

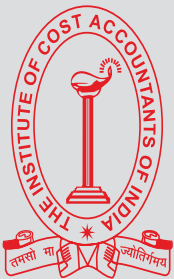


59TH

NATIONAL COST CONVENTION 2019

THEME

**COST AND MANAGEMENT
ACCOUNTANTS:
“POWER OF THE PAST -
FORCE OF THE FUTURE”**



THE INSTITUTE OF COST ACCOUNTANTS OF INDIA

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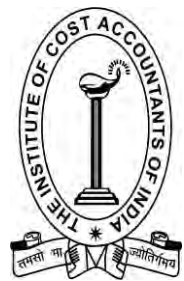
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**COST AND MANAGEMENT ACCOUNTANTS:
“POWER OF THE PAST - FORCE OF THE
FUTURE”**

JANUARY 20 - 21, 2019
JW Marriott Hotel, Senapati Bapat Road, Pune – 411053

Knowledge Pack



The Institute of Cost Accountants of India
(Statutory Body under an Act of Parliament)

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THE INSTITUTE OF COST ACCOUNTANTS OF INDIA

Statutory Body under an Act of Parliament

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FOREWORD



Dear all,

I wish that 2019 gives you wonderful moments to cherish and to store in your heart to create wonderful memories that you would like to look back upon every now and then!!!

It gives me immense pleasure to inform you that the Institute is starting its year with its Annual Event **59th National Cost Convention (NCC-2019)** on the theme **“Cost and Management Accountants: Power of the Past – Force of the Future”** at Pune, Maharashtra and a **Knowledge Pack** is getting released in the auspicious event.

Content of the book is emphasizing on the emerging issues like Industrial Revolution 4.0, Artificial Intelligence, Data Analytics, emerging regulatory environment, costing in service sector, etc. I am sure the book will provide the necessary insight to the readers on the diverse issues it has covered and will prove to be highly beneficial to the readers by enriching their knowledge base.

Fuelled by policy reforms and rebound in credit, India's economy is forecast to expand by 7.5 per cent during the 2019-20 fiscal year and retain its position as the fastest growing major economy in a world of slowing growth, according to the World Bank. The industry needs to develop Cost Competitiveness and follow responsible governance practices for ensuring sustained growth of Indian economy. I am proud to state that Cost and

Management Accountants have played a significant role in this transition. We, the CMAs have an increasing role than ever before, considering the complexities of the scenario and the acumen of CMAs to address the situation.

The Institute and its members are committed to serve the country by extending the expertise and support to the Government, industry and all sectors of the economy to achieve the desired economic and social objectives. The Institute has been actively collaborating with Government, Industry, and Academic institutions to undertake studies, research and to issue industry specific technical papers.

NCC-2019 intends to provide a forum for thoughtful discussions on the topics of relevance in today's business and economic context. The two days long national event of the Institute will have eminent speakers from Government, Industry, academics and Practice etc. I am confident that with the participation and support of a large number of distinguished guests and delegates from profession, industry, regulators and government, NCC-2019 would conclude with a great success.

Warm Regards,

CMA Amit Anand Apte

President, The Institute of Cost Accountants of India



MESSAGE



Dear professional colleagues,

Greetings and best wishes of New Year!!!

It gives me an immense pleasure to state that the Institute has organized its **59th National Cost Convention (NCC-2019)** on the theme **“Cost and Management Accountants: Power of the Past – Force of the Future”** at Pune, Maharashtra on 20-21 January, 2019 and a **Knowledge Pack** has been prepared keeping in mind the sub-themes of the Technical sessions.

The world is at the cusp of the fourth Industrial Revolution - fondly called Industry 4.0 - which envisages smart factories in which cyber-physical systems will monitor the physical processes of the factory and make decentralized decisions. The physical systems will become the Internet of Things, communicating and cooperating both with each other and with humans in real time via the wireless Web. Fact-based decision-making, peak productivity and clear understanding of commercial impacts are just a few of the central factors that will underline the concept.

India needs to swiftly but convincingly invest in the right infrastructure to adopt Industry 4.0—the most tectonic shift in industrial production - to be able to manufacture everything from a pen to an airplane at global quality standards. The Institute has completed 75 glorious years of its existence and the track record of its contribution in the all-inclusive growth of the Country is highly commendable. With the power of the illuminating past, the Institute and its members are treading the path of becoming the Force of the Future wherein the emerging avenues

like AI, IBC, Valuation, Banking & Insurance etc. are posing wider professional scope for them.

I would like to articulate my heartfelt thanks to all the contributors, sponsors, advertisers, Council Members and Institute officials for successful conduct of its annual event National Cost Convention and Directorate of Journal & Publications of the Institute for preparing and releasing the Knowledge Pack in such a platform for exchange of thoughts and ideas that would benefit all participants of this convention.

I convey my best wishes for its success.

Regards,

CMA Balwinder Singh

Vice President
& Chairman, 59th National Cost Convention, 2019



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"POWER OF THE PAST - FORCE OF THE FUTURE"

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INTRODUCTION

COST AND MANAGEMENT ACCOUNTANTS: “POWER OF THE PAST - FORCE OF THE FUTURE”

The global competitiveness is a challenge for everyone. In globally connected world organizations require professionals with specialized knowledge of business strategy and value creation. To achieve extra ordinary results in the focused sectors wherein the country has a competitive advantage, completely enhanced business practices driven by the leadership of the Indian Industry are required. The Indian business has to adopt best cost and management accounting practices and embed the same in business processes for extra ordinary results.

The business will have to make strategic choices on competing with other economies on products/services, offer cost effective value added services, embed sustainable business practices and manage processes efficiently. These outcomes can be powered only by robust cost and management accounting framework. Cost and Management Accountants are experiencing revolutionary change in almost all dimensions of their professional work environment. Increasingly, they are being asked to become business partners and change agents. Innovative technology and intense business competition are propelling this change in role from transaction processor to business partner. The speedy development in Information Technology has enabled professional accountants to gather data, perform analysis, and report information in real time.

The present Government, in its determination to put the Country into a growth path, has been increasing stress on physical infrastructure such as Energy, Railways, Roads, Ports, Irrigation, Water supply and Urban trunk infrastructure. Major Engineering sectors like Electronics, Heavy Engineering, Telecommunication services, Electricity, Telecommunication services, Electricity, Defence Machinery and mechanical appliances in atomic energy sectors, Arms and ammunitions, Aeronautical

services, Railway and tramway locomotives etc. have been included for maintenance of cost records and their cost by the Government of India. This will help the industry to improve productivity of all the resources, including natural resources, which in turn leads to the optimum utilization of resources.

In the changing economic and regulatory scenario, role of cost and management accountants is also changing. They are now supposed to be seen as business analyst, strategy formulator, internal consultant or advisor or business partner, change agent, information provider, leader of and/or participator in cross functional teams, designer and manager of information systems, designer and controller of performance measurement systems, teacher, guide or educator and interpreter and manager of complexity.

Necessary skills for Cost and Management Accountants identified in the changing scenario include adapting cost and management accounting technologies to new forms of manufacturing process, exploring data analytics and artificial intelligence in managing organizational change propelled by the Industrial Revolution 4.0. Using a deeper understanding of organizational structuring, functioning and processes, sponsoring and innovation, personal skills, interpersonal skills, analytic/constructive skills, change agent and strategy formulator roles, ability to be intuitive, synthetic and creative thinking and pro-activity and innovativeness and organisational design skills.

All this constitutes the agenda of the forthcoming National Cost Convention (NCC-2019) on Cost and Management Accountants: Power of the Past Force of the Future to be held in Pune during 20th and 21st January, 2019. There will be Technical Sessions with focused discussions on the role of CMAs in the prevailing and emerging economic and regulatory environment of the Country to enrich the knowledge of the participants and enhance the skill set of the professionals.



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TECHNICAL SESSION 1

Industrial Revolution 4.0

- ⦿ Industrial Revolution 4.0
- ⦿ Artificial Intelligence
- ⦿ Big Data & Data Analytics



Industrial Revolution 4.0

Several years have passed and now we stand on the cusp of another Industrial Revolution. The fourth industrial revolution or Industry 4.0 has become quite a buzzword. Economies across the globe are all set to adopt it and India is also treading the path in its own way. Industry 4.0 is a blend of advanced analytics, Big Data, Robotics & Automation, Artificial Intelligence, Internet of Things (IoT) and Process Digitization across the business value chain. The rise of Industry 4.0 is a transformation that makes it possible to gather and analyze data across machines, enabling faster, more flexible, and more efficient processes to produce higher-quality goods at reduced costs. This manufacturing revolution will increase productivity and foster industrial growth, as well as modify the profile of the workforce—ultimately changing the competitiveness of companies and regions. As innovation continues to drive forward complexity, so professionals like CMAs must keep abreast of the latest developments. From automation to blockchain, big data to the cloud, they need to be able to advise clients and their bosses about how to get the best from the latest technological advances. The ability to explain complex issues simply and competence to adapt has been the hallmark of good professional for years. It will be tested more than ever at a time when the pace of change is accelerating. Cost and Management Accountants are experiencing revolutionary change in almost all dimensions of their professional work environment. Innovative technology and intense business competition are propelling this change in role from transaction processor to business partner. The speedy development in Information Technology has enabled professional accountants to gather data, perform analysis, and report information in real time.

Artificial Intelligence

Artificial intelligence i.e. AI has now become sought-after technological advent where organizations are using machine learning techniques to automate the process which generally took longer time with high human interference. With the advent of AI, the CMA professionals can now provide the management of a company with critical financial information for effective decision-making. With artificial intelligence entering financial and accounting services, it is important to assess how the technology redefines the roles of cost and

managerial accountants. AI also eliminated the tedious time-consuming task of manual encoding besides providing more time for analyzing the information concerning grave issues. This AI feature can also be used in analyzing contracts and other financial documents, saving more time in a number of tasks as well. Artificial intelligence in accounting not only eliminates these risks, but they also perform deep quality checks based on the conditions set by the user. Having AIs in your system ensures that the information you are using is correct, thereby saving both time and costs from these mistakes.

Big Data & Data Analytics

Big data has proven to be of great use since its inception as companies started realizing its importance for various business purposes. Now that the companies have started deciphering this data they have witnessed exponential growth over the years. Data analytics seeks to provide operational insights into the complex business situations. Looking into the historical data from a modern perspective, finding new and challenging business scenarios and applying methodologies to find a better solution are the prime concerns of a data analyst. Not only has this but data analyst can also predict the upcoming opportunities which the company can exploit. Big Data tools open up a great opportunity for the CMAs to become data analyst and access a huge amount of digital data, from various sources in both structured and unstructured format and analyse the same in a cost and time effective manner. With this deeper insight, CMAs can add a lot of value to the strategy formulation, planning and performance management process of the organization.



BLOCKCHAIN TECHNOLOGY - THE POWER HOUSE FOR INDUSTRY 4.0 ERA

Introduction

Advancements in digital technologies in Industry 4.0 era have started bringing in quantum leaps in transformational impacts on systems and processes for value deliveries to business stakeholders. It has already shown potentials for enormous minimization of value destructions and surfeit of 'inventive' value creations. Some of these technologies will cause shift to higher trajectory of quality and speed for multifaceted service deliveries by any government both at federal and county levels.

Blockchain is one of the most welcomed technologies of this new era. Digital scientists are categorising it as a medium to high impact creating technology. But the present author's divination is that it has power of creating ground breaking transformational impacts. It has immense potential to benefit people at the lower strata of society, more than what www has rendered in the immediate preceding era.

This paper has been written in sequel to the present author's first paper¹ on Blockchain, which was published in February 2018 issue of this journal. Objectives are to demystify myths and perceptions about Blockchain, take a brief account of its applications in solution building, humane dimensions, imperatives for digital scientists, and regulatory interventions that are necessary to achieve success in applications of this technology. The present author expects readers, if possible, to read his earlier paper for the benefits of continuity.

Research Methodology

Even after extensive research, one is hardly able to hunt out hard facts and authentic literatures on Blockchain as the technology has started evolving. However, news items, viewpoints of IT and legal professionals, blogs by academicians and opinion makers, etc. can be mined out from cyberspace. Any author on Blockchain, therefore, does not have options but to refer those.

The present author, however, has the benefit of interacting with many 'startupians', first generation entrepreneurs, digital scientists from world class MNCs, academicians, senior business professionals and opinion makers who are directly / indirectly associated with Blockchain applications. He has viewed their presentations, interacted in one-to-one meetings in events, e. g. National Blockchain Conference, Vizag, held in October 2017, World Block Chain Summits, in Dubai and Moscow held in October 2017 and April 2018 respectively. Desk-top researches had to be conducted to explore information and data points for his own inaugural keynote presentations, as the Chairperson of those two summits and moderating three panel discussion sessions. This paper is being presented with researched out information and viewpoints gathered during interactions with those professionals.



Genesis of Blockchain

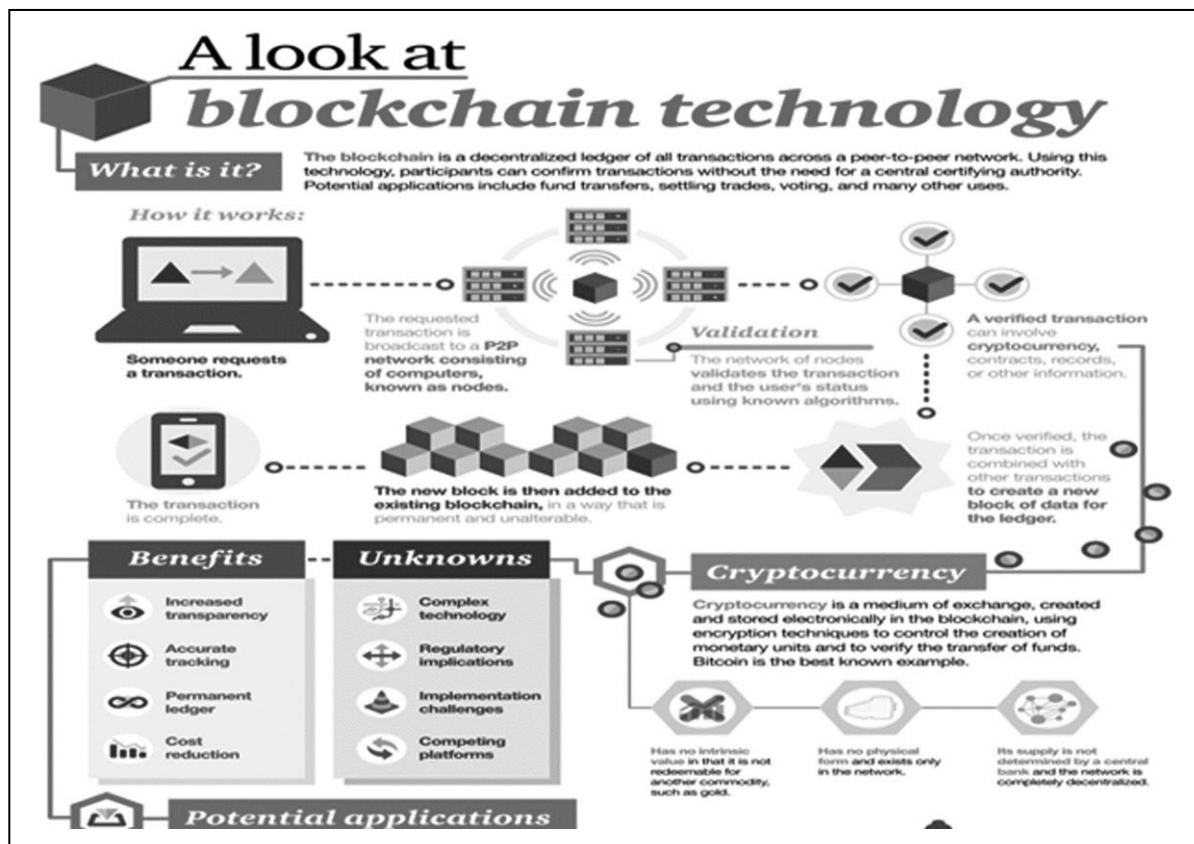
Ideation and the first use of this technology can be traced after the global financial crisis of 2008. In his article² Bernard Marr wrote that when "Satoshi Nakamoto, whose true identity is still unknown, released the whitepaper *Bitcoin: A Peer to Peer Electronic Cash System* in 2008 that described a 'purely peer-to-peer version of electronic cash' known as Bitcoin, blockchain technology made its public debut." Nakamoto's seminal idea is based on a 'chain of digital signatures'. There are different views whether Nakamoto was one person or the pseudo name of a group of professionals who initiated Distributed Ledger Technology (DLT). In subsequent sections DLT and Blockchain has synonymously been used.

Tim Harvey³ observed that, "..... However, a March Newsweek article raised the possibility that Nakamoto is a very real recluse living in Temple City, Calif. See "The Face Behind Bitcoin," (<http://tinyurl.com/mhmq3ok>) by Leah McGrath Goodman, Newsweek, March 6, 2014....." Objective of this paper is not to indulge into such controversies. Keeping aside those, Bitcoin was thus born in 2009, followed by other crypto currencies (CCs). Bitcoin and CCs are being touted to be another asset class

for investments and safe medium for conducting financial transactions.

Core of Blockchain

Essentially Blockchain is a cryptographically enabled computing system with distributed ledgers maintained in and accessible from the computing device of each participating user. Every user must log into the platform from his / her device, called a Node in the whole chain, using both his / her private key and public key. Any user can view earlier transactions by linking with the public keys of the initiating participants. He / she can also initiate a fresh transaction or one linking with any previous transaction. No third-party authentication is required since every user accepts the terms and conditions of the 'Smart Contract' embedded in the platform. No user can delete/ modify earlier transactions of any user(s) in any manner and under any circumstances.



Source:

https://www.google.co.in/search?q=a+look+at+blockchain+technology+pwc&tbm=isch&source=iu&ictx=1&fir=Uf4cJuOBGQ22VM%253A%252C2nO0Ff9vTxDfGM%252C_&usg=__WF6u-lrbbPuX2-6JKx6axiFXefs%3D&sa=X&ved=0ahUKewjowsSc_qLbAhWfsl8KHQUHCJwQ9QEIUjAD&biw=1280&bih=615#imgrc=Uf4cJuOBGQ22VM

Since every two-key sign-in and all transactions are crypto graphed and simultaneously maintained in distributed ledgers of each Node, it is almost impossible to be hacked or infiltrated with a malware. The hacker must apply a superfast algorithmic tool; beating all developed so far, and use a computer with supersonic speed to decrypt those entries before hacking. Information privacy and safety will further be enhanced with implementation of 'General Data Protection Regulation' by the EU from May 25, 2018. In India, a similar Bill is in advanced stage of drafting by the Justice B. N. Shrikirshna Committee.

From around 2014 other digital scientists explored more and started developing private blockchains for alternative applications. Marr's³ observed that

VitalikButerin, one of the co-founders of Ethereum and contributors to Bitcoin codebase, wanted to remove this technology's limitation of only dealing with a digital currency. He launched in 2015 the second public Blockchain called Ethereum, which could handle different types of transactions with the help of a built-in 'Smart Contract'. This version of Ethereum attracted attentions of multinational corporations like Microsoft, BBVA and UBS, because of its vast business potentials, powerful ability to disrupt legacy systems and ushering in a new era.

Demystification of Blockchain vs. Crypto currency

Such a genesis of digital currencies, and because transactions are conducted using a cryptography



enabled DLT platform, this technology in common parlance has become near cent percent synonymous to crypto currency. This perception is perhaps because a common man is yet to observe and experience widely used applications of this new technology. Readers will recall that internet was initially equal to email only till hundreds of other applications were developed. Let this be clear that Blockchain is not a crypto currency and a crypto currency is not equal to Blockchain.

A section of experts has attributed certain reported frauds concerning CCs to the failure of DTL. Many have concluded that Blockchain cannot prevent frauds like any other technology. Let this first be clearly understood that the meteoric rise and extreme volatilities in prices of Bitcoin and other CCs are not due to the underlying DLT but mainly due to interplay of factors, viz., demand, supply, human greed and many others influencing business and financial ecosystem.

Again, the reported frauds related to Bitcoin, etc. are not the frauds committed by infiltrating into the DLT. Human gluttony and ulterior motives have played their forceful roles like in any other cases of economic offences. Such frauds have mostly occurred in the course of CCs being traded in exchanges operated by separate entities. Most of the buyers and sellers do not directly access the underlying DLT platform from their respective Nodes. Their brokers in those exchanges do.

Readers will recall the newspaper item⁴ that US Justice Department has been reported to have

started probe into suspected Bitcoin price manipulation. It will be worthwhile to quote a portion from the report – *“Authorities worry that virtual currencies are susceptible to fraud for multiple reasons: scepticism, that all exchanges are actively pursuing cheaters, wild price swings that could make it easy to push valuations around and a lack of regulations like the ones that govern stocks and other assets.”*

Blockchain – The Power House of Industry 4.0

Solution architecture for dealing with business operations can be developed using an in-house or external vendor's Blockchain dovetailing with digital transformation strategy. External DLT platforms are available based on opensource, permissioned, or hybrid arrangements. Readers may know more about eight such public Blockchains, viz, Ethereum, Hyperledger (Sawtooth Lake), Multichain, HydraChain, Open Chain, IBM Bluemix Blockchain, Chain, IOTA in the article of Shyam Purakayastha⁵. However, one must take due care before selection of the public DLT. Rohas Nagpal⁶ has written about 17 more platforms which are *“purely peer-to-peer version of electronic cash.”*

At this stage readers are must be keen to know what all applications are possible using Blockchain. The present author has tried to compile the following illustrative list, which is in no way being claimed to be comprehensive, because every week and month a new use is being ideated, developed, tested, and / or put to pilot or full commercial use in some parts of the world.

Finance, Industry, Trade and Commerce	Government Service Functions and Others
1. Banking, Insurance, Credit history, FinTech	I. Government functions and services
2. Cross border P2P and B2B remittances	1. Citizens identity management and Passport
3. Investments in capital assets, Derivatives	2. Public voting
4. P2P Lending, Crowd funding, Micro finance	3. Land registration, title deed and mortgage
5. eCommerce, Software Apps sale	4. Wills and inheritances
6. Health care	5. Underground water use management
7. End to end export-import business	6. Correction houses, orphanages
8. Multimodal supply chain	7. Gun safety management
9. Real estate listing and rental	8. Law enforcement and crime management
10. Sea and dry port management	II. Others
11. Security trading, stock exchange management	1. Music streaming
12. Contracts – Digital Rights, Wagers, Escrows	2. IPR of singers and musicians
13. Public transport and ride sharing	3. Donations and charity, old age home
14. Public car parking at airports	4. Protection of right to speak and write
15. Pollution control devices and carbon credit	5. Testimonials and credential documentation



16. Travel and leisure management	6. Cloud storage and cybersecurity
17. Warranty and maintenance services by OEMs	7. Education
18. IOT and Blockchain of Things	8. Human resource

The following information are relevant and useful to know in the context of Blockchain technology applications and implementations:

- Power of Blockchain is being further enhanced with simultaneous applications of Artificial Intelligence, Machine Learning, Deep Learning, Predictive Modelling and Internet of things. In near future Swarm Computing and Human Brain- Computer Interface are expected to enhance the power of Blockchain.
- Existing and established entities can migrate from legacy systems to DLT based operations and accept payments through CC. The myth that Blockchain is for startups only has been invalidated by a European company called ParkinGo.
- There are several instances of service providers using Blockchain resorting to issue of their own CC like Helthureum for healthcare management. Some startups are also using and / or planning for Initial Coin Offering (ICO) of CCs as medium of raising funds for their projects, e. g., GladAge.
- As is evident from the above list DLT can encompass different streams of activities in one application. Therefore, very existence of embedded 'Smart Contracts' will transcend multitude of legislations within and across sovereign boundaries when participants are from different countries, e. g. export-import transactions. This will cause legal disruptions.
- As per the findings of a recent survey of Gartner, worldwide 20.4 Bln. connected things will be in use by 2020, as against 8.4 Bln. in 2017, i. e., increase by 142%. But the centralised model that currently supports billions of smart devices connected to the IoT devices fails to address several critical risk issues. Technologists are trying to use IoT devices like tracking / tamper proofing seals, powered by Blockchain, to eliminate cyber-physical gap and create a transparent and responsible system for logistics management. This concept is being christened as 'Blockchain of Things'.
- Efforts are also on for ensuring omnichannel delivery with interoperability between more

than one DLT platforms. These will add versatility, e. g., payments using a digital currency, offered by a separate FinTech operator, while business operations are done in a different DLT. This will enhance user acceptances.

- International Decentralized Association of Cryptocurrency and Blockchain (IDACB), is working on basic principles of market legal regulation and synchronize law initiatives for various countries in Blockchain and CCs. Efforts are on to propose law initiatives for regulators based on best countries' practices. IDACB is said to already have memberships of about seventy-five countries.
- Some digital technologists are working for ushering in the requirements Industry 5.0 by cerebral designs of their Blockchain in such a flexible manner that each customer will have the option personalise his / her own needs and meet his / her unique requirements by using the platform the way they want.

Recent Developments

The following is an illustrative list of major recent developments. These will provide directional guiding light to digital scientists for their journey through roadless paths to the dream destinations of Industry 4.0.

- "U.S. regulators are still looking into cryptocurrencies and initial coin offerings, but don't aim to suppress the industry, according to comments made during a panel at CoinDesk's Consensus 2018 conference in New York."⁷
- "On May 16th, (2018) The European Parliament Committee on Research, Industry and Energy, passed a blockchain resolution, and included a section on initial coin offerings (ICOs). ... Greek S&D member Eva Kaili said that it was an important moment because this was the first time a big



institution such as a Parliament was discussing the regulatory framework requirements for distributed ledger technologies and blockchain.”⁸

- “J.P. Morgan Chase & Co. is experimenting with the way blockchain could help cut costs and facilitate smoother transactions within capital markets. ... The bank demonstrated a prototype of its blockchain-based platform for capital markets, called Dromaius, on May 16th at the Consensus 2018 conference...said Christine Moy, executive director and head of J.P. Morgan's Blockchain Center of Excellence.”⁹
- Emirates Real-estate Solutions, the technology arm of Dubai Land Development Authority, will develop five real estate related solutions using Blockchain, viz, Title deed management, Smart sales, Real estate listing portal, Rental platform and Mortgage platform.¹⁰The readers may be aware that the UAE Government has already taken multitude of ambitious initiatives for making Dubai as the happiest and smartest city of the world by 2020. Blockchain will play a pivotal role for achieving this target.

Recommendations

The present author would recommend for technologists, users, sovereign governments, regulators and all other stake holders associated with Blockchain to reflect upon the following comments and recommendations while dealing with DLT for solution building. He is of the view that consideration of these will further augment the power and resourcefulness of Blockchain.

1. **Power of Mind:** Time immemorial Indian mythology, particularly Bhagvad Gita, has taught us that “We are born into the world of nature, Our second birth is into the world of spirit. But he who with strong body serving mind, Gives up his power to worthy work.” It is power of mind and spirit that will determine sustainable success in Industry 4.0 era. This comment can be corroborated by the famous quote of Albert Einstein who said

that, “The true sign of intelligence is not knowledge, but imagination.”

2. **Application of '7WH Principle':** In present market-driven globalised economy risks and ever-changing dimensions of volatilities, uncertainties, complexities and ambiguities (VUCA) in the business ecosystem are day by day becoming more unpredictable. To withstand and combat these five foundations are required for a business ready solution. Those are Trust, Shared value proposition, Value experience, Ease of application, and Sustainability. IT professionals will be able to test whether any DLT based solution is really built on those five foundations and an antithesis of those risks by testing for the following '7WH Principle' based questions ideated by the present author:

- What are the latent needs and demands of business, society and humanity at large?
- Who are the service providers and target customers?
- When the solution is to be delivered, updated and up scaled?
- Where is the universe of customer located and for what value?
- Whose regulations are to be complied with and for what risk coverages?
- Whom should the user refer to in case of trouble?
- Whether any better solution is being offered by competitors for edge in competitive advantage?
- How to minimize risks of and value destructions by legacy systems, assess and track users' delight to ensure sustainability?

At every step of system development life cycle (SDLC) the system developers must apply the above questions to ensure sustainable effectiveness and desired ROI of their solution.

3. **Humane Dimensions:** Technology does not have morality, passion, emotion, ethics and value generation skills. Technologists have. Success of Blockchain will depend on those humane qualities of solution builders, leaving



least scope for the user to deploy against humanity with an ulterior greedy motive. Blockchain will attain 'Darling of the Mass' status like 'Internet' if it is adopted and applied with the mindset of universal altruism. It should be grounded on the foundation of sustainable shared values. Blockchain technologists cannot become just another 'Technology-tribe'. They should be harbingers of shared developments for inclusive happiness of mass. Blockchain should have its own ism irrespective of globalisation and protectionism.

4. **Regulatory Need:** www has transcended geographical boundaries, Blockchain will have to transcend sovereign / political boundaries for achieving its dream to be the 'Powerhouse of Industry 4.0' with ground-breaking successes. Humanity is one and the world is its home. Hence there is definite need of a global regulatory body for directional policy guidelines, defining international code of conduct, tracking and monitoring of applications, etc., which must be followed by all nations, besides own internal regulations. Institutions like UN or WTF can take this role. Objective will be to ensure that this powerful technology can also achieve, besides success for industry, trade and commerce; shared developments for inclusive happiness of all till the lowest strata of society across the world.

Blockchain and CMAs

CMAs will find enormous opportunities for participating in the process of developing market driven entity-specific business strategies, dovetailing the same with digital transformation strategies, providing consultations for risk-enabled performance management, etc. They can immensely contribute for articulating digitally transformed business requirements; participate in solution development using Blockchain, AI, Machine Learning, Forensic Data Analytics, etc. testing them before use. They can define revised policies and lay down SOPs for clients. They can also add values by conducting RAGE (Required, Available, Gap and Essential) Analysis before the said 7WH Principle is deployed and tested jointly with the digital scientists. All these will contribute for ensuring sustainable value creation

for business entities and the society as a whole for inclusive happiness.

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BIG DATA IN MANAGEMENT ACCOUNTING

“Big data is the new technology wave that has to do with enormous amount of unstructured data triggered by the internet-enabled environment. Management accountants have for long learned to integrate structured, quantitative data”

Organisations essentially represent a synergistic partnership between people, processes, and information. People play various roles within a defined organisational structure (hierarchical, for instance), processes support decision making and operations, and the information generated supports various roles within that structure. Galbraith (1974) had convincingly argued that organisations are essentially a reflection of how an entity deals with uncertainty and in the process, uses information to support decision making.

While all three - people, process, and information - are necessary for an organisation to function, the information revolution over the past several decades has attached greater importance to data and data processing. Early computer-based systems, constrained by hardware capabilities, were meant to process large batches of financial transactions efficiently and accurately. With advances in data processing speed and data management systems, the emphasis shifted to software as the catalyst. Soon real-time processing capabilities matured, relational databases emerged and end-user computing became the norm. Thereafter, the internet took charge as the driver of the next revolutionary wave, putting innovation on the back of communication technologies and wireless networks. Expectations of 'anytime, anywhere' became economically and technologically feasible. Online everything became viable. Offshore outsourcing of information technology (IT) services prospered as a new global business framework

(Raval, 1999). Data servers on the web facilitated cloud storage and cloud computing (Raval, 2010). Currently, a new norm is being set by technological advances such as near-field communication (NFC) and mobile devices, virtual reality, and the internet of everything; and social advances, such as technologically supported social networks.

Now that we have a rich blend of potentially powerful systems components, the centre of attention goes to the resulting voluminous unstructured data generated outside of traditional and formal transaction processing systems. The most current surge in IT and business innovation is driven by the mind-boggling growth in what has been termed *big data* by TCS (2013). Big data represents an extremely large collection of data that can be best described as messy or unstructured.

What is big data?

The term big data was coined, not to distinguish from 'small' data because there's no such thing, but from the traditional, mostly transaction-oriented, and highly structured data, managed within the traditional data management systems, like relational data base management. These are the data, and information resulting from it, that the management normally uses to support operations, and make tactical and strategic decisions. In the established data management processes, the initial decision focuses on whether some data, if it can be captured, is of value to the organisation. Thus, for



example, a university may not be interested in capturing data about its students' hair colour or shoe size, for these attributes have very little value. Data could change over time, and it may cost more to have the data than its potential value. Intuitively, the value of data a firm chooses to capture is apparent, and the focus is on controlling the cost of collection, processing, and information generation. Thus, what *not* to capture was determined at the 'front gate'.

Not so with big data that are generated and captured in their form almost continually; their anticipated value is not the initial motivation to capture data, because of the low or uncertain value. On the flip side, such data are generated constantly in troves and it is up to the organisation to exploit them to improve performance. In contrast to structured data, a major challenge posed by big data concerns finding value - by generating information - from these heaps of data. One may call it an exercise to find a needle in a haystack. And yet, the potential of big data cannot be denied.

The 2013 TCS Big Data Global Trend Study reports that of the 1,217 firms surveyed, 53 percent (643 firms) had undertaken big data initiatives in 2012 and of these companies, 43 percent predicted a return on investment of more than 25 percent. At the extreme end, the business model of a company may entirely rest upon big data. For instance, the 2012 World Economic Forum report on big data (page 5), said that the Global Viral Forecasting Company (San Francisco) uses advanced data analysis on information mined from the internet to comprehensively identify the location, sources, and drivers of local outbreaks before they become global epidemics.

Big data is comprised of structured data that are not accommodated in the traditional data management systems, and all kinds of

unstructured data related in some way to the enterprise. The category of unstructured data includes emails, multimedia content, videos, messaging content, images, and social media content. The key drivers of the phenomenal growth of unstructured data include mobile devices on wireless networks, electronic sensors, social networks such as Facebook and Twitter, and numerous (mostly wireless) applications for routine and non-routine tasks and queries. These data include incidental events which, at the unit level, have very little significance. One major stream of big data is thus identified as "exhaust data."

In contrast to the field of nanotechnology where scale is predefined for nano-materials, what is 'big' is left rather vague in the big data domain. With entities developing more capacity to deal with big data, the relative positioning of what would be considered 'big', has shifted to a higher plane. Regardless of size considerations, the three characteristics of big data are that they occur in huge *volume* (scale), at a high speed or *velocity* (constantly streaming), and represent an enormous *variety* (different forms) in its media and form (structured, unstructured, multimedia), making 3Vs (volume, velocity, variety) as the core elements for recognising big data. Because of these rather dramatically different characteristics of unstructured data, technologies and systems, and processes developed to manage such data are quite different.

Management accountant and big data

Accountants are in the business of creating information. The dominant role of accountants, however, was limited largely to structured data; however, the opportunity to create

information that potentially produces value does not have to be constrained by whether the data you are

Now that we have a rich blend of potentially powerful systems components, the centre of attention goes to the resulting voluminous unstructured data generated outside of traditional and formal transaction processing systems

The management accountant is likely to be involved in the use of qualitative or non-financial data, like the activity-based costing system or in a comprehensive dashboard such as the balanced score card



working with, is structured or unstructured, quantitative or qualitative, financial or non-financial. If anything, it is highly probable that valuable information can be harnessed from unstructured data, something that may not exist in, or be extractable from structured sources. For example, auto insurance companies promote the use of a device that would track the driving habits of the insured. Such data are converted into insightful information about risks, unique to the insured. In turn, this would allow the carrier to price its insurance products in line with the subscriber's risks and even motivate subscribers to improve their driving patterns to better mitigate risks. Armed with such insights, management accountants can recommend an effective pricing strategy, reduce risks to the company while improving profitability, and help expand the subscriber base with the help of applications and devices to manage risks. This was possible because unstructured data provided additional insights to create value.

The application of big data in managerial accounting holds significant potential and many organisations are already involved in capturing and that to create value. Cities encourage residents to report potholes on the roads by sending images via smartphones, and local weather forecasting agencies help fans attending a major outdoor sports event track looming thunderstorms. Procter & Gamble aligns its global supply chain dynamically using big data. Retail businesses track consumer buying behaviour to develop insights on consumer reaction to the week's menu of items on sale and what was purchased in response to the sales promotion. McKinsey Global Institute (MGI) reported in 2011 that a retailer using big data to the fullest has the potential to increase its operating margin by 60 percent.

As such, the management accountant is likely to be involved in the use of qualitative or non-financial data, like the activity-based costing system or in a comprehensive dashboard such as the balanced score card. Even some of the routine requirements, such as variance analysis to track the causes of a significant deviation from the standard, may draw

the management accountant into looking at unstructured data. Accountants in some firms could be ahead of the curve, attempting to produce triple-bottom line reports that include economic, social, and environmental performance reports in a unified format. Invariably, such reports would be a great deal of unstructured data. So, the leap from the use of structured data to the big data is not as insurmountable as it might first appear. Since management accountants are constantly in the business of sifting data to find information to build intelligence, they are the most likely candidates to team up with technology and executive leadership in finding ways to make big data work for their firm.

Thus, the argument for aggressive use of unstructured data to create value has merit and the best position in any organisation that could be empowered to lead the effort to use big data is the management accountant. As an expert in creating information to support all kinds of decisions, the management accountant should take the initiative to identify opportunities for the use of big data to create value, and propose the launching of experiments in the use of big data.

Executive leadership
focused on data-
driven decision
making could
facilitate introduction
of big data with ease
because the
appetite to use data
is already inherent in
the mindset

Challenges

Here are some of the challenges of incorporating big data in management accounting

The learning curve effect: There is a learning curve involved in the use of unstructured data and in integrating structured data with unstructured data. Depending on the organisation and its human resource talent, the learning curve can be manageable or steep. If the

company's leadership has not developed a data-driven mindset as part of its culture, having more data may not help much and they are likely to remain underutilised. On the other hand, executive leadership focused on data-driven decision making could facilitate introduction of big data with ease because the appetite to use data is already inherent in the mindset. Since most unstructured data result from the internet backbone, internet-centric companies like Netflix and others, are more likely to deploy big data than those who do not use the internet heavily in their operations. The 2013 TCS Big



Data Survey (page 10) shows that companies that generate more than 75 percent of their revenue over the internet spend about six times more on big data than the light users of the internet.

Innovation and creativity are assumed: These are not the function of big data. As Ackoff (1967) puts it, more data does not mean better decisions. Big data, specifically, are very different from the structured transaction-oriented data. Their use in creating value requires innovative thinking to develop non-traditional insights. Like data-driven mindset, the culture of innovation is assumed in successful exploitation of big data. Management accountants not only need to be aware of this prerequisite, but also should help the executive team in nurturing the environment of innovation.

Big data can be used in innovative ways to support traditional accounting and financial reporting value chain. For instance, big data may provide insights on how business risks are changing and whether the leads provided by the data suggest new fraud-risk factors. In management accounting, big data may lead to more reliable financial forecasts and more importantly, they may help discover drivers of revenue and margins and how to engage these drivers to improve operating performance. In sum, while the tool kit of the management accountant may remain unchanged, big data would likely induce a richer set of diverse inputs to unearth valuable correlations and causations.

Big data is big: Finding a needle in the haystack could be a costly and uncertain adventure. Roe (2012) noted that according to IDC's newest estimate, 1.8 zettabytes (a zettabyte equals one trillion gigabytes) of digital data were created and replicated in the world in 2011. This is projected to climb to 7.9 zettabytes by 2015. In an experiment to squeeze value out of such enormous data, one might find that the process is messy, learning curve is steep, and potential payoffs are limited. Thus, it is likely that for a variety of reasons, effectively leveraging big data could pose a challenge. MGI has developed a measure to determine the relative ease of capturing the value potential of big data. It reports that ease of capturing value varies across sectors, with manufacturing, information processing, insurance, banking and finance, and healthcare sectors at the high end. The laggards include the government, art and entertainment, recreation, and

educational services. So, the degree of challenge would vary depending on the sector.

Timely use of data is critical: Some insights from big data may have ongoing benefit. In the auto insurance company example discussed earlier, the driver behaviour and resulting auto-insurance pricing decisions become ongoing information intelligence. However, much of the big data may be perishable; they relate to here-and-now states and therefore, are of value in the immediate window of time. For example, if a person is relaxing at Juhu beach in Mumbai at 7pm on Sunday night, sending him a discount coupon for dinner at a nearby restaurant on the next day is of little value. While time-sensitive information may also have some permanent impact on the management control system (like, logistics may be realigned using insights from big data on consumer behaviour), much of time-sensitive data may simply be contextual, may not reveal any pattern, and may be inconsistent, uninterruptable, or unreliable.

Conclusion

While technology development to manage big data as an information resource has taken the lead, potential users are still wondering if this is a myth. The path to successful deployment of big data is filled with uncertainty, and there is a chance that some environments would nurture big data experimentation more than others. Success, even spotty success, may mean competitive advantage; it may result in new or improved services, more efficient supply chain, better customer experience, and higher profit margins and income. Not being prepared to cope with the big data tidal wave could have serious consequences ranging from lower financial viability to total extinction. After all, big data exhibit traits of disruptive technology that could set a new norm over the next few years.

The management accountants are most suited to take the lead. They are producers of information and have knowledge of how to combine quantitative and qualitative data to draw insights from a holistic dashboard. They could help reshape their companies, calibrate information value chain, and balance the use of the traditional and big data optimally in their organisation. A status quo does not appear to be an attractive option.



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MANAGEMENT ACCOUNTANTS MARCHING DILIGENTLY INTO THE FUTURE: CONDUCTING DUE DILIGENCE WITH BIG DATA ANALYTICS

The last decade, also the era of deal making, saw many a successful deal such as Time Warner-AT&T merger in 2016, Microsoft & LinkedIn in 2016, Pfizer Inc. & Wyeth in 2009. One of the common factors amongst them all- "an effective due diligence." Due Diligence, a term that became popular in 1982 includes processes that have withstood the test of times¹. The business environment is changing rapidly, the past is no longer the complete indicator of the future and the processes need to be adapted for an effective due diligence. Learning about its process, effectiveness, risks associated and the traps in the procedures are essential for performing due diligence right. Big Data Analytics helps avoid overlooking critical factors or rendering them inconsequential to the deal, which happens due to the ever changing circumstances, can cause massive damage to businesses rather than create value.

Some of the landmark international deals in the recent past like Teva-Allergan Generics, one of the biggest pharmaceutical deal of 2015; Bain & Company, a leading private equity firm; or Nestle, a leading conglomerate with huge success in Merger and Acquisition, have depicted the significance of conducting a detailed due diligence activity for concluding any successful restructuring deals in the contemporary world².

To better understand the role of Big data analytics in due diligence in today's world, we structure the article as under:

- Analytics, Robotics and Artificial Intelligence (AI) in Due Diligence.
- Due Diligence in the emerging markets with Big Data Analytics.
- Due Diligence in practice; The Tata-Thyssenkrupp joint venture.
- Due diligence as a process.

Analytics, Robotics and Artificial intelligence (AI) in Due Diligence

Analytics

Data is the most important aspect of the due diligence and with the advancing technology business analytics provides that insight, which helps the researchers in analyzing financial data beyond financial statements. In a mergers and acquisition transactions, business analytics can be a blessing, as the data can be used accurate

¹http://ink.library.smu.edu.sg/cgi/viewcontent.cgi?article=4304&context=ikcsb_research

²https://books.google.co.in/books?hl=en&lr=&id=RKsuW_mUs1kC&oi=fnd&pg=PR11&dq=due+diligence+in+business+transactions&ots=UlmYjQFE28&sig=7I9EKe_EpctXQ51icKhvSQHgptw#v=onepage&q&f=false (Due Diligence Techniques and Analysis – e-book)



valuations using models and scenario forecasting. Using business analytics for this process can help both the parties to analyse data sets on both ends. Some proper analytics can be helpful in showing the variance and deviation of forecasted data indicating whether the predicted value can be relied upon or not. A compressive dashboard can also be prepared using the business analytics for showing the relationship between different components helpful in decision making. The companies with a strong ERP system act as a catalyst in improving the overall data mining and identifying any loopholes in advance. Accordingly, companies who can adapt cutting edge technology like business analytics will be successful in future as it helps them to understand how they manage data and use it for decision making process³. The process has evolved over the years and will be rapidly evolving in coming future; hence the stakeholders are required to adapt and implement these new changes in their process to get the desired results.

In a Mergers and Acquisition transaction, a large number of documents (legal and commercial) need to be perused in a relatively short period of time and analytics software like NVivo can be gainfully used for qualitative data analysis. Also the past judgments of the honourable courts and word trends of similar legal documents can be used in conjunction with AI to find the relevant information.

Robotics & Artificial Intelligence (AI)

Artificial intelligence i.e. AI has now become sought-after technological advent where organizations are using machine learning techniques to automate the process which generally took longer time with high human interference. Robotics is the branch of AI which can be used to implement the automation of most of the processes. In due diligence, robotics can be handy in reporting, where machines can read the reported document in compliance with the regulations. The contract review can also be done through machine learning, which effectively will be low cost & high-quality. The time involved in the process is also reduced significantly thereby, helping dealmakers in getting the market, especially emerging nations' trends quickly. Of course, the entire exercise of AI can be success if there is no compromise on the minute investigation in a due diligence process and ensures continue data flow system, both in pre and post due diligence activity.

Due Diligence in Emerging Market

Due Diligence in Emerging Market Hedge Funds

With the changing times, hedge funds organization have started using due diligence as a critical component in their activities. After major frauds in the past such as the infamous Bernard Madoff scandal (discovered in 2008), the organizations allocating hedge funds and the investors have started using big data analytics in the due diligence to mitigate the risk.

In hedge funds, the compliance process, IT infrastructure, valuation techniques and gathering data to other operational risks associated with the funds are termed as operational due diligence. However, there are frameworks designed to review the operational due diligence reviews implemented at the fund of hedge fund level. These frameworks styles are categorized as Dedicated, Shared, Modular and Hybrid⁴.

"Dedicated" is a framework where a dedicated team member is designated to evaluate operational risks involved in the hedge funds. "Shared" is a framework where there is no dedicated team member and the due diligence is done by the investor itself. The "Modular" framework includes classification of different functional components among different specialist with specific business knowledge. The "Hybrid" framework is the combination of above three frameworks⁴.

³MAQ_SPRINGS_2015_BRANDS -/media/fba0ebd670414d25a467d4cff8d0c691.ashx

⁴https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1409851



Due Diligence in Merger and Acquisition (M&A) Transactions

The purpose of due diligence in an M&A transaction is to investigate the company to be acquired thoroughly and also to ascertain whether the business is actually what it is claimed to be. Due diligence for M&A should be done patiently in order to identify risks of black swans, if any, in the business⁵. Thus in the M&A transactions, there are two sides of due diligence—the buyer side due diligence and the seller side due diligence. The former focuses more on the information memorandum, market analysis, and operational due diligence, while the latter focuses more on the avenues available for maximum gain ceding more.

The due diligence in M&A also supports the valuation process and the accuracy of available data is tested. All financial documents, reporting standards of the target company should also be verified. The process starts with a first proposal indicating willing of both parties of engaging in the deal, after which, a non-disclosure agreement is signed, and a letter of intent is issued once the term sheet is finalized where deal terms are explained in detail. The letter of intent leads to a definitive agreement which confirms the deal.

Due Diligence in the Private Equity (PE) context

One of the key parameters for the due diligence in private equity is the performance of fund level returns diversified across different sectors⁶. Also, the private equity managers need different sector expert who can perform due diligence of the different sectorial funds, these functional experts help the managers to perform diligence in a systematic and more knowledgeable manner through the use of Predictive Analytics. The difference in perspective of due diligence of a PE firm and a Corporate/strategic buyer are as follows:

P/E player	Corporate player
More demanding due diligence at the outset due to lack of understanding of the new businesses.	A corporate player will often benefit from its intimate knowledge of the target company's industry
Focus is on <ul style="list-style-type: none">• Value in totality• External Growth opportunities• Potential exit routes	Focus is on <ul style="list-style-type: none">• the high value assets of the target• Synergies (potential) that may arise
Have to be swift in order to gain maximum advantage	Under normal circumstances, can take their time for the entire process

Due Diligence in Project Management

The core theme in project management is to develop quality control and due diligence lays the foundation of the whole process. This is helpful in establishing the reliability of different analysis done in any project including cost-benefit analysis and need-impact assessment. The further implications and road map to the project is decided from the results of due diligence. To perform due diligence in project management, there are certain questions which need to be answered for proper evaluation of cost-benefit analysis. These questions are broadly related to:

- What is the forecasted value of cost & benefits of the project and how it is calculated?
- How much will the expected value vary based on certain indicators i.e. the deviation of the actual versus the projected?

Such questions when addressed through big data analytics help a manager understand whether the estimates are likely to be overestimated or underestimated. This due diligence is part of an outside perspective which managers prefer as there can be a certain bias which managers and forecasters may be inclined to and can

⁵https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2294836

⁶https://papers.ssrn.com/sol3/papers.cfm?abstract_id=942991



make honest mistakes. Therefore, a due diligence process with an outside view through analytics can be welcomed by forecasters and managers⁷.

The Cultural Due Diligence

Cultural due diligence has recently gained popularity among the investors as over the years, people have seen cultural clash among the corporates once they merge or one party acquires another. The cultural clash arises due to due diligence oversight and not analysing the impact of corporate culture on organizational performance. Companies spend a lot of money and time in analysing physical documents, financials and other historical events of the company but neglecting cultural correlation among the dealing parties. To avoid such cultural clashes, companies should broadly include these parameters viz; key business drivers, infrastructure, organizational practices, leadership and management teams, supervisory & work practices and technology utilization. The data collection for cultural due diligence should be based on these parameters and then the qualitative analysis should be done primarily interviews and focus group. This will help understand whether the two corporates have cultural similarity or not. This will prevent the loss, one would have to bear once the deal is finalised⁸. In 2005, the same error was made by Sprint Corp. when they were trying to acquire Nextel Communications Inc. to boost its user base and revenue creating a wireless powerhouse. Nextel's casual culture did not fit well with Sprint's more corporate professional culture. The two companies struggled to blend not only cultures but even billing systems. This resulted in a loss of \$29.5 Billion which could have been avoided if proper due diligence would have been performed focusing on the cultural synergies through advanced analytics⁹. As the cultural due diligence is simply a subject of good business management and cultural clash should be seen coming by every manager involved in the process.

Due Diligence in Practice: The THYSSENKRUPP TATA STEEL JOINT VENTURE

A recent and appropriate illustration of a well-executed due diligence is would be the Thyssenkrupp AG and Tata Steel Limited Joint Venture (JV). The two industry leaders operating in total opposite territory, has decided to go for a JV. Both of these companies wanted to make a sustainable business in European market. With Thyssenkrupp aiming for economies of scale by partnering with Tata Steel to produce high quality steel and gain a significant market share. The JV will create the 2nd largest steel player in the European market. Since, both companies operated in different geographical location, due diligence will play an important role in the venture. The companies differ in the business model, operations, management and culture¹⁰.

The JV was initiated when both the companies started looking for a business partner, because of the lucrative nature of European steel market. The companies engaged into the origination phase and started evaluating the options and entry strategy. Once the clear vision and synergies were established, both companies signed the memorandum of understanding and decided to enter a 50-50 shareholding venture. The agreement was still in non-binding phase i.e. initial underwriting. The main agenda was to evaluate key challenges faced by both of the companies to build a sustainable business operation. The decisions were taken by the end of 2017 since the state of origination which states that, the company will widen its portfolio, focus on innovation, quality, technology and cost leadership¹¹.

The deal was in pre-diligence phase till the memorandum of understanding (MoU) was signed, and has been in phase 1 of due-diligence process since then. A new two-tier governance structure has been formed, one being supervisory board focusing solely operation and other being management board creating synergies across the leaders from both the group. Another important aspect which is taken into consideration by both of the companies is the client. Since the industrial customers of Tata steel will also gain the benefit of Thyssenkrupp AG Original Equipment Manufacturer (OEM) will take the synergy to next level. The financials are also in favour of both companies. As per the document released by Tata steel, the JV has estimated the initial cost synergy of €400-600m per annum of a steady state basis and henceforth doubling the profit. The strong European portfolio was expected to help Tata steel to focus on its native place operation in India and scale up its business¹⁰. But the challenges posed by the company be it

⁷<https://www.sciencedirect.com/science/article/pii/S026378631200138X>

⁸<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.469.2516&rep=rep1&type=pdf>

⁹<https://www.firmex.com/thedealroom/top-10-due-diligence-disasters/>

¹⁰ **Thyssenkrupp Tata Steel Joint Venture: Nerves of steel**

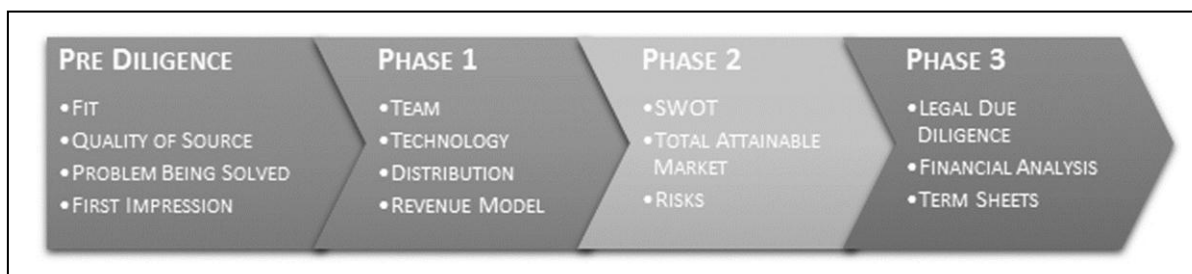
¹¹<http://www.tatasteel.com/media/5004/tata-steel-thyssenkrupp-jv-final.pdf>



regulatory, geographical, management or cultural all of which can only be solved through due diligence. This is how important due diligence and can be used to analysis different scenarios.

The due Diligence PROCESS THROUGH BIG DATA ANALYTICS

Due Diligence is undertaken before the investors binds to a contract.¹² As the following chart indicates, how due diligence should be performed in different phases.



Pre-Diligence

The effectiveness of the process can be significantly improved if the investor has the sufficient information way before the agreement is finalised. This phase is started even before the investor is engaged with its target company. Initial talks decide the course of the deal, but before the talk begins, the investor should put in an effort to analysis the cost and other factors involved in the deal. In this phase a complete checklist of the documents is prepared which is very helpful for the investors so that the information required for the deal can be verified. Also, any informal information which is received from unverified sources should be recorded immediately and verified in later stages. This process of note-taking can be very helpful to make data centrally available through the file for later stages of the process².

Approaching the Target

Once the target is approached, the intention of due diligence should be made clear. This approach brings transparency in the deal which is the essential part of the process. Now, that the investor has background information about the target, the investor can ask all the relevant questions inside out to solve all the queries. In the same phase, an investor can also request for the data officially. This data will verify the information gathered in the preliminary stage. The investigator who is gathering information should be attentive to not only gather information what is asked but also every piece of information which seems relevant².

Analysing Financials and Trends

Reviewing financials of the company or the product you are investing in is the best way to know your target better. The revenues, profits, margin and capitalization tell the health of the company and a historical comparison should be done to confirm the same. Apart from fundamental ratios, ratios like P/E, P/S should be checked to confirm the financial health of the company. Also, trends can be helpful to see if the margin is rising, falling or constant. Usually, all the information required to conduct this step can be found in the financial report of the company. (3). The key areas of attention are broad; net worth, working capital management, sustainability of current revenues, capital structure and accounting policies. These parameters will help the investigator to find out if the current revenues are adequate and will the profit levels be increasing.

¹² Flow Chart Source - <http://www.toniic.com/step-3-conducting-due-diligence/>



Competitors and Industries

Now, once the financial health of the target has been established, industry sizing and competitors helps you to take more informed decisions. Competitors analysis clearly shows the where the target lies in the spectrum¹³.

Legal & Regulatory Due Diligence

One of the most important thing in the process is to manage legal due diligence. There can be certain issues in the whole process which needs to be addressed and it should be done during the process and not at the end. All documents should be closely reviewed and updated periodically and should be asked for if there is some missing one¹⁴. It is imperative to analyse the impact of compliances from all sections, inter-alia anti-money laundering or anti-bribery and corruption laws. Any pending litigation and its impact should also be covered in the process. The regulatory compliance procedure should be verified properly. An investor should know if the target properly follows all the compliance related to all local regulations including environmental issues.

Currently in India, place of effective management (PoEM), introduced with effect from April 2016, is an essential part of any merger or acquisition and must be included in legal & regulatory due diligence. The PoEM is defined as the place where the value creation takes place. This was introduced to prevent leakage of taxes. The ramifications are huge and the previously followed structures to invest in India and avoid taxes will not work anymore. For example:

- A company registered in USA holds all its board meetings in India
- Two employees of a company do all the work in India while the company has just a registered P.O. box in Singapore
- Indian company sets up a subsidiary unit in Mauritius with the same directors as the parent unit and the value creation takes place in India

In all the above cases the foreign companies can be deemed by virtue of the new provisions to be tax residents in India and their global incomes can be taxed in India at the rate of 40%.

CONCLUSION

Risk mitigation and value creation are the reason why due diligence is performed by most of the organizations. All the industry and company risks should be considered in totality while executing both the buy side and the sell side due diligence. Big Data Analytics can help the management accountants plays a crucial role in filling in all the information gaps and thus providing valuable insights which has a deep impact on the merits of the due diligence process.

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¹³<https://www.investopedia.com/articles/stocks/08/due-diligence.asp>

¹⁴<https://www.icsi.edu/Portals/72/Year%202017/Presentation/Legal%20Due%20Diligence%20-%20180217%20-%20Pooja%20Patel.pdf>



BIG DATA: BIG INSIGHT FROM MULTIPLE SOURCES FOR MANAGEMENT ACCOUNTANTS

The past decade has seen the massive explosion of digital technology in all aspects of daily life. Digital products such as Facebook, Twitter, WhatsApp, YouTube, smartphone, Flip kart / Amazon and other e-commerce sites, digital wallets have become pervasive in our life. Likewise, in the B2B scenarios in addition to typical ERP and other commercial applications, Point of Sale billing machines, Debit / Credit card swiping machines, CCTV footage, Barcode Readers, RFID sensors, machine sensors etc., are also generating a huge amount of digital data. This phenomenon, coupled with the great advances in the computing technology, (covering both storage and processing) have made available, a huge reservoir of data for analysis for a management accountant.

BIG DATA is the technology which enables the collation, processing and generating analytical reports of huge amount of data coming from different varied sources.

This article introduces the concept of Big Data, its functionalities and coverage from a non-technical perspective to the Management Accountant and later discusses how management accountant can use the same to enhance the efficiency and effectiveness of his/

her role.

What is Big Data:

The exploding digitization of activities both in B2B and B2C space has made available a huge amount of data for analysis from multiple sources in various forms. Big Data tools enables Management Accounts to analysis of such huge data to gain in - depth insights for managerial decision making. This article introduces the Big Data concept and discusses how Management accountant can use these tools for gaining valuable insights for formulating organization strategy for enhancing value for all stakeholders.

Wikipedia defines Big Data as under:

"Big data represents the information assets characterized by such a high volume, velocity and variety to require specific technology and analytical methods for its transformation into value"

As per the above definition, the following are the main characters of BIG DATA which distinguishes from other IT applications (such as ERP, CRM, etc.).

High Volume: Storing and processing huge amount of data in terms of terabytes (1024GB) and petabytes (1024Terabytes)

High Velocity: Big Data tools should be able to handle the huge volume of data is getting generated at a rapid pace / speed. If an FMCG company, promoting its brand during a special event like IPL, has to be track public response in social media, it has to analyse a) Twitter feed consisting of roughly 175 million tweets every day and b) 34,722 Likes every minute of the



day, expressed by the users in Facebook.

High Variety: Big Data should be able to handle multiple varieties of data coming from different sources

Other literatures on the subject, add the following additional distinguishing features to the above list.

Veracity: Since Big Data would handle a huge volume of varied data, it would encounter the problem of verifying the veracity of the data i.e., ensuring that the bits of data which are unreliable, due to biases, noises and abnormality in data, are identified and appropriately handled.

Validity: Big Data applications are intended for a specific objective and a lot of data being processed may not be valid or required for the intended purpose. Filtering of the huge data coming from large, varied sources so as to pick up what is required, and to ensure the data is correct and accurate i.e., in other words, ensuring the validity of the data would be a challenge.

Volatility: Not all the huge data collected need to be stored for a long time. After the analysis the same may be discarded if not required for future use. Volatility refers to the issue of how long the data should be stored and used.

Varieties of data:

Based on the Source:

1. Internal:

ERP Data covering supply chain and financial accounting activities

CRM Data covering customer relation management process

Data from function specific application packages kept outside the scope of ERP

- Quality Control
- HR, Payroll, attendance data etc.,
- Security and other administration related data.
- Point of Sale billing data

Data from Company website, click through data, browser's profile etc.

Data captured by the machines / equipment during operation (CNC Machines, IT servers etc.)

Data generated through Internet of Things (IOT). RFID etc.

Emails, and texts (XL, Word, PDF etc.) generated during the day to day working.

Images from CC TV Cameras and other internal sources.

2. External Data

Data from supply chain partner for example distributors', Point of Sale, stock data etc.

Data from official sources: Census data, Govt official statistics, Data from industry associations, Non- Government think tanks etc.

Data from social media: Facebook, Twitter, Instagram etc.

Data from Web pages: Websites, Blogs,

Using the Big Data Tools, the Management Accountant can conduct analysis in a holistic manner, combining the data from different disparate sources as listed above, so as to get much better insights.

Based on Structure of data

1. **Structured Data:** As defined by Techopedia, "Structure Data are the data that are organized in a format easily used by a database or other technology. Data confirm to fixed fields. That means those utilizing the data can anticipate having fixed – length pieces of information and consistent models in order to process that information".

The data from application packages such as ERP, RFID, Point of Sale Data etc., are the examples.

2. **Unstructured data:** As defined by Techopedia "Unstructured data represents any data that does not have a recognizable structure. Unstructured data also may be



identified as loosely structured data, wherein the data sources include a structure, but not all data in a data set follow the same structure. Unstructured data usually does not include a predefined data model, and it may not match well with relational tables."

Text data from internal sources such as "Emails, Word, PP, PDF docs", Social media data on face book and twitter, data in webpages are the examples of unstructured data.

Text Analytics, an important additional tool for Management Accountant;

Having predominantly worked with numbers as input throughout their professional life and extensively used ERP as the source of input data, Management accountants are very much aware of the usage of structured Data to derive information and insight. They can add Text Analytics as a very important tool in their armory.

A very brief introduction to the Text Analytics is given below.

Wikipedia defines Text Analytics (Or Text Mining) as under

Text mining, also referred to as text data mining, roughly equivalent to text analytics, is the process of deriving high-quality information from text. Text mining usually involves the process of structuring the input text (usually parsing, along with the addition of some derived linguistic features and the removal of others, and subsequent insertion into a database), deriving patterns within the structured data, and finally evaluation and interpretation of the output.

Text Analytics aims to provide the following types of outputs

(Source: Practical Text Mining and Statistical analysis for Non - Structured text data Application: by G Miner and others)

- 1) *Search and Information Retrieval: Storage and Retrieval of Text Documents, including search engines and keyword search*
- 2) *Document Clustering: Grouping and Categorizing terms, snippets, paragraphs or*

documents, using data mining clustering methods.

- 3) *Document Classification: Grouping and Categorizing terms, snippets, paragraphs or documents, using data mining classification methods based on models trained on labeled methods.*
- 4) *Web Mining: Data and Text mining on the internet, with a specific focus on the scale and interconnectedness of the web.*
- 5) *Information Extraction: Identification and Extraction of the relevant facts and relationships from unstructured text; the process of making structured data from unstructured and semi structured text.*
- 6) *Natural Language Processing: Low level language processing and understanding tasks. (e.g. tagging parts of speech) often used synonymously with computational linguistics*
- 7) *Concept Extraction: Grouping of words and phrases into semantically similar groups.*

Management Accountant adding value using Big Data.

Management Accountant primarily adds value to the organization by

- i. Assisting the Sr. Management in formulating the Organization's strategy, which involves, providing cost and revenue inputs for developing different financial forecast models under various assumptions, interpreting and analyzing the results shown up in the models and assessing the controllable and uncontrollable risks involved in executing the various possible strategic options.
- ii. Devising and implementing the planning systems to execute the above strategy and performance management systems to track the actuals so that he can highlight the areas of inefficiencies and losses and opportunities for improvement.

Below table shows how BIG DATA would broaden availability of Data / Information for Management accountant so that he can enhance his contribution, many more times, to the organization in above areas.



Types / Areas of Data, information	Traditional Data used by Management Accountant (mainly ERP)	BIG Data Tools.
Nature of Data	Structured	Structured and Unstructured (Text)
Source of Data	Totally internal to organization	Internal + External to organization
Scope of usage of internal Structured Data	Financial + Operational Data to the extent integrated with ERP	ERP Data + structured data from Non ERP sources (sensors and machine data coming from CNC machines, Internet of Things etc., Function specific applications such as Quality, Point of sales data etc.,)
Scope of usage of Un Structured Data (Text)	Unstructured Text Data is not analyzed.	Both internal and External Text data is analyzed.
Granularity of Data	Granular transaction wise to the extent recorded in ERP	Much more granular than ERP data. (Point of Sale data is much more granular than day wise, item wise, sales summary recorded in ERP in a retail chain.)
Combining data of	Quite complicated,	Much Simpler under Big

different applications	even though there is concept of data warehouse / data mart, but with limited capability.	Data Tools, can combine data from different sources with different structures including unstructured data.
Focus of reporting	Mostly Day to day canned reports in standard formats. Data mining tools are used for gaining deeper insight.	Predominantly used for gaining deeper insight, through special analysis.

Practical areas for usage of BIG DATA by Management Accountant.

a) Getting the Voice of the Customer in a formal structured manner into the Planning and performance management systems:

Perhaps due to unavailability of solid verifiable data in a summary usable manner, Management Accountants to a very large extent were not incorporating the voice of the customers into their analytical reports.

Oscar Wilde (a noted English Poet) is said to have quipped "cynic was a man who knows the price of everything and the value of nothing." This is all the more applicable to typical accountants (including management accountants) who concern themselves only and only about the financially measurable facts (costs and revenue) of a transaction but not the value it generated to the customers.

The maximization of the value generated for the customer, within the targeted revenue and cost structure, is the ultimate purpose of any business strategy. However, "Value generated for the customer" is a very nebulous concept as it varies from customer to customer depends upon his / her socio economic background, personal preferences, fashion / hype of the day and such other factors. Any serious misunderstanding at a business strategy



level of what customer wants as a value proposition in the product would lead disastrous consequences. Remember the astounding failure of Nano Car, which came to market with a lot of fanfare and promise to revolutionize entry level car segment, but ultimately fizzled out as the customers gave Thumbs Down to the value / price equation of the car.

By analyzing the social media and the unstructured customer interactions recorded in CRM applications, organization's website, BIG DATA tools can answer the most important questions on customers' perception about their wants in the space where the organization is operating, how they feel about the organization offering vis some vis the competition etc., in a reliable structured methodical manner.

In a nutshell, Big Data analytics can provide insight about the "Value generated to the customer from the organization's operations "as perceived by the customers. Management Accountant can incorporate this important insight along with the usual data on revenue and costs while advising management on formulating the future strategies.

b) Developing unique / differentiated highly flexible offerings to customers (Dynamic Pricing)for maximizing value to all stake holders

With the insight from customer's voices, companies can develop unique/ differentiated flexible offerings to the customers.

In respect of a Dynamic pricing proposal, the challenge for the Management Accountant would be to evaluate / project on the following parameters and recommend appropriate strategy.

- a) the likely increase in the net overall revenue through this strategy,
- b) the likely increase in incremental cash cost (i.e., keeping aside the sunk cost)
- c) the likely increase in the intangible gains to the organization which is expected to pay off in the long run (Brand Equity built during short period discount sale at loss, paying off in the long run)

Of course, after the strategy is implemented, Management accountant would have to continuously monitor the actual performance of the

strategy on the ground and suggest course corrections.

Combining the data on customer's needs and value perceptions (which comes from the company's website, CRM and social media data) with the inventory / cost data (which comes from ERP data from procurement / stores / financials module), management accountant can develop an appropriate Dynamic pricing strategy. Subsequently for monitoring the actual performance, Management Accountant, can use the data coming from different sources (E –Commerce, POS platforms, sensors, ERP data on inventory status and cost structure etc.,) through Big Data tools.

E- Commerce companies heavily use this technique to maximize the sales, as they have the advantage of customer interacting with them totally in a digital mode. Businesses in large organized service industries such as Airlines and Hotels, (where the demand fluctuates considerably due to various predictable and unpredictable reasons, but the supply remains fixed with heavy fixed costs) have been using this technique for a long time.

Macy Inc. a US based premier Omni -channel retailer with iconic brands, adjusts pricing in near real time for 73 million items, based on demand and inventory using technology.

The increasing share of electricity generated from renewables, has created a situation where the supply of electricity into the grid is dynamic and volatile. Since electricity cannot be stored, it is better to incentivize the consumers to consume more during the periods of excess supply, through dynamic pricing. Even with conventional thermal power plants also, to boost up the capacity utilization, there is a need to increase the consumption during non – peak period.

This Technology has been deployed in some western countries where Sensors have been deployed to measure the electricity consumption during various points of time and bills are generated at different rates applicable for corresponding time buckets.

With the wide availability of user friendly, cost effective Big Data Tools, more and more industries can move towards Dynamic Pricing model for better customer value delivery, efficient utilization of resources and hence benefitting all stakeholders.



Management accountant has a greater role to play in this regard.

c) Stricter monitoring and control of costs at operational levels:

Since Big Data tools provide much more granular level information at a much shorter time interval, a much stricter monitoring and control of costs and efficient utilization of resources would be possible.

In Advertising:

The famous / age old joke on advertising, but which has a lot of grain of truth, goes as follows

"I know that half of my advertising dollars are wasted ... I just don't know which half".

With the increased digitization, it is possible to design and execute unique, differentiated advertising strategy for target customer groups. Using Big Data tools one can get data on customers' response to the various advertising campaigns on a near real time basis, so that the campaign course corrections may be efficiently and effectively tailored to deliver maximum value.

Internet of Things (IOT) to monitor the health of machines:

The sensors, embedded into the machines, can continuously monitor the health parameters and send out signals when the parameters are going out of range for immediate corrective action, so as to prevent a bigger failure.

A marketing brochure issued by DELL, claimed that by utilizing Internet of Things (IOT) and Big Data tools best in class companies have increased the efficiency of operations in a big way by

- a) reducing unplanned downtime by 3.5%
- b) improve the overall effectiveness to 89%
- c) Reduce maintenance cost by 13% YOY
- d) Increase Return on Assets by 24%

In ABC Costing for better allocation of costs to understand the true nature of cost behavior

ABC costing aims at recognizing the casual relationship of cost drivers to activities and to assign costs to cost objects based on their use of activities.

In this exercise, the higher the quality of data on behavior of cost drivers, on their relationship to costs and on utilization of cost drivers by a specific cost object better would be the result of ABC costing exercise.

High quality digital data from various sources (e.g., Machine Sensor / IOT Data, data from other application packages (Quality etc..) could be used to identify the cost drivers. By combining the data on cost drivers with the cost data from ERP, a more insightful relationship can be understood and appropriate ABC costing methodology can be developed.

Conclusion: Big Data tools open up a great opportunity for the Management accountant to access a huge amount of digital data, from various sources in both structured and unstructured format and analyze the same a cost and time effective manner. With this deeper insight, he / she can add a lot of value to the strategy formulation and planning and performance management process of the organization.

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59TH

NATIONAL COST CONVENTION 2019

THEME

**COST AND MANAGEMENT
ACCOUNTANTS:
“POWER OF THE PAST -
FORCE OF THE FUTURE”**



TECHNICAL SESSION 2

Towards Social Sustenance

- ⦿ Climate Change
- ⦿ Agriculture
- ⦿ Political Framework & Governance
- ⦿ Integrated Reporting



Climate Change

Climate change refers to a broad range of global phenomena created predominantly by burning fossil fuels, which add heat-trapping gases to Earth's atmosphere. These phenomena include the increased temperature trends described by global warming, but also encompass changes such as sea level rise; ice mass loss in Greenland, Antarctica, the Arctic and mountain glaciers worldwide; shifts in flower/plant blooming; and extreme weather events. With the dawn of the ratification of Kyoto Protocol by most of the nations, business entities started to consider issues such as trading in carbon allowances (or permits), investment in low- Carbon Dioxide emission technologies, counting the costs of carbon regularity compliance and passing on the increased cost of carbon regulation to consumers through higher prices. The CMAs can apply cost management techniques and measures for informed decision making. They can apply strategic cost accounting systems to evaluate the 'whole-of-life' costs in terms of carbon emissions relating to products and services. CMAs can also carry out Green audit of environmental accounts to ensure Compliance of Environmental Laws, effective assessment of Environment Cost, Environment Impact Assessment and Carbon Credit. This would also help organizations identify ways to reduce waste, save money, improve overall efficiency and minimize liability risks.

Agriculture

The Government has set a target of doubling of farmers' income by the year 2022. Parallely, the Government is aiming to reorient agriculture sector by focusing on income centeredness. In order to realise net positive returns for the farmer, schemes as follows, are being promoted and implemented in a major way through the States/UTs viz :- Soil Health Card, Pradhan Mantri Krishi Sinchayee Yojana, National Agriculture Market scheme (e-NAM), Pradhan Mantri Fasal Bima Yojana, National Food Security Mission, National Mission for Sustainable Agriculture, National Mission on Agricultural Extension & Technology , Rashtriya Krishi Vikas Yojana and many more. In addition, schemes relating to tree plantation, Bee Keeping, Dairy and Fisheries are also implemented. All these schemes are implemented to enhance production and productivity of agriculture and thereby enhance income of farmers. Minimum Support Price (MSP) is notified for both Kharif & Rabi crops based on the recommendations of the Commission on Agriculture Costs & Prices (CACP). MSPs are considered as an important pillar of Indian Agricultural price policy rolled out with an intention of providing price security to farmers. Theoretically, the support prices are to benefit farmers of most of the crops in the entire nation. The CMAs can analyze and recommend most apt MSP, considering relevant factors such as domestic demand, global prices, export competitiveness and ecological sustainability of crops; consequently assisting the Government towards decision-making for fixation of MSP. The Institute aspires to carry out

Agricultural Awareness Programme in support of Government's flagship idea of doubling farmers' income and improve Gross Value Added (GVA) percentage in Agriculture. The CMA professionals are competent enough to assist farmers to get the best prices for their produce through the market linkages, by providing constant information about prices, helping with warehousing, assisting in buyer agreements too.

Political Framework & Governance

Governance is the exercise of political, economic and administrative authority to manage a nation's affairs. It is the complex mechanisms, processes, relationships and institutions through which citizens and groups articulate their interests, exercise their rights and obligations and mediate their differences. The purpose of governance is to guide, steer and regulate citizens' activities through the power of different systems and relations so as to maximize the public interest. Good governance is therefore a subset of governance, wherein public resources and problems are managed effectively, efficiently and in response to critical needs of society. Effective democratic forms of governance rely on public participation, accountability and transparency. India should be poised for an effective governance program, where CMAs can facilitate the Government by suggesting appropriate governance mechanisms and facilitate in apt decision-making.

Integrated Reporting

Integrated Reporting is the reporting of both financial and non-financial information, including sustainability information, in an integrated way, as contrasted with the current prevailing practice of issuing separate financial and sustainability reports. As an internal auditor, CMAs also play a crucial role in integrated reporting. The IR Framework requires that organizations address risk management and governance areas, here the CMAs can help to prepare an effective implementation of the IR Framework by meeting requirements in the Standards related to risk management and governance. Integrated reporting gives a view of an organization's activities and performance in the broader context, which will enable more effective decision making at board level, improve the information available to investors and encourage more integrated thinking and business practices. The CMAs through their professional skill can prepare credible Integrated Report for better internal control and enable investors and other stakeholders to understand how an organization is really performing.



TOWARDS A GREEN ECONOMY*

Introduction and background

Green economy represents the economy where every stakeholder becomes aware of environmental issues and adopts measures that contribute to the better quality of life. It aims to transition the economy into a low carbon economy through facilitating green business and hence green jobs. The job-seekers should have the desirable background. So, among other things, green education and green training should also be part of the education system. The World Bank reports/surveys¹ give some *background* for seriously examining the issues relating to green economy. They can be summarized below:

- India's remarkable growth record has been clouded by a degrading environment and growing scarcity of natural resources.
- In a study of 178 countries whose environments were surveyed, India ranked 155th overall and almost last in air pollution exposure. The survey also concluded that India's environmental quality is even far below all BRICS countries [South Africa (72), Russia (73), (Brazil 77) and China (118)].
- According to another recent WHO survey, across the G-20 economies, 13 of the 20 most polluted cities are in India.
- Poverty remains both a cause and a consequence of resource degradation: agricultural yields are lower on degraded lands, and forests and grasslands are depleted as livelihood resources decline.
- Environmental degradation costs India \$80 billion per year or 5.7% of its economy.

What may be the possible solutions to the environmental problems? The survey reports also made a few important points:

- Environmental sustainability could become the next major challenge as India surges along its projected growth trajectory. It is important to note that India is the fastest growing economy in the world – its present (2016-17) growth rate is 6.8% which is likely to improve in 2017-18. World Bank² pegs India's economy growth at 7.2% in 2017-18. It is projected to gradually increase to 7.7% in 2019-20. So, India is likely to overtake China in the matter of GDP growth rate.
- A low-emission, resource-efficient greening of the economy should be possible at a very low cost in terms of GDP growth.
- Lastly, for an environmentally sustainable future, India needs to value its natural resources and eco-system services to better inform policy and decision making.

In view of the above, this paper delves on some of the important polluting activities of the stakeholders and suggests measures which can bring about some improvement in the situation with a view to enhancing the quality of life.

Identifying the stakeholders and their activities

The important question is: who are the stakeholders and how do they pollute environment?

Among a large number of the stakeholders, we identify the following three groups:

1. The public in general

* Based on author's oral presentation at a UGC Seminar on "Greening Business: Steps towards Greener Economy" held on 29th April, 2017 at Rabin Mukherjee College, Kolkata.

¹ www.worldbank.org/en/news/features/2014

² According to India Development Update Report released in New Delhi on 29.05.17 (vide Indian Express, dated 30th May, 2017, p.14).



2. The transport system (both public and private)
3. The corporate sector.

The impact of various activities of the corporate sector is huge. There are many dimensions also e.g. green growth, green economy and sustainable development, impact, if any, on poverty eradication in a developing country like India, etc. Therefore, in view of its nature, importance and volume³, we deal with the corporate sector separately elsewhere. After addressing the first two, we also touch upon global warming, some of its impact and the Paris Accord as a possible remedy.

1. The public in general

General public in every country can contribute significantly towards the quality of life by self-regulating their behaviour. Even in a developing country an overwhelming majority of the people has concern about the environment and it is the minority who vitiates it. Such activities are committing nuisance in the public place or road, using and throwing plastic-carry bags below the standard specified by local authorities, cutting off trees, etc. But good sense and awareness can cure these evils. The first photo taken in front of a building in a good locality in Kolkata shows that local citizens have come forward to stop the practice of committing nuisance on the road or on the wall by the side of a main road by adopting a unique method i.e. implanting photo of mighty Hanumanji on the wall. Photos of many other Gods and Goddesses implanted on the wall in many other areas in the City can also be seen. This is in spite of the fact there is no dearth of



public toilets usable on a nominal charge in each area.. The use of sub-standard plastic carry bags is another menace not only to the environment but also to the drainage system which gets choked very often due to heavy rain when plastic bags are found lying all around. This is a common scenario in many cities in spite of some measures taken by the municipalities. Can local municipalities impose fine on selling of goods along with sub-standard plastic carry bags? Of course, the awareness of the people concerned is more important.

Another important issue is preventing cutting of trees and planting new trees in each area. Happily, there are many environmental-activists who very often fight it out. There are Green Benches in High Courts and Supreme Court to take action on the erring public. Most importantly, the awareness of the public has to be enhanced. It is generally said that one tree can give oxygen to 30 persons in that locality. The Hyderabad Urban Development Authority (HUDA) planting many trees around Hussain Sagar has come out with a slogan for public awareness: "Plant a Tree and Get Oxygen Free." The Japanese citizens are very environment friendly. When a person dies, members of the deceased family plant a tree as a ritual. So, it has become part of their culture.

Plantation in any city can be enforced by the local authority which sanctions plan for housing construction. It should be incumbent on the part of the builder to plant trees systematically in compliance with rules, if any. An example can be drawn from a



small newly built township, namely, Bethlehem in Pennsylvania in the USA, wherein a builder is required to plant trees whenever a new house is built. Zoning laws here mandate the builder to plant a tree every 50 ft with at least 10 ft from the road. Photo above shows the beautiful scenario of a part of this locality

³ See, for example, Bhabatosh Banerjee, *Corporate Environmental Management – A Study with Reference to India*, PHI, 2009.



which is 20+ years old and shows matured trees. Can we not build up such practices in India whenever new areas are developed or new townships are built?

2. The transport system

Vehicles run by petrol and diesel are one of the major contributing agents to pollute the level of air quality. An example of environmental friendly transport system is the tram or bus run by overhead electrical lines to operate in specified routes within the city. The City of Kolkata is one of the oldest examples when in British India Calcutta Tramways Company used to operate its fleet of trams in the corporation area as the main public transport system, there are some other good examples in this regard viz. Melbourne City (Australia), Hong Kong (having double-decker trams). Even after nationalisation of tram services, over time, Kolkata has been witnessing gradual withdrawal of tram services from many routes in the name of town-planning and faster transport service. But was environmental issue given any serious consideration by the decision making authorities? Interestingly, we find a reverse trend elsewhere. For example, in Paris, the city municipal authorities are experimenting running of trucks within the city by electrical overhead lines. In Nepal, we also find that buses do run by the same system. Although the initial cost of arranging the overhead wiring is high, its operating costs is low because of consumption of low-cost electricity instead of using high-cost petrol or diesel. On the top of everything, it is tremendously environment-friendly. Thus, while considering planning of new towns in the country, should we not seriously give consideration to operation of environmental friendly public transport system? Let us now come to the issue of operation of transport system by mini-bus, bus, private and public cars which normally run using petrol or diesel, a non-renewable resource.

India is now the world's third largest producer of motor cars. Major cities are showing signs of increasing number of use of motor cars, thanks to the changing pattern of life styles among the upper and middle class families. This is contributing significantly to not only "air pollution" but also "noise pollution" which are addressed below.

(i) Air Quality Index (AQI)

The Pollution Board in India notifies AQI for the public about the declining air quality level and the possible associated health hazards. AQI is the only tool that provides the correct information about air quality to people. An expert group comprising medical professionals, air quality experts, academics, advocacy groups, and state pollution control boards has been constituted and the authority of technical study is awarded to IIT-Kanpur.

The AQI considers eight pollutants (PM_{10} , $PM_{2.5}$, NO_2 , SO_2 , CO , O_3 , NH_3 and P_B) for which short-term (up to 24-hourly averaging period) national ambient air quality standards are prescribed. The AQI has six sub-categories of AQI values, namely, good (0-50), satisfactory (51-100), moderately polluted (101-200), poor (201-300), very poor (301-400) and severe (401-500). Based on the particulate matter count in the air, side effects of air pollution are also suggested. For example, while good represents minimum impact on health, severe stands for respiratory impact even on healthy people, serious health impacts on people with lung/heart disease, might feel exhausted even during light physical activity.

According to world health organization study, as stated earlier, 13 Indian cities are among the top 20 in the world as far as fine particulate matter ($PM_{2.5}$) is considered. The position in four metropolitan cities is given below:

AQI ($PM_{2.5}$) as on Dec. 23, 2015		
Delhi	442	severe
Kolkata	264	poor
Mumbai	245	poor
Chennai	50	good

The position is very alarming and local governments need to introduce measures that will bring down pollution in air quality. There is no doubt that change in technology is the best option although it will require huge investment and time by the automobile industries around the world. Accordingly, some countries are taking ad hoc short-cut conservative method to fight the pollution in air quality.

China declared war against pollution by introducing "odd-even" traffic curbs along with closing down of pollution factors in the Beijing city for three days from 8th to 10th December, 2015. This was followed by



Government of Delhi in 2016. The details of the latter are given here.

Odd-even traffic curbs introduced in Delhi

The Government of Delhi introduced the "odd-even" traffic scheme from New Year's Day (January 1, 2016) from 8.00 a.m. to 8 p.m. as a trial for 15 days⁴. It was reviewed after 15 days' experience.

- ❖ To start with two-wheelers (over 50 lakh of 92 lakh vehicles registered in Delhi) and woman-drivers were excluded. Although, the scheme is on a trial basis, a fine of Rs. 2,000/- was payable by a violator.
- ❖ On the first day of trial, about 1 lakh less vehicle was on the road. To ease the pressure on public transport, the Government introduced 3,000 additional buses.

The Chief Justice of India and a few top political leaders supported the scheme. The scheme will lead to behavioral change of people because there will be more carpooling, more travel by metro, walking short-distance for marketing, etc.

To sum up, the operation of the "odd-even" scheme for a period of 15 days in Delhi led to some good result in improving the level of air quality. May be in future, some other cities in India will follow this ad hoc measure from time to time at least to give some temporary respite to the public in general.

(ii) Sound pollution: blowing horns while driving vehicles

Like varieties of cars, there are many varieties of motor horns – some loud and clear, some sounding anguished or in deep pain. Many mini and private buses use loud electrical horns. So, we have to live to hear a continuous honking of horns and, thanks to God, we have learnt to live with it.

One professor from the Massey University (New Zealand) came to attend an international conference in Kolkata a few years ago. She was amused to know that nothing happens if someone blows horns unnecessarily and continuously. With laughter she gave the name of the City as the "City of Horns". Such behaviour on the part

⁴ In a Public Interest Litigation, the Delhi High Court refused to grant a stay order with the observations "the scheme may have caused hardship to a section of society but courts were not experts in deciding if a policy decision was correct or the best available option."

of driving community is hard to be found in many advanced countries like Singapore, Australia, EU countries, England, Canada and North America, to mention a few.

There are good examples also. In Aizawl, capital of Mizoram, drivers do not blow horns while driving their vehicles no matter how much time it takes for a journey. Police does not have to intervene because hardly there will be any offender. The system operates very well because it has become part of the culture of the drivers Mizoram.

What are then the possible remedies? First, stringent law is to be enacted and implemented efficiently and objectively. In Singapore, for offence beyond certain points, even licence of an offending driver is cancelled and he or she has to undergo training afresh for getting a new licence⁵. It involves additional cost and also loss of earnings. Similarly, laws in many other countries are stringent and there is proper implementation of the laws. What is our experience in India?

We inherited many things from the British including many laws – so there may not be dearth of laws but our experience shows that implementation is weak or very poor. This is one area where we need improvement. Second, there should be orientation course for the drivers periodically given the average background of them so that compliance of traffic rules and regulations becomes part of their normal behaviour and, over time, a part of their culture as we find in Aizawl. It is no doubt a huge task. The Police Department on behalf of the Government may also introduce scheme for giving award (both cash and certificate) which will act as further motivating factor to comply with traffic rules.

3. Global warming and historic Paris Accord

Global warming occurs when carbon dioxide (CO₂) and other air pollutants and greenhouse gasses collect in the atmosphere and absorb sunlight and solar radiation that have bounced off the earth's surface. Normally, this radiation would escape into space - but these pollutants, which can last for years to centuries in the atmosphere, trap the heat and cause the planet to get hotter. That's what's known as the greenhouse effect⁶ The burning of fossil fuels to make electricity is

⁵ The Kolkata Police Department introduced a 3-month licence ban for flouting road rules. License may be cancelled for repeat offence. This action follows the Supreme Court order. According to rules laid down by the Supreme Court, driving licence to be suspended for flouting road rules (for details see TOI, Kolkata, March 8, 2017, p.2).

⁶ www.nrdc.org/stories/globalwarming-101



the largest source of heat-trapping pollution, producing huge quantity of CO₂ every year. Coal-burning power plants are by far the biggest polluters. The other source of carbon pollution is the transportation sector which generates tons of CO₂ emissions a year in a country. Curbing dangerous climate requires very deep cuts in emissions as well as the use of alternatives to fossil fuels worldwide.

What are the likely effects of global warming? Global warming has many effects in the physical world, such as:

- More heat waves
- Heavier rainstorms,
- High sea level, etc.

Thus, the important question is: what will climate change mean for human welfare? Scientific papers have predicted effects as varied as a greater spread of tropical diseases, more death from hot weather than on cold weather, bumpier rides in the flights. Interestingly, another prediction enters in the literature, i.e., people will get lesser sleep in the night because of hotter world⁷. In a paper published recently by the Journal Science Advances, Dr. Nick Obradovich⁸ predicted more restless nights especially in the summer, as global temperature rises. Poor people, not having air-condition systems, and elderly ones will be hit hard as they will face more difficulty in regulating their body temperature. "As world warms up, people will stay awake six nights a month by 2050", claims the Scientist.

In view of the devastating impact of global warming, both developed and developing countries had been negotiating to find out workable solutions to the problem. This at last resulted in historic global climate deal mentioned below.

On 12th December, 2015, a historic climate deal with 198 countries approving the Paris text that aims to transform fossil fuel-driven economies within decades and slow global warming. The deal was signed by 195 countries (including China and North Korea) on April 22, 2016, at UNO office in New York.

According to Paris agreement⁹, the global warming is to be kept well below 2°C, 1.5° if possible. India's key

⁷ Times of India, Kolkata, May 28, 2017, p.15.

⁸ Dr. Obradovich is a political Scientist researching both on the politics of climate change and its likely human impacts, having link with Harvard and MIT in the States (for further details see TOI, ibid.).

⁹ TOI, Kolkata, Dec. 13, 2015, pp. 1&13. (for full report log on to www.timesofindia.com)

concerns, viz. developed countries will take 'enhanced action' on mitigation, adaptation, climate finance, tech transfer, capacity building and transparency, have been met. The deal will take place in 2020. Developed countries will review actions in 2023 and then every 5 years. Developing countries will do so voluntarily.

India has already submitted its action targets till 2030. Regarding "climate finance", the developed countries will provide \$100 billion by 2020 and potentially scale it up later but this point is not legally binding. "India has always espoused the case of sustainable development and climate justice both these have been found mentioned in the text. That is an important achievement for India" – says the environment scientists.

But on June 1, 2017, by a Presidential Order, the U.S. pulled out of the Paris Accord on the premise that "climate change goals by reducing its carbon foot-print is detrimental to the US economy and will affect job creation." Experts feel that now onus will be on China, EU and India to carry the accord forward. Growth of renewable energy in India and China will drive the deal. India may not cut raise her emission-cut targets keeping development goals in mind¹⁰.

Concluding observations

We have already suggested remedies to the problems in different sections. Some of the measures can be taken immediately to fight against pollution, while others need a time frame for implementation. All said and done, changing our behaviour and building awareness among us is the key. Both State and Central Governments have been relentlessly campaigning in favour of many schemes introduced to fight against pollution to enhance the quality of life. Happily, at the school and college levels, short courses on environment have been introduced and this makes the younger generation more conscious about protection of environment. So, we can dream for a better future.

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Source: *The Management Accountant*, July 2017 VOL 52 NO. 7

¹⁰ TOI, Kolkata, June 2, 2017, p. .



THE CHANGING DYNAMICS IN INDIA'S AGRICULTURAL POLICY

Six decades of policy need to be reviewed, in order to assess and suggest policies based on merits under the current situation. There could be recent developments and innovations to be considered as possible solutions suitable to the current problems. There is also a need to look at agriculture holistically and not from the narrow view-point of individual stake-holders. Reactive policy-making under pressure from interest groups could lead to sub-optimal policies and actions. Several aspects of agricultural policy have remained static over six decades, as subsidies become fiscally untenable and objectionable from a global trade perspective. On the other hand, sophisticated instruments such as futures and options on agricultural products are being considered, as also aligning Indian agriculture with global realities and markets. As part of the middle ground, there is a felt need for a structural strengthening of the Indian agricultural sector, consolidating on the past gains and upgrading policy to meet with the emerging developments and realities.

This study aims at identifying and analyzing a wide range of aspects impacting the Indian agricultural sector, in the light of the events that have taken place in the two-year period from July 2013 to September 2015, to provide policy-makers with an analytical framework. From recent developments, there appears to be a reversal from the "dole and debt-waiver approach" placing Indian agriculture on a stronger footing for the future.

Background and Context

The history of civilization and agriculture are intertwined, with the Indus-valley inhabitants as one of the pioneers of rice cultivation. This is a technology of taming and harnessing nature, and contributed in a large way in the elimination of hunting-gathering as a means of subsistence. Agriculture has been carried out over the millennia for subsistence, for barter and subsequently, for commercial purposes. The centres of production and consumption grew and continue to grow, giving agriculture a global dimension, and with it, the birth of national and international agricultural commodity markets. Agriculture and its mismanagement became central to public discourse with the Bengal Famine of 1934, where in significant portions of India's produce of rice was diverted to the British Army. Newly independent India was dependent on wheat imports from USA, until the green revolution made India agriculturally self-sufficient after the 1970s. Large quantities of food-grain are procured from farmers at support prices and many times

inefficiently, resulting in storage losses. At various points, agriculture is subsidized by the central government, in the form of subsidies for seeds, fertilizers, agricultural credit, and also support prices.

Today, India is an exporter of rice, albeit an importer of edible oil and pulses. Along the way, India has adapted technology in the form of Mexican strains of wheat, and its agricultural research institutions have developed certain indigenous strains of rice, among other technological innovations.

Some Stylized Facts of Indian Agriculture

Geographically, northern India has a network of snow-fed rivers and is also largely irrigated, whereas southern (peninsular) India is dependent on rains and rain-fed rivers. Peninsular India is a frequently beset by droughts, inducing farmers to commit suicide, especially in Marathwada (Maharashtra), North Karnataka, Telengana and Rayalseema



(Andhra Pradesh), and, to a lesser extent, in Uttar Pradesh and Bihar. Crop failures due to drought and crop losses due to unseasonal rain are reasons put forward by farmers for the inability to repay crop loans, driving them to suicide. Markets are also fragmented, since food-grain from one state currently cannot be sold in another state. Additionally, there are the **Agricultural Market Produce Committees (APMCs)** which further restrict markets.

Occupationally, around 60% of the population is engaged in agriculture, but the contribution of agriculture to the GDP is only around 15%. By contrast, 1% of USA is engaged in agriculture, but the output is sufficient to feed the entire populace of USA, and also create exportable surpluses.

Managerially, the inputs available to the manufacturing and services sectors have not yet fully percolated to the agricultural sector. Farmers are left to deal with middlemen and government officials on their own. Of late, the advent of the mobile cellular telephony and internet platforms have resulted in better information in terms of market prices and production-related information.

Politically, agriculture is a state subject, i.e. the state governments are primarily responsible for legislating agriculture and the implementation of various programmes. There is, however, a Union Ministry for Agriculture and Farmers' Welfare that makes budgetary allocations and allocating central funds to the states. Agriculture is a politically emotive subject, since farmers constitute a large percentage of the voting population and also have a large political voice. Besides subsidies, agriculture is free of income tax and wealth tax. Crop losses due to drought and flood are also put forward as reasons for farm loan waivers, particularly in the light of suicides by farmers. There are three levels of government: central, state and village (gram-panchayat).

Semantically, the term '**farmer**' means various occupations, including agriculture, horticulture, floriculture, cattle-rearing and poultry. Agriculture involves the tending of land to grow crops. Farmers include land-owning farmers (who rent out their land for cultivation), land-owners-cum-cultivators, share-croppers and landless farmers who work purely as farm labourers. As a consequence, rich farm owners could possibly benefit from subsidies under the garb

of poor farmers. Some of the richer farmers double up as money-lenders and middlemen for crop buyers.

Agriculture, in this paper, includes the cultivation of cereals, pulses, oilseeds, horticulture- including fruits, vegetables, tubers such as onions and potatoes, mushrooms, on land as well in greenhouses. Activities such as poultry, dairy farming, inland fishery etc., are excluded from the purview of this paper.

Agronomically, land holdings by inheritances have become fragmented as ownership passes from generation to generation, reducing economies of scale, such as decreasing viability of mechanization of smaller fields. Rising input costs in terms of seeds, fertilizers and farm labour and reducing prices in light of the dominance by middlemen squeeze profits, unless supported by higher prices under government procurement programmes. The gains from fertilizer subsidies are also creamed away by some companies and middlemen. Other sub-optimal practices include inadequate irrigation, diversion of urea from agriculture, excessive use of fertilizers, inadequate knowledge of advancements and innovations in agriculture, inappropriate choice of crops etc.

Since agriculture is a politically sensitive topic in India, there are interest groups that demand various actions from policy-makers, some of which are listed below.

Policy Actions Demand by Farmers and Politicians, and their Possible Implications

Actions	Implication
Waiver of loans in light of crop losses and suicides by farmers	Misallocation of credit without ascertainment of exact cause of suicide
Continuance of subsidies for seeds, fertilizers, loans at subsidized interest rates	Misdirection of subsidies, wrong choice of crops
Continuance of minimum support prices by the government	Inflationary tendencies from higher support prices, and higher storage costs in respect of higher inventories, and storage losses



Motivation and Objectives of this Study

The **motivation** for this study arises due to several reasons. Firstly, six decades of policy action need to be reviewed, in order to assess and suggest policies based on merits under the current situation. Secondly, there could be ecological, technological, economic developments, as well as innovations to be considered as possible solutions suitable to the current problems. Thirdly, there is a need to look at agriculture holistically and not from the narrow viewpoint of individual stake-holders. Fourthly, reactive policy-making under pressure from interest groups could lead to sub-optimal policies and actions.

On the one hand, several aspects of agricultural policy have remained static over several decades, as subsidies become fiscally untenable and objectionable from a global trade perspective; on the other hand, sophisticated instruments such as futures and options on agricultural products are being considered, and aligning Indian agriculture with global realities and markets. As part of the middle ground, there is a felt need for a structural strengthening of the Indian agricultural sector, consolidating on the past gains and upgrading policy to meet with the emerging developments and realities.

The **objectives** of this study are two-fold:

- To identify and analyze a wide range of aspects impacting the Indian agricultural sector, in the light of the events that have taken place in the two-year period from July 2013 to September 2015
- To provide policy-makers with an updated and holistic framework, with a view to structurally strengthen the Indian agricultural sector, incorporating the events and developments over the recent two years

Organization of Contents

In order to achieve the stated objectives, the rest of the paper is organized as under:

- I. Recent Articles by Academicians on Indian Agriculture
- II. Research Questions
- III. Data
- IV. Methodology
- V. Analysis and Findings

VI. Summary and Conclusions

The paper ends with a listing of References cited in (I) above.

I. Recent Articles by Academicians on Indian Agriculture

During the period from July 2013 to October 2015, a total of 29 articles by Indian academicians highlighted various issues pertaining to Indian agriculture. Broadly, five themes emerge:

Fertilizers: Srinath (2013) and Mehta (2013) wrote on the potash cartels in Russia and Canada that raised the input costs for fertilizers in India. Himanshu (2015) pointed out the drastic flaws in India's fertilizer policies. Haque&Hashmi (2015) cite the possible reasons for organic farming not taking off completely in India.

Policy Reform: Gulati (2014 a) spoke of the need for irrigation and redirecting of subsidies. Gulati (2015 b) appreciates the positive role played by the Indian farmer and justifies assistance for them, while commenting upon defunct policies that inhibit reform. Sambrani (2015) also stressed on sweeping reforms in Indian agriculture. Along these lines, Balakrishnan (2015) calls for reforms for producing more food-grain in India.

Innovation: Gulati (2015 a) credits the boldness of the Indian farmer for the risk in adopting new technologies. Zeigler (2015) stressed upon the role of scientific research and innovation, particularly the success of new rice varieties. Rajaraman (2015) recommended the adoption of Systemic Rice Intensification (SRI) techniques in order to save water used in paddy cultivation. Whereas Gulati (2014 b) steered a discussion towards horticulture, Alagh (2015) brought a focus on pulses that India imports in large quantity. Nair (2015) highlighted the dangers of genetically modified 'golden rice'.

Water Dependence and Distress: Gokarn (2015) analyzed the rain dependence of Indian agriculture, and Swain & Lahn point out to the depleted river-water resources. Singh & Dadhich (2015) and Argade&Haque highlight the problem of crop losses. The role of crop insurance and the use of technology in estimating losses are the focus of their work. Ravi (2015) studied suicides, including suicides by farmers. Gulati (2015 c) highlighted the reasons for stress in



Maharashtra, viz. improper water pricing and choices of water-intensive crops.

Market Linkages: Papers by Dey(2015a and 2015 c) focused on partnerships across the supply chain and linkages between producers and consumers. Haque&Shailendra (2015) propose a price stabilization fund for horticulture products. Yadav, Shailendra&Haque (2015) wrote on the linkages between market intelligence and a price stabilization fund. Whereas Dey (2015 b) analyzed the distress of potato farmers, Singh, Pal & Shah (2015) analyzed fluctuating prices in the onion markets in India. Sukhpal Singh (2015) analyzed the workings of the APMC markets in India and Shailendra & Yadav stress the need to include small farmers in market linkages. Joshi and Negi observed the mechanics of onion pricing.

II. Research Questions

1. The research questions addressed in this paper are: What are the key observations and recommendations made by various academicians for Indian agriculture, during the period 2013-2015?
2. What have been the key developments impacting Indian agriculture, during the period 2013-2015?

III. Data

This study covers the period July 2013 to September 2015, a period of 27 months. Whereas September 2013 marked the end of a normal monsoon, September 2014 and September 2015 were monsoon-deficient, with shortages of 12% and 14% respectively. With over 60% of India's workforce engaged in agriculture, such deficiency brought rural distress to the fore, calling for a more holistic agricultural reform in India. Year 2014 also marked a change of government, and with it, intent to relook the extant policies, in terms of diagnosis as well as policy action. During this significant period in Indian agriculture, 400 news events were reported, indicating the intensity of reportage, public discourse and opinion. This provides a rich context for analysis, if the data are given a structure.

IV. Methodology

The methodology involves the parsing of large amounts of text and digitizing them (0,1) to measure

developments on various themes. [For example, a news item pertaining to a Contract Farming of fruits arrangement would be recorded with a digit 1 against Horticulture as well as Markets]

The data have been classified into 9 themes, as tabulated below. Each of the 400 news event could have an impact on one of more of the identified themes. In this manner, a total of 686 impact points were recorded.

Classification	No of observations	% to Total	Ranking
Cereals/ Sugar-Cane/ Cotton	99	14.43	3
Pulses	31	4.52	9
Oilseeds	41	5.98	8
Horticulture	69	10.06	6
Fertilizers	44	6.41	7
Innovation	83	12.10	4
Irrigation	102	14.87	2
Suicide/ Distress	146	21.28	1
Markets	71	10.35	5
Total	686	100.00	

Notably, the notion that cereals such as rice and wheat would have the most a dominating role in the discussions have been belied by the statistics cited above. Furthermore, the rising cost of fertilizers and their adverse impact on Indian agriculture was a dominating feature of the discussion until the beginning of this study period, until there was a dramatic fall in their input prices in the international markets. Towards the end of this study, the dominating theme has been the deficient monsoons two years in a row, and the particularly vulnerable areas in India, viz. Marathwada and Telangana, which constitute the high-suicide prone areas in India. The least-recurring item of discussion, viz. Pulses, also found 31 mentions in the data collected for the period.

It is clarified that the frequency of the mention of the above aspects in the public discourse and opinion does not necessarily reflect the precise order of their relative importance. It merely reflects the shape and structure of the inputs available for policy action. For instance, Horticulture and Pulses are ranked 6 and 9 respectively, but found specific mention in the speech of Reserve Bank of India Governor on September 29, 2015, for their role in food inflation.



The analysis of the 9 themes is carried out in the next section in the order of the Rankings cited in the table above. The objective of this analysis is to provide value-added policy insights and better management of the agricultural sector and commodity markets in India.

Finally, in Part VI of this paper, a table is generated with two columns:

- Column I depicts 18 observations made by academicians referred to in Part I of this paper
- Column II depicts the corresponding findings based on the observations across 9 themes, against each of these 18 observations

Such a mapping helps in broadly evaluating the progress made towards an updated framework to deal with the future challenges in Indian agriculture.

The process of parsing and digitizing has been done to facilitate measurement, so as to arrive at the conclusions in an unbiased manner. This methodology is replicable to generate consistent results.

V. Analysis and Findings

Suicides and Distress

Until the month of September in calendar year 2015, Maharashtra witnessed a total of over 3,000 suicidal deaths of farmers. Of these, 1,010 were from the Vidarbha region and 695 from the Marathwada region, representing the highest farm-related suicide concentration in the country.

This analysis of this theme is based on 146 observed data points. Drought, distress and suicide became prominent from September 2014, with the late and weak monsoon of 2014, followed by unseasonal rains in April 2015 with the attendant crop damages. This was exacerbated by the promise of a good monsoon in June 2015, but the seeds withered away due to poor rainfall in July and August 2015. Some late rain spells in September 2015 were not good enough to revive the 2015 crop, resulting in the worst monsoon productivity in 6 years.

Thus, years 2014 and 2015 represented two back-to-back drought years with rain deficits of 12% and 14% respectively. This is statistically rare, and has

happened only 3 times in 143 years. The probability of a single-year drought has been estimated at 17%, and hence, insurers may be able to design a suitable and affordable insurance cover product. It is noted that the penetration of crop insurance in India is only 23%. Rain-dependence in some places and untimely rain at other places are the main causes of losses. Crop insurance is the missing link in the rural financial inclusion, together with access to banking and credit facilities. It is not feasible to waive off loans (at the cost of depositors) or provide compensation from government coffers (at the cost of taxpayers) substituting the role of insurance. Assessment of insurance claim losses has become a simpler affair with the help of satellite-based imaging technology.

In many cases, suicides have been associated with cotton crop failures, (and soya bean and pulses in some cases) exacerbated by rain-dependence. Suicides have also been associated with farmers having holdings of 3 acres and less. Lack of alternative income and job opportunities and indebtedness in the light of crop failures are contributing factors to suicides. Year 2015 also saw a glut in cotton supply, as India overtook China as the world's top producer of cotton, leading to depressed prices. In the case of the potato crop in West Bengal, high seed costs and low prices offered by middlemen led to distress among potato farmers.

Farms in North India are well irrigated through snow-fed rivers. Farmers in peninsular India depend totally on rain. This makes farmers in Marathwada (Maharashtra) and Telangana particularly vulnerable and suicide-prone. Vidarbha (Maharashtra), another drought-prone area, has fortuitously received a normal monsoon in 2015. A study by CRISIL identified Bihar, Karnataka, Maharashtra and Uttar Pradesh as vulnerable states vis-à-vis the risk of poor monsoons.

A politically powerful interest group in Marathwada and elsewhere in Maharashtra, particularly the sugar lobby, controlled irrigation projects, water-bottling plants, breweries, distilleries, sugarcane cultivation, sugar-mills and cooperative banks, cornered resources, including water over an entire decade. With this group voted out of power, misallocation of resources have now come to light. A de-emphasis on these water-guzzling activities will help in reducing water-stress and its consequences and reduce farmer distress in this water-scarce region in the future.



Small and marginal farmers and landless farm labourers need to generate income, which could come from rural infrastructure development projects.

Researcher Ravi (2015) had cautioned against sensational and insensitive media coverage of suicides, as they could have a contagious effect on rural minds. Likewise, monetary compensation without other risk-mitigation or long-term support systems could wrongly incentivize suicidal behavior. A study by the National Crime Record Bureau (NCRB) attributes less than 5% of suicides in India to financial indebtedness. The government of Maharashtra has commissioned a health-service NGO, ASHA, to provide mental counselling in drought-prone areas such as Marathwada, a timely step. The government has also established a climate study centre at Aurangabad in Marathwada. Of late, increasing social sector activity in drought prone regions by companies is being witnessed.

Irrigation

A total of 102 observations were recorded under the theme of Irrigation. Punjab and Haryana, the grain bowls of India are well irrigated, as are several parts of North India, due to snow-fed rivers. From the preceding section, it was observed that the most water stressed regions are in Marathwada, Telangana, Karnataka, Uttar Pradesh and Bihar. Other states in Western, Central and Eastern India are also under-irrigated.

The “big dam approach”, increasingly faces local opposition, based on long-term ecological considerations, besides displacement of arable land and project affected people. In recent times, there has been a preference for small check dams, revival of river beds, lake beds, water bodies and farm ponds in an effort to improve the depleted ground water levels and harvest rains. One huge beneficial outcome of the drought of 2015 is the Jalyukt Shivar Abhiyan, a campaign encouraged by the state government of Maharashtra. Under this initiative, a partnership between the locals and the government resulted in the creation as well as revival of several small water bodies to harvest and store rain water. Locals have participated even financially, contributing more than Rs.60,000 million. Such type of work in the Vidarbha region in earlier year has now proved to be beneficial, as it received normal rainfall during calendar year 2015, and with the potential for the harvesting and storage of rain water, a bountiful

harvest of cotton, oranges and other crops followed. Maharashtra has been inspired by the water conservation model of the state of Rajasthan.

Maharashtra serves as a classic example of having one of the largest irrigation dams in the country, yet is one of the most water-stressed regions, demonstrating many such projects have either not seen the light of day due to corruption, or that their benefits have not reached the common people. Only 15% of farm land in Maharashtra is irrigated, as compared to Punjab, which has 85% irrigation coverage. From April 2015 onwards, irrigation is in the news in Maharashtra for the wrong reasons, viz. large-scale corruption in irrigation projects and diversion of financial and water resources to the sugar-lobby over the past 10 years. With this realization, there is likely to be far less water stress from the near future, since the cultivation and crushing of water-guzzling sugarcane will be toned down, making water available for other crops. Sugarcane, paddy and soya bean consume more water than other crops that are more suited for the Maharashtra ecosystem.

Dam water in Maharashtra is used mainly by thermal power-generating plants such as Tata Power and NTPC. After generation of power, it has come to light that such upstream water resources have been allowed to flow into the sea, whereas the same could have been released downstream to serve the parched fields of Maharashtra, Telangana and Andhra Pradesh. Since this has come to light, the government of Maharashtra and the power companies have taken note of this suggestion. NTPC has also considered the use of recycled water for power generation as an alternative.

Experts now opine that there is a need to push irrigation, not dams. The success of ASEAN countries in achieving high agricultural productivity has revolved on the reach of irrigation facilities to smaller farms. The government of India is also in the process of incentivizing irrigation through the merger of several irrigation schemes, with a focus on the precise use of water, combined with a wise choice of crops and fertilizers.

At the national level, an ambitious plan for linking of various rivers is under way. Linkage of two rivers that have been taken up for implementation are the Godavari-Krishna in Andhra Pradesh (initiated at Polavaram) and the Ken-Betwa in Madhya Pradesh



and Uttar Pradesh (the project has received environmental clearance from the forest department). At a later date, several more linkages are likely to be established, at the intra-state and inter-state levels.

Cereals, Sugarcane and Cotton

There are 99 observations under this theme. Cereals (wheat and rice), sugarcane and cotton are covered under this theme. Since India's independence, emphasis has been on food security through ample buffer stocks, there is multi-pronged government support in terms of input subsidies on seeds, fertilizers, electricity and bank credit, as well as price support of the output. In general, wheat is the main staple food in northern, central and western India, whereas rice is the main staple food in southern and eastern India. This results in a diversified food pattern. The two principal agricultural cycles are the *kharif* crop (sown during the monsoon) and the *rabi* crop (sown during the winter). Exports are of secondary importance in the extant policy framework. India also meets with stiff objections from other exporters in the global arena, on account of the subsidy regime in India.

Wheat is produced mainly from Punjab, the grain bowl of India, and, of late, from Madhya Pradesh. Farmers from Punjab have become prosperous over the decades on account of good irrigation and support prices offered by the government. Today, India has adequate buffer stocks in wheat.

Rice: The irrigated fields of Punjab and Haryana also produce the *basmati* variety of rice which has a high export value. In the *non-basmati* variety, India competes with Thailand and Vietnam in the global markets. The export destinations are the Gulf countries in the Middle-East, and recently, Iran, for *basmati*, in competition against Pakistan. In the *non-basmati* category, the export destination is Africa, particularly Nigeria. In recent times, the alarming depletion of ground water levels in India has led experts to believe that the cultivation of water-intensive rice comes at an ecological price, hence not worth the effort. Some of the resources engaged in cultivation of water-intensive rice could be diverted to other aspects of agriculture. From an innovation perspective, the cultivation of rice paddy can take place through the Systemic Rice Intensification (SRI) technique advocated by Rajaraman and others.

Sugarcane: As is the case with rice, sugarcane is a water guzzler, and most unsuited for Maharashtra. For political reasons, sugarcane, a cash crop, was grown in Maharashtra by the diversion of water resources through a powerful interest group. The same group also owned sugar mills and other downstream industries. Time has shown that such pursuits are not sustainable over the long term. Sugarcane is best left to be grown in other states, and Maharashtra will be better served if agricultural resources are conserved for other crops as the soil and water conditions may permit.

Cotton: A cash crop has the allure of attracting many farmers to cultivating it. In contrast to attractive prices, there are risks pertaining to pests, unseasonal rains, production gluts and the viability of growing on smaller land holdings. As per a Brookings study, almost 60% of farmer suicides are associated with the cultivation of cotton. Years 2014 and 2015 were global glut years, depressing cotton fiber prices. Of late, there has been a shift among farmers from cotton to oilseeds and pulses.

Experts also add that, over time, agricultural policy in India has been too cereal centric (i.e. an over-emphasis on wheat and rice). This needs to be moderated, in order to focus on oilseeds and pulses, as more than 25% of India's domestic requirements are imported. Shortages of oilseeds, pulses and horticultural products (fruits and vegetables) also cause spikes in inflation, a factor to which the government as well as the central banking authority of India are highly sensitive. Based on the appropriateness of local water and soil requirements, the growth of maize, and jowar (millet) also need to be encouraged.

Innovation

Surprisingly, there are 83 observations under this theme.

The main message of this section is that innovation need not always be of a 'big bang' nature. The sources of innovation could also be varied, ranging from institutions to practitioners. Innovation connotes a shifting of the discourse in Indian agriculture away from the dole and debt-waiver based dialogue to development of solutions.

Soil Health Card: One of the most far-reaching innovations has been initiated by the central



government, in the form of a free soil health testing facility. This shall be a once-in-three-years exercise. For the first time, fundamental questions will be asked pertaining to the suitability of the soil for various crops and the types of nutrients required to nurture it. Indiscriminate use of chemical fertilizers over the past several decades has resulted in a damage of the soil across several locations in India. This is sought to be rectified now.

Rice-related Innovations: From the institutional side, the Indian Agricultural Research Institute (IARI) has come up with a new, hardy and aromatic basmati variety of rice called the Pusa-1059. It consumes less water and can be grown in a shorter time. Pusa-1059 has enabled Indian basmati exporters capture international export markets rapidly and in a price-competitive manner. The International Rice Research Institute has also propagated Systemic Rice Intensification (SRI), a cultivation technique that necessitates lesser land, water and results in higher productivity. Indian scientists have also developed indigenous rice chips. New strains of rice have also been developed, enabling rice to be cultivated in acceptable levels of saline water. This could be a boon in coastal areas. In Thailand and Indonesia, there is a practice of breeding fish in the flooded paddy fields, so that fish excreta serves as manure, while fish eat pests away, providing organic protection. The fish and rice both constitute saleable produce for the farmer. In some farms in the ASEAN region, duck cages are placed above fish ponds: duck excreta serves as fish feed, while ducks keep flying pests at bay. In another innovative technique, the Dutch have pioneered the art of generating electricity from water-soaked paddy fields.

Process Innovations: The Dutch have also pioneered the use of Light Emitting Diodes (LED) bulbs of various colours, to enhance the yields of fruits and vegetables. Israel has pioneered precision-irrigation in Fruit and Vegetable (F&V) cultivation, some of which is being tried out in Maharashtra. Israeli technology is also being explored in Rajasthan to grow edible oil. The use of organic bio-fertilizers (cow/buffalo excreta and other bio-mass) is growing. Farmers in Gujarat are forming cooperatives for installing solar panels to power their irrigation pump-sets and sell excess power to the electric grid when not needed, earning them extra income on a monthly basis. In Himachal Pradesh, farmers are investing in plastic Poly-houses to grow mushrooms, vegetables, fruits and flowers, away

from the vagaries of nature, such as hail, snow and unseasonal rain. In Indonesia, owls and plastic sheets are regularly sold to farmers to combat pests and unseasonal rain, respectively. Poly-houses also explore the potential of using vertical space, unlike traditional agricultural practices where horizontal expansion on land is the only option.

As regards water, there is an innovation of Brazilian origin, wherein large metal hoardings are installed on open ground, with pipes bordering the lower frame. Condensed water-vapour from the surface of the metal hoarding are collected as water, and flow through the pipes into buckets and drums, through the night.

Agricultural Start-ups: It is heartening to note that the demographic dividend is being exploited for agriculture. Youngsters with a background in engineering and management are using a problem-solving approach to engage in agricultural entrepreneurship. Farmers who have neither the financial resources nor knowhow, can access this talent pool for a fee or a commission. Agricultural startups provide a whole range of services: venture capital and working capital, hiring of equipment, supply of seeds, product-mix, knowhow on innovative techniques, best practices, weather forecast services, organic cultivation, food processing and value addition, packaging, branding, procurement, storage, supply chain and logistics, knowledge of markets and marketing, internet marketing and exports. This range of activities brings in dimensions that were hitherto unknown to the Indian farmer, particularly the small farmer.

Markets

Markets in India are highly fragmented, owing to the archaic set of laws that govern agriculture in India (such as the Forward Markets Regulation Act = FCRA, the Agricultural Produce Marketing Committees Act = APMC Act etc.). This archaic set of laws are likely to be dismantled over time. The presence of these laws made Indian agriculture become overly dependent on government subsidies and government procurement mechanisms. As an undesirable consequence, gaps and information asymmetries in the markets were exploited by middlemen and moneylenders who constitute a powerful interest group.



There are 71 observations under this theme.

International Level: India has made its presence felt in the rice market. India also has a major presence in the export of mangos. On occasions, India also has surpluses to export wheat. However, increasingly, owing to the Indian regime of input subsidies and government procurement of output, there is the growing threat of disputes from other exporting countries. Besides, India's own self-imposed restrictions on the export of rice-bran oil, groundnut oil and other agricultural commodities prevents Indian farmers and exporters from gaining from remunerative export prices. In a way, this is like a hidden tax on Indian agriculture, where the cost of the missed opportunity could exceed the subsidy benefits. Some Indian economists feel that this regime of subsidies and export restrictions has stunted Indian agriculture and constrained its efforts to capture global markets.

National Level: there are the sophisticated commodity markets. Hitherto regulated by the Forward Markets Commission (FMC), this regulator has been merged into the Securities and Exchange Board of India (SEBI) with effect from September 2015. In addition to futures contracts, it is hoped that more sophisticated hedging tools such as options and index-based products, will be available for price discovery, hedging and risk mitigation mechanisms for a wide range of agricultural commodities. It is also hoped that wide participation from banks, insurance companies, food processors, agricultural cooperatives and others will lead to information dissemination, better price discovery and lesser asymmetry between the financial markets, commodity futures markets and the spot markets. The major recognized commodity exchanges are the National Commodity Derivative Exchange (NCDEX), the Multi Commodity Exchange (MCX). Other important players in the trading infrastructure are the National Bulk Handling Corporation (NBHC) and the Warehouse Development and regulatory Authority (WDRA). SEBI will find it challenging to exercise vigilance in order to monitor price manipulation between the futures markets and the spot markets. By way of information dissemination, the Food Corporation of India (FCI) has also committed to reveal the inventory levels of food-grains at various locations at regular intervals, as per the Minister for Consumer Affairs, Government of India.

State Level: As per the Constitution of India, agriculture is a state subject. Archaic laws also ban the inter-state trade of agriculture produce, a restriction that has stunted the growth of a national market. States have established spot markets and market yards (known as a *mandi*), totaling to 584 *mandis* across India. The rest of the markets are private, and largely dominated by middlemen and moneylenders. There is a wide-spread feeling among farmers that the APMC markets are oligopolistic in nature, controlled by a few dominating buying entities, and not fair and remunerative to the farmer. Opinions about APMCs are mixed. Some call for the total abolishing of APMCs, while others voice the need for APMCs since they serve the small farmer with some connectivity to a market. Each state has a different set of operating rules, making it a very heterogeneous market across the country. The government of Karnataka has taken an initiative to convert the markets within the state to an electronic information platform, called an e-market or an e-*mandi* and has linked it with the NCDEX.

Private-Private Initiatives: Other attempts at organized "Farm-to-Fork" marketing are initiatives inter se between private parties. These include Contract Farming, Small Farmers' Agricultural Cooperatives (SFACs) and Farmer-Producer Organizations (FPOs).

Under Contract Farming, many farmers have taken up cocoa farming in partnership with chocolate manufacturing companies, benefitting from inputs, knowhow and a guaranteed buy-back arrangement. It may serve as additional remuneration from crop diversification. SFACs may make use of an umbrella brand to sell fruits or vegetables, in order to attract a wider net of customers capture larger markets over a wider geography. FPOs may operate under a common internet portal for e-commerce, with a payment gateway. The sum total of these organized efforts by farmers is to leave as little as possible to the vagaries of the market forces.

Horticulture

There are 69 observations under this theme.

Inflation, particularly food inflation is a matter of concern for policy-makers. The Reserve Bank of India (RBI) Governor had remarked, during one of the monetary policy press briefings that inflation has



been under control for most of calendar year 2015, barring certain vegetables and pulses, whose prices tend to spike up due to supply chain concerns. Notably, cereals such as rice and wheat, of which the central government possesses ample buffer stocks, are not subjected to price manipulation. There is no government Minimum Support Price (MSP) and buffer stock mechanism in the case of vegetables and pulses, hence such items are subject to price manipulation.

Horticulture comprises Fruits and Vegetables (F&V). In this section, onions and potatoes are also considered for discussion. A wide variety of F&V are cultivated in India, and their markets are as wide as supply chain constraints would permit them to be transported. Indian mangoes reach global markets. The central government's initiative on food parks will establish greater linkages between food processing companies and F&V growers, besides the value addition and employment generation that will be fostered. Many of the initiatives in Contract Farming, SFACs and FPOs pertain to F&V.

Onions and potatoes have been targeted by middle-men for price manipulation. Hoarders induce panic by creating artificial shortages and exploit gullible consumers. Despite being the world's second-largest producer of onions, India is sometimes an importer. 4 million tons of onions are wasted each year due to poor storage and transport. Potatoes are a classic example of bad data, inefficient storage and poor market linkages-farmers never benefit from high prices, but suffer with low prices in years of glut, despite higher input prices. Other products like tomatoes and vegetables are targeted serially by price manipulators in a similar manner. Such manipulation is rampant citing both crop failure due to poor rains, as well as crop losses due to flooding. Even delayed arrivals of produce into the markets cause price inflation. Considering such malpractices, the central government proposes a Price Stabilization Fund (PSF), in addition to physical verification of stocks on complaints of malpractices.

Policy-makers are aware of the direct link between abundant supply and low prices of F&V. In order to enhance productivity, a reference was made earlier on Israeli technology for micro irrigation. The use of Poly-houses for protection against unseasonal rain and pests is particularly useful in the case of F&V

cultivation. The Dutch innovation of coloured LED lighting to enhance F&V yields is also noteworthy.

To address the twin concerns of low price (of the producer) and high cost (of the retail consumer), farmers are now using the internet to market directly to consumers. SFACs are also coming together under an umbrella brand such as Masakkal and TANHODA in south India, effectively bypassing the middleman, with pooled resources for supply chain management.

In addition, there are new, financially resourceful "agripreneurs", being agricultural start-ups, who turn to agriculture as a hobby, and consolidate existing land as well as add fallow land to F&V cultivation. In the long run, these initiatives will add to the supply of F&V. Due to such efforts, grapes, wine, exotic fruits and vegetables and organically farmed products have been introduced to the domestic and export markets.

Fertilizers

There are only 44 observations under this theme. Most interestingly, Fertilizers represent one of the most important aspects in the Indian agricultural discourse up to 2013. Its importance has decreased dramatically over the past two years on account of three reasons:

A fall in international crude oil prices, from above US \$ 100 to levels below US \$ 50: The shale revolution in USA, the global industrial slowdown, the Chinese slowdown and fresh supplies from Iran are causal factors. Thus, the key input to fertilizer costs has come down, including phosphatic, nitrogenous and urea based fertilizers.

The breakdown in the global potash cartel, dominated by Russian, Belarus and Canadian companies has caused a collapse in potash prices.

In India, an awareness campaign initiated by the central government, called the Soil Health Card scheme, provides farmers with knowledge against the indiscriminate use of fertilizers. Neem-coating of urea has been made compulsory to prevent diversion of urea away from agricultural to industrial uses, black-marketing and artificial shortages of urea. A Nutrient Based Subsidy (NBS) regime could also give way to the phase-out of the fertilizer subsidy regime, due to rapidly falling global input prices. The



resurgent interest in organic fertilizers and bio-fertilizers is on the rise, even in the face of the counter-campaign by the lobby of large companies that produce chemical fertilizers.

The diminishing importance of fertilizers in the Indian discourse in agriculture is contrasted by the increasing importance of Oilseeds and Pulses that are covered as the last two themes that follow, in this paper.

Oilseeds

There are 41 observations under this theme.

India is the world's largest importer of edible oils. In fact, high imports have come under the lens of the government of India and the Prime Minister's office. The most frequently imported oils are palm oil from Indonesia and Malaysia and canola from Canada. Since imports have to be paid for in hard currency, such imports become more expensive when the Indian Rupee weakens against the US Dollar. Sometimes, this has the effect of slowing down imports, indicating price elasticity. This provides room for domestic edible oil producers to raise their prices.

Generally, Indian edible oil producers prefer to source oilseeds from domestic markets. Input prices are low when the rainfall is adequate and crop output is high, and vice versa. In 2014 and 2015, poor monsoons have necessitated high imports of edible oil. In the past, some edible oil producers have expressed an interest in exporting rice bran oil and groundnut oil when international prices were conducive, but were restrained from exporting, by the government of India, fearing supply shortages in India. Farmers have expectations of Minimum Support Prices (MSP) and input subsidies from the government, as incentives for oilseed cultivation. Excessive imports of edible oil are also a drain on India's foreign exchange resources.

India also resorts to levying custom duties on imported edible oil to discourage imports. This works to the benefit of domestic producers. Considering the attractive prices of edible oils, some farmers have resorted to cultivation of oilseeds and pulses, replacing cotton. In south India, palm oil cultivation has been taken up in Kerala (partly replacing rubber and areca-nut) and Karnataka (2,000 hectares). Since palm is a hardy crop and consumes relatively less water, its cultivation has been encouraged by

the government of India. Rajasthan has taken up an experiment of cultivation of olives, with the help of Israeli technology.

The presence of castor futures trading on the NCDEX has made some savvy farmers take cues on cultivation of castor, using the price signals. The introduction of more commodity futures could provide more signals to the agricultural sector.

Pulses

There are 31 observations under this theme.

Pulses are a source of vital protein for a vast majority of the Indian population. The RBI had also expressed concern, on occasions, that high pulse prices cause inflation, due to supply constraints.

Pulses are cultivated mainly in the rain-dependent states of Madhya Pradesh, Maharashtra, Telangana, Andhra Pradesh and Karnataka. Unfortunately, these are the very states affected by drought conditions during 2015. India produced around 1.7 million tons of pulses during 2015, as against a demand of 2.1 million tons, the balance being met through imports. The major exporting countries are Myanmar, Australia and Canada.

As the failure of the Indian monsoon became imminent in August 2015, hoarders and price manipulators began taking advantage of shortages. Prices of pulses began to spiral upwards, even as imports were resorted to. Some state governments initiated raids and imposed inventory-level restrictions on importers and traders, particularly as the festival season was on, during October-November 2015. Import consignments got stuck on the high seas, until inventory-level restrictions were relaxed for direct importers.

As a result of the prevailing high prices of pulses in India, the acreage under cultivation increased for pulses, partly replacing cotton and rice, particularly in Gujarat. This is a good example of crop diversification guided by market forces. This could pave the way for partnerships between farmers and processors, creating a value chain.

There is a now view that the government now needs to incentivize cultivation of pulses, a form of a PPP, by bringing them under the Minimum Support Price (MSP) scheme and also maintain buffer stocks of



pulses, to curb inflation. Excessive imports of pulses are also a drain on India's foreign currency resources.

Chana is a commodity whose futures are traded on the NCDEX. It is hoped that other commodities futures too, will be traded on the exchanges, to provide price signals and aid price discovery, which

will also guide the allocation of agricultural resources.

VI Summary and Conclusions

On the basis of the recent articles by academicians on agriculture in India, and in the light of the specific developments in the agricultural sector in India between the 2013 and 2015 monsoons, the following table emerges:

Recommendation	Developments between 2013 and 2015
A. <u>Fertilizers</u> 1 Potash cartels 2 Dismantling subsidy regime 3 Organic Fertilizers	Have collapsed on their own Global crude prices falling. Neem-coated urea in supply Growing awareness being created
B. <u>Policy Reform</u> 4 Reform policy holistically 5 Grow More Food-grain	Soil Health Card to e-markets: wide range of reforms Focus on less water-intensive crops. Pulses and Oilseeds.
C. <u>Innovation</u> 6 Support risk-taking by farmer 7 New rice varieties 8 Save water in paddy cultivation 9 Focus on pulses	More knowledge dissemination IARI 1059, Saline water rice SRI awareness rising Through market forces, as seen in Gujarat
D. <u>Water Dependence and Distress</u> 10 Rain dependence to be reduced 11 Depleted river water resources 12 Crop Insurance 13 Suicides by farmers 14 Improper water pricing and crop choices	Focus on irrigation, water harvesting, check dams Water body rejuvenation, river-linking Growing awareness, raising financial inclusion Crop insurance, financial inclusion, counseling Water management, de-focus sugarcane and paddy
E. <u>Market Linkages</u> 15 Partnerships Across Supply Chain 16 Price Stabilization: Onions, Potatoes 17 Small Farmers 18 Role of APMC	Farmer-Producer Organizations (FPOs) Price Stabilization Fund (PSF) being considered by govt. Small Farmers' Agricultural Cooperatives (SFACs) Mandis to e-markets, spot-futures linkages, regulation

To summarize and conclude:

- A. The international potash cartel has collapsed on its own, whereas the drastically falling internationally crude oil prices have reduced the severity of the fertilizer subsidy burden, making its phase-out more feasible and politically palatable. The neem-coating of urea will prevent its misallocation. Awareness of organic fertilizers is rising, but the complete phase-out of chemical fertilizers seems impractical in the short to medium term.
- B. The Soil Health Card scheme is revolutionary and will result in a more merit-based usage of fertilizers, as well as choice of crop in

- accordance with local water availability. Discouraging the excessive cultivation of sugarcane and paddy in water-scarce areas are steps in the right direction.
- C. More information is now being disseminated to the farmer, as compared to the past, from choice of crops up to e-markets. As regards, rice, the saline-water variety may not find a market in the immediate future. It is necessary to make paddy cultivation more water-efficient, as resources need to be directed towards cultivation of pulses and oilseeds, two items that consume India's foreign exchange resources.
- D. Irrigation, not dams, is now the focus of watershed management. It is reemphasized



that water-efficient crops need to be given priority for cultivation. Crop insurance is an integral part of financial inclusion, in order to address distress and suicides in the agricultural sector.

- E. Market linkages have become the focus of the government, and a Price Stabilization Fund for Onions, Potatoes and Fruits & Vegetables is under consideration.

To conclude, there have been some favourable developments on the international front, in the form of the collapse of the potash cartel and a fall in international crude oil prices, which partly address the fertilizer subsidy problem. There have also been unfavorable developments in the form of two back-to-back droughts in calendar years 2014 and 2015. Despite this huge challenge, policy-makers have, in a span of 16 months, demonstrated a long-term vision and emphasized on (a) Soil Health Card and knowledge-dissemination initiatives, for better resource allocation (b) comprehensive watershed management (c) crop insurance and (d) e-markets to align agriculture towards markets. This marks a reversal from the "dole and debt-waiver approach" and places the Indian agricultural sector on a stronger footing for the future. It will be pertinent and interesting to carry out an updated evaluation of the extant policies after the 2016 monsoons, i.e. September 2016. Some of the aspects highlighted could also be taken up for econometric analysis, with appropriate data sets.

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INTEGRATED REPORTING PRACTICES IN TOP 30 BSE COMPANIES

The IIRC has developed a framework for the integrated report, which combines the different aspects of reporting like finance, management analysis, governance and sustainability reporting of an organization. An effective integrated report reflects an appreciation that the organization's ability to create and sustain value based on financial, social, economic and environmental systems and by the quality of its relationships with its stakeholders. In India too, companies are gradually changing their reporting practices to bring more inputs to the stakeholders. They are combining quantitative information with qualitative information to justify their sustainability and value creation to society.

It is observed that many companies adopted a system of reporting on sustainability, governance and social and environmental concerns in separated sections along with financial reporting. They also mandatorily give information about auditors' comments, chairman's report and directors' report and thereby giving a scope to combine quantitative and qualitative information. The scope of information is as per IIRC intended framework, but the way of reporting does not exactly fit into the framework of IIRC. With a change in the orientation of reporting these companies can fit themselves into integrated reporting.

Introduction

In the global economy, the organizations; profit, non-profit rely on scarce resources. Some of these resources are owned by the organizations and others are owned by the society. The value created by an organization through utilizing the resources of the society should be shared between the owners, society and other stakeholders. Companies/Organizations inform their stakeholders about their performance through reporting. In the past, corporate reporting focused mainly on financial performance which was mostly intended towards investors. Of late corporate reporting became very inclusive with reporting corporate social responsibility, governance, business sustainability report along with financial information. The process of such integration is now being spearheaded by International Integrated Reporting Council (IIRC). It has developed a framework for integrated reporting which promotes an integrated thinking. Integrated thinking and reporting are the issues mainly related to the top management. It is a new concept which articulate the broader range of factors that

contribute to long term value of organization to play a role in the society. The value creation concept is the backbone of integrated reporting which is the direction of the future of corporate reporting. The important objective of an integrated reporting is to define company's sustainability, its future in the context of external environment. IIRC in its framework identified the guiding principles and content elements in communicating the value creation by the companies to their stakeholders. According to the IIRC, the integrated report is a single report, which combines the different aspects of reporting like finance, management analysis, governance and sustainability reporting of an organization. An effective integrated report reflects an appreciation that the organization's ability to create and sustain value is based on financial, social, economic and environmental systems and by the quality of its relationships with its stakeholders.

In India too, companies are gradually changing their reporting practices to bring more inputs to the stakeholders. They are combining quantitative information with qualitative information to justify their



sustainability and value creation to society. A few companies in India have adopted the framework of IIRC and started reporting in an integrated way. Some companies still continue to report only financial data with a passing reference of other initiatives such as CSR, environmental issues and so on. A few other companies adopted a system of reporting on sustainability, governance and social and environmental concerns in separated sections along with financial reporting. Such category of companies are combining quantitative and qualitative information which is presented not exactly as per the framework of IIRC but fit into integration. This paper makes an attempt to examine the extent of integration of financial data with non-financial data in the top 30 companies of the Bombay Stock Exchange (BSE). The BSE is an Indian stock exchange which is the oldest exchange in Asia. BSE listing means admission of securities to dealings on a recognised stock exchange. The securities may be of any public limited company, central or state government, quasi government and other financial institutions/corporations, municipalities etc. Listed on the BSE, these companies created a value for themselves. It is interesting to observe their reporting patterns vis-à-vis integrated reporting framework.

Review of the Literature:

Jonathan Labrey (2015) describes integrated reporting can be treated as a powerful tool to help the company in managing the processes and activities in an effective manner and build the awareness of the heterogeneous capitals, resources and relationships which are used and affected in their internal business.

V. Usha Kiran and Maschender Goud (2015) emphasized that the Indian Banks should adopt and establish a sound reporting process for identifying material issues and target audience, shareholders before embarking on the integrated reporting agenda.

Cecile Churet, Robeco SAM, and Robert G. Eccles (2014) reviewed the integrated reports of companies considering the ESG issues which are disclosed as part of the company's strategy and which are explicitly linked with cost savings. They concluded that there is non-conclusive evidence on the relationship between ESG risk management,

integrated reporting and financial performance measured by return on invested capital.

Ioana - Maria Dragu and Adriana Tiron-Tudor (2013) argued that there is a strong need for an internationally coordinated action as the financial and non-financial information disclosed by a company influences its strategic decisions. The topic of the current paper outlines the issue of integrated reporting as the interconnection between financial, social and environmental information.

Antonio Argandoña (2011) discussed about creating economic value of the company not based on external criteria, but on the core relationship between the company and its stakeholders.

According to Sarah Adams and Roger Simnett (2011) traditional financial reporting models fail to take this into account, providing a one dimensional view of the performance and operations of NFP organisations. The authors, therefore, suggest that an integrated approach to reporting offers NFP organisations an opportunity to provide more comprehensive information on the nature of their business including key performance areas.

Neva R. Goodwin (2003) explained the different meanings of capital and differentiated between five kinds of capital: financial, natural, produced, human and outputs. The maintenance of all five kinds of capital is essential for the sustainability of economic development.

Objectives of the Study

The main objectives of the research paper are:

1. To examine the extent of integration of financial and non-financial information in top 30 BSE companies
2. To examine whether reported elements of the top 30 companies fit as equivalent to the content elements of integrated reporting
3. To analyse the extent of value communication as per integrated reporting by BSE 30 companies

Research Methodology:

The paper is descriptive in nature and brings out the integrated reporting practices in BSE listed top thirty companies. The required information is collected



from secondary sources; i.e. Annual reports and websites of chosen companies. Content analysis is used to know the extent of integrated reporting practices by the companies. Content analysis refers to reading the annual reports carefully for the chosen information (parameters) and identifying whether the information is reported fully / partially / not at all.

Period of the Study:

The period of the study is based on one financial year, i.e. 2015-16. Annual reports of BSE top 30 companies for the financial year 2015-16 are analysed. The reports for the FY 2016 – 17 are not yet uploaded by some companies and hence the study period is taken as 2015 – 16.

Scope of the Study:

The scope of the study is confined to BSE listed top thirty companies and also examine the extent of integration of financial and non-financial information. It studies whether the present reporting practices fit as equivalent to the integrated reporting in BSE top 30 companies.

Quantitative Techniques

The study makes use of percentages in analysing the data. A disclosure Index is used to understand the extent of integrated reporting in annual reports. For the calculation of the disclosure index, the annual reports are analysed for the chosen parameters i.e. the various elements of integrated framework. If the element is fully reported a score of 1 is assigned, for

partial disclosures the score is 0.5 and not reported the score is 0. The formula of disclosure index is used;

Disclosure Index of each parameter =

$$\sum_{i=1}^n yd_i / n$$

Where d_i = If Fully reported = 1, Partially reported = 0.5 and not reported = 0, y = Number of companies reporting in each category and n = 30 companies; The score (d_i) is multiplied by the number of companies (y) and the total is divided by the sample companies (n) to get each parameter's disclosure index.

$$\text{Overall Disclosure Index} = \sum_{i=1}^n yd_i / (n(x))$$

Where d_i = If Fully reported = 1, Partially reported = 0.5 and not reported = 0, y = Number of companies reporting in each category, n = 30 companies and x = number of parameters in each element of IR framework. Overall Disclosure Index is found out by Total score divided by the no of parameters multiplied by the number of companies. The disclosure index score up to 0.3 is considered as very low fit, 0.3 to 0.5 a low fit, 0.5 to 0.8 is a moderate fit and above 0.8 is a high fit for IR framework.

Discussion and Analysis

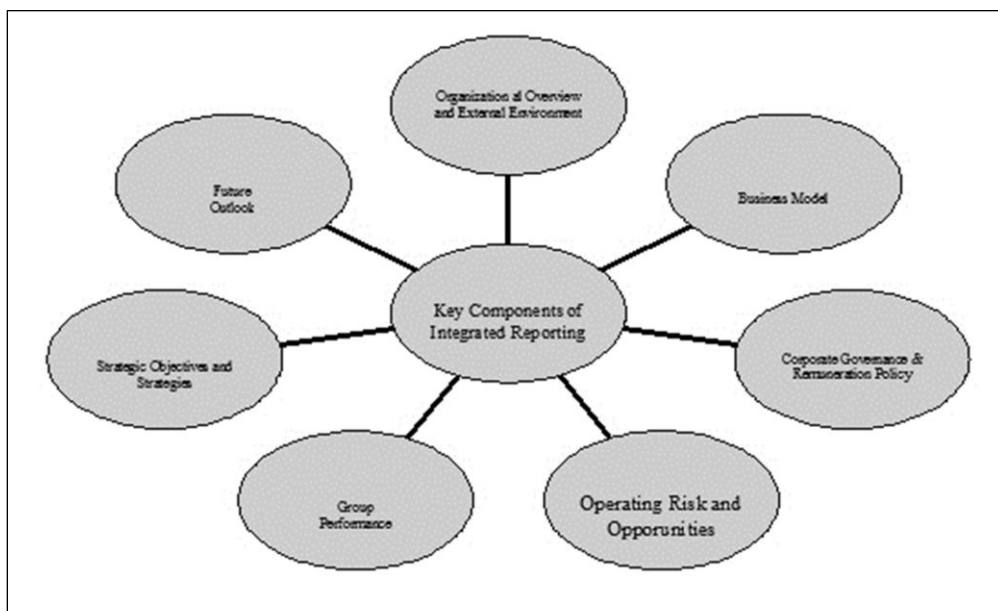
The following companies have been chosen for analysis and are listed on the Bombay Stock Exchange (BSE Top-30).

Table - 1
BSE Listed top 30 companies

S. No	Company	S. No	Company	S. No	Company
1	Adani Group	11	HDFC Bank Ltd	21	Maruti Suzuki
2	Axis Bank Ltd	12	Hero Motocorp	22	NTPC
3	Bajaj Auto Ltd	13	Hindalco Industries Ltd	23	ONGC Ltd
4	Bharti Airtel Ltd	14	Hindustan Unilever Ltd	24	Reliance Industries Ltd
5	BHEL	15	ICICI	25	SBI
6	Cipla Ltd	16	Infosys Ltd	26	Sun Pharma
7	Coal India Ltd	17	ITC Ltd	27	Tata Consultancy Services
8	Dr.Reddy's	18	L & T	28	Tata Motors Ltd
9	GAIL	19	Lupin	29	Tata Steel Ltd
10	HDFC	20	Mahindra & Mahindra	30	Wipro

(Source: www.bseindia.com) (As per alphabetical order)

According to the International Integrating Reporting Council (IIRC) suggested framework, the elements considered in the integrated reporting of business / organizations provide a holistic picture.



Source: IIRC draft 2013

The important research question is that out of the thirty top companies how many are following IR and how many are reporting the elements of IR though they have not adopted the IR framework. All the annual reports are analysed for the elements of reporting on the basis of IR framework and conclusions are drawn.

1) Organizational Overview and External Environment

An organisational overview should consider the following aspects such as; The organisation's name, size and the location of its operations and activities. The principal activities of the organisation, including its products and services. The organisational structure, including the principal divisions, subsidiaries, associates and JVs. A concise statement of the business model describing the manner in which the organisation currently creates value. High-level information about the existing resources of the organisation and any claims against it.

Table-2
Organizational Overview

Parameters	Extent of Integrated Reporting			Disclosure Score = d_i	Disclosure Index
	Fully Reported	Partially Reported	Not Reported		
Mission-Vision- Values	2 (7%)	28(93%)	Nil	2+14+0/30	0.53
Types of products	2 (7%)	28(93%)	Nil	2+14+0/30	0.53
Ownership and operating structure	2 (7%)	28(93%)	Nil	2+14+0/30	0.53
Subsidiary companies	2 (7%)	28(93%)	Nil	2+14+0/30	0.53
Joint ventures	2 (7%)	28(93%)	Nil	2+14+0/30	0.53
Reporting boundary	2 (7%)	Nil	28(93%)	2+0+0/30	0.07
Total Score	12	70		12+70+0/180	0.46

Source: Annual reports



Note: Disclosure score = Fully Reported = 1, Partially Reported = 0.5 and not reported = 0; The score is multiplied by the no. of companies and the total is divided by the sample companies to get each parameters disclosure index. Overall Disclosure Index is found out by Total score divided by the no of parameters multiplied by the no. of companies. The procedure of calculation remains the same for remaining elements of IR

On the analysis of 30 companies on the component Organizational Overview, it is found that the two companies as per the IR framework could reveal all the aspects of organisational overview along with the emphasis on the value creation. Remaining 28 companies are spread in reporting trends in these parameters partially. It is observed further that except in case of reporting boundary, all other parameters have been effectively represented. As the reporting is not integrated in case of 28 companies, they are silent about the reporting boundary. The companies which are not fitting themselves in IR also more or less giving the necessary information about the parameters which are considered under IR. The disclosure Index (0.53) for the first five parameters also indicates that reporting of this element is moderate. The overall disclosure index is effected by the last parameter. Though value creation is not being covered effectively and reporting boundary is not informed,

still the companies can fit themselves if they change the orientation of the reporting.

2) Governance

Organization's governance, leadership, engagement and communication with stakeholders, corporate social responsibility, description of the material aspects of the governance structure, organisational hierarchy, committees, their composition and remuneration committees approved by the organisation's governing structure are some of the aspects in effective IR. An integrated report should provide information on how employees in general and senior executives in particular are remunerated. The disclosure should indicate the extent to which the remuneration is fixed and variable and the factors that influence the variable element. Employees should be grouped while providing this disclosure. Separate disclosure should be given for the executive directors of a company. Disclosure should be provided of the major components of employment costs, for instance salaries and wages, housing benefits, post-employment benefits, etc. Consideration should also be given to disclosing comparatives for the total cost to the organisation per employee at the different levels.

**Table -3
Governance**

Parameters	Extent of Integrated Reporting			Disclosure Score	Disclosure Index
	Fully Reported	Partially Reported	Not Reported		
Structure of committees	2(7%)	28(93%)	Nil	2+14+0/30	0.53
Audit Committee	2(7%)	28(93%)	Nil	2+14+0/30	0.53
Remuneration committee	2(7%)	28(93%)	Nil	2+14+0/30	0.53
Investors Grievance committee	2(7%)	28(93%)	Nil	2+14+0/30	0.53
Executive committee	2(7%)	28(93%)	Nil	2+14+0/30	0.53
Total Score	10	70	0	10+70+0/150	0.53

Source: Annual Reports

It is noticed from the Table – 3, that the companies which are not following the IR also fit themselves in reporting the identified parameters. However, there is a mere mention of the structure, committees, remuneration policies etc. They are failing in bringing out the competencies, diversities, skills of the committees. Most of the companies are bringing out a separate report on governance which identifies number of shareholders meetings, attendance of the committee members and so on. The value created or sustained is not communicated clearly. If value addition in the context of external environment and organisation's culture, ethics and values and their effect on



capitals and stakeholders are incorporated under this heading, all the companies fit themselves into IR framework. The disclosure index for each parameter (0.53) and overall disclosure index (0.53) reveal the same.

3) Business Model

Business Model defines the core of the organization and explains the processes by which value is created for the organization. The business model and strategy communicates how capitals translate into value creation. The use of key performance indicators (KPI) in measuring the value is indicated in the IR. As per the IR framework, business performance can be described in terms of inputs, business activities, product differentiation, warranty arrangements, process improvements, employee training, outcomes, key products, services, by-products and waste treatment.

Table -4
Business Model

Parameters	Extent of Integrated Reporting			Disclosure Score	Disclosure Index
	Fully Reported	Partially Reported	Not Reported		
Inputs	2 (7%)	28 (93%)	Nil	2+14+0/30	0.53
Business Activities	2 (7%)	28 (93%)	Nil	2+14+0/30	0.53
Product Differentiation	2 (7%)	Nil	28 (93%)	2+0+0/30	0.07
Warranty arrangements	2 (7%)	Nil	28 (93%)	2+0+0/30	0.07
Process improvements	2 (7%)	Nil	28 (93%)	2+0+0/30	0.07
Employee Training	2 (7%)	28 (93%)	Nil	2+14+0/30	0.53
Outcomes	2 (7%)	Nil	28 (93%)	2+0+0/30	0.07
Key Products/Services	2 (7%)	28 (93%)	Nil	2+14+0/30	0.53
By Products/ waste	2 (7%)	22 (73%)	6 (20%)	2+11+0/30	0.43
Total Score	18	67	0	18+67+0/270	0.32

Source: Annual Reports

Majority of the companies communicated about their business activities, key products, by-products and waste management in their reports. Majority of the companies gave information about product lines, geographical location, joint ventures etc. Majority of the companies did not report the value creation in the form of product differentiation, warranty arrangements, process improvements. Internal outcomes such as employee welfare, social and environmental effects, revenue and cash flows etc are reported by majority of the companies. Carbon emissions, labour practices, tax payments, etc are also reported by majority of the companies. As per disclosure index of each parameter it is found that product differentiation, warranty arrangements, process improvements and outcomes are not at all fit into the IR practices. On the basis of overall disclosure index(0.32) of Business model, compared to overview(0.46) and governance (0.53) this element needs more inputs to be fit to IR framework.

If companies include information and explain to stakeholders regarding business model and its value, they can easily fit themselves into IR framework.

4) Operating Risk and Opportunities

Risk management is crucial to any organisation. All the businesses operate in an uncertain environment. It is now the order of the day that each company has a team of employees who scan the environment for various risks and associated opportunities. Each challenge brings a greater prospect with it. The efficiency of organisation lies in the conversion of risks into opportunities. This requires incorporating risk management into the organization's decision-making process as well as strategy, then aligning it with prevailing industry circumstances. The goal is to reduce uncertainty with respect to the organization's performance and future flexibility.



Table- 5
Operating Risks and Opportunities

Parameters	Extent of Integrated Reporting			Disclosure Score	Disclosure Index
	Fully Reported	Partially Reported	Not Reported		
Materiality	2 (7%)	4 (13%)	24 (80%)	2+2+0/30	0.13
Risk Management	2 (7%)	28 (93%)	Nil	2+14+0/30	0.53
Identification of Internal/ External risks	2 (7%)	23 (76%)	5 (17%)	2+11.5+0/30	0.45
Steps to mitigate	2 (7%)	3 (10%)	25 (83%)	2+1.5+0/30	0.12
Cost competitiveness	2 (7%)	19 (63%)	9 (30%)	2+9.5+0/30	0.38
Shareholders Engagement	2 (7%)	21 (70%)	7 (23%)	2+10.5+0/30	0.42
Total Score	12	49	0	12+49+0/180	0.34

Source: Annual Reports

Though majority of the companies are identifying risks which are internal or external fully or partially, are not describing the steps to mitigate the risks. Material issues which are crucial in risk management are not stated by majority of the companies (80%). Shareholders engagement and cost competitiveness are the two issues which are reported effectively by the companies. The value creation, linking the risks to strategies are not noticed in the reporting by these companies. Disclosure index for materiality and steps to mitigate the risks indicates very low fit to IR framework. The overall disclosure Index (0.34, low fit) also reveals that if the companies disclose identified

information, they can fit themselves into IR framework.

5) Strategy and Resource Allocation

The aim of integrated reporting is to identify the organization's short, medium and long term strategic objectives. In a nutshell, company answers where it wants to grow and how does it intend to get there. It should disclose resource allocation plans. Strategies for value creation for shareholders and other key stakeholders such as customers, suppliers, employees and society as a whole also be part of the strategies for short, medium and long term periods.

Table -6
Strategic Objectives and Strategies

Parameters	Extent of Integrated Reporting			Disclosure Score	Disclosure Index
	Fully Reported	Partially Reported	Not Reported		
Strategic Objectives	2 (7%)	21 (70%)	7 (23%)	2+10.5+0/30	0.42
Resources allocation	2 (7%)	21 (70%)	7 (23%)	2+10.5+0/30	0.42
Measurement of targets	2 (7%)	Nil	28 (93%)	2+0+0/30	0.07
Competitive Advantage	2 (7%)	27 (90%)	1 (3%)	2+13.5+0/30	0.52
Innovation	2 (7%)	13 (43%)	15 (50%)	2+6.5+0/30	0.28
Stakeholder engagement strategies	2 (7%)	28 (93%)	Nil	2+14+0/30	0.53
Total Score	12	55	0	12+55+0/180	0.37

Source: Annual Reports

Integrated reports should disclose the KPIs used by management to track performance. It helps investors compare organizations and understand their performance. The linkages between strategy, resource allocation and content elements should be informed. The organizations also should reflect about the role of innovation. Strategies



regarding environmental and social considerations to be included in the company's policies have to be spelt out in IR.

As per the analysis it is observed that majority of the companies are stating objectives, resource allocation, measurement of targets, competitive advantage, stakeholders engagement strategies in their reports fully or partially. As per the disclosure index, measurement of targets (0.07) and innovations (0.28) are the two parameters which needs improvement in reporting. However, the companies are not clearly stating the strategies and other parameters as per the short, medium and long term periods. Value creation by / through these parameters are not at all reflected in the report of

these companies. The overall score of 0.37 is low and companies cannot fit into IR framework unless they improve the reporting style.

6) Performance

An important part of the integrated report is to answer to what extent has the organization achieved its strategic objectives for the period what are the outcomes in terms of effects on capital. The answer is disclosed in the form of current financial performance and other appropriate measures of performance segment wise or business model wise. An indication may be given as to how financial value is added by the business to its stakeholders.

Table-7
Performance

Parameters	Extent of Integrated Reporting			Disclosure Score	Disclosure Index
	Fully Reported	Partially Reported	Not Reported		
Targets Risk and opportunities	2 (7%)	28 (93%)	Nil	2+14+0/30	0.53
Effects on capitals	2 (7%)	3 (10%)	25 (83%)	2+1.5+0/30	0.12
Engagement towards Stakeholders	2 (7%)	28 (93%)	Nil	2+14+0/30	0.53
KPIs	2 (7%)	28 (93%)	Nil	2+14+0/30	0.53
Total Score	8	43.5	0	8+43.5+0/120	0.43

Source: Annual Reports

Identifying the issues and capitals that have a material impact on performance is essential in IR. A mention may be made about the six types of capitals which a company uses in its operations, and value created by them is to be measured. Value created to these capitals also should be measured. As per IR framework, the important parameters are targets, risks, opportunities, effects on capitals, engagement towards Stakeholders and KPIs in terms of sales, profits, ROCE, and so on. It is evident that majority of the companies reported through KPIs, and their engagement towards stakeholders. The capitals, their identification, effects are not at all form part of their reporting (Disclosure index = 0.12, very low). A point of observation is that all most all the companies are communicating about financial capital, intellectual capital and human resource capital at one place or the other. But there is no direct reference of these parameters. The overall disclosure index (0.43) reveals that if the companies

include these observations in their reporting they become fit to be in the IR.

7) Outlook

An integrated report should reflect as to how an organization faces challenges and uncertainties' while perusing it's strategy. It should also define its business model in the context of future environmental risks and opportunities. What kind of implications an organization faces during the process also should be indicated in IR. The outlook states the expectations on external environment and organization's readiness to accept the changes.



Table-8
Outlook

Parameters	Extent of Integrated Reporting			Disclosure Score	Disclosure Index
	Fully Reported	Partially Reported	Not Reported		
Expectation about external environment	2 (7%)	28 (93%)	Nil	2+14+0/30	0.53
Impact of external environment	2 (7%)	1 (3%)	27 (90%)	2+0.5+0/30	0.08
Organizations Responsiveness	2 (7%)	Nil	28 (93%)	2+0+0/30	0.07
Total Score	6	14.5	0	6+14.5+0/90	0.23

Source: Annual Reports

It is observed that the companies selected except two, are not reporting on impact of external Environment (0.08) and organizational responsiveness (0.07). However they are referring to expectations about external environment to some extent. Mostly this kind of information is provided in the reports of Banks and IT companies. There should be always a strategy with the company to face any kind of situations of future. Clear cut objectives in respect of capitals, organization's competitiveness and company's market positioning are indicated through this element. However, the overall disclosure index (0.23) is very low in this key element. All the companies can reflect these parameters to indicate the value creation in future times.

Conclusion

Integrated reporting no doubt is a good trend in corporate reporting framework. It communicates value to all its stakeholders and explains organization's sustainability and impact of capitals it uses. The present reporting trend in the select companies though not as per the IR framework, fits to most extent into IR framework. The reporting is no doubt exhaustive but fails to communicate the value creation to the stakeholders. It is observed that with a minimal corrections/ additions/ deletions, all the companies can easily fit into the IR framework. Aspects such as materiality, capitals, outlook need to be focused on so that they can fulfil the high expectations of IR framework. It is further observed that instead of reporting the issues qualitative and quantitative in separate sections, companies can well organize their value under the different elements as suggested by the IIRC.

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NATIONAL COST CONVENTION 2019

THEME

**COST AND MANAGEMENT
ACCOUNTANTS:
“POWER OF THE PAST -
FORCE OF THE FUTURE”**



TECHNICAL SESSION 3

Costing in Service Sector

- ⦿ Health Care
- ⦿ Infrastructure (Highways, Construction, Power, Fuel, Ports, Aviation etc)
- ⦿ Telecommunication



Health Care

Healthcare has become one of India's largest sectors - both in terms of revenue and employment. Healthcare comprises hospitals, medical devices, clinical trials, outsourcing, telemedicine, medical tourism, health insurance and medical equipment. The Indian healthcare sector is growing at a brisk pace due to its strengthening coverage, services and increasing expenditure by public as well private players. India's competitive advantage lies in its large pool of well-trained medical professionals. India is also cost competitive compared to its peers in Asia and Western countries. The cost of surgery in India is lesser than that in the US or Western Europe. The country has also become one of the leading destinations for high-end diagnostic services with tremendous capital investment for advanced diagnostic facilities, thus catering to a greater proportion of population. India's competitive advantage also lies in the increased success rate of Indian companies in getting Abbreviated New Drug Application (ANDA) approvals. India also offers vast opportunities in R&D as well as medical tourism. To sum up, there are vast opportunities for investment in healthcare infrastructure in both urban and rural India. There are abundant opportunities available in healthcare industry for CMAs, maintenance of cost records and cost audit, designing of Integrated Cost Accounting and ERP System based on Activity Based Cost Management, fixation of charges for various services provided by the healthcare industry using latest costing concepts and methodologies, project Costing, Inventory Management, resource mapping and risk mapping. CMAs can be appointed as Internal Auditor in the healthcare sector, in addition to appointment as internal auditor, CMAs may design the Internal Control and Internal Audit System of the healthcare Industry and also prepare Internal Audit Manual for them, moreover, facilitate in reporting of compliance of laws to various governmental agencies.

Infrastructure

Infrastucture sector is a key driver for the Indian economy. The sector is highly responsible for propelling India's overall development and enjoys intense focus from Government for initiating policies that would ensure time-bound creation of world class infrastructure in the country. The Government of India is taking every possible initiative to boost the infrastructure sector. Some of the steps taken in the recent past are Sahaj Biji Har Ghar Yojana (Saubhagya) scheme, Green Energy Corridor Project along with other wind and solar power projects, investment towards telecom infrastructure, Railways &

Metro Railways, Smart City Missions, Pradhan Mantri Awas Yojana (Urban), etc. India's national highway network is expected to cover 50,000 kilometres by 2019. India and Japan have joined hands for infrastructure development in India's north-eastern states and are also setting up an India-Japan Coordination Forum for Development of North East to undertake strategic infrastructure projects in the northeast. CMAs can keep track of allocation and apportionment of the fund provided by the Government to extract a maximum outcome and eliminate money laundering. CMAs can initiate suitable strategies to balance the public-private interest, Benchmarking governance methodologies, technology, carry out Risk Mapping and proper designing of the projects. CMAs can facilitate the management by Social Cost Benefit Analysis tool for apposite planning, decision-making, evaluation and control project costing to determine the profitability in addition to the feasibility of the project.

Telecommunication

The Indian government is aware about the potential of the Telecom sector in advancing financial access, improving information, and raising productivity in the economy. It has therefore initiated major flagship programs like *Digital India* and *Smart Cities* which primarily depend on telecommunications infrastructure. India, however, needs to develop its wireless infrastructure and spectrum policy for this potential to be fully realized. While spectrum availability is a global challenge faced by all economies, it is particularly a matter of concern in India. Through affordable devices, reasonable telecommunications fees, and low mobile taxes, the digital sector can prosper and propel the overall economy. Improvements in these areas can boost Internet access and provide access to affordable services and diverse content. CMAs may render advisory services to the companies in telecom industry in taking policy decision, cost reduction, maintaining the quality, introducing innovative schemes etc., by virtue of his expertise in costing and accounting to attain desired economic growth and societal inclusion. A practicing CMA is authorized to appear for Telecom Disputes Settlement Appellate Tribunal to resolve the disputes of the service providers. He may even render advisory services to the companies in telecom industry regarding policy decision, cost reduction, maintaining the quality, initiating innovative schemes and carry out audit for Metering and Billing Accuracy through his professional expertise in costing and accounting.



ACTIVITY BASED COST MANAGEMENT WITH ERP MODULES IN HEALTHCARE SECTOR - OPPORTUNITIES FOR CMAs IN HEALTHCARE INDUSTRY

“Ensuring equitable access for all Indian citizens, resident in any part of the country, regardless of income level, social status, gender, caste, or religion, to affordable, accountable, appropriate health services of assured quality (promotive, preventive, curative, and rehabilitative) as well as public health services addressing the wider determinants of health delivered to individuals and populations, with the government being the guarantor and enabler, although not necessarily the only provider, of health and related services”

- High-Level Expert Group (HLEG) on Universal Health Coverage (UHC), 2010 Definition

One of the important objectives of Government of any Country is improvement in the standard of living and health status of its population. For this, every government endeavours to provide its populations accessible, affordable and quality healthcare. Indian Government is also making efforts to improve the standard of living and health status of its population and it remains one of the important objectives in Indian planning. The five year plans had reflected long term vision consistent with the international aspirations of which India has also been a signatory. India's health care system have mixed ownership patterns and with different systems of medicine - Allopathy, Ayurvedic, Unani, Siddha and Homoeopathy.

The health care sector in India comprises both of private sector and public sector. Health care service is gradually emerging as one of the largest service sectors in India. The private health care sector consists of the 'not-for-profit' and the 'for-profit' health sectors. The not-for-profit health sector includes various health care services provided by Non-Government Organisations (NGO's), charitable institutions, trusts, etc. Health care services in the for-profit health sector are provided by various types of practitioners and institutions in private sector. Most of the healthcare services are provided by the private sector. The increased spending power of the middle class is providing growth opportunities to healthcare providers. The public health sector also known as publicly-funded government hospitals consist of the central government, state government, municipal & local level bodies. Though



Health is a State responsibility but the central government contributes substantially through grants and centrally sponsored health programs/ schemes.

Publicly-funded government hospitals provide basic care only and often lack adequate infrastructure. We may witness that the publicly funded government hospitals are crowded and waiting times in these hospitals is very long. Further, the Government hospitals are often understaffed; however the cost of care is significantly less as compared to private hospitals. On the other hand, the private hospitals offer a high standard of health care and are well equipped with modern technology, the doctors are highly qualified and often trained abroad, though the cost of care is significantly more at these private hospitals. Furthermore, the private sector in India has a dominant presence in medical education and

training and other areas such as medical technology and diagnostics, pharmaceutical manufacture and sale, hospital construction and ancillary services.

Health Care Expenditure by Government

Public healthcare expenditure by Indian government as a percentage of gross domestic product (GDP) is 1.4 per cent which is far lower than the global median (5 per cent) and compared to the healthcare spend/GDP ratio close to 6 per cent or above for most developed western countries, even BRICS (Brazil, Russia, India, China, South Africa) nations such as Brazil and South Africa are far superior to India on this score. Further, healthcare sector lack of skilled human resources as compared to western countries.

Table-1: Contrasting Conditions

Contrasting conditions					
Countries	Expenditure on health as % of GDP		Hospital beds	Nurses	Physicians
	Government	Private			
	Per 10,000 population				
Germany	7.8	2.7	82	108	35
UK	7.2	1.5	34	103	21
USA	7.3	7.9	31	98	27
Japan	6.7	1.6	138	41	21
Russia	3.1	1.7	97	85	43
Brazil	3.7	4.7	24	65	17
South Africa	3.3	4.9	28	41	8
Thailand	3.0	1.1	22	15	3
China	2.0	2.3	41	14	14
Vietnam	2.8	4.4	29	10	12
India	1.4	2.8	9	13	6
Global median	5.0	3.3	24	28	12

Source: World Health Statistics (2006)

What Governments Spend On Health Care¹

- At 60%, India has one of the highest out-of-pocket health care expenditures. Besides, the country has only 6.49 doctors per 10,000 people, lower than even Pakistan, which spends just 2.5% of its GDP on health care.
- 54% of US health spending is private, out of which insurance spend accounts for 59%, one of the highest in the world.
- With 95% of its total GDP spend on health care, Cuba has the highest government health spending globally. It also logs 67 physicians per 10,000 people, the most in the world.
- Oil-rich Qatar spends the least on health care, 1.9% of its GDP, next only to 1.6% of South Sudan, the youngest nation.

¹ <http://forbesindia.com/article/world-watch/what-govts-spend-on-health-care/36443/1#ixzz35LZoywWk>



Table-2: Health care services

	% OF GDP SPENT ON HEALTH CARE	PER CAPITA HEALTH EXPENDITURE	GOVT SHARE IN HEALTH CARE SPENDING (IN %)	HEALTH EXPENDITURE AS % OF TOTAL GOVERNMENT EXPENDITURE	% OF PRIVATE OUT-OF-POCKET EXPENDITURE
USA	18	\$8,608	46	20	11
UK	9	\$3,609	83	16	9
INDIA	4	\$60	31	8	60
CHINA	5	\$278	56	12	35
BRAZIL	9	\$1,121	46	9	31
GERMANY	11	\$4,875	76	19	12
RUSSIA	6	\$807	60	10	35
NIGERIA	5	\$80	37	8	60

Source: Article appeared in the Forbes India magazine issue of 15 November, 2013

As per 12th five year plan (2012-17), main thrust areas *inter alia* identified are **infrastructure, health and education**. 12th plan provides for inclusive agenda for health care which includes 'access to health care services by all segments of population, Special services for the vulnerable and disadvantaged groups, Training of health and rehabilitation professionals'. Also, there is substantial increase in the health sector expenditure as compared to 0.94 per cent of GDP in tenth plan and 1.04 per cent in eleventh plan.

Problems of Health Care System in India

The Indian healthcare system is in a dilapidated state. The cost of medical care in private hospitals rises day by day and it seems there is no control of government on these hospitals. Much of these costs can be attributed to the diagnosis and treatment of chronic diseases and conditions such as diabetes, obesity, cardiovascular disease and asthma. Though healthcare costs look affordable to medical tourists,

but the health care is costly, almost prohibitive, to the average Indian citizen. Further, the quality of healthcare in India varied from hospital to hospital in urban and rural areas. Access to quality medical care is limited or unavailable in most of the rural areas. For a poor family with a meagre income, the health care is almost unaffordable. One medical procedure can cost lakhs of rupees and this may send the family of a patient into a huge debt.

Further, the population accessing private services largely encounter with unlicensed practitioners who deliver poor quality of services. High cost of treatments in private hospitals is due to lack of regulations and standardized cost of procedures prescribed by the Government. Therefore, there is an urgent need to control and prescribe the standardized cost of procedures/ treatments as good medical treatments can be afforded by those who are in the higher income brackets.



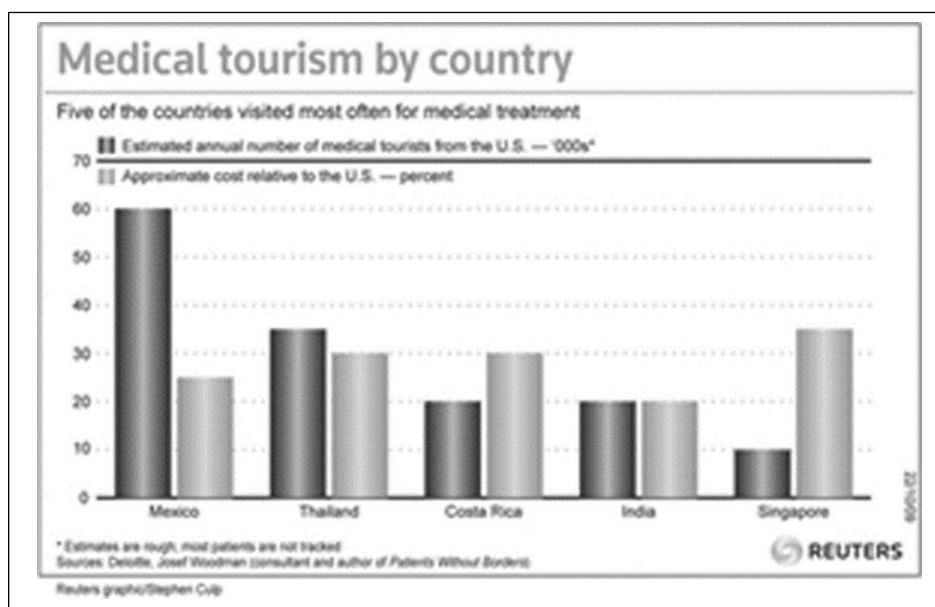
Reasons of rising healthcare costs

1. One of the main reasons for rising healthcare costs in India is: use of latest sophisticated technology and equipment by the doctors and hospitals. Earlier, Doctors prescribed tests only if the patient's illness was of serious nature and also those tests were very simple. Now doctors advise a battery of complex tests to ensure correct diagnose.
2. Medical negligence cases are now under the purview of consumer courts and the doctors have no alternative but to ask for the test reports before prescribing the treatments. This has also lead to the over-recommendation of diagnostic services.
3. The opening up of the private sector in providing healthcare has also contributed to the rise in costs. In Private Hospitals all things are commercial be it Land, Professional fees to Doctors, salary to Nurses, staff etc. So while fixing the charges for treatments/ procedures by the private hospitals, the costs are to be loaded and the patients have to pay more for diagnostic, hospital stay, doctor fees, nursing charges, and planned diet while seeking treatment from private hospitals.

4. AS per WHO data-2012, Higher life expectancy 64/68 years (male/female) and lower infant mortality rate of 56 per 1000 live births have also played its role and more people are seeking healthcare putting a demand on its availability and hence pushing the cost upwards.
5. Higher purchasing power due to rising income levels and rising literacy levels has boosted awareness on preventive and curative healthcare and, in turn, increase the hospitalization rate.
6. The sustained expansion of healthcare insurance coverage also pushing the hospitalisation rate.

Medical Tourism

'Medical Tourism' is a term which refers to medical treatment by a patient in a country other than the country where he resides. It is also called medical travel, health tourism or global healthcare. The medical travellers seek many services such as elective procedures, complex specialized surgeries namely joint replacement (knee/hip), cardiac surgery, dental surgery, cosmetic surgeries etc.



Source: www.blogs.reuters.com

Figure: Medical Tourism by Country



India is preferred medical tourism destination due to low costs of treatments as compared to developed and western countries. Further, in India availability of latest and sophisticated medical technologies and growing compliance on international quality standards also attract the foreigners for medical treatments in India.

Though India is seen as a centre for cost-effective treatments by people around the world but it is losing its competitive edge in the medical tourism due to strict visa regime in India. This is playing havoc and the foreigners give a miss in favour of other Southeast Asian nations like Thailand, Singapore and Malaysia which, although costlier, are seen as more welcoming of medical tourists.

Indian government is taking steps to address infrastructure issues, cost effectiveness and has removed visa restrictions on tourist visas to attract medical tourists in India.

Medical Procedures

A medical procedure is a course of action intended to achieve a result in the care of persons with health problems. A medical procedure with the intention of determining, measuring or diagnosing a patient condition or parameter is also called a medical test.

As mentioned under reasons for rising healthcare costs that due to medical negligence cases are now under the purview of consumer courts and the doctors in order to correctly diagnose the diseases and due to other reasons generally prescribe numerous diagnostic tests which are unnecessary in many cases. The tests/ procedures are very costly in private hospitals. Many private hospitals are owned by corporate houses and Doctors are given internal targets in their budget in terms of number of cardiovascular surgeries, orthopaedic surgeries, various tests, other surgeries, ICU occupancy rate, etc. Based on such budgets doctors are offered rates per procedure to get them affiliated to the hospital(s). So to meet the internal targets, the doctors perform procedures on patients without any regard for the genuine need of procedure on particular patient.

There needs to be transparency in charges levied by Private Hospitals. Helpless patients are forced to pay huge amounts unnecessarily because they are fear of their life. *When many organisations such as banks,*

airlines etc. could display their rates/charges then why cannot the Private Hospitals do?

Times of India in an Article "**Private hospitals will have to display treatment costs**" dated October 8, 2012:

Jagdish Prasad, director general of health services (DGHS), mentioned: *"Our aim is to notify standard costs for various medical procedures such as angioplasty, coronary bypass surgery etc. We also plan to categorize hospitals based on quality of services offered and develop standard treatment costs for each category"*

Dr Kameshwar Prasad, head of the clinical epidemiology unit of AllMS mentioned: *"Unwarranted procedures and diagnostic tests put extra financial burden on the healthcare system and cause increased morbidity and mortality. For example, a person suffering from muscular chest pain does not require angiography. Still, many hospitals routinely put such patients through this procedure"*.

Experts cite studies showing rampant use of unnecessary procedures in India. For instance, hormone replacement therapy is carried out in post-menopausal women despite there being no evidence that it reduces cardiac events. Similarly, antioxidant vitamins are commonly prescribed for reducing cardiovascular disease though there's no evidence of its efficacy. The Elisa test has till recently been widely used for diagnosis of tuberculosis. It has since been banned due to its unreliability.

Cost Management System in Hospitals

Profitability and Cost Management is necessary for healthcare sector which is possible through better costs management system. Most of the healthcare organizations continue to struggle with identifying the costs of products and services provided by them. Cost control and cost reduction are the most challenging issues faced by the healthcare industry. Many organizations are introducing shared service centres, centralizing certain operations either in the front or back-office in order to reduce indirect costs.

Further, pricing of healthcare services depends the way a hospital books the expenses (direct & indirect), identify the cost centres/Activities, cost drivers and allocations of indirect expenses based on these cost drivers to the activities/apportionment to cost centres etc.



Challenges in costing of the Services of Hospitals

As discussed above, the Healthcare sector or Industry needs very sound costing system and practices integrated with ERP in view of the following challenges:

1. Many Studies conducted in India show that "Out of Pocket expenses" constitute more than 80% of total bill. Therefore, healthcare industry should focus on ways and means to reduce the cost of services through good cost management system and through restructuring the businesses and service lines;
2. Costs of procedures vary from hospital to hospital (rural & urban) and also patient to patient under "Packages" for CGHS, Insurance companies, Corporates, private and public;
3. Price fixation for numerous procedures/ diagnostics tests and facilities cannot be similar in all the hospitals due to various reasons such as competition, demand for the product in the community, affordability, the need to generate funds, varied cost of facilities, infrastructure cost, professional fees to doctors (specialists/ super specialists), salaries to nurses, technicians & staff, establishment cost etc.
4. To provide efficient and cost effective services to patients, making available updated information at one desk with respect to appointments, bed availability, and schedules of doctor, specialized services, costs of treatments etc.;
5. To cope up with rising costs coupled with decreased funding from government and other funding agencies, and to find ways and means to reduce costs;
6. For making quick and efficient decisions to authorize, modify or discontinue a programme or activity; and
7. For effective planning and management of inventories, as determination of the right inventory for hospital is very difficult in view of need for customizing services to each and every segment of customers, etc.

Activity Based Cost Management helps to identify the non-profitable areas so that the organization takes decisions to control costs. The project control system also helps organizations get a fair indication of the existence and the extent of such problems.

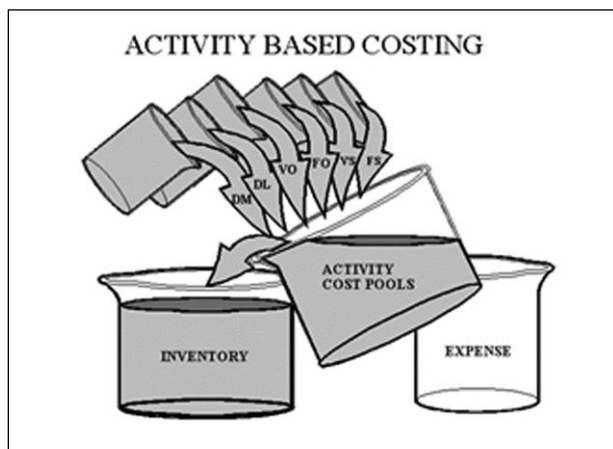
Jo-Ann Mulligan et al (2003)² in their study evaluate the feasibility of economic evaluation methods for specified interventions and assessment of the intensity of the problem to be addressed by the health authorities. The study explores how assessment of standardized regional unit costs for a range of health care resource inputs and providing such information to the authorities [DCPP (Disease Control Priorities Project)] with the ratios of relative costs for different regions, helped the authorities in developing and introducing unit pricing for regions where-ever they intended to execute their plans. Such planned execution lead to realization of the intended objectives ensuring deployment of right resources and have effective control over the cost.

Activity Based Cost Management System

As mentioned above that the Healthcare/hospitals need very sound system of cost management due to various reasons indicated thereat. In Traditional Costing System we consider total costs for valuation of products or services and overhead costs, which constitute major portion in total cost, are allocated on these products/ services arbitrarily on the basis of volumetric measures such as the labour hours or machine hours, space, watts etc. So allocation of such costs to products/services in an arbitrary manner distorts the final cost of products or services.

The hospitals which are already struggling to reduce the cost of services may not be able to value their services effectively. Activity Based Costing (ABC) solves this problem by tracing major portion of overheads into direct costs through cost drivers.

² Jo-Ann Mulligan et al (2003), Unit Costs of Health Care Inputs in Low and Middle Income Regions, Working paper funded by Disease Control Priorities Project (DCPP), London School of Hygiene and Tropical Medicine and World Health Organisation



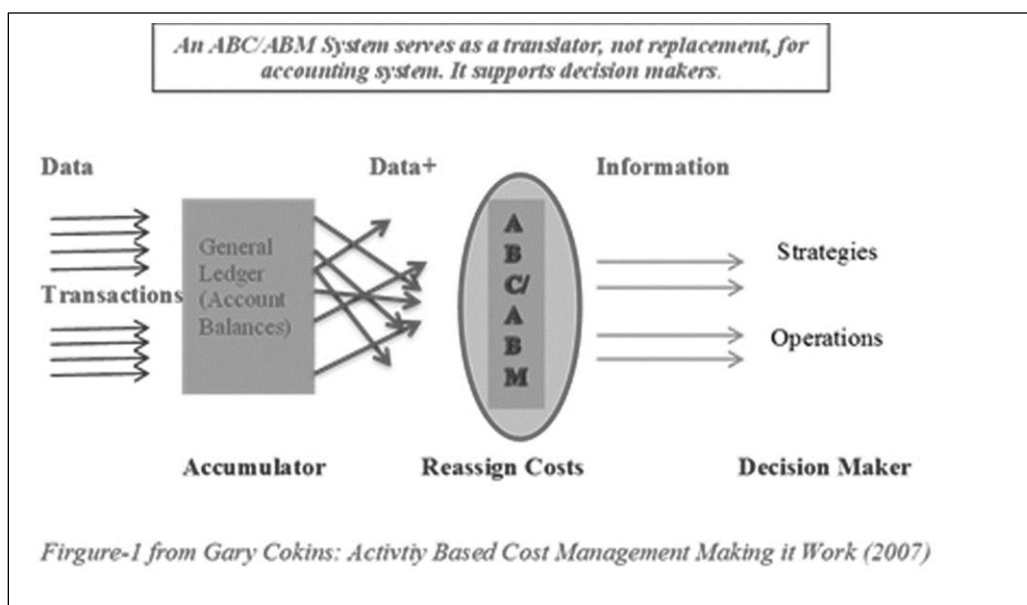
Source: <http://maaw.info/Chapter2.htm>

In Activity-based costing (ABC), we identify activities and assign the cost of each activity with resources to all products and services which benefit from the activity according to their actual consumption. Some of the examples of activities are material ordering, material handling, quality testing, machines set-ups, and customer support service etc.

In ABC maximum indirect cost (overheads) are converted into direct costs as compared to

traditional costing system. ABC replaced cost allocations with substantially more realistic and consequently much greater accuracy. As mentioned by Gary Cokins in his book "Activity-Based Cost Management Making it Work" that "Activity-based costing (ABC) is of that sea change. ABC is not a replacement for the traditional general ledger accounting. Rather, it is a translator or overlays, as in Figure 1, that lies between the cost accumulator or the expenditure account balances in the general ledger and end-users who apply cost data in decision making. ABC converts inert cost data into relevant information so that the users can take action."

In ABC identification of activities are done and those activities are eliminated which are not contributing value to the products and services that are unprofitable and lower the prices of those that are overpriced.



Activity Based Cost Management (ABM) uses the data provided by Activity Based Costing for various

analyses to achieve continuous improvement. The use of ABC tool for managing costs at activity level is



known as ABM. ABM is a natural extension of ABC. ABM allows managers to examine non-value-added activities and make rational decisions to eliminate them. ABM manages activities rather than resources. ABM supports business excellence by providing information to facilitate long-term strategic decisions about such things as product mix, process, line of business, product design, capital investments, pricing etc. It models business processes to determine cost, profitability and drivers. It allows product designers to understand the impact of different designs on cost and flexibility and then to modify their designs accordingly. Further, ABM focuses on management of activities as the route to improving the value received by the customers and the profit achieved by providing this value and new insights on performance management.

How ABC work?

- Resources costs are assigned through activities;
- Activities are identified for both production and services;
- Cost drivers for each of the activity are determined;
- Cost is accumulated for each activity according to the cost drivers;
- Assignment of cost of activities to products and services on the basis of cost drivers.

Activity, Resource and Cost Drivers

For activity-based costing, several terms are used viz. activity, resource, resource consumption cost driver, and activity consumption cost driver.

- An **activity** is a specific task or action of work done. Activities comprises of all operational activities including management and support functions.
- A **resource** is an economic element needed or consumed in processing products or performing activities such as salaries and supplies. The resources can be taken from the General Ledger or Chart of Accounts.
- A **cost driver** is the underlying factor that creates or drives the cost relating to that activity. For example, the cost of the activity of bank tellers can be ascribed to each product by measuring how long each product's transactions (**cost driver**) takes at the counter and then by measuring the number of each type of transactions.

For the activity of running machinery, the driver is likely to be machine operating hours. **A cost driver is either a resource consumption cost driver or an activity consumption cost driver:**

- Resource consumption cost drivers measure the amount of resources consumed by an activity, such as the number of items in a purchase or sales order or labour hours or machine hours etc.
- Activity consumption cost drivers measure the amount of activity performed for an object, such as the number of batches used to manufacture a product.

Time-Driven Activity Based Costing (TDABC)

The Activity Based Costing is generally used in Manufacturing Industry. As Hospital industry is a Service Industry, it requires to ascertain time spent on each activity or transaction and ascertain their multiple cost drivers. Kaplan and Anderson developed a **Time-Driven Activity Based Costing (TDABC)** which requires only two parameters viz. (i) unit cost of supplying capacity and (ii) the time required to perform a transaction or an activity.

Designing Healthcare Costing System

In healthcare industry, the costs are mainly categorized into Hospital Costs, Physician Costs, Indirect Costs / Overhead Costs. The patients are billed for each activities/procedures performed on him/her. It is therefore imperative to identify the cost of each activity / procedure to have efficient cost accounting and profitability analysis systems in a hospital. TDABC approach identifies the different departments, their costs and their practical capacity.

For healthcare operations, the practical capacity is expressed as the amount of time that employees can work, without idle time. Often practical capacity is estimated as a percentage, say 80% or 85%, of theoretical capacity³. By dividing the total

³ Kaplan R, Anderson S. Time-driven activity-based costing. Harvard Business Review 2004;82:131–8 and Kaplan R, Anderson S. The innovation of time-driven activity-based costing. Journal of Cost Management 2007;21(2):5–15.



cost by the practical capacity, the cost per time unit is calculated. Costs then are assigned to the cost object by multiplying the cost per time unit by the time needed to perform the activity.

Cost of activities is to be segregated in Direct Cost and Indirect Costs.

(a) Direct Costs: Direct cost is that cost which can be directly related to the activity of a patient such as Inpatient nursing (Medical/Surgical, Intensive Care Units, Operating Rooms), diagnostic & therapeutic, Laboratory, Diagnostic Imaging, Pharmacy, Physiotherapy, specific equipment and specialists' fees etc.

(b) Indirect Cost: Indirect Cost is the total support cost of the nursing and medical departments. These are the cost centres which provide support services to the nursing and medical cost centres. **Support Services** are: Administration - Corporate, Finance, Human Resources including Personnel & Security and Depreciation.

These costs are apportioned to the direct cost centres based on appropriate cost allocation drivers.

Following are the Cost Centres:

• Patient Cost Centre:

General Medicine	Dermatology
Pediatrics	TB & Chest
Surgery	Physiatrist
Orthopedics	ENT
Gynecology	Physiotherapy
Ophthalmic	Dentistry etc.....
ICU/CCU/PICU/NICU	

Facility Cost Centres

Room Facility/Ward	Blood Bank
Lab	Radiology
Medicine/ Pharmacy	Laundry
Dietics and Canteen Facility	Gym and Club
Anesthesia	DG and Power etc.

Support Cost Centres

Manpower and HR	Purchase & Stores
Accounts & Finance	Central Sterile Service

	Maintenance
General Administration	Security
IT	Compliances and Legal etc.
Housekeeping	

Cost to serve a Patient for Emergency Surgery

As mentioned above there are many cost centres but a modal based on activity based costing for emergency surgery⁴ is presented below:

Step 1: Identify cost objects: For present model based on activity based costing, cost per patient who has come to Emergency Department for endoscopy surgery is identified as cost object.

Step 2: Identify and define activities and activity cost pools: next step is to identify direct costs related to patients:

- Cost of medicines provided to a patient
- Fee for surgeon/ anesthesiologist
- Cost of medicines used in surgery
- Cost of Lab/Diagnostic Tests
- Specific equipment used in procedure, which are charged directly to patient. There are some other equipment such as high powered lights, surgery table costs etc. which are not directly chargeable but are allocated based on utilization.

Step 3: Wherever possible, directly trace costs to activities and cost objects: The following costs are directly traceable to patient:

- Costs towards Patient Admission (Check in and discharge)
- Clinical Labs
- Surgery
- Patient Care after surgery

Step 4: Identify the costs associated with each activity pools: The cost associated with each activity is consolidated in Activity Pools which are relatable to cost object.

- Patient Admission Cost Pool:** Cost of staff associated with admission activity, cost of stationery used for patient admission, Rent/

⁴ Adapted from <http://www.naggesh.com/2014/04/16/activity-based-management-in-healthcare-cost-to-server-a-patient/>



depreciation of space occupied by Admission Staff (Allocated proportionately), Depreciation of computer/ printers/scanner and other devices used by admission staff, Cost of telephone calls etc.

(ii) **Emergency Room Cost Pool:** Cost of staff associated with endoscopy activity such as checking of patient's blood pressure, temperature, weight, taking blood sample, depreciation of medical equipment required for endoscopy, rent/depreciation of the space occupied (allocated proportionately), accessories used for surgery activities, printing & stationery including depreciation of computer/ printers etc. used for generating reports for patient.

(iii) **Other Patient Care Cost:** Other costs associated with surgery, patient care after surgery, patient check in and discharge are to be identified and need to be grouped into respective activity cost pools.

Based on above, the following costs can be identified with cost pools:

Activity Pools	Associated Indirect Cost (Rs.)
Patient Admission	10,00,000
Diagnostics	12,50,000
Surgery	62,50,000
Patient Care after Surgery	3,75,000
Patient Check in and Discharge	62,500
Total	89,37,500

Step 5: Identify the costs drivers for each activity pools: The following will be cost drivers for the activities identified above:

Activities	Cost Drivers
Patient Admission	No. of Patient Admitted
Diagnostics	Direct Labour Time (Hours)
Surgery	Patient/ days
Patient Care after Surgery	Patient/ days
Patient check in and Discharge	No. of Patient checked in and Discharged

Step 6: Identify rate per unit of cost driver: To know the cost of each activity, the costs as identified above (Step 4) are to be calculated per unit based on cost drivers identified as per step 5 above.

Activity Pools (A)	Associated Indirect Cost# (Rs.) (B)	Cost Drivers (C)	Quantity of Cost Drivers (D)	Rate per Unit of Cost Driver (B÷D)
Patient Admission	10,00,000	No. of Patient Admitted	10,000 Patients	Rs. 100 ÷ Patient
Diagnostics	12,50,000	Direct Labour Time (Hours)	500 hours	Rs. 2500 ÷ hour
Surgery	62,50,000	Patient/ days	250 patient- days	Rs. 25000 ÷ patient days
Patient Care after Surgery	3,75,000	Patient/ days	250 patient- days	Rs. 1,500 ÷ patient days
Patient Check in and Discharge	62,500	No. of Patient checked in and Discharged	250 patient- days	Rs. 250 ÷ patient days
Total	89,37,500			

Note: # The Associated indirect cost and quantity of cost drivers are taken for a month. However, there shall not be any difference in the result obtained if the indirect cost and quantity of cost drivers are taken on annual basis.



Step 7: Compute the indirect costs allocated to a patient

The activity rates as calculated in the step 6 will be used to assign the indirect costs to cost object. Let us assume, a patient consumes 90 minutes for diagnostics, ½ day for surgery, and 3- days for patient care after surgery. Based on these assumptions, total indirect costs allocated to one patient will be as follows:

Activity Pools (A)	Quantity of Cost Drivers (D)	Rate per Unit of Cost Driver (B÷D)	Allocated Cost Rs. (BxC)
Patient Admission	1 Patient	Rs. 100÷ Patient	100.00
Diagnostics	90 minutes	Rs. 2500÷hour	3,750.00
Surgery	½ patient- days	Rs. 25000÷ patient days	12,500.00
Patient Care after Surgery	3 patient- days	Rs. 1,500÷ patient days	4,500.00
Patient Check in and Discharge	1 patient	Rs. 250÷ patient days	250.00
Total			21,100.00

Step 8: Compute the total cost per patient: To compute the total cost per patient, we have to take direct costs associated with the patient and allocated indirect cost as arrived at above as follows:

Particulars	Costs (Rs.)
Direct Costs per patient	
(i) Cost of medicines (from step 2)	5,000.00
(ii) Fees for Surgeon/consultant & anaesthesiologist (from step 2)	15,000.00
(iii) Cost of Lab/Diagnostic Tests (from step 2)	7,500.00
(iv) Specific equipment used in procedure, which are charged directly to patient (from step 2)	9,000.00
Total Direct Cost (A)	36,500.00
Total allocated indirect cost as per step 7 (B)	21,100.00
Total cost per patient (A+B)	57,600.00

ERP modules used in Hospitals

Hospitals need a very good ERP module to address multi-discipline angles related to hospital management and services, doctors, patients etc. Speed and efficiency with quality delivery is the moto of each and every hospital. The hospital should select such an ERP module which may improve human resource management that may lead to maximized value realization of the investment made by it and reduces human requirement and intervention for different hospital activities. The hospital management system integrates different systems used in hospitals such as financial management, inventory management and other important systems. The integration of all systems leads to availability of updated information at one desk. Information about appointments, bed availability, and schedules of doctor, specialized services, and treatments is easily available to the person sitting in the front desk.

There are many software companies who design the "Hospital Management Information System" integrated with Activity Based Costing with a view to reduce operational costs of serving patients by removing operational inefficiencies and improving the quality of health care. Hospital Management Information System also reduces the workload of hospital employees and improves their efficiency.

Further, if majority of the clinical processes are automated then it would make available to hospital staff more time to devote in providing quality patient care. It would also streamline personnel management of nurses, clinical specialists, physicians and other health care professionals to provide highest quality care, 24x7. ERP also gives complete in-sight of project related data in a structured manner. The ERP system integrates projects with procurement, fixed assets and stocks. Further, the ERP system plays an important role in creating centralized storage of data, and its easy access helps the management to take timely informed decisions.



There are many integrated ERP modules⁵ relating to healthcare industry which are available in the market such as:

1. Reception/Cashier: This module may have several sub-modules enabling staff to provide the information relating to *Appointments (showing dash board for information relating to Today appointment, scheduling, re-scheduling appointments, history of earlier appointments), Doctor Directory, Cash Desk of collection of payments, Reports, Billing, Refund* etc.

2. OPD Consulting: This module may have several sub-modules covering the services such as: *Appointments, Patient History, Doctor Corner, Prescription, Investigation, Follow-up appointments, Symptoms, Diagnosis Tracking, Last Visit Details* etc.

3. IPD Consulting: This module may have several sub-modules covering the services such as: *Cost Estimation (initial estimate prepared for patient depending on ward/surgery chosen) Admission Request, Transfer Details (transfer from ICU/shifting across wards can be done), Doctor Notes (updatation of status of patient during every doctor visit), Nursing Notes (updatation of status of patient by nurses tracking different patient parameters), Drug Request (indenting of drugs by nurses patient-wise as per advice by doctor), Discharge Summary, Refund Management, Scroll management (daily cash/credit card/ corporate/ insurance/TPA tracking).*

4. Wards: This module may have several sub-modules covering the services such as: *Ward Allocation, Ward Shifting, Ward Master, Occupancy Dashboard, Consent Form, Record Management, Label Generation (automated label generation for patient as well as patient files), Inpatient Registration, Payee/Company/Insurance (input details of self-paying/corporate/ insurance/TPA/package).*

5. Operation Theater (OT): This module may have several sub-modules covering the services such as: *OT Allocation (booking of OT on particular date/time with OT team), OT Master (different type of surgeries with class/ speciality/grade/ward/price master), Surgery Master, Surgery Class Type (different types of class to be included), Doctor/Anaesthetist Booking, OT Status (utilisation of OT daily/weekly/monthly/ annual), OT Tool Details (booking of OT tools for*

particular operation), OT Reports, OT Inventory Management (charging of consumables/special services during an operations).

6. Nursing: This module may have several sub-modules covering the services such as: *Patient Record Updation (updatation of status of patient parameters), Physical Examination Module, Drug Indent, Drug Returns, Drug Transfer (drug transferred across wards/location depending on requirement), Drug Re-Order (automatic reorder depending on nursing indent requirement), Investigation Management, Procedure Management, and Diagnostics Management.*

7. Billing: This module may have several sub-modules covering the services such as: *Payment Module (tracking of cash/credit card/corporate credit/TPA credit), Patient Billing Details, Automatic Room Charges, Provision for Pre-Billing, Posting of Charges for Services, Insurance Module/TPA (interlinking of corporate with respective insurance/TPA), Maker Checker Module (provision for checking of bills generated by cashier), Billing Scroll Summary (details of daily/ weekly /monthly collections for cash/credit card), and Advance/Refund Management.*

8. Pharmacy: This module may have several sub-modules covering the services such as: *Billing (billing for both OPD and IPD), Drug Inventory, Supplier Information (tracking of vendor information, delivery, turnaround time), Drug Issue to patient, Manage Expired Items, Goods Receipt & Stock, Minimum Stock Levels, Reorder Quantity, and Reorder Quantity.*

9. Laboratory Information System: This module may have several sub-modules covering the services such as: *Equipment Integration, Sample Management, Electronic Data Exchange, Patient Data Management, Patient Data Analysis, Report Generation, Barcode Generation, Equipment Maintenance, and Quality Insurance.*

10. Investigation: This module may have several sub-modules covering the services such as: *Investigation Master, Package Master, Respective Doctor Master, Investigation Service Billing, Investigation Dashboard, Investigation Reference, Sample Collection, and Investigation Reporting.*

⁵ BigSun Hospital Management software



11. Electronic Medical Records (EMR): This module may have several sub-modules covering the services such as: *Patient Information Retrieval, Instant Information* (data available for both online and offline instantly), *Analysis* (analysis of various record of similar diseases available to doctor), *Evaluation* (tracking of different types of treatment on various diseases), *Accuracy of Information, Treatment Analysis, Drug Taken, History Availability, and Ancillary Services.*

12. Administration: This module may have several sub-modules covering the services such as: *OPD Master, IPD Master, Investigation Master, Package Master, Doctor Master, User Master, Announcement Master* (ticker running continuously giving announcements, any major changes), *OT Master, and Ward Master.*

13. Insurance: This module may have several sub-modules covering the services such as: *Initial Estimate, Insurance Master, TPA Master, Package Master, Outstanding Report* (tracking of outstanding of corporate/ insurance/TPA), *Advance/Refund Management, Actual Cost, and Billing.*

14. Dietician: This module may have several sub-modules covering the services such as: *Diet Management, BMI* (immediate calculation of body mass index as per patient), *Calorie Management, Food Ordering, Raw Material Indenting, Diet Sheet, Quality Check, Cost of Services, and Billing of Special Services.*

15. Engineering Services: This module may have several sub-modules covering the services such as: *Asset Management, AMC Services, Spares Management, Contract Labour Management, Vendor Management, Stores, Consumable Tracking, Scrap Management, and Repair & Maintenance.*

Maintenance of Cost Records and Cost Audit by Healthcare Industry

Considering the importance of Healthcare Sector in India, the Government of India for the first time through Companies Act 2013 vide section 148 included the "Services" and Service Industry for maintenance of cost records and conduct of cost audit by such class of companies as may be prescribed through rules.

Ministry of Corporate Affairs, Government of India has vide GSR 425(E) dated 30th June 2014 notified "**Companies (Cost Records and Audit) Rules 2014**" defining & prescribing class of companies which are required to maintain cost records and conduct cost audit. These rules include Healthcare Industry also for the purpose of maintenance of cost records and cost audit by those healthcare companies who meet the respective threshold limit prescribed thereunder. In view of importance of healthcare sector, these rules include healthcare industry at two places i.e. under two sub-rules, extract of which are given below:

Rule 3C(a)(x)

"Companies engaged in health services viz. functioning as or running hospitals, diagnostic centres, clinical centres or test laboratories"

Rule 3D

"Companies (including foreign companies other than those having only liaison offices) engaged in the production, import and supply or trading of following medical devices, namely:-

(a): (i) Cardiac Stents; (ii) Drug Eluting Stents; (iii) Catheters; (iv) Intra Ocular Lenses; (v) Bone Cements; (vi) Heart Valves; (vii) Orthopaedic Implants; (viii) Internal Prosthetic Replacements; (ix) Scalp Vein Set; (x) Deep Brain Stimulator; (xi) Ventricular peripheral Shunt; (xii) Spinal Implants; (xiii) Automatic Impalpable Cardiac Defibrillator; (xiv) Pacemaker (temporary and permanent); (xv) patent ductus arteriosus, atrial septal defect and ventricular septal defect closure device; (xvi) Cardiac Resynchronize Therapy ; (xvii) Urethra Spincture Devices; (xviii) Sling male or female; (xix) Prostate occlusion device; and (xx) Urethral Stents".

Opportunities for CMAs in Healthcare Sector

There are abundant of opportunities available in healthcare industry for CMAs, gist of which is given below:

- (i) As mentioned above, Government of India has created new opportunity for CMAs in healthcare industry and the threshold limits prescribed under Rule 3(C)(a)(x) and Rule 3(D)(a) for maintenance of cost records and cost audit are very low. Even trading and supply



of medical devices have been covered under Rule 3(D)(a). In view of these rules the CMAs may provide the following services to healthcare sector:

- (a) Maintenance of Cost Records as per companies (cost records and audit) rules 2014;
 - (b) Cost Accountants can be appointed as Cost auditors by the healthcare companies who meet the threshold limits under Rule 3C(a)(x) and Rule 3(D) aforesaid;
 - (c) Designing of Costing Accounting System keeping in view requirement of companies (cost records and audit) rules 2014, Generally Accepted Cost Accounting Principles (GACAP), Cost Accounting Standards (CAS) and Cost Auditing Assurance Standards (CAAS);
 - (d) Designing of Integrated Costing Accounting and ERP System based on Activity Based Cost Management as per the steps suggested in this article above under **"Designing Healthcare Costing System"**.
- (ii) Fixation of charges for various services provided by the healthcare industry using latest costing concepts and methodologies e.g. opportunity cost, joint costing principles and based amongst other on Total Costing Method, Activity Based Costing Method, and Marginal Costing Method etc.;
- (iii) Managing cash activities, billing, finances, Finance & Accounts activities, Budgeting, Budgetary Control, Inventory Control, and Finance Management and Costing Systems etc.;
- (iv) Designing standalone Inventory control management system;
- (v) As per estimate India requires 2000 medical colleges with 500 bedded hospitals immediately to meet with the requirement of the country. This also present enormous opportunities to CMAs who may provide their expert services in the following areas:
- (a) Preparation of Project Reports following the norms prescribed under *"Establishment of Medical College Regulations, 1999"* by Medical Council of India for establishing a Medical College & Hospitals;
 - (b) Project appraisal & evaluation and project monitoring being a member of Project Implementation Team;
 - (c) Help the management in project financing through Financial Institutions;
 - (d) Tendering, evaluation of tenders of civil & electrical and other works, Procurement of equipment, furniture & fixture etc. and helping management in award of various works;
 - (e) Monitoring day to day project activities through MIS system, Reports may comprise of the Comparative Statements for Projected Costs of Activities/ Actual Costs, cost over-runs, payment of Running Account (RA) Bills, evaluation of extra and substituted items, escalation & other claims etc.
 - (f) After the hospital and college established, designing a costing systems for hospital as suggested above and for medical college, helping in establishing a costing system which may enable it to fix the fees for various courses offered by it, examination fee, hostel charges and charges for various services rendered by medical college.
- (vi) The Companies Act 2013 contains several opportunities for CMAs apart from maintenance of cost records under section 148(1), conduct of cost audit under section 148(2) and internal audit under section 138. Accordingly, CMAs can be appointed internal auditor in the healthcare sector.
- (vii) In view of provision of internal audit in the Companies Act 2013, the Ministry of Health & Family Welfare vide its letter dated 19.5.2014 informed the Institute that the National Health Mission (NHM) will empanel the cost accountants also for internal audit & concurrent audit.
- (viii) In addition to appointment as internal auditor *ibid*, CMAs may design the Internal Control and Internal Audit System of the healthcare Industry and also prepare Internal Audit Manual for them.
- (ix) Reporting of compliance of laws to various governmental agencies etc.



Conclusion

From the above discussion, it may be observed that the healthcare sector is facing many problems which could be solved by establishing proper systems including Activity Based Cost Management integrated with ERP modules. Costing System based on Time Driven Activity Based Cost Management will be most appropriate for hospitals, which may enable them to fix the charges for various services being provided by them. ABC combined with ERP will provide a hospital an edge over the other hospitals that are not following either ABC or ERP systems. The healthcare companies would be more responsive to their patients in providing cost efficient quality services since they would be in a position to know the accurate cost of their services/procedures etc.

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COST AND MANAGEMENT ACCOUNTING FRAME WORKS FOR MAJOR INDIAN PORTS

Introduction

Organisations make use of principles of Cost and Management accounting to integrate the relevant financial information and other

cost to the other parameters for better financial planning, control and managerial decisions. It has been traditionally used as a control system to monitor utilization of resources, namely, man, machine, material and money. The objective has been extended to include productivity to identify the action required to be taken to improve utilization of resources. The ultimate aim has been to achieve strategic objectives of a firm leading to competitive advantage. The American Institute of CPAs (AICPA) and Chartered Institute of Management Accountants (CIMA) have suggested four principles of global management accounting. These are influence, relevance, analysis and trust. The motivation behind such framework was to cut across the silos and integrate decision making;

integrate financial and non-financial data to enable identify the root cause of issues and simulate

different business scenario. At the end these principle are likely to instill confidence on the stakeholders of a firm (CGMA, 2014).

Daniel (1961) pointed out that the key to the development of a dynamic and useable system of management information is to move beyond the limits of classical accounting reports and to conceive of information as it relates to two vital elements of the management process – planning and control. One key requirement to establish a sound cost and management accounting system is to identify the critical success factors (CSF) (Esteves (2004), Ramaprasad and Williams (1998) and Amberg et al, (2005)). The term strategic management accounting (SMA) was introduced by Simmonds (1981) and defined by him as 'the provision and analysis of management accounting data about a business and its competitors, for use in developing and monitoring business strategy'. CIMA (2010) stressed the importance of strategic

management accounting as it aids strategic decision making via the provision of financial

Major ports in India have been losing their share (IPA, 2017) to the smaller and minor ports despite considerable investments and reforms since 1991. Ports need to undertake better managerial decision relating to long term planning and control. It calls for assessment of cost and management accounting system in ports. In this paper a review of implementation of management accounting system in ports has been made. This paper identifies the critical success factors, key performance indicators (KPIs) and strategic decisions related to the port and its integration with the management accounting system. This will enable the port planners to take critical decisions on investments, outsourcing and tariff charges, apart from exercising control on its activities. The results of this analysis suggest a relook into allocation of overheads and integration of performance parameters with financial outcomes.



analysis. It suggested that monitoring of margins, re-forecasting and variance analysis are key activities for drawing up future strategy. Cuganesan (2012) stressed the roles for management accounting in strategising that extend beyond the typically ascribed functions of decision-facilitation and decision-influencing. Its main contribution is the detailing of specific ways in which management accounting is constitutive of strategizing through specific organisational practices.

Cinquini and Andrea., (2010) concluded that customer accounting, competitive position monitoring, competitor performance appraisal based on published financial statement and quality costing represent the most widely used SMA (strategic management accounting) techniques in the Italian sample. From the regression analysis, both defender- and cost leader-type of strategy are found to be more willing to use SMA techniques addressing cost information.

The oceanic shipping consists of two main participants namely the carriers and sea-ports which

are influenced by the requirements of transportation for various commodities. Ports are the economic entities primarily engaged in loading and unloading of cargo to and from ships. There are other associated functions, namely, shed, yard and terminal management, repair and maintenance of equipment, pilot services, tugging and towing. Ports deploy all resources, as applicable to different tasks, to carry out its activities.

In the context of ports, cost and management accounting system ensures effective utilization of the oceanic resources for economic development of the country. The operational cost structure of sea-ports covers the infrastructure, superstructure, port labours and other enabling functions.

So far, major ports in India have not been able to make their presence among the top 30 ports in the world. Figure 1 show that the share of major ports has declined to less than 60 % as on 2017 from 90% in 1991.

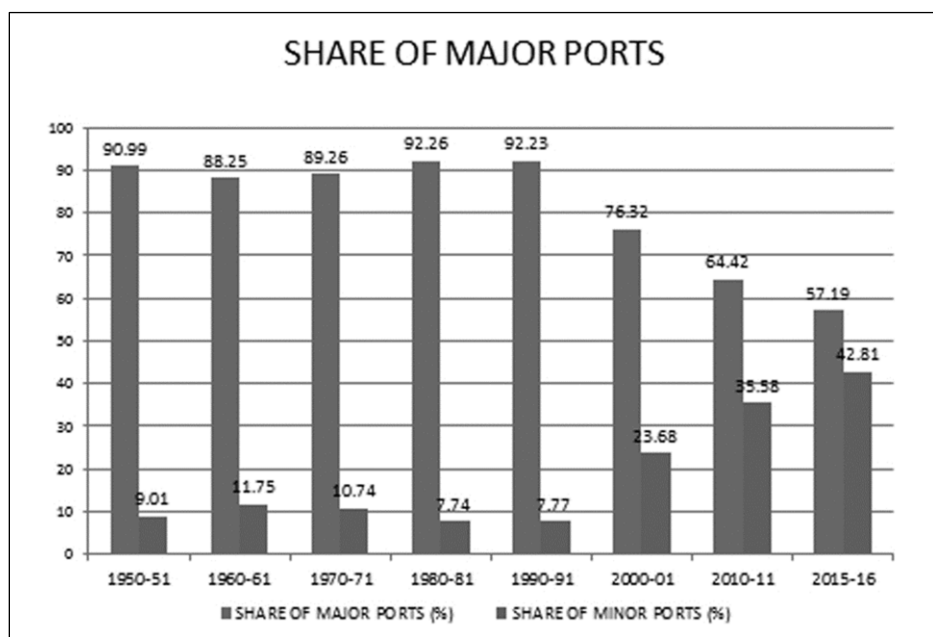


Figure 1: Comparison of share of cargo handled by major and minor ports in India
Source: IPA, Major Ports of India: A Profile, 2016-17

An effective management accounting and control system will be able to reflect on operational and cost structure towards improving port operations and

meeting the stakeholders' interest. Given the current thrust on improving India's ranking in Ease-of-Doing-Business by the government, the results cannot be



achieved without improving the port efficiency. Ports also need to enhance its cargo throughput, expansion and utilization of capacity and make capital investments. Major ports in India are resorting to all kinds of governance architecture to remain competitive. Ports have three models to follow; one the Land Lord model, second, the Tool Port model and third, the Service-Port model. Traditionally were in the third category and the performance declining over years have resorted to privatization and outsourcing. This has landed the port in a hybrid state of affairs and is yet to achieve the desired results. Authorities of many of the major ports have leased out their berths and terminals to the private sector. However results of analysis show that many of the privately managed terminals are yet to demonstrate the desired efficiency levels (Dasgupta and Sinha, 2016). The cost and management accounting system must provide data on port costs and revenues for analysis of port's performance. For proper analysis and evaluation of port performance, one can develop a set of port performance indicators. These indicators help the port authorities to measure the performance of port's operation. These indicators should be easy to calculate and simple to understand. These indicators should be benchmarked with the target and with other ports. The process of calculation and comparison is a continuous process and management should use the data for cost reduction and cost control purposes. These indicators can also be used for pricing decisions like port congestion surcharges, port development, port tariff considerations and investment decisions. The main objective of the port performance indicators is to provide useful managerial information for planning and control. The purpose of planning is to predetermine a course of action and the purpose of control is to ensure progress towards the objectives in the plan.

In this paper an analysis of implementation of cost and management accounting system in ports has been made. A new framework based on critical success factors and identification of key strategies has been suggested.

Analysis of implementation of cost and management accounting system in ports

The analysis of cost and management accounting in port include:

- i. To ascertain the revenue and cost flow in ports
- ii. To study the present financial reporting system of the port and its utility for managerial decisions.
- iii. To examine the implementation of the concept of responsibilities centre within the port for accumulation on ascertainment of cost and revenue to enable Management Control System.
- iv. To examine the applicability of existing fiscal laws in the light of financial reporting practice within port.
- v. To enhance faster decisions at all levels with Cost and Management Accounting System.

The approach and methodology

- i. Assessment of revenue and cost flows for the resources, accumulation and accounting including the points of control.
- ii. Studying the budgeting process for revenues and cost and budgeting control system follows currently.
- iii. Incorporating the principles of Management Control Systems and financial perspectives of balance score card for customizing a Cost and Management Accounting System for ports.
- iv. Providing select formats of control reports for day to day monitoring and decision making.
- v. Recommend financial, operational and integrated metrics for better control and planning.

Process followed by Ports in preparation of its Budget Estimates:

Statutory provisions for Major Ports

Section 98 of Major Port Trusts Act, 1963 stipulates that the Board of Trustees of Ports shall prepare and provisionally approve its estimate of the Income and Expenditure for a financial year on or before the preceding 31st January. This estimate shall be prepared in the formats specified by the Central Government.

The estimates as approved by the Board are required to be forwarded on or before 10th February to the Central Government. The Central Government is required to accord its sanction for the estimate on or before 31st March, with or without



modifications/alterations after seeking additional clarifications or particulars either by returning the estimates to the respective ports or without returning the estimates to the ports.

If the estimate is not approved by Central Government on or before 31st March, the Central Government may authorize the Board of Trustees of the ports to incur such expenditure as considered necessary by it till such time the estimate is approved by Central Government.

These estimate procedures are exactly similar to the methodologies followed by Union Government for its Budget and 'Vote on Account'.

In view of these statutory provisions, preparation of the budget in the specified Form, its approval by Board of Trustees and its sanction by the Central Government are time sensitive.

Minor Ports

In Minor Ports, there are no statutory provisions for preparation of budgets. They follow the usual procedure for preparation of their budgets like other corporates.

Distribution of Operating Income

The Table 1 provides the present practice of distributing revenue from various sources in a port. Cargo Handling and Storage refers to the revenue earned from cargo loading and unloading operations, while Port and Dock Charges include earning from marine operations. Ports which leased out their terminals to run by private operators, earn a revenue share from cargo handled in those terminals. For examples, Chennai port in eastern coast earn revenue share from container handling by the private terminal operator, i.e., Chennai Container Terminal Limited (CCTL). Many of the ports maintain the last mile railway connectivity that connects the port yards to the trunk railway of the Indian Railways. Shippers who bring cargo by rail pay railway charges. Apart from these earnings from operational sources, ports also earn from lease rent of its estate.

Table 1: Sources of Revenue

Sl No.	Nature of Income
1	Cargo Handling & Storage

2	Port & Dock Charges
3	Revenue Share from Private Terminal Operators
4	Railway Earnings (if any)
5	Estate Rentals
6	Σ Total Operating Revenue

Distribution of Non-Operating Income

A small amount flow from different sources such as penalties, interest earned and from similar means. This is generally accounted under Miscellaneous Income.

The Table 2 provides a snap shot of distribution of revenue from various sources under the heading F&M Income (FMI).

Table 2: Distribution of Non-operating Income

Sl No.	Nature of Income
1	Interest from Bank Deposits
2	Interest and Dividend income from Investments
3	Others
4	Σ TOTAL FMI

Distribution of Operating Expenses

The Table 3 provides a snap shot of distribution of expenses under various headings.

Table 3: Distribution of Operating Expenses

Sl No.	Nature of Expenditure
1	Salaries & Wages
2	Stores Expenses
3	General Expenses
4	Sundry Expenses
5	Depreciation
6	Σ TOTAL EXPENDITURE

Distribution of Non-Operating Expenses

The Table 4 provides a snap shot of distribution of expenses under various heads under the heading F&M Expenditure (FME).



Table 4: Distribution of Non-Operating Expenses

Sl No.	Nature of Income
1	Contribution to Pension Fund
2	Contribution to Gratuity Fund
3	Others
4	ΣTOTAL FME

Estimation of Operating Income and FMI

Every year the port draws up its budget for the next year (April to March) in the month of September and puts up its revised budget for the ongoing year. The earnings from different sources based on forecast cargo traffic proposed to be handled in the next year. The revised budget is drawn up based on the trend in earning from the first half of the period, that is, April to August' of the year. The budgets are fine-tuned by iterating the same for exceptional changes (positive or negative) in Scale of Rates (SoR) for vessel and cargo related charges.

The forecast of cargo traffic is generally based on trend of cargo handled during the past years; and factoring the CAGR (compounded annual growth rate) to project the next years' traffic. The forecast is perfected through adjustment based on port users' feedback and exceptional changes (such as disruptions due to weather, shortfall in domestic demand and similar causes)

Railway Earnings are estimated based on the proportion of total projected quantities of cargo handled or estimated.

The Estate rentals are estimated on manual intervention/iteration based on the extent of land and buildings leased out, with current and future estate rentals.

FMI is estimated primarily by the Finance Department by iteration and consideration of actual data of investments available at the time of preparation of budget estimates.

Estimation of Operating Expenses and FME

The Budget Section sends out internal notes to the following Departments and also to CISF (Central Industrial Security Forces) requesting them to provide the estimate of expenses for the next financial year to be accompanied with a justification note for every item. A typical major port of India would have

8 departments, namely, GAD (General and Administration), Traffic, Marine, Civil engineering, Mechanical engineering, Finance, Medical and Vigilance. Earlier there were few more departments, such as Estate, Planning, Materials, Labour and Law. These have been subsumed in the present 8 departments. In ports such as Kolkata port a separate department on hydraulics exists. It is called Hydraulic Study Department (HSD). This department focuses on river dynamics as Kolkata port is a riverine port. Most of the major ports deploy CISF to maintain their security. All operational expenses on account of CISF are borne by the port.

Data are forwarded by the individual departments and CISF either manually or electronically to the Budget section. These are manually verified by the Budget Section and this Budget Section advises to make changes as considered appropriate. After receipt of the changed estimates the budget is sent for approval by the Financial Advisor and Chief Accounts Officer (FA&CAO). Since most of the ports have ERP (Enterprise Resource Planning) system in place, and final budgeted estimates are made available to the departments through the system, along with a printed Budget manual

Limitations of Present System

The existing system is too generic and does not provide specific information for management control. In the event of drop in revenue or increase in expenditure, it is difficult to identify the root cause of the problem. In these cases it becomes difficult to recommend specific actions (short term as well as long term) required to be taken to restore the performance. Moreover, the present management accounting system is not fully capable to give strategic directions to the port authority. These relate to change in port tariff, investment planning and feasibility of outsourcing and privatization.

Proposed Management Accounting Framework

The management accounting (MA) system should enable to monitor the critical success factors (CSF) and address the strategic decision making. The CSF lies with profitability of different independent units such as docks, berths, yards and terminals; and overall profitability of cargo handling, marine and railway operations. The MA system should enable determination of resource wise utilization, earning, and expenses. For example, equipment wise



productivity, idle time, breakdown time and expenses.

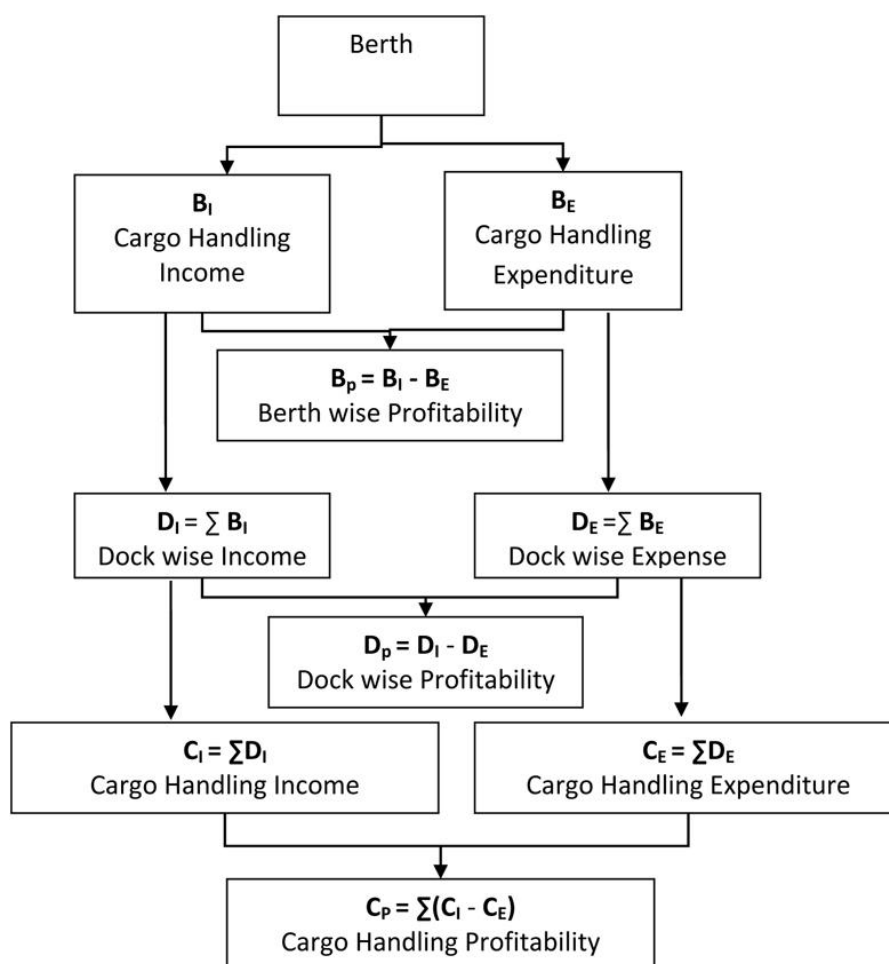
Thus the MA system in port should enable control of the following CSF:

1. The Berth wise profitability
2. The Dock wise profitability
3. Profitability under the following head.
 - a. Cargo handling and storage charge

- b. Port and Dock charges
- c. Railway earnings
- d. Estate rentals
- e. Revenue share from cargo handling by private terminals

The structure of the budget should be reoriented from top down to bottom up approach. The structure is illustrated in figure 2 below.

Figure 2: Bottom up approach to Cargo Handling Profitability in a Port



Similarly, port and dock charges should be accounted for each berth and dock. The actual expenditure should be recorded for each vessel,

especially fuel and other variable cost of tugs and boats used for berthing a vessel.



Allocation of Overheads

The UNCTAD report on port pricing discussed methods for converting capital expenditure into a flow of annual capital costs. Capital costs for port facilities and equipment form the bulk of the fixed costs of a port. An important consideration is how fixed costs are allocated when selecting financial indicators. Since a large portion of fixed costs are associated with capital costs and since these costs are associated with a particular port area, the basis for their allocation is that which best represents the capacity for that area. For break – bulk, general cargo berths, the most suitable basis is the quantity of cargo handled.

The remaining general overheads not allocated, for example supervision, staff facilities, utilities etc, can only be allocated to the various cargo handling areas of the port on an arbitrary basis. Thus it is recommended for control purposes that such costs are not allocated. Therefore one should find out the contribution from each area which will cover the overhead costs, return on investment and profit for the port.

Although fixed overhead rates are important for costing and long-run pricing, such rates have limited significance for control purposes.

The most important financial indicator for measuring port performance is contribution per ton of Cargo handled by a berth over a specified time period. The direct costs of a berth are deducted from the revenues generated by the berth in order to calculate the contribution of the berth. The contribution of the berth so calculated is divided by the Cargo handled (in tons) by the berth in order to find out the contribution per ton. Contribution per TEU may be calculated for the berths which handle containers.

A negative contribution may not necessarily be a bad thing provided it has arisen as a result of a policy decision to allow other local or national economic interest to benefit from a port subsidy.

An extremely important indicator, both operationally and financially, is the monthly volume of the Cargo worked. If, for example, the port charges for Cargo handling are based on tons of Cargo worked, the management must be made aware of the variance between the budgeted and the actual quantity handled. This difference is an indication of the likely revenue variation.

Management Control System

The ports need an information system that integrates financial with operational parameters to exercise control on consumption of resources and utilization of assets. The following port performance indicators should be calculated for any given period of time duration, say on monthly basis, for the purpose of cost control, cost reduction, increasing revenues and return on assets;

- a. Tonnage worked
- b. Berth occupancy revenue per ton of cargo
= (Total berth occupancy revenue produced)/ Tonnage worked
- c. Cargo handling revenue per ton of cargo
= (Total revenue produced from transferring cargo to or from ships from or to storage areas)/Tonnage worked
- d. Labour expenditure per ton of cargo
= (Total direct labour expenditure for transfer of cargo to or from ships, from or to storage areas)/ Tonnage worked
- e. Capital equipment expenditure per ton of cargo
= (Total depreciation and interest allocated to and maintenance and operating costs incurred for the berth group, excluding the costs of transit sheds and warehouses)/ tonnage worked
- f. Contribution per ton of cargo
= (Total contribution)/Tonnage worked
- g. Total contribution
= Berth occupancy and cargo handling revenues minus labour and capital equipment expenditure

In case of berths handling containers, instead of per ton, we can calculate contribution, revenue and cost per TEU (twenty equivalent units).

The following 'Performance Parameters', though being non-financial operational data, may be calculated for revision of tariff and to decide on dynamic tariff.

- a. Performance Parameters Relating to Cargo Related Services
 - i. Average ship berth day (in tonnes) in respect of every cargo constituting more than or equal to 5 % of total of Cargo Related Income
 - ii. Average moves per hour (in TEUs) in respect of containers
- b. Vessel Related Services
 - i. Average Turn Around Time (TAT) of vessels (in hours or days)



- ii. Average Pre-Berthing Time of Vessels (in days)

c. Berth and dock related performance metrics

- i. Average output per berth per day (in tonnes for non-containers)
- ii. Average no. of moves per crane hour (for containers)

Conclusion

Every industry has certain peculiarities that make cost and management accounting system unique for a firm. Previous studies have focused on SMA (strategic management system) to enable cost and management accounting system to address both strategic planning, tactical planning and operational planning and control. So far, ports have system of budget where they estimate the income and expenditure on certain broad heads by seeking inputs from respective departments. This system has limitations as it fails to address the control on critical success factors and answer the strategic questions, namely, need for tariff revision, outsourcing and viability of investments.

This paper suggest a bottom up approach that would answer the following two leading questions:

- a. How much revenue is produced from a service?
- b. What is the cost of the service?

The above two significant results clubbed with operational parameters will enable the top management to achieve the following primary objectives:

1. Identification of profit making resources/entities
2. Identification of loss making resources/entities
3. Identification of idle resources which will lead to improvement of productivity
4. Identification of over utilised resources which will lead to necessity of further investment
5. Fixation of port tariff/ pricing
6. Presentation of perspective plans

The present work can be extended to design the management information system and develop causal models for policy experimentation.

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IFRS 15 (REVENUE RECOGNITION) IN TELECOMMUNICATION INDUSTRY

IFRS 15 (Revenue from contract with customer) is being applied effective 1st January, 2017. The new standard is making a significant impact on telecom industry, because of its nature of business, where the industry profusely enters bundle contract with the customers. Now revenue to be allocated to all performance obligations of product and services, the entity promised to deliver. IFRS 15 is not limited to accounting treatment, but wisely impact on strategical business decision, marketing channel and internal system and processes. Currently the industry is in consolidation phase across the world, the new standard enrich this trend much faster and competitive.

IFRS 15 (Revenue from Contract with Customer) is becoming a reality with effect from 1st January, 2017 across the world. Revenue is a key and judgmental economic parameter for an entity or industry. Recognition, measurement and disclosure of current pattern of revenue are changing under the new standard. Telecom industry is corroborates to be one of the most affected and venerable on implementation of IFRS 15. Other industries too like Real Estate, Software and long term contracts would be affected equally. This happens, mainly because of 'bundle' transaction and multiple obligations under one single contract and time value of money. A unique feature used in the telecom industry is 'bundle' offer to customer. Bundle transaction refers, (product + Service) offered to customer under a single contract expires within a year or more. The bundle transaction offered from a telecom entity may include and / or not limited to,

Combination of Voice & Data,

Voice, Data & Hardware (Handset, Setup box, modem etc.),

Hardware & data,

Voice & Hardware and so on offered by the telecom operators to their customers.

Presently telecom operators accustomed to report their revenue based on real/existing sale price. If the handset standalone price is INR, 6,000 offered free along with network services, handset revenue will be treated as zero. But under new standard, a price to be allocated to handset too along with others, based on standard criteria, makes significant difference from present standard. Transactions are also to be adjusted in accordance with 'time value of money' if it has significant financial component. Accordingly, if the telecom entities receive money in advance from customer, where contractual obligation expires for more than of 12 months, amount to be discounted with net present value of money while recognizing revenue in subsequent period.

Though accounting of overall cash receipts from the customer has no any difference from IAS 18 over a



period of contract, but because of time differences and allocation of amount to different obligations, IFRS 15 requires significant changes in a particular financial year. Because of such changes in Revenue, EBITDA and Net Profit also get affected significantly. In the Balance sheet part, contractual assets and liabilities will have larger impact, leads changes in working capital changes and covenant compliance. Along with that, the entity must consider significant change in Tax liabilities, Budget & Planning, Costing, Strategic decisions and reporting to stakeholders and stock exchange.

The dynamic telecom industries passing through a global consolidation phase. The new standard will enrich this trend much faster in such a competitive scenario. Therefore, following IFRS 15, if an entity losing customer market share, will lose revenue more rapidly as compared to old revenue standard because high revenue amount recognized at the beginning and comparatively lower revenue in subsequent periods. IFRS 15 is not limited to accounting activities, but it has consequential changes in shape and size of income statement and balance sheet. It witnesses a long lasting impact on investments, compliances, covenants, software changes and reporting for the telecom entities. The new standard compels the industry to apply different strategy and approach of marketing, pricing and other factors to meet the new requirement without much affecting their financials. Let us discuss the new standard in brief and how it affects the industry.

IFRS 15 – a five model test to recognize revenue:

1. **Identify the contract(s) with customer-** leads an enforceable agreement of right and obligations between two or more parties.
2. **Identify the performance obligations in the contract-** is a promise to the customer to transfer goods /services to the customer.
3. **Determine the transaction Price-** the amount of consideration, to which an entity expects to be entitled in exchange for transferring goods or services to the customer, excluding

amount collected on behalf of a third parties.

4. **Allocate the transaction price to the performance obligations in the contract.** Under a contract that has more than one performance obligation, an entity should allocate the transaction price to each performance obligation in an amount that depicts the amount of consideration to which the entity expects to be entitled in exchange for satisfying each performance obligation.
5. **Recognize the revenue when the entity satisfies the performance obligations.**

Out of above, number (4), allocation of transaction price is very relevant as far as telecom industry is concern. Under IAS 18, revenue is defined as gross inflow of economic benefits arising from ordinary operating activities of an entity. Thus, if a telecom entity offers, free handset along with mobile connection to a customer, revenue recognized from handset is zero (0 or else). Full amount received from the customer treated as service revenue. In general the entities treat cost of handset (less residual value of cash income over services) as 'cost / commission of acquiring a customer'.

Illustration

Just to understand above, let us take a practical example. A telecom service provider, named XYZ Limited offers to their customers a mobile handset, voice network services and data network services. On 1st July, 2017, the entity entered into a contract with a customer TTK, offering him all three product and services for INR 13,500, though individual selling price for these are INR 16,800 as mentioned below. Further it is known that inventory cost of handset is INR 3,500. Based on above assumptions, revenue recognition, cost and EBITDA is summarized in the following table along with related journal entries under IAS 18 and IFRS 15:

Goods and Services offered by XYZ Limited	Standalone selling price of each item	% of Total	Bundle selling price for all the three	Revenue Recognition and Accounting Treatment			
				IAS 18		IFRS 15	
				2017-18	2018-19	2017-18	2018-19
Handset	6,000	36%	-	-	-	4,821 (36% of 13,500)	-
Network-	3,600	21%	-	1,800	1,800	1,446 (21% of 13,500)	1,446 (21% of 13,500)



Voice				(3,600/2)	(3,600/2)	13,500/2)	of 13,500/2)
Network-Data	7,200	43%	-	7,200 (3,600/2)	7,200 (3,600/2)	2,893 (43% of 13,500/2)	2,893 (43% of 13,500/2)
Total	16,800	100%	13,500	5,400	5,400	9,161	4,339
Cost							
Handset	3,500	-	3,500	-	-	3,500	-
Customer acquisition cost	-	-	-	800	-	-	-
Network-Voice	2,178	-	2,178	1,080	1,098	1,080	1,098
Network data	4,788	-	4,788	2,736	2,412	2,736	2,412
Total Cost	10,466	-	10,466	4,256	3,510	6,956	3,510
EBITDA	6,334	-	3,034	1,144	1,890	2,205	829
EBITDA % to Revenue	-	-	-	21%	35%	24%	19%
<i>Revenue recognition and related journal entries for the item sold as bundle</i>							
<i>1. On receiving of cash from customer</i>							
Cash /Bank/Debtors	Dr.		13,500	-		13,500	-
Unbilled / Deferred Revenue	Cr.		13,500	-		13,500	-
<i>2. On delivery of Handset to Customer</i>							
Cost of Handset	Dr.		3,500	-		3,500	-
Inventory	Cr.		3,500	-		3,500	-
<i>3. Charging the differential value to cost of acquisition of customer</i>							
Unbilled / Deferred Revenue	Dr.		2,700	-		-	-
Cost of acquisition of customer	Dr.		800	-		-	-
Cost of Handset	Cr.		3,500	-		-	-
<i>4. On allocating of revenue towards handset and network services</i>							
Unbilled / Deferred Revenue	Dr.		5,400	5,400		-	-
Handset Revenue	Cr.		-	-		4,821	-
Network Services-Voice Revenue	Cr.		1,800	1,800		1,446	1,446
Network Services- Data Revenue	Cr.		3,600	3,600		2,893	2,893

For making the explanation simple, it is assumed that the customer has availed the services of networks equally during 2017-18 and 2018-19. In general it never happens and the practical adventure is much more complex than that. Also time value of money is ignored in above situation since contract expires within 12 months period.

Under IAS 18, cost of acquisition of customer is 800 = Cost of handset – Residual value of economic benefits = 3,500- 2,700.

Residual value = Total Economic benefits – Network Revenue - (13,500-3,600-7,200). In this example, cost handset is less than the residual value, where if the cost of handset exceeds residual value, such excess difference transfers as handset revenue. For

example, if the cost of hand set is only INR 2,500, than, 200 (2,700-2,500) transfers as handset revenue.

Have a look at the above table, under IAS 18, the revenue is 5,400, where under IFRS 15, the revenue recognized as 9,161 during 2017-18 (170% jump) and consequential EBITDA has 193% jump from 1,144 to 2,205. During next year (2018-19) it reduced drastically from 1,890 to 829 (44%). In telecom industry, where a number of options offered to customers with different time frame and value, things will become much more complex to get into and understand. In practice, when multiple similar contracts or other contracts analysed together, revenue at beginning will much higher than the present standard. Consequently, revenue in subsequent years will be much lower as compared to IAS 18. In general corporate customers entered



into the contract for more than a year or so, where time value of money becomes a significant component.

Applying IFRS 15

Certain salient point must be noted while applying IFRS 15.

1. It must applied from 1st January, 2017, without any option and because of that following standard treated as abolished

IAS 18 - Revenue

IAS 11 - Construction Contracts

SIC 31 - Revenue – Barter transaction involving advertising services

IFRIC - 13 Customer loyalty programs

IFRIC - 15 Agreements for the construction of real estate and

IFRIC - 18 Transfer of assets from customers

2. Every revenue contract must be evaluated and pass through the 5 models tests to define and recognize revenue.
3. Entity needs to collect, collate and summarized millions of statistical data about, type of contract, validity period, fair value, standalone selling price to each type of customer and period and so on.
4. IT system and existing software need a major change to meet the new requirement and maintain the data. Under current revenue recognition, system generates revenue information in line and consistent with cash inflow from the customer. But under new rule, there is need to bring a logic to identify what is the revenue and when and how much it is to be considered for accounting. This would be possible only when the system is able to maintain systematic portfolio data for revenue calculation.
5. Existing contract (s) should be re arranged in accordance with the new standard and differential journal to be passed during 2016 itself.
6. Time value of money to be applied in accordance with the general price index and / or cost of investments.

7. Under the new standard, telecom and software industries recognize revenue earlier than the IAS 18. As we saw, the telecom operator must allocate a part of revenue to the free handset.

8. Since it applies from 2017, the corresponding data and figures must be regrouped for the year 2016 also.

9. In general, telecom operators have different type of contracts with customer, each type is required to dealt and evaluate separately.

10. Telecom entities charge upfront fees, like activation charges- needs to be judged if the amount is non-refundable, promised for which goods or services. If it is for future obligations, the amount must be kept under unbilled revenue.

11. Revenue to be charged on monthly basis in accordance with performance obligation delivered to customer.

Applying Strategy

Once we summarize all revenue contracts, it shall reveal, revenue curve moves in parallel to customer curve over a period of time under the new standard which is not the same under present standard. Whole data to be simulated and a comprehensive exercise to be carried out about changes in Revenue, EBITDA, EBIT, Net Profit and working capital. Accordingly a new strategy required to discussed and developed about marketing, price, sale, product dimension and channels.

Reference

ifrs.org

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59TH

NATIONAL COST CONVENTION 2019

THEME

**COST AND MANAGEMENT
ACCOUNTANTS:
“POWER OF THE PAST -
FORCE OF THE FUTURE”**



TECHNICAL SESSION 4

**Significance of Cost Audit in
emerging regulatory environment**

- ⦿ Insolvency Profession
- ⦿ Valuation
- ⦿ Banking & Insurance



Insolvency Profession

The Insolvency and Bankruptcy Code is a welcome overhaul of the existing framework dealing with insolvency of corporate, individuals, partnerships and other entities. One of the fundamental features of the Code is that it allows creditors to assess the viability of a debtor as a business decision, and agree upon a plan for its revival or a speedy liquidation. The Code creates a new institutional framework, consisting of a regulator, insolvency professionals, information utilities and adjudicatory mechanisms, that will facilitate a formal and time bound insolvency resolution process and liquidation thus making a huge impact on Indian economy. Our Institute has incorporated a Section 8 Company to function as Insolvency Professional Agency (IPA) of the Institute under the provisions of the Insolvency and Bankruptcy Code 2016 and Rules and Regulations framed thereunder. The Insolvency and Bankruptcy Board of India (IBBI) has recently notified three Regulations, Insolvency and Bankruptcy Board of India (Insolvency Professional Agencies) Regulations 2016; Insolvency and Bankruptcy Board of India (Insolvency Professionals) Regulations 2016; and Insolvency and Bankruptcy Board of India (Model Bye-Laws and Governing Board of Insolvency Professional Agencies) Regulations 2016 as provided under the "Insolvency and Bankruptcy Board of India (Insolvency Professionals) Regulations 2016". The IPA of the Institute shall allow enrolment of Cost Accountants and other persons who meets the eligibility criteria under the said Regulations. The Insolvency Professional with Insolvency and Bankruptcy Board of India would be able to work jointly to support the Government in its endeavour.

Valuation

Credible valuations are critical to the efficient working of the capital markets, businesses, government and all its stakeholders. With growing shareholder activism, importance of independent valuations is arising all over the world including India. Different Regulators in India have prescribed different valuation methodologies for different purposes. However, in most of the cases, there is neither any guidance on the basis for selection of a particular methodology nor much of details on its manner of application including its technical nitty-gritties. In this backdrop, the Companies Act, 2013 brought into the light the

concept of 'Registered Valuers' to regulate the practice of Valuation in India and to standardize the valuation in line with International standards. Consequentially, The Ministry of Corporate Affairs (MCA) notified the provisions governing valuation by registered valuers [section 247 of the Companies Act, 2013 (the Act)] and the Companies (Registered Valuers and Valuation) Rules, 2017, w.e.f. from 18 October, 2017. The Institute of Cost Accountants of India (Statutory body under an Act of Parliament) has promoted ICMAI Registered Valuers Organisation (RVO), a section 8 company under Companies Act, 2013, which has received the recognition of Insolvency and Bankruptcy Board of India (IBBI) [vide RVO Recognition No. IBBI/RVO/2018/005] to conduct educational courses for three different asset classes - Land & Building, Plant & Machinery and Securities or Financial Assets. The Institute has designed a thorough step-by-step curriculum that would enable the members to gain insight, proficiency and profound knowledge on various methods of valuation and will transform them into a refined valuer upon successful completion of the course. To facilitate the Government to boost up the ranking in the forthcoming years, CMAs can act as a registered valuer of properties and assets of liquidation estate under the Code and Regulations being framed under Insolvency and Bankruptcy Code (IBC)-2016.

Banking & Insurance

Indian Banking Sector is poised with efficacy for robust growth which will play a pivotal role in flourishing Indian economy. The Indian Banking industry is currently utilizing the latest technologies like internet and mobile devices to carry out transactions and communicate with the masses. Reform agenda is the highest priority of the government which has to be implemented along with capitalization in the New Year. Indian banks are saddled with bad loans and the government has made it a top priority to lift banks out of the extant non-performing assets (NPA) crisis. A whole lot of reforms will come so that genuine borrowers don't suffer and get hassle-free, need based credit. CMAs can act as consultants and suggest suitable strategies for NPA Management, Product Pricing, Risk based Internal Audit, Risk Profiling, Risk Management, Customer Due Diligence and Compliance with Know Your Customer Procedures, Project Techno-economic Feasibility Studies and Project Monitoring, Borrower Credit Appraisal and



Working Capital Assessment, Borrower Security Evaluation and Stock Audits, Asset and Liability Management System and Management Information System, etc. CMAs can perform Forensic Audit to investigate fraudulent activities, uncover money laundering and find missing assets through a combination of investigative techniques and financial acumen. In cases of restructuring of loans or enhancements of facilities when the performance of the companies are not up to the mark, banks and financial institutions, among other things, ask for the Cost Audit Report. The cost audit report helps banks to check the operating efficiency, working capital management, working below capacity, inventory management, abnormal costs etc. Cost Audit report and cost records also help in deciding upon matters related to risk assessment and efficient risk management.

Post-liberalization, the Insurance Industry in India has recorded significant growth. The Indian insurance industry is expected to grow to US\$ 280 billion by FY2020, owing to the solid economic growth and higher personal disposable incomes in the country. There are 24 life insurance and 33 non-life insurance companies in the Indian market who compete on price and services to attract customers. There are two reinsurance companies. The industry has been spurred by product innovation, vibrant distribution channels, coupled with targeted publicity and promotional campaigns by the insurers. Government has approved the ordinance to increase Foreign Direct Investment (FDI) limit in Insurance sector from 26 per cent to 49 per cent which would further help attract investments in the sector. Going forward, increasing life expectancy, favourable savings and greater employment in the private sector is expected to fuel demand for pension plans. Likewise, strong growth in the automotive industry over the next decade would be a key driver for the motor insurance market. In various types of general insurance policies such as fire, marine, Loss due to catastrophes, loss of profits, fidelity guarantee, malicious damage, etc., the CMAs can act as the surveyor and assess the quantum of loss strictly as per conditions laid down in the policy. The surveyor's report forms the basis for payment of compensation by insurance companies where he is appointed as surveyor. The CMAs can assess and certify Transit Loss arising due to leakage, pilferage or improper packing, Marine loss occurring due to leakage or pilferage, Loss of Stock due to fire and damage of equipment by militant, trade unions or political

parties. They can be appointed as consultant in the panel of consultants to assist the management in decision-making purpose and risk-mapping purposes.



A STUDY ON 'THIRD COST' IN BANKS

(Rent, Taxes and Lighting)
(Schedule 16 – operating Expenses of Banks' Balance Sheet)

Except **TWO** public sectors banks, rest of the banks bottom line is badly affected on account of decrease in spreads (yield on advances minus cost of deposits), increase in overheads, increase in technology costs and increase in provisions for non-performing assets etc. for the financial year ending 2018. Age of alternate delivery channels in Indian banking system has completed one and half decade. Most of the customers were migrated from branch banking to alternate delivery channels. Hence, there is scope to control overheads (Rent, Taxes and Lighting) by better utilization of alternate delivery channels instead of branch banking model / channel.

In earlier days, primary channel of banks i.e., BRANCH is used to sell the bank products. This channel is a costly one. Over a period of time for the sake of customer convenience and also to reduce the high cost of primary channel, banks had developed many alternate or alternative delivery channels.

One of the objectives of introduction of number of alternate delivery channels in Banking System like ATMs, Cash Deposit Machines (CDMs), Internet Banking, Mobile Banking, Central Processing Centres (CPCs) for Retail Advances (for Home Loans, Car Loans, Mortgage Loans, Education Loans etc.), CPCs for MSME Advances (for Working Capital and Term Loans), Liability Processing Centres (for processing of Savings Bank Accounts, ATM Cards, Cheque Books etc.), Trade Finance Processing Centres (for processing of LCs, BGs and discount of Trade Bills), Cheque Clearing Processing Centres, Pension Processing Centres, Exclusive Locker Branches and Call Centres etc. is to reduce the per transaction cost of bank transactions and also for customer

convenience. Now CPCs became manufacturing units for processing various bank products and as a result it reduces footfalls of bank customers at bank branches. Present Banking system is divided into TWO i.e., *Marketing* of bank products and *Processing* of bank products. Marketing function is being handled by branches and operations / processing function by Central Processing Centres (CPCs) and other alternate delivery channels.

Thereby Banks' primary channel i.e., branches became purely marketing / selling outlets to sell various bank products including cross selling of various third party financial products and central processing centres (CPCs) are taking care of 75% to 80% of workload i.e., operations / processing functions of branches particularly at Tier-I, Tier-II and Tier-III cities / towns. Whereas in rural areas still the primary channel i.e. branch continues to be an important channel to sell and processing bank products.



As per annexure-I, Top five banks in business performance for the financial year ending 2018 is as follows:

Name of the Bank	Total Business (Deposits + Advances) (In Crs.)	Average Business per Branch (In Crs.)
State Bank of India (SBI)	46,41,223	207.07
Punjab National Bank (PNB)	10,75,961	153.84
Bank of Baroda (BOB)	10,18,747	186.34
Canara Bank (CB)	9,06,475	145.92
Bank of India (BOI)	8,62,234	166.26

Analysis

Average per branch business is highest in IDBI Bank (Rs.219.03 Crs.) followed by SBI (Rs.207.07 Crs.), BOB (Rs.186.34), UBI (Rs.167.95), BOI (Rs.166.26 Crs.). Lowest per branch business is in United Bank of India (Rs.96.27 Crs.). Average per branch business of public sector banks is Rs.195.10 Crs. BOB and BOI retain their position both in total business as well as average per branch business i.e., 3 and 5 ranks. To arrive, the optimum usage of bank branch, per branch business is the best indicator by comparing with industry average.

For better utilization of bank branches, banks should segregate total business of the branch into Digital Business Vs Non-Digital Business i.e., total business minus customer transactions through branch is Digital Business of the branch.

About Third Cost

Main source of revenue to the Banks is Yield on Advances followed by Exchange on remittances, forex transactions, Commission on various services offered by the bank branches and Discount on Trade Bills (Usance and Sight Bills). The following is Schedule 16 i.e., Operating Expenses of State Bank of India.

Schedule 16 - Operating Expenses

	Year Ended 31.03.2018 (Current Year) ₹	(000s omitted) Year Ended 31.03.2017 (Previous Year) ₹
I. Payments to and provisions for employees	35410,62,16	35691,20,50
II. Rent, taxes and lighting	5392,58,19	5270,90,67
III. Printing & Stationery	603,44,87	544,30,58
IV. Advertisement and publicity	1997,56,23	600,28,87
V. (a) Depreciation on Fixed Assets (other than Leased Assets)	3094,39,40	2911,03,48
(b) Depreciation on Leased Assets	10,67,70	3,64,95
VI. Directors' fees, allowances and expenses	6,53,54	9,52,63
VII. Auditors' fees and expenses (including branch auditors' fees and expenses)	296,38,24	311,82,32
VIII. Law charges	501,90,13	414,86,73
IX. Postages, Telegrams, Telephones, etc.	1031,49,33	975,44,05
X. Repairs and maintenance	971,89,71	870,95,63
XI. Insurance	2774,59,09	2479,26,16
XII. Other Operating Expenses relating to Credit Card Operations	1155,03,28	1655,63,91
XIII. Other Operating Expenses relating to Insurance Business	29377,02,59	24228,69,27
XIV. Other Expenditure	13530,22,81	11322,28,44
TOTAL	96154,37,27	87289,88,19

On expenditure side the highest cost is "Cost of Deposits" followed by Payment to and Provisions for Employees and the Third Cost is Rent, Taxes & Lighting – RTL (Other than operating expenses relating to insurance business and other expenditure).



As per Annexure-III TOP five Banks spent on Rent, Taxes and Lighting (RTL) for the Financial Year ending 31.03.2018 is as follows:

Name of the Bank	Rent, Taxes and Lighting 31.03.18 (Rupees in Crs.)
State Bank of India (SBI)	5,140
Bank of Baroda (BOB)	1,011
Canara Bank	922
Punjab National Bank	739
Bank of India	670

Analysis

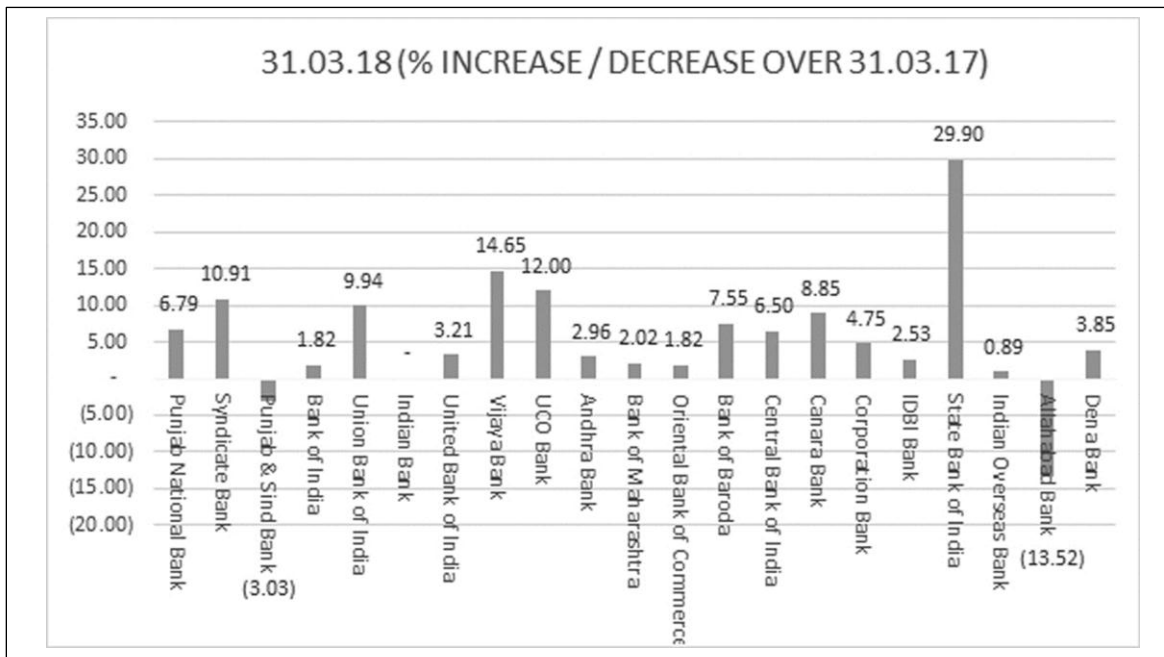
Highest amount of RTL spent by SBI followed by BOB. This is due to more number of branches, ATMs and Zonal / Regional Offices of the bank. On account of merging of Associate Banks and Bharatiya Mahila Bank with SBI, the RTL is high.

Best strategy to reduce high amount RTL is merger of nearest branches. While merging, study the branch profile based on locational advantage, rent and electricity paid by the branches, staff pattern, type of customers, potential of business in particular place

and profit contributed by of these branch etc. then take a decision for merging the branch by increase in the grade of the nearest branch or shifting the branch to unbanked areas in order to increase in business levels of the bank and to control RTL.

Percentage of Increase in RTL over 31.03.17

The following chart shows the percentage of increase in Rent, Taxes and Lighting costs of the banks in 31.03.18 financial year over 31.03.17 financial year.



Analysis

Average growth rate is 3% in RTL is considered to be reasonable, exceeding which will have effect on

Bank's Profit. In Allahabad Bank and Punjab & Sind Bank the growth rate of RTL is negative; these two banks reduced substantially the RTL overheads by



13.52% and 3.30% when compared to previous year. Control of RTL not only reduces the overheads of the bank but also indirectly reduces the manpower costs. In Indian bank neither increase nor decrease in RTL. Whereas in IOB, OBC, BOI, Andhra Bank and

BOM has nominal growth and when compare to average growth of public sector banks i.e. 3%.

Percentage of in RTL in Total business of the bank

Following table shows percentage of RTL as on 31.03.18 in total business of the banks.

Name of the Bank	% of RTL in Total Business as on 31.03.18
Dena Bank	0.12
Allahabad Bank	0.11
Indian Overseas Bank	0.11
State Bank of India	0.11
IDBI Bank	0.11

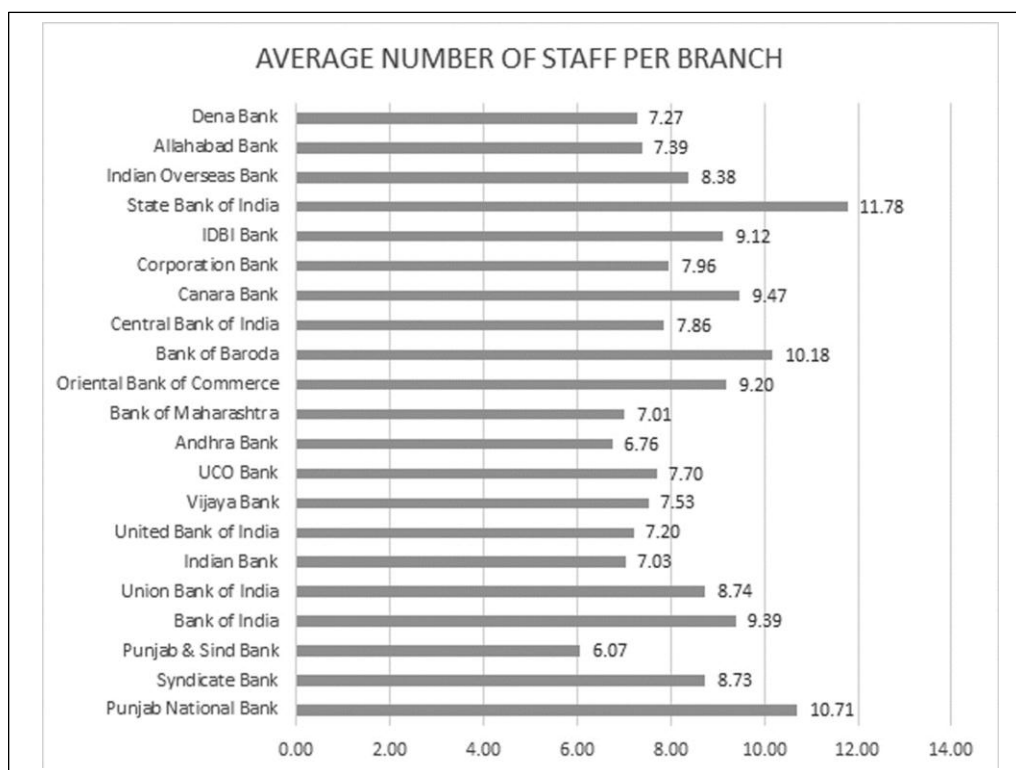
Analysis

Average percentage of RTL in total business should not exceed 0.10%, banks mentioned in the above table is more than the 0.10%. Whereas in Punjab National Bank, Syndicate Bank the percentage is 0.07% Punjab & Sind Bank, Bank of India and Union Bank of India is 0.08%. The ideal percentage is 0.05% on account of increase in alternate delivery channels and shifting of back office operations to

central processing centres. Review of existing premises, usage % of alternate premises, RTL Policy, growth rate in business, competition / market share of the branch etc. are the parameters to control the RTL overheads.

Average Number of employees per branch

Following chart shows average number of staff per branch in banks as on 31.03.18.





Analysis

The number of branches and total number of employees is high in State Bank of India, followed by PNB. If we take average number of employees per branch SBI is more and followed by PNB. In view of increase in alternate delivery channels in the banking system, number of employees per branch is to be reduced gradually. The average number of employees of PSBs is around 10 per branch. In Punjab & Sind Bank and Andhra Bank is 6.07 and

6.76. Once the branches are trimmed on account of increase in alternate delivery channels and CPCs, proportionately the manpower costs will be reduced and cost of banking operations will also reduce.

Branch vs. ATM

Following table shows number of ATMs and Branch vs. ATMs data as on 31.03.18 for six branches with high Branch vs ATM ratio.

Name of the Bank	ATMs	Branch vs. ATMs
State Bank of India (SBI)	59,541	2.66
Bank of Baroda (BOB)	9,704	1.78
Punjab National Bank (PNB)	9,668	1.38
Canara Bank (CB)	9,395	1.51
Union Bank of India (UBI)	7,642	1.78
IDBI Bank (IDBI)	3,779	1.97

Analysis

Number ATMs are high in SBI followed by BOB. If we take the ratio of Branch vs. ATM, the ratio is more in SBI followed by IDBI. If more number of ATMs is installed, the foot falls of the customers will reduce drastically. This ratio is very low in Allahabad Bank and Punjab & Sind Bank i.e., 0.34 and 0.81. Due to less number of ATMs, the customers of the bank are forced to use other bank ATMs; thereby service charges are to other banks. Thereby customers are forced to open the accounts with other banks where number of ATMs are more. Some of the banks are using *White* and *Brown* labeled ATMs to reduce the cost of capital expenditure and other revenue expenditure to the bank. This is one good strategy to the banks to control the capital expenditure. But sometimes, if number of hits are more in a strategic location, it is beneficial to the bank to install own ATMs instead of using white and brown labeled ATMs. Instead of installing ATMs, banks should go for ATM-cum-CDM, thereby the cash receipts transactions at the branch reduced further. Whenever the life of the ATMs is over, it is better replace with combo type alternate delivery channel like ATM-cum-CDM, thereby further cost of transaction will reduce further.

Strategies to Control Rent, Taxes and Lighting (RTL) Costs

Develop “Rent, Taxes and Lighting Policy” of the bank: As spreads of the banking business is decreasing on account of increase in cost of deposits and decrease in yield on advances / investments and increase in NPAs. Control of every cost is essential, other-wise the rating of the banks will decrease and it is difficult to attract or mobilization of additional capital through public issue. To control RTL costs, banks have to develop RTL Policy. Policy guidelines of RTL should be discussed by the bank management on monthly, quarterly basis in review meetings of the regional / zonal / head office performance review meetings. Thereby RTL costs can be reduced / controlled substantially.

Review of the existing space of all branch premises: Alternate delivery channels were introduced in bank 15 years back; at present most of the bank customers are habituated to use alternate delivery channels. Review of the existing space is one of the important strategy i.e., reduce or to increase the branch space based on the customer foot falls, number of the transactions held at the branches, business levels of the branch, demand deposits vs. time deposits, term loans vs. working capital loans, segmental customers like retail or SME or corporate,



educated customers or non-educated customers, number of alternate delivery channels linked to the branches, shifting of back-office operations to central processing centres, number of staff members, rent paid by the bank with prevailing market price, capital expenditure spent by the bank for interiors, number and distance of branches situated surrounding to the existing branch etc. all these factors are to be verified while reviewing the existing space of the branch premises.

Searching for alternate premises: While searching new or alternative premises, factors to be considered by the bank are amount of rent to be paid per sq. ft., number of other bank branches located, number of business establishments, type of customers located, potentiality for bank business, number of years to reach break-even-point of the branch. Due to increase in alternate delivery channels of the banks and implementation of the concept "bank customer not branch customer" etc, prime locality is not a vital factor in selection process of the branch.

Shifting of ATMs to the branch premises: To save the rent and other infrastructure facilities costs of ATM, ATMs are to be shifted to branch premises instead of ATM located near to the branch, if the branch is situated in prime location. This way, Cash replenishment costs can be reduced and customers of the branch can be encouraged to use the branch ATM instead of using branch for cash requirement. Requirement of ATM space is normally 100 Sq. Ft. , this space can be easily arranged by the branch in premises.

Merging of branches: The ideal distance between two branches of one commercial bank is in the range of 3 to 5 km in metros and in other locations 10 km. In metro, urban, semi-urban branches are crowded in same locality and the pie of the total business is shared among the branches. In crowded places, competition among branches is more, growth of the business is nominal and in some cases stagnated and negative growth is observed. In few branches the growth is on account of inflation and not real growth.

Hiring of unutilized own premises: In some cases, own premises of the banks are underutilized, due to decentralization of organization structure of the bank, decrease in business levels due to opening number of other banks in surrounding places. If

underutilization of own premises is observed, bank should explore to hire the premises to other commercial establishments, and thereby it increases the revenue resources of the banks. In case of rented premises, de-hire the excess premises to the landlord; thereby RTL will reduce to some extent.

Close / Shift low hits ATM premises: At initial stages most of the banks have installed number of ATMs at different locations as a new initiative. For every location banks are incurring overheads like rent for the ATM Room, security staff, capital expenditure for interior decoration and also air-condition system and depreciation thereon, cash replenishment on monthly basis etc. Shifting of ATM to strategic location is one strategy to reduce the cost of operations of the bank.

Trimming of the branch premises wherever feasible: Trimming the branch premises is one strategy to reduce overheads of rent and electricity costs. Forecasting of business sometimes may not be achieved by the bank due to various reasons. Solution in this case is either de-hiring or trimming of the branch premises. This clause to be included in lease agreement with the landlord while hiring the premises. Some of the branches are holding like old records, furniture etc. for so many years in the branch premises. If retention limit of old records is over and furniture which is not useful, either it may be shifted to needy branches or to sale furniture through auction, thereby premises can be used in a better manner.

Optimum utilization of own premises: Some banks are having own premises, due to decentralization in the organization structure or decrease in business levels and opening of number of banks in surrounding areas, usage of branch premises decrease substantially, these premises are to be reviewed by the controllers and explore the possibility of shifting Central Processing Centres, Whenever surplus of space is available on account of decentralization of organization structure, the premises can be hiring to other commercial organizations. Thereby revenue will be generated to the bank.

Develop Standard Operating Procedure (SOP) for Rent, Taxes and Lighting Costs: Standard Operating Procedure (SOP) is a tool to the Controller of the branches to do the activity in a defined manner. It gives an idea to the operating staff, how to



complete the specific task. SOP is to be circulated to all the branches, thereby it is a tool for the branches to follow the guidelines of the bank without any deviation.

Re-design the branch with current requirements:

After introduction of alternate delivery channels by the banks in large scale, footfalls of the customers are gradually reducing. Banks are encouraging the customers to use the alternate delivery channels and Head Offices of the Banks have also allotted targets to the Branches like number of ATM Cards to be issued, Internet Banking and Mobile Banking kits to be issued. Thereby it is beneficial both to the bank (Cost Angle) and also Convenience to the Customers (i.e., 24 x 7 banking services).

This is a good opportunity to the bank to re-design the branches as per the current requirements, thereby substantial reduction of RTL and Fixed Assets cost like furniture and electrical gadget will come down. This not only reduces the RTL but also results in reduction in capital expenditure incurred by the branch for interior design etc.

Sale of outdated and redundant furniture / stationery laying at Head Office / Zonal Office / branches:

Old furniture like computer monitors, broken chairs, old stationery, old record (even after retention period is over) are to be disposed off, thereby it creates space at the branch. Old iron furniture always consumes more electricity (if the branch is in air-conditioned) than wooden furniture. Old furniture not only occupies the costly branch space, but also leads to bad ambience. Once disposed or sale of old furniture / stationery by the branch, some revenue will be generated. Good maintenance always improves the face lifting / ambience of the branch.

Use of LED bulbs to save electricity: Electricity bill reduces by using Led Bulbs instead traditional lighting. Still bank branches are using traditional electrical systems (these may be in good condition) but it consumes more electricity. Even though it requires some additional capital expenditure but revenue expenditure will reduce substantially in the long run and also the new systems increase the face lifting of the branch.

Use of sensors in the branches / offices: In some branches / offices even though employees are not working in their work stations, still electricity

appliances like lights, air-condition is ON position. It not only increases the monthly electricity bill but also the life the electrical appliances will decrease. Installation of sensors at important places in the branch decreases electricity cost substantially. Educating the staff is very important to control the RTL costs as they are users of the branch in addition to the customers.

Use of Solar panels on the terrace of zonal office / head office / ATM rooms:

Banks should encourage use of solar panels on the top of the branch premises (wherever feasible), thereby they can avoid standby generator system at the branches. Most of the branches are having standby generator system and recurring expenditure like oil, rent and operator salary is to be paid by the branches, but branches are using generator mostly in summer season. If branches install solar panels for electricity it not only reduces the electricity costs but also reduces the dependence on alternate current system. Best example is *Thiruvananthapuram Airport* which is operated on solar energy system.

Digital Banking: Banks and Government of India are encouraging Digital Banking, it not only reduces the cost of bank operations but also customer convenience i.e., 24 x 7 banking. Digital banking reduces the circulation of money with the public and thereby there is cost reduction to the regulator in printing of currency and forged notes problem can be avoided. Here lot of customer education is required particularly regarding various risks in digital banking system. This is one way to reduce the overheads of RTL.

Channel-wise Costs figures: To control the cost and also to arrive cost-benefit-analysis of various channels of the banks, banks have to develop channel-wise costs reports i.e., Internet banking, Automated Teller Machines, Mobile Banking, Central Processing Centres (for advances) etc. Through this data banks can take cost control measures in various channels of banking operations and popularize the best channels both from bank and customers point of view.

Parking space and Customer space: While selecting branch premises, parking space is an important aspect. Particularly high net worth customers prefer to visit the branch when adequate space of parking is available. If customers visits to the branch is more, up-selling and cross selling of the bank products are



possible. On account of cross selling and up-selling business of the branch, RTL can be recovered through additional business of the branch.

Documents Archival Centres (DAC): While selecting a bank branch, provision for additional space for storage of old records, vouchers, documents etc are to be made. Some banks established "Documents Archival Centres (DAC)" at outskirts of the City / Town (where low cost rent premises is available), at periodical interval the documents, old records, vouchers of all branches linked to DAC shifted at regular intervals. This type of initiative further reduces the requirement of branch space which can be trimmed further to save the RTL costs further.

Premises Department or Subsidiary: In some banks, premises issues are handled by a separate department i.e., premises department, entire portfolio of bank's premises (own / rent) will be handled by the premises departments, they develop Standard Operating Procedures (SOP) for RTL and closely monitor the same. Here, specialist staff like civil engineers, electrical engineers to be recruited to check / control the various costs of bank own / rented premises and this department closely monitors and controls the budget given by the bank.

Some public sector banks opened a separate subsidiary and placed specialist staff like civil engineers and electrical engineers. Under this model, subsidiary of the bank is profit centre and not cost centre like premises department of the bank. Subsidiary of the bank not only providing services to the parent bank but also to the other banks for ambience works with the help their own staff and earn profits. This model gives additional revenue to the bank.

Leased Accommodation to Staff Members: Year-on-year rents payable by the banks for the leased accommodation provided to the staff members is on increasing trend. To arrest this situation wherever own space is available, banks may construct staff quarters to reduce overheads of rent paid to the staff members for the leased accommodation. To reduce the overheads of rent of staff accommodation and also to increase the productivity levels of staff, banks may provide staff quarters instead of paying amount for hiring accommodation to staff members.

Conclusion: To conclude, public sector banks spent Rs. 6,997 Crores for rent, taxes and electricity for the financial year ending 2018. This is only recurring and direct expenditure, other indirect expenditure like depreciation of capital expenditure on ambience, manpower costs etc. for the primary channel is not considered in above analysis. Some of the banks are having their own premises like Head Offices, Zonal Offices, District Head Quarters Branches etc, rent for these premises is not taken into account (had it been hired to others) while arriving total rent paid by the banks. If we take all direct and indirect expenditure, the primary channel is a costly one.

Without branches Paytm's registered users are 300 million, over 7 million of Paytm merchants and average number of daily Paytm transactions are Rs.5 million from rural to metro in India (mobilization of funds from customers). Credit Cards holders are 3,74,84,955 with number of transactions as 12,80,77,981 and volume of Rs.4,46,774 Million transactions on March, 2018 (lending to customers).

Popularizing digital banking not only reduces the cost of primary channel but also helps in optimal utilization of Information Technology costs incurred by the banks. Implementation of cloud computing, black chain technology, data warehousing and mining, educating the customers about benefits of digital banking particularly to rural and semi-urban centres, results reduce dependency on primary channel. Along with the above implementation and review of RTL policy will help banks to decrease / control RTL costs and other overheads.

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IMPACT OF Ind AS IMPLEMENTATION ON FINANCIAL STATEMENTS OF INSURANCE COMPANIES IN INDIA

This paper addresses the possible components of financial statements of the companies doing insurance business in India and which are expected to get impacted due to proposed mandatory Implementation of Ind AS.

An accounting standard is a principle that guides and standardizes the business transactions and other events that are to be recognized, measured, presented, and disclosed in financial statements. The global competitiveness, rapid growth of international trade and Internationalization of Indian firms has created the need of global harmonization of accounting standards. In reorganization of the facts, MCA, Govt. of India notified the phase wise roadmap for Ind AS to be implemented by the companies in India.

From 01 April, 2016, the new Generally Accepted Accounting Policies is applicable to such companies which have net value of their assets upto or more than 5 billion. The new GAAP are based on Ind AS **converged** with IFRS. Accordingly, the phase 1 companies have already started preparing and reporting their FS based on Ind AS from FY 2016-17. In the phase 2- the Insurance Companies, Banks and NBFCs have been required to migrate to new standards from 2018-19 in a phased manner as well. The implementation of revised standards are expected to bring improvement in the quality of financial reporting but cannot be said to be free from challenges and therefore the understanding of possible impacts of Ind AS implementation on Financial Statement is a concern of great significance to the internal and external stakeholders.

The topic for study has been adopted with the objective to analyze the possible areas of financial reports of Insurance Companies which are expected to get impacted due to Ind AS Implementation.

Introduction

The new Accounting Standards aim to increase transparency and provide a clearer picture of companies' financial state of affairs. The Financial Statements based on new GAAP or Ind AS are worth

more for the reason that Ind AS recognizes substance over form and the asset's fair value is given importance in the preparation stage itself. This signifies that in order to present a true & fair view of affairs of a business concern the events and transactions be found more accurate, if they are



recorded in the Financial Statements that are based on their economic substance rather than their just legal form. The new principles would also lead to more transactions flushed through P&L rather than capitalizing.

The Regulatory framework on Indian Accounting Standards for the Insurance Sector in India

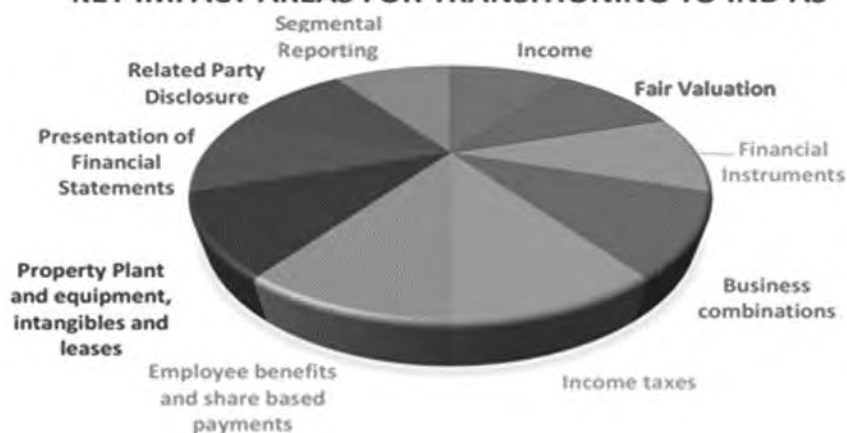
The Ministry of Corporate Affairs is the regulatory body under Govt. of India for all corporates that also ensures the global best practices are adopted by the body corporates in India through its directives, enforcements as per Companies Act, 2013 and various amendments which are brought into the Act from time to time. The Companies (Indian Accounting Standards) Rules, 2015 were notified by the said regulatory body on 16th February, 2015 regarding implementation of Ind AS. The notification provided the roadmap to the all across India spreaded Insurance Companies, Banks, NBFCs as well as select Term Lending and Refinancing Institutions. The guidelines require such institutions to perform the execution of Ind AS converged with IFRS in their financial reports to be commenced with accounting periods beginning from April 01, 2018 along with comparative figures for the preceding accounting period that will end on March 31, 2018.

The insurers have also been advised through notification to comply as per roadmap rules, 2015 which are subject to any further guideline or direction issued by the Authority in this regard. The applicability of the Ind AS shall be on both the financial statements i.e. standalone and consolidated financial statements.

Statement of expected change effect from implementing new Ind AS

The roadmap issued by the MCA is based on the comparative studies between prevailing Indian GAAP and Ind AS conducted to know the implementation effect of new Ind As on financial statements. The observations significantly convince that there are the several areas of the Balance Sheets which are "Form" driven than they are driven by 'Substance' in the existing GAAP system. Since the 'substance' is preferred under IFRS therefore the new Ind AS will bring the enhanced comparability of accounting and financial statements which will transform the Insurance and other phase 2 companies into more competitive amongst their peers and international counterparts.

KEY IMPACT AREAS FOR TRANSITIONING TO IND AS



Source: KNAV International E- Ind-AS-Transitioning

Key issues to be factored before transition to Ind AS

To prepare Ind AS-based standalone and consolidated financial statements for FY 2018-19 with

comparatives of FY 2017-18, the insurers shall apply Ind AS only as per the given timelines. They have not been permitted to adopt the same at earlier than required. However, there are certain issues and



challenges which need specific attention at the each company level because they are expected to require significant changes in the systems and processes during implementation of new Ind AS. To ensure that desired comparable changes in financial results are presented as a result of timely execution of Ind AS, the respective companies need to begin with internal planning, testing, and managing the following in advance;

1. To analyze the possible success and failure due to differences between the current accounting framework and Ind AS, the requirements of specific technical changes need to be considered by the companies. These requirements may be diagnostics analysis, documentations, drafting, preparation of proforma Balance Sheet, P/L-Account and notes for disclosure of accounting policies as per Ind AS decisions. In addition to the above the company should also take into consideration the time required for transition from old to new standards and an end to end trial of accounting systems should be run.
2. There are the different IT, Information and data security related systems and processes in each company which require internal revisits for changes as per Ind AS, so as the same be developed or strengthen timely to prepare much before in advance. This is important to capture the data in the systems as per change of accounting policy else the results may differ from expected whenever required.
3. Broadly the change in accounting policy i.e. as per Ind AS will impact not only on asset items but also different liability items as well such as- capital, taxes, and profits. Therefore a proper advance planning and budgeting of these items will help company to maintain reserves to pay-off its short-term and long-term obligations.
4. To introduce change or transit from current GAAP to new Ind AS, the adequate training to dedicated accounting and finance staff is a foremost need of the companies. Therefore, the human resource deployed on related jobs or who are supposed to implement the Ind AS should undergo tests

to know if they are well equipped with transitioning knowhow on Ind AS. Wherever it is necessary, the comprehensive training programs on the subject should be run with utmost priority.

5. Implementing Ind AS is not lesser than a project. The strategic and holistic project Management approaches should be applied to ensure that the people and systems are capable enough to establish effective communication with the internal and external stakeholders.

Critical Components of Financial Statements to have a transitional effect:

Following are the critical areas which should have a change impact not only on financial statements of insurance organizations but also on the financial statements of other phase 2 companies which are required mandatorily for implementation of Ind AS.

1. Standard for Transactions in the nature of Business Combinations

Under present Indian GAAP, the recording and reporting of transactions in the nature of business combinations such as assets acquisition, consolidation and amalgamation etc. are dealt in accordance with the separate standards provided for each. Hence there is no single standard that covers all such transactions of the said nature in a comprehensive manner. **Ind AS 103** will apply on accounting for all such transactions and will have following effects;

- a) Recognition will given only to the fair value of all assets and liabilities acquired
- b) On the date of acquisition, if the balance sheet of Acquiree does not have record of intangible assets or contingent liabilities or both, the same will be recorded additionally in the balance sheet of Acquirer as a transition effect.
- c) Amortization to the value of goodwill on acquisition will not take place, but the impairment of goodwill may be only tested.



2. Standard for Insurance Contracts

Objective of **Ind AS 104** is to specify the financial reporting about insurance contracts by any organisation that issues such contracts and the standard is developed with the intention of minimizing short-term system changes. It allows entity to continue using their prevailing accounting policies for insurance contracts. However, this allowance for use of extant accounting policies will be applicable only if they meet certain minimum requirements set out in new Ind AS. The key implications include segregation of products among insurance contracts and investment contracts, unbundling of deposit component from insurance contract, accounting for discretionary participation features in insurance contract, treatment of embedded derivatives in insurance contracts, liability adequacy test, treatment of deferred acquisition costs, reinstatement of reinsurance assets and liabilities etc.

3. Standard for Financial Instruments:

The existing Indian GAAP system for accounting of financial instruments does not require the companies to include mandatory guidance but only as a recommendatory. Now the roadmap or guidelines of **Ind AS 109** will apply on Financial Instruments from **FY 2018** which would have a significant impact on the Balance Sheet, Profit and Loss Statements, and guidance notes as well. This will change the way of classification, measurement, and presenting the financial assets and liabilities. The significant impact of new impairment model will be also on the systems and processes of entities due to its extensive requirements for data and calculation.

The classification of equity, debt, and compound financial instruments will be changed as well as derivatives, and hedging and foreign currency convertible bonds.

4. Standard for CFS (Consolidation of Financial Statements) in a Group Company

As per existing system, the parent organisation reports the assets and liabilities in its balance sheet, and income and expenses in the P/L Statement and also the statement of cash flows of a group companies and its subsidiaries as a single economic entity. The establishment of **Ind AS 110** will provide a model that will have single control on all types of entities including entities for special purpose or variable interest or structured entities. The management of parent entity will be required by IndAS110 to apply the decision significantly and determine the entities being controlled by it for Consolidation of Financial Statements as a parent. If the definition of control is revised by the entity, it will change the consolidation accordingly. In the context of present Indian business environment, the new definition of '**control**' is going to introduce a paradigm change. This may change entities and their control within the group and thereby will have a high impact on such companies which have already formed special purpose vehicles and whose holding structures are complex.

5. Standard for Revenue Recognition

In India, under the present accounting system the revenue is recognized on accrual basis i.e. before the cash comes in to account. The standard Ind AS 115 meets the equivalence criteria of IFRS15 and provides the guidance for judgments and estimations for revenue recognition.

This standard is based on the core principle that entitles the organisation to recognize revenue in event when its' control over goods or services is transferred to customers. The implementation of this standard will have an influence in the events or transactions that arise on day to day basis such as when performance obligations are identified; transactions related to warranties are recorded, the incentives to the sales teams are provided, the options or material return rights are given to customers etc.



Comparatively, the implementation of this standard will require the companies to make more estimates than they do in the present system. An early share of communication with the stakeholders and making them understand in advance regarding its change impact will provide a cushion and help the companies retaining and maintaining their relationships.

6. Ind AS compliant Interim financial information

Preparation or presentation of interim financial information is governed by Clause 41 of the Listing Agreement. Therefore, it is natural, if a company is using IND AS for annual financial statements, it will use the same standards for quarterly reporting also.

Conclusion:

Though, the implementation of new Ind Accounting Standards will transform the preparation and presentation of financial reports of insurance companies and other phase 2 Indian companies through International Standardization. However, the companies are under pressure to keep pace with the decisions that they require to have in place for transition to Ind AS. The limited availability of resources, lack of new Ind AS skilled talents within organisation to improve reporting efficiency and manage compliance is a challenge and also outsourcing of services are expensive. To the fact that the all major regulatory reforms and developments like GST, Tax Accounting Standards, and Ind AS are also to be implemented at around the same time, therefore management of this transformation process at the company level is certainly a challenge.

However, given the mandatory provisions of MCA, the insurance companies are to follow Ind AS for bringing out enhanced level of financial statements which will give true and fair information at par with the global standards harmonized with IFRS.

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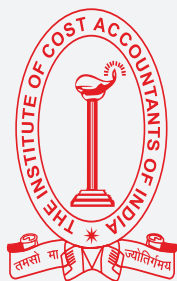
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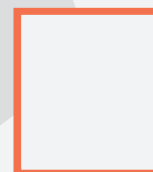
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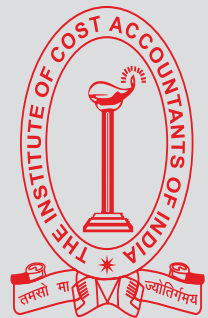
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