012) “Using Big Data to Combat Enterprise Fraud” *Financial Executive*, 28(10), pp44-47.
- Gupta, R., Kabundi, A., Miller, S., & Uwilingiye, J. (2014) “Using large data sets to forecast sectoral employment” *Statistical Methods & Applications*, 23(2),pp229-264.
- Gurley-Calvez, T., Hembree, J., Mosley, J., Zimmerman, M. K., & McCandless, B. (2014). The Challenges of ACA Marketplace Enrollment: Results from Big Data and Campaign-Style Tactics in the Kansas City Area. *National Tax Journal*, 67(4), pp925-940.
- Habte, M. L., Howell, C., Warren, A., Freerks, M., & Millendorf, S. (2015) “The Big Data Dilemma: Compliance for the Health Professional in an Increasingly Data-Driven World” *Journal of Health Care Compliance*, 17(3), pp5-12.
- Halaweh, M., & El Massry, A. (2015) “Conceptual Model for Successful Implementation of Big Data in Organizations” *Journal Of International Technology & Information Management*, 24(2), pp21-34.
- Harris, D. F. (2015) “HR Data Privacy in the Era of Big Data” *Workforce Solutions Review*, 6(5), pp41-42.
- Hartmann, Philipp Max, Zaki, Mohamed, Feldmann, Niels & Neely, Andy (2016) "Capturing value from big data – a taxonomy of data-driven business models used by start-up firms" *International Journal of Operations & Production Management*, 36(10), pp1382 – 1406.
- Henry, R., & Venkatraman, S. (2015) “Big Data Analytics the Next Big Learning Opportunity” *Academy of Information & Management Sciences Journal*, 18(2), pp17-29.
- Higgins, J. (2014) “Bringing HR and Finance Together with Analytics” *Workforce Solutions Review*, 5(2), pp11-13.
- Hoffmann, L. (2013) “Looking Back at Big Data” *Communications of the ACM*, 56(4), pp21-23.
- Howes, J. (2014) “Taking a Long Data View for Effective Workforce Analytics” *Workforce Solutions Review*, 5(2), pp5-8.
- Huang, T., & Van Mieghem, J. A. (2014) “Clickstream Data and Inventory Management: Model and Empirical Analysis” *Production & Operations Management*, 23(3), pp333-347.
- Jackson, R. A. (2014) “The data behind the curtain” *Internal Auditor*, 71(3), pp45-49.

- Jagadish, H., Gehrke, J., Labrinidis, A., Papakonstantinou, Y., Patel, J. M., Ramakrishnan, R., & Shahabi, C. (2014) "Big Data and Its Technical Challenges" *Communications of the ACM*, 57(7), pp86-94.
- Jain, C. L. (2016) "How to Use Big Data and Predictive Analytics to Improve the Success of New Products" *Review of Business*, 37(1), pp48-55.
- James, H. (2014) "How the Interaction of Social and Big Data influences Employee Engagement" *Workforce Solutions Review*, 5(2), pp35-36.
- Janssen, Marijn , Van Der Voort, Haiko & Wahyudi, Agung (2017) "Factors influencing big data decision-making quality" *Journal of Business Research*, 70, pp 338–345.
- 
- Japac, Lilli, Frauke Kreuter, Marcus Berg, Paul Biemer, Paul Decker, Cliff Lampe, Julia Lane, Cathy O'neil, And Abe Usher. 2015. "Big Data In Survey Research Aapor Task Force Report." *Public Opinion Quarterly* 79 (4), pp839-880.
- Jin-ho, J., & Seung-Ryul, J. (2016) "Designing a Crime-Prevention System by Converging Big Data and IoT" *Journal of Korean Society For Internet Information*, 17(3), pp115-128.
- Jinqun, Dai, Huang Jie, Huang Shengsheng, Liu Yan, & Sun Yuanhao. 2012. "The Hadoop Stack: New Paradigm for Big Data Storage and Processing" *Intel Technology Journal*, 16(4), pp92-110.
- Jobs, C. G., Gilfoil, D. M., & Aukers, S. M. (2016) "How Marketing Organizations Can Benefit from Big Data Advertising Analytics" *Academy Of Marketing Studies Journal*, 20(1), pp18-35.
- Johnson, J. E. (2012) "Big Data + Big Analytics = Big Opportunity" *Financial Executive*, 28(6), pp50-53.
- Jones, K. (2014) "Big and Getting Bigger: Managing Data Growth in HR Today" *Workforce Solutions Review*, 5(2), pp37-39.
- Juan, Z., Xiongsheng, Y., & Appelbaum, D. (2015) "Toward Effective Big Data Analysis in Continuous Auditing" *Accounting Horizons*, 29(2), pp469-476.
- Jukić, N., Sharma, A., Nestorov, S., & Jukić, B. (2015) "Augmenting Data Warehouses with Big Data" *Information Systems Management*, 32(3), pp200-209.
- Jun, S., Park, S., & Jang, D. (2015) "A Technology Valuation Model Using Quantitative Patent Analysis: A Case Study of Technology Transfer in Big Data Marketing" *Emerging Markets Finance & Trade*, 51(5), pp963-974.

- Ketter, Wolfgang, Peters, Markus, Collins, John & Gupta, Alok (2016) “Competitive Benchmarking: An Is Research Approach to Address Wicked Problems with Big Data and Analytics” *MIS Quarterly*, 40 (4), pp1057-1089.
- Kitchin, R. (2015) “The opportunities, challenges and risks of big data for official statistics” *Statistical Journal of The LAOS*, 31(3), pp471-481.
- Krahel, J. P., & Titera, W. R. (2015) “Consequences of Big Data and Formalization on Accounting and Auditing Standards” *Accounting Horizons*, 29(2), pp409-422.
- Krajicek, D. (2014) “Big Data's Next Step” *Marketing Insights*, 26(1), pp10-11.
- Krajicek, D. (2013). “Making Big Data Actionable” *Marketing Insights*, 25(1), pp8-9.
- Krishnamurthy, R., & Desouza, K. C. (2014) “Big data analytics: The case of the social security administration” *Information Polity: The International Journal of Government & Democracy in the Information Age*, 19(3/4), pp165-178.
- Kuempel, A. (2016) “The Invisible Middlemen: A Critique and Call for Reform of the Data Broker Industry” *Northwestern Journal of International Law & Business*, 36(1), pp207-234.
- Kugler, L. (2016) “What Happens When Big Data Blunders?” *Communications of the ACM*, 59(6), pp15-16.
- Kuiler, E. W. (2014) “From Big Data to Knowledge: An Ontological Approach to Big Data Analytics” *Review of Policy Research*, 31(4), pp311-318.
- Kulkarni S, Apte U, Evangelopoulos N. (2014) “The Use of Latent Semantic Analysis in Operations Management Research” *Decision Sciences [serial online]*, 45(5) pp971-994.
- Kumar, A., Niu, F., & Ré, C. (2013). “Hazy: Making It Easier to Build and Maintain Big-Data Analytics” *Communications of the ACM*, 56(3), pp40-49.
- Kyunghee, Y., Hoogduin, L., & Li, Z. (2015) “Big Data as Complementary Audit Evidence” *Accounting Horizons*, 29(2), pp431-438.
- Levenson, A. (2014) “The Promise of Big Data for HR” *People & Strategy*, 36(4), pp22-26.
- Li, R., Lin, D. K., & Li, B. (2013) “Statistical inference in massive data sets” *Applied Stochastic Models In Business & Industry*, 29(5), pp399-409.
- Li, X., Tian, Y., Smarandache, F., & Alex, R. (2015) “An Extension Collaborative Innovation Model in the Context of Big Data” *International Journal of Information Technology & Decision Making*, 14(1), pp69-91.
- Little, R. J. (2015) “Calibrated Bayes, an inferential paradigm for official statistics in the era of big data” *Statistical Journal of the LAOS*, 31(4), pp555-563.

- Liu, Z., Jiang, B., & Heer, J. (2013) “imMens: Real-time Visual Querying of Big Data” *Computer Graphics Forum*, 32(3pt4), pp421-430.
- Lokanathan, S., Kreindler, G. E., Nisansa de Silva, N. H., Miyauchi, Y., Dhananjaya, D., & Samarajiva, R. (2016) “The Potential of Mobile Network Big Data as a Tool in Colombo's Transportation and Urban Planning” *Information Technologies & International Development*, 12(2), pp63-73.
- Magnier, P. (2016) “A smart access to global innovation networks” *Information Services & Use*, 36(1/2), pp113-117.
- Malgieri, G. (2016). “Ownership of Customer (Big) Data in the European Union: Quasi-Property as Comparative Solution?” *Journal of Internet Law*, 20(5), pp3-17.
- Markham, S. K., Kowolenko, M., & Michaelis, T. L. (2015) “Unstructured Text Analytics to Support New Product Development Decisions” *Research Technology Management*, 58(2), pp30-38.
- Martens, D., Provost, F., Clark, J., & de Fortuny, E. J. (2016) “Mining Massive Fine-Grained Behavior Data to Improve Predictive Analytics” *MIS Quarterly*, 40(4), pp869-888.
- Martin, K. D., Borah, A., & Palmatier, R. W. (2017) “Data Privacy: Effects on Customer and Firm Performance” *Journal of Marketing*, 81(1), pp36-58.
- Mashayekhi, H., Habibi, J., Voulgaris, S., & Steen, M. (2013) “GoSCAN: Decentralized scalable data clustering” *Computing*, 95(9), pp759-784.
- Matthias, Olga, Fouweather, Ian, Gregory, Ian & Vernon, Andy (2017) "Making sense of Big Data – can it transform operations management?" *International Journal of Operations & Production Management*, 37(1), pp37 – 55.
- McGuire, S., & Ladd, B. (2014) “Big Data and Human Capital Management” *Workforce Solutions Review*, 5(2), pp30-31.
- McNeely, C. L., & Hahm, J. (2014) “The Big (Data) Bang: Policy, Prospects, and Challenges” *Review of Policy Research*, 31(4), pp304-310.
- Menon, S., & Sarkar, S. (2016). “Privacy And Big Data: Scalable Approaches to Sanitize Large Transactional Databases for Sharing” *MIS Quarterly*, 40(4), pp963-982.
- Metcalf, J. (2016) “Big Data Analytics and Revision of the Common Rule” *Communications of the ACM*, 59(7), pp31-33.
- Miller, J. A. (2015) “Data Analytics: School, Work, and World” *Armed Forces Comptroller*, 60(2), pp42-45.

- Min, C., Chychyla, R., & Stewart, T. (2015) "Big Data Analytics in Financial Statement Audits" *Accounting Horizons*, 29(2), pp423-429.
- Munroe, F. (2013) "Technological Transformation -- Implications for Compliance from Big Data to BYOD" *Journal of Health Care Compliance*, 15(6), pp41-46.
- Murphy, M., & Barton, J. (2014) "From a Sea of Data to Actionable Insights: Big Data and What It Means for Lawyers" *Intellectual Property & Technology Law Journal*, 26(3), pp8-17.
- O'donnell, R. (2015) "Data, Analytics And Your Audit: What Financial Executives Need To Know?" *Financial Executive*, 31(3 & 4), pp24-29.
- Ohata, M., & Kumar, A. (2012) "Big Data: A Boon to Business Intelligence" *Financial Executive*, 28(7), pp63-64.
- Parker, P. A. (2014) "Discussion of Reliability Meets Big Data: Opportunities and Challenges" *Quality Engineering*, 26(1), pp117-120.
- Pigni, F., Piccoli, G., & Watson, R. (2016) "Digital Data Streams: Creating Value from the Real-Time Flow of Big Data" *California Management Review*, 58(3), pp5-25.
- Porter, L., & Gogan, J. L. (2013) "Before Racing up Big Data Mountain, Look Around" *Financial Executive*, 29(5), pp59-61.
- Prakash, S. D. (2014) "Big Data Led Big Monetization" *Vidvat: The Indian Journal of Management*, 7(1), pp6-7.
- Procter, R., Vis, F., & Voss, A. (2013) "Reading the riots on Twitter: methodological innovation for the analysis of big data" *International Journal of Social Research Methodology*, 16(3), pp197-214.
- Ramasamy, R. (2015) "The production of salary profiles of ICT professionals: Moving from structured database to big data analytics" *Statistical Journal of the LAOS*, 31(2), pp177-191.
- Ramlukan, R. (2015) "How Big Data and Analytics Are Transforming the Audit" *Financial Executive*, 31(3 & 4), pp14-19.
- Reed, D. A., & Dongarra, J. (2015) "Exascale Computing and Big Data" *Communications of the ACM*, 58(7), pp56-68.
- Rousidis, D., Garoufallou, E., Balatsoukas, P., & Sicilia, M. (2014) "Metadata for Big Data: A preliminary investigation of metadata quality issues in research data repositories" *Information Services & Use*, 34(3/4), pp279-286.
- Saboo, Alok R., Kumar, V. & Park, Insu (2016) "Using Big Data To Model Time-Varying Effects for Marketing Resource (Re) Allocation" *MIS Quarterly*, 40 (4), pp911-940.

- Sanders, N. R. (2016) "How to Use Big Data to Drive Your Supply Chain" *California Management Review*, 58(3), pp26-48.
- Saxena, Stuti & Sharma, Sujeet Kumar (2016) "Integrating Big Data in "e-Oman": opportunities and challenges" *info*, 18(5), pp79 – 97.
- Scarlet, S., & Tarraf, S. (2015) "Mining for Insights" *Marketing Insights*, 27(4), pp18-19.
- Schleyer, C. (2014) "The Holistic "Big Data" Recipe" *Workforce Solutions Review*, 5(2), pp33-34.
- Schoenherr, T., & Speier-Pero, C. (2015) "Data Science, Predictive Analytics, and Big Data in Supply Chain Management: Current State and Future Potential" *Journal of Business Logistics*, 36(1), pp120-132.
- Shi Cheng , Qingyu Zhang , Quande Qin , (2016) "Big data analytics with swarm intelligence" *Industrial Management & Data Systems*, 116 (4), pp646 – 666.
- Shi, Z., Lee, G. M., & Whinston, A. B. (2016) "Toward a Better Measure of Business Proximity: Topic Modeling for Industry Intelligence" *MIS Quarterly*, 40(4), pp1035-A53.
- Shim, J. P., Koh, J., Fister, S., & Seo, H. Y. (2016) "Phonetic Analytics Technology and Big Data: Real-World Cases" *Communications of The ACM*, 59(2), pp84-90.
- Shirtcliff, B. (2015) "Big Data in the Big Easy: How Social Networks Can Improve the Place for Young People in Cities" *Landscape Journal*, 34(2), pp161-176.
- Sinclair, J. (2014) "Employee Engagement" *Workforce Solutions Review*, 5(2), pp25-27.
- Singh, R. (2015) "Forces of economic growth in China, India, and other Asian countries" *Asian-Pacific Economic Literature*, 29(1), pp62-81.
- Solove, D. J. (2013). "Introduction: Privacy Self-Management and the Consent Dilemma" *Harvard Law Review*, 126(7), pp1880-1903.
- Staney, W. (2014) "Big Data Transforms Recruiting Practices" *Workforce Solutions Review*, 5(3), 30-31.
- Stonebraker, M. (2013) "What Does 'Big Data' Mean?" *Communications of the ACM*, 56(9), pp10-11.
- Sukumar, S. R., & Ferrell, R. K. (2013) "Big Data collaboration: Exploring, recording and sharing enterprise knowledge" *Information Services & Use*, 33(3), pp257-270.
- Tallon, P. P., Ramirez, R. V., & Short, J. E. (2013) "The Information Artifact in IT Governance: Toward a Theory of Information Governance" *Journal of Management Information Systems*, 30(3), pp141-178.

- Terhanian, G. (2013) “Hiring the Researchers of Tomorrow” *Marketing Insights*, 25(1), pp42-47.
- Thomee, B., Elizalde, B., Shamma, D. A., Ni, K., Friedland, G., Poland, D., & ... Li-Jia, L. (2016) “YFCC100M: The New Data in Multimedia Research” *Communications of the ACM*, 59(2), pp64-73
- Tihanyi, L., Graffin, S., & George, G. (2015). “Rethinking Governance in Management Research” *Academy Of Management Journal*, 1015(1), pp1-9.
- Tirunillai, S., & Tellis, G. J. (2014) “Mining Marketing Meaning from Online Chatter: Strategic Brand Analysis of Big Data Using Latent Dirichlet Allocation” *Journal of Marketing Research (JMR)*, 51(4), pp463-479.
- Trifu, M. R., & Ivan, M. (2016) “Big Data Components for Business Process Optimization” *Informatica Economica*, 20(1), pp72-78.
- Vahn, G. (2014) “Business analytics in the age of Big Data” *Business Strategy Review*, 25(3), pp8-9.
- Vale, S. (2015) “International collaboration to understand the relevance of Big Data for official statistics” *Statistical Journal of the LAOS*, 31(2), pp159-163.
- Vasarhelyi, M. A., Kogan, A., & Tuttle, B. M. (2015) “Big Data in Accounting: An Overview” *Accounting Horizons*, 29(2), pp381-396.
- Verdino, G. (2013) “From the Crowd to the Cloud” *Marketing Insights*, 35(2), pp26-30.
- Vriens, M., & Kidd, P. (2014) “The Big Data Shift” *Marketing Insights*, 26(6), pp22-29.
- Waller, M. A., & Fawcett, S. E. (2013) “Click Here for a Data Scientist: Big Data, Predictive Analytics, and Theory Development in the Era of a Maker Movement Supply Chain” *Journal of Business Logistics*, 34(4), pp249-252.
- Waller, M. A., & Fawcett, S. E. (2013) “Data Science, Predictive Analytics, and Big Data: A Revolution That Will Transform Supply Chain Design and Management” *Journal of Business Logistics*, 34(2), pp77-84.
- Warren, J. D., Moffitt, K. C., & Byrnes, P. (2015) “How Big Data Will Change Accounting” *Accounting Horizons*, 29(2), pp397-407.
- Wedel, M., & Kannan, P. K. (2016) “Marketing Analytics for Data-Rich Environments” *Journal of Marketing*, 80(6), pp97-121.
- Welbourne, T. M. (2014) “Does Size Really Matter? Getting to Results with Small, Medium and Big Data” *Workforce Solutions Review*, 5(2), pp9-10.

- White, P., & Breckenridge, R. S. (2014) “Trade-Offs, Limitations, and Promises of Big Data in Social Science Research” *Review of Policy Research*, 31(4), pp331-338.
- Wilson, D. W. (2015) “The Problem with Solutions” *Marketing Insights*, 27(6), pp28-31.
- Xia, J., & Neapolitan, R. E. (2015) “Evaluation of a two-stage framework for prediction using big genomic data” *Briefings in Bioinformatics*, 16(6), pp912-921.
- Yahav, I., Shmueli, G., & Mani, D. (2016) “A Tree-Based Approach for Addressing Self-Selection in Impact Studies with Big Data” *MIS Quarterly*, 40(4), pp819-A9.
- Zaharia, M., Xin, R. S., Wendell, P., Das, T., Armbrust, M., Dave, A., & ... Stoica, I. (2016) “Apache Spark: A Unified Engine for Big Data Processing” *Communications of The ACM*, 59(11), pp56-65.

Ms. Aparna Parab  
Librarian  
Rizvi Institute of Management Studies & Research

## Guidelines for submission of research paper

1. The journal accepts only original research work based any management stream which includes Commerce , General Management , Human Resource , Marketing , Information Technology , Systems or Operations.
2. The author of the research paper should disclose details : Full name , designation, address , emails and contact number
3. The format of the paper is as follows:
  - Manuscript should be clearly typed in a MS Word document in double space with 1 & ½ “margin on the left, ½” on the right, 1” on the top and 1” on the bottom.
  - The font size should be 12 in Times New Roman
  - Please add graphs and diagrams wherever necessary
  - The manuscript should not exceed more than 30 typed pages in the aforesaid format including tables, graphs, diagrams and appendices.
  - Every paper must be accompanied by a statement that the paper is the author’s own work and has not already been published or submitted to any other journal
  - The cover page of research report should encompass the following :
    - ✓ Title of the paper
    - ✓ Author’s name
    - ✓ Mailing address
    - ✓ Email address
    - ✓ Professional affiliation ( if different from the mailing address)
    - ✓ Acknowledgements to be attributed ( if any)
    - ✓ The manuscript should include an abstract of 100 to 150 words ( including 4 to 6 key words)
    - ✓ All notes should be numbered with footnotes
    - ✓ References should be given separately at the end of the paper and arranged alphabetically
    - ✓ The paper should only include research done by the author, in case of references then please follow the following guidelines:
      - *In case of periodicals:*

- Journal name, author/s name, years of publication, volume & number, title of the article, exact page number of the article. For eg: Tobin J, 1958, Liquidity preference as behaviors towards risk. *Review of Economic Studies* , 25 (2): 65 – 86

### **Guidelines for submission of Books Reviews**

- Dubrin , A ( 1984), *Foundations of organizational behavior: An applied approach* , New Jersey , Prentice hall
- Taylor, B and Willis, G ( Eds) , ( 1970) , *Pricing Strategy*. Princeton , NJ : Brandon System
  - ✓ **If an article has no author, the periodical or newspapers is referenced as follows:**
    - Business Standard, 2003, TCL beats baron in FIPB war. Dec 16: 12
  - ✓ **For chapters in books , follow this form :**
    - Srinivas, E S (1994. Perceived Quality of Working Life (PQWL) and organizational commitment, A study of managers in select organizations. In N K Gupta and A Ahmad ( Eds) , *Management research , Contemporary issues*, New Delhi : South Asia Publications
  - ✓ **For unpublished research papers presented as working papers, dissertations and papers presented at meetings :**
    - Sachs, JD, Bajpai N and Ramiah, A 2002, Understanding regional growth in India. CID working Paper No 88. Center for International Development, Harvard University, Massachusetts.
    - Gupta, S. 1993, *Optimal retailer pricing and purchasing in a dynamic environment*. Unpublished doctoral dissertation. Cornell University, Ithaca , NY
    - Wall, J P 1983, *Work and non work correlates of the career plateau*. Paper presented at the annual meeting of the Academy of management , Dallas
  - ✓ **For electronic documents**
    - Give the author's name, if known and year of publication, or give the periodical / newspaper's name of the organization's name as author. This should be followed by the full title of the document, the http, or other addresses and the date the document was posed or accessed.

- Basu, 1, 2004, India's thorny FDI rule under scrutiny. Asia Times , May 28,  
[http://www.atimes.com/atimes/South\\_asia/FE28Df03.html](http://www.atimes.com/atimes/South_asia/FE28Df03.html)  
accessed on April 27, 2004
- Financial Express, ICI yet to respond to Asian paints offer to buy 9.1 % stake.
- <http://www.expressindia.com/fe/daily/19980129/02955144.html> . Accessed on April 27, 2004

✓ **Citation in the text should simply give the name of the author and the year of the publication quoted for example:**

- Theil ( 1970)
- A few studies have been done in this area ( Gupta , 1990 : Srivasatav , 2003: Sen 1999 , 2001 : Dasgupta , 2003a , 2003b)

✓ **Page numbers should be provided whenever another author/text is quoted**

- Eg: According to Saini (2000, 35), “the buzz word in people management is India is HRD and not HRM.”

✓ **References:**

- Two or more referees review all contributions will follow the ‘double blind’ system.
- The review process will approximately take 2 months.
- The editorial team of Management Vision reserves the right of making editorial amendments in the final draft of the manuscript to suit journal's requirement



Rizvi Institute of Management Studies and Research  
New Rizvi Educational Complex, Off Carter Road,  
Bandra West, Mumbai - 400 050.

Tel.: +91 22 26042180, 2604 0924, 2604 4068

Fax: +91 22 2604 9710

Email: [managementjournal@rmi.rizvi.edu.in](mailto:managementjournal@rmi.rizvi.edu.in)

Website: [www.rmi.rizvi.edu.in](http://www.rmi.rizvi.edu.in)