Business Analytics

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Bank Quest

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लेखों तथा अन्य रचनाओं में व्यक्त किए गए विचार लेखकों के निजी विचार हैं । लेखकों द्वारा व्यक्त किए गए विचारों के लिए संस्थान किसी प्रकार से उत्तरदायी नहीं होगा ।

MISSION

The mission of the Institute is to develop professionally qualified and competent bankers and finance professionals primarily through a process of education, training, examination, consultancy / counselling and continuing professional development programs.

ध्येय

संस्थान का ध्येय मूलतः शिक्षण, प्रशिक्षण, परीक्षा, परामर्शिता और निरंतर विशेषज्ञता को बढ़ाने वाले कार्यक्रमों के द्वारा सुयोग्य और सक्षम बैंकरों तथा वित्त विशेषज्ञों को विकसित करना है ।

Dr. J. N. Misra

Chief Executive Officer,

IIBF, Mumbai

The R. K. Talwar Memorial Lecture, organised jointly by State Bank of India and the Indian Institute of Banking and Finance, in the memory of the Late Shri. R.K. Talwar, is an important annual event conducted by the Institute. The 7th R. K. Talwar Memorial Lecture on the topic "Castles in Sand: India and the Tide of Globalization", organised on 24th August 2016, was delivered by Dr. Ashish Nanda, Director, Indian Institute of Management, Ahmedabad. The said lecture forms the first article in this issue.

The Banking industry is a fast growing sector in India. As complexity in the banking system grows, it will be important for the Indian banks to carefully navigate the troubled waters to counter the risk of future shocks and Analytics, with its wide application and the ability to meet the growing complex decision-making needs of banks, will play a crucial role in this. By applying new analytical tools and service delivery methods, banks can quickly convert data into knowledge to acquire market and service differentiating capabilities. In this milieu, the Institute felt if the Bank Quest issue focuses on this aspect, it may be useful. Keeping this in view, the current Bank Quest issue is based on the theme "Business Analytics".

On 2nd July 2016 the Institute had organised a Seminar on 'Value Driven through Business Analytics' at its Leadership Centre, Mumbai Corporate Office. The Guest of Honour for the seminar was Mr. A. P. Hota, Managing Director & Chief Executive Officer, National Payments Corporation of India (NPCI). The inaugural session was followed by a panel discussion amongst eminent banking experts on varied topics like "Role of Technology in Business Analytics", "How Business Analytics helps in optimizing the business mix of a bank", Use of Analytics in Developing Bank Business and in Resolution of Asset Quality Challenges", "Effective use of Analytics in credit rating process", "Lessons in Adoption of Analytics" etc. The brief report on the Seminar forms the second article of this issue.

The third article is on the topic "Business Analytics" authored by Mr. Kajal Ghose, Former Chief General Manager, State Bank of India, wherein, the author has offered an interesting perspective of Analytics and is of the opinion that today analytics has grown as a science (and art), with more skilled manpower and enhanced tools and models being available. The author has shared his viewpoint that the use of analytics has to be all pervasive across products, processes, human resources, fraud, risk etc.

The fourth article on "Approaching Analytics: A Common Banker's Perspective" by Mr. S. Mukhopadhyay, Former General Manager, State Bank of India, narrates the banker's perspective about Data Analytics and also walks the reader through the universe of data warehouse, data mart, business Intelligence, analytics, visualisation, modelling, predictions, etc. to understand the place of analytics in Banking.

The fifth article is on "Debt-equity phenomenon of Indian companies in the light of Business Analytic" authored by Prof. (Dr.) Bijay Krishna Bhattacharya, Professor, Adamas University, Kolkata and co-authored by Mr. Lakshmi Kanta Sinha Ray, Retired General Manager, West Bengal Financial Corporation, Kolkata & Ex-Secretary (Honorary), Khardah Co-operative Bank Limited and Mr. Mridul Kumar Ghosh, Financial Analyst & Ex-Officer of West Bengal Financial Corporation, Kolkata. This article is intended to take the readers through the analysis of debt equity ratio of different companies and to identify the effects of various degrees of debt equity levels in different companies in respect of their earning power and dividend distribution ability and stock price level in recent times.

We also carry a Hindi article on "डिजिटल होती बैंकिंग" written by Mr. Vijay Prakash Srivastava, Chief Manager, Bank of India.

This issue also carries a summary of "Macro Research Project (2014-15)" by Mr. Sumit Jain, Dr. Tapas Kumar Parida & Dr. Soumya Kanti Ghosh from State Bank of India on "Rethinking Priority Sector Lending for Banks in India" and a Book Review by Mr. Ramdas Kamath, Assistant General Manager & Faculty, State Bank Staff College, Hyderabad, of a book on "The Big Data- Driven Business" authored by Russell Glass & Sean Callahan.

We are confident that the articles included in this edition will stimulate your interest.

Your valuable suggestions and feedback for improving the contents are welcome.

Dr. J. N. Misra

Castles in Sand :
India and the Tide of Globalization

✍ **Dr. Ashish Nanda***

I feel honoured to be invited to give the R. K. Talwar Memorial Lecture. I did not have the good fortune to meet Mr. Talwar personally. But what I have heard about him and read of him suggest that he was a truly extraordinary leader in the banking industry, respected even today for his integrity, leadership, and service.

I feel humbled, intimidated almost, to read the names of past speakers who have given this lecture : Professor Rangarajan, my professor when I was a student at IIM Ahmedabad, Mr. Vinod Rai, Smt. Elaben Bhat, the impact of whose transformative work at SEWA on women in remote villages, I have had the privilege of experiencing firsthand, Dr. Rakesh Mohan, Mr. N. Vaghul, and most recently, Dr. Arvind Panagariya, who I had the pleasure of listening to at a public lecture only two weeks ago at IIMA.

Unlike many of the past speakers, I am not an expert in banking and finance industry, nor am I a macroeconomic policymaker. I am, however, a student of management. And I would like to share with you some recent developments on the global stage that I believe could have a significant impact on how India engages with the rest of the world. But, I argue that despite these recent developments, India should remain steadfast in its commitment to greater engagement with the rest of the world.

The world has shrunk these past few decades, and yet it has been moving apart these past few years. We are part of an unstable world, one that is witnessing the re-emergence of a great power and the gradual decline of established ones. It is a world riven by strife and beset by great migrations. These forces are leading to the ebbing of the tide of globalization that has lifted the global economy since the Second World War. The new world into which we are stepping is more parochial, more provincial than the one we are leaving behind.

Ebbs and Flows in the Tide of Globalization

To some, it might appear that globalization is an irreversible force that can only proceed along a path of progression. Such has not been the case over time. The tide of globalization has ebbed and flowed in the past, and it will, in the future.

Commerce linked distant geographies even in archaic times : Sumer with the Indus Valley Civilization, cities from Spain to the Indus in the Greek empire, and the regions through which goods and people flowed along the Silk Road. Wars of conquest and decline of empires intervened though, interrupting trade and fractionating regions.

In more recent times, the industrial revolution, coupled with colonial expansion, knit European nations and their colonies closer. Lord Keynes described the prevailing sentiment towards globalization in the early 1910s as follows :

"The inhabitant of London could order by telephone, sipping his morning tea in bed, the various products of the whole earth, in such quantity as he might see fit, and reasonably expect their early delivery upon his doorstep; he could at the same moment and by the same means adventure his wealth in the natural resources and new enterprises of any quarter of the world, and share, without exertion or even trouble, in their prospective fruits and advantages; or he could decide to couple the security of his fortunes with the good faith of the townspeople of any substantial municipality in any continent that fancy or information might recommend. He could secure forthwith, if he wished it, cheap and comfortable means of transit to any country or climate without passport or other formality, could despatch his servant to the neighbouring office of a bank for such supply of the precious metals as might seem convenient, and could then proceed abroad to

* **Director, Indian Institute of Management, Ahmedabad.**

foreign quarters, without knowledge of their religion, language, or customs, bearing coined wealth upon his person, and would consider himself greatly aggrieved and much surprised at the least interference. But, most important of all, he regarded this state of affairs as normal, certain, and permanent, except in the direction of further improvement, and any deviation from it as aberrant, scandalous, and avoidable".[1] [Emphasis mine]

Europe, for sure, perhaps the entire world, seemed to be on a trajectory of increasing integration. And then, the two World Wars intervened, highlighting barriers and boundaries.

In each of these waves, desire for commerce, spirit of enterprise, and openness to other cultures have led to increasing globalization, whereas concern of losing identity, desire to maintain the status quo, and fear of being exploited by others have heralded retreats.

Post World War II, United Nations, Bretton Woods and Information Technology have heralded yet another wave of globalization, with international trade and investments, the flow of goods and services, the movement of people all contributing to the creation of economic value. And yet, it seems, in recent times, we are experiencing a rolling back of this tide of globalization.

A Tour Around the Globe

As mentioned earlier, I am not a political economist, nor a historian. I am a student of management. My views are based on conversations and observations. This paper does not draw upon an empirical survey or research of a data set. Rather, it is an attempt to draw a pointillist picture of the world based on experiences and deliberations. Having made this disclaimer, allow me to take you on a quick tour around the regions of the world and see if all this adds up to a prediction as to the near future.

United States

The U.S., the world's largest economy, fueled by an energy boom, thanks to fracking technology, and maintaining a relatively young population, due to relatively liberal immigration, has continued to grow, albeit at a slow pace, as one might expect of a mature, large economy. Yet, there are questions aplenty within that nation: How to leverage wealth to society's benefit? How to ensure economic growth is accompanied with increase in employment with good jobs? How to continue to nurture the American Dream of improving

living standards with every generation as growth slows and aspirations don't?

Cheap credit and low cost imports keep consumption afloat, along with fears of bubbles and what tapering of credit might reveal as to the true state of the economy. Schisms appear in society, separating the 1% from the 99%, the privileged but threatened white males from the underprivileged but rising minorities. America's shadow on the rest of the world, long and deep, owing to its economic and military might, particularly pronounced since the collapse of the Soviet Union, weakens with the rise of China and with the nation's own uncertainty about adventurism abroad, catalyzed by the disaster of the Iraq invasion and its aftermath.

Europe

Cracks are growing wider in Europe. The Greek crisis and its after math created the impression of a two-speed Europe, a productive and investment oriented North, and a profligate and spending oriented South. Nations in the European Union have been pondering over whether and how to strengthen the existing union beyond common currency to greater fiscal and even political coordination, in the process placing demands on states that some of the economically weaker ones might find untenable. Britain, one of the stronger states in the European Union, surprised everyone, even itself, perhaps, by voting to exit, intensifying doubts whether a supranational union will hold.

The Brexit vote was driven more by concerns of retaining a cultural identity than by arguments of economic growth. These concerns of retaining cultural and social mores have intensified in recent years as Europe has been buffeted by waves of immigration from strife torn parts of the world. Refugees streaming in from distant lands follow lifestyles very different. Spectacular episodes of terrorism led by individuals, even if few and disaffected, yet identified with and from among recent immigrants, have widened the gulf between the residents and the newcomers. As threats to existing values become imminent and the future appears ambiguous and ominous, European societies have retreated from liberal ideals and relatively open borders that characterized the continent in the decades since World War II.

This social turmoil is occurring within the context of anemic growth, despite extraordinary monetary stimuli, reaching even into the territory of negative interest rates on savings. With population already gray and predicted

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1.　John Maynard Keynes, The Economic Consequences of the Peace, Harcourt Brace : New York, 1919, Chapter 2.

to gray further in coming years, immigration curtailed (unlike in the US) owing to social and cultural fears of identities being submerged by waves of immigrants, the future appears foreboding.

China

China has emerged, most Chinese would say reemerged, as a major nation and is today the world's second largest economy. Yet, it is going through a period of acute adjustments. The torrid pace of growth emblematic in the perennial ten-percent per annum GDP increase, maintained for two decades from 1991 to 2010, has moderated down.

An extraordinary compact between one of the richest countries in the world and one of its poorer countries, which buttressed both economies over these two decades, is ending. China helped United States sustain huge current account deficits, and thus consume beyond its production, by building reserves of US Treasuries received in exchange for its products, thus ensuring employment in China. But Chinese citizens cannot consume the dollars it has been hoarding and American citizens cannot continue to borrow to live beyond their means. In recent years, especially since the financial crisis of 2008, both nations have been trying to wean off this exchange of employment for consumption. US current account deficits as percentage of GDP have been declining in recent years as the nation becomes more disciplined in consumption, and China's foreign exchange reserves, already three times larger than those of the next country, have begun to decline as it looks to diversify its assets beyond US Treasuries.

China has developed significantly in the past two decades. Yet, growth is plateauing right when the mix of Chinese population is undergoing dramatic change. Partly owing to the government's one-child policy and partly thanks to improvements in healthcare, the demographic profile of the Chinese population is changing dramatically from one of a less developed country, with a large proportion of children and the youth, to one of a mature high- income country, with the elderly constituting a large proportion of the population, all within one generation.

With international demand weakening, wages of its workers rising, and needs for some form of social safety net for its aging population becoming more acute, China faces the challenge of offering gainful employment to absorb the populace in its coastal cities as also the continuing influx of people from the hinterlands to the economic clusters on its Eastern Coast.

As opportunities plateau, the populace's attention is drawn more to the pronounced social inequities that were byproducts of breakneck growth that particularly rewarded those with guanxi, appropriate connections. Aware of public ire towards the rich, especially if the gains appear ill gotten, the government cracks down on corruption, making the rich fidgety and insecure.

All this change is occurring within a social context unlike any other in the world, where citizens have extraordinary economic freedom but social freedoms are severely curtailed. The tradeoff between limiting rights of expression in exchange for improvement in economic well being may have been palatable when economic well being was improving rapidly. As economic growth slows, citizens may no longer be willing to accept the tradeoff.

Mindful of the seething humanity, the stresses generated by slowing growth, and the risk that these stresses could find expression in social unrest, those in power in China might attempt to mollify such tensions by stoking conflict with "others": territorial disputes with the near abroad and simmering resentments with distant shores. Neighboring countries, sensitive to the shadow that China's size already casts on them, and America, the receding power, suspicious of an alien political and social system, focus on Chinese words and deeds as evidence that the rising giant is not only trying to take its rightful position among the comity of nations but is also pursuing an aggressive policy towards the rest of the world consistent with an expansionist philosophy. Differences spiral quickly into greater uncertainty and withdrawal into nationalistic narratives, in China, among its neighbors, and in the United States.

Japan

Three decades of rapid economic growth, fueled by exports, led to a dramatic rise for Japan from the ashes of World War II to become, by 1990, one of the most developed countries in the world. But following the bursting of the stock market and real estate bubble in the early 1990s, the nation went through the painful "lost decade" of the 1990s, when growth was negligible. Despite continued stimuli, deflationary pressures have persisted. Japan has grown very slowly in the time since, leading to speculation that such a plateau may be the natural growth rate for a mature economy with an aging, declining population. As Japan looks to the future, it foresees slow growth at best, even as it confronts an increasingly assertive China across the East China Sea.

Asian Tigers and South East Asia

The Asian Tigers — South Korea, Taiwan, and Singapore — were among the first Asian nations to fuel growth through active government involvement in building export-oriented industries. Other South East Asian nations (particularly, Vietnam, Thailand, and Philippines) have followed the approach of export-led growth in recent years, all with some degree of success. Proximity to China has helped, as commerce with an economically vibrant China has increased (as for Taiwan), China has been a ready market for natural resources (as for Indonesia), and businesses have moved from China as cost of operations there have increased (as for Vietnam). But China slow down has impacted these economies and the smaller Asian nations are looking for other partners to keep the engine of commerce-led growth humming.

Russia

Russia experienced an extraordinary shrinkage from the late 1980s, the period immediately succeeding perestroika and glasnost, to 2005. In virtually every measure — territory, economic output, population, life expectancy — the nation suffered grievous decline.

As it convulsed with the birth pain of a new state being born, the country experienced tremendous turmoil. Existing rules had been set aside, new rules were not yet formed, and so a frontier mentality took hold where might was right and robber barons laid claim to mammoth shares of national wealth. Faced with lawlessness, rulers reverted to an earlier approach, and society accepted it as the lesser evil: a strong government that maintains order, tames oligarchs, and prevents capture of national wealth, however, a strong government that has accumulated the power to control, dominate, and extort.

As Russia harkens back to the glories of its past empires and looks with dread at the future, the present does not offer much solace. During the aughts, as demand for natural resources grew, the nation used its oil and gas resources to improve living conditions and re-establish a more muscular international presence. However, with world economies slowing down and new sources of energy available, the economic rebound has stuttered and Russia is struggling yet again, hoping that aggressive realpolitik and bluster in the international arena might preserve some pride and recompense for a weakening economy. As the nation struggles, Russians become increasingly certain that Western Europe and the US, enemies of the old, are taking comfort in its current travails, and a querulous attitude towards those nations has developed.

The Middle East

A region rich in history and culture, comprising ancient civilizations, blessed in some parts with a surfeit of oil, the Middle East nevertheless has suffered feuds long-lasting. It has some very rich countries, whose monarchs have fabulous wealth, and other very poor countries, where existence is difficult. Throw in differences in religion and culture and the result is a volatile mix, rife with strife and uncertainty.

The Gulf has oil riches, yet regional rivalries keep the rulers occupied in politicking, and the sparse local population relies on, but does not trust, large numbers of guest workers from other nations. Sectarian conflict, often catalyzed by outside interests, has caused enormous misery over decades in Iraq, Syria, and Lebanon. The Arab Spring brought with it intimations of possible political liberalization but degenerated into cycles of escalating conflict and powerful repression. The cocktail of repressive regimes, religion inspired violence, and angry populace make for suffering and violence and have led to displacement of large segments of population.

Latin America

Latin America, with Brazil, Argentina, and Chile as lynchpins in the South, Venezuela, Colombia, and Peru, in the middle, and Mexico in the North, grew rapidly during the aughts, on the back of growing global demand for natural resources (particularly from China), increasing trade within the region and with other countries (including Mexico with the US, following NAFTA), and expectations of growing economic vitality. The region has struggled in very recent times, however, owing to slowdown in global demand and political uncertainty coupled with questions about quality of governance.

Resource Rich Nations

Relatively sparsely populated resource rich countries, including democracies such as Australia and Canada, and the autocratic Stans of Central Asia, as well as Mongolia, experienced a boom in their economies during the aughts, with growing demand for natural resources, fueled primarily by the extraordinary growth of China. However, with global growth slowing down and rapid growth in availability of shale gas, these economies have suffered recent hiccups.

Africa

Africa is an extraordinary mixture of opposites : birthplace of humanity and yet the "dark continent" till recently, with its natural riches yet abject poverty, risen from colonial exploitation yet suffering from kleptocratic leaders, thinly populated yet divided in more than fifty nations, comprising diverse communities living close together for generations yet marred by episodes of great violence between people, blessed with youthful energy yet with health indicators and life spans among the lowest in the world. In recent years, the continent has grown rapidly, partly because it started from such a low base, and partly because the rest of the world began to take notice of the rich natural resources of the continent.

Anchored by the two giants — Nigeria to the west, with its oil and its people, and South Africa, with its established economy, despite the challenges of poor governance and lawlessness that both face, as do most other African nations — the continent looks to a brighter future. But an average positive trend hides tremendous volatility. Different African nations will go through very different growth trajectories, based on their circumstances, and the same nation will go through significant gyrations in its performance over time, because the continent has weak institutional infrastructure, leading to volatility.

India and South Asia

In this generally dark environment, one bright spot is India. Even as world economy slows down, it continues to grow at a good pace and despite its abject poverty, continuing development challenges, corruption, and political intrigues. A principal reason is that India's economic growth is powered by domestic demand. Its youthful population, societal consensus for economic growth, and political commitment to facilitating commerce are fueling the nation's growth. Neighbouring Bangladesh and Sri Lanka will grow too, influenced by buoyancy in the region.

The Receding Tide of Globalization and its Impact on World Businesses

Faced with turmoil across the globe, with unrest leading entire swathes of population on migrations of magnitudes unheard in modern times, economic uncertainty leading to shuttering of windows into a brighter future, fissures becoming more evident between the privileged who have gained from globalization and the weaker sections of society who have suffered at the hands of globalization, nations are growing inward looking, supranational bodies are facing existential challenges, borders are becoming more prominent, and perceptions of conflict between "us" versus "them" grow.

The age of global giants of commerce that bestride the world from nodal megalopolises of commerce may be drawing to a close. It may be time for businesses to consolidate at home as provincialism re-emerges. With globalization ebbing, technology (automation and robots) will be employed to substitute for off shoring. Traditional enterprises, bounded by jurisdiction, language, culture, and relationships might yet again begin to flourish. Even international companies will scramble to build local presence.

As businesses look around the world for international expansion opportunities, competition will be fiercer, and opportunities slimmer. Mired in slow growth, graying in demography, yet limiting immigration to maintain their cultural identity, attempting without much success to prime the pump of domestic demand by offering cheap credit, the mature markets of a Europe that is fracturing and a Japan saddled with two decades of deflation, will continue to experience anemic demand, thus intensifying domestic competition, making it difficult for outsiders to break in.

Emerging markets will continue to grow in relative strength. Chinese State Owned Enterprises that have been trawling the world in search of sources of raw material to secure their manufacturing supply chains, will continue to do so, investing in resource rich economies of Africa, South America, Australia, and Central Asia, albeit at a slower pace than during the times of heady growth. Small opportunities will flicker in South East Asia. Africa offers promise, coupled with volatility.

The large markets that will attract foreign companies will be : USA, thanks to innovation and immigration and despite its myriad regulations and intense competition; China, as it transitions from being an export- oriented to a domestic consumption oriented economy; and, provided it cuts red tape and improves ease of doing business, India.

Technology as a Binding Force

There is one major proviso to this prediction of the ebbing tide of globalization. That is the binding force of information technology, which is making the world smaller and geographical distances moot.

In our changing and challenging world, technology is asserting a new dominance. Today, five of the top seven companies in the world in market value are technology

companies. For some time now, Information Technology has offered new ways to organize work, promising efficiency and quality. Broad bandwidths have allowed parsing out of work, encouraging outsourcing, remote teaming, and off shoring. Advances in big data, machine learning, and robotics are replacing human activities with automation.

And yet, the biggest impact of technology may not be in more efficient back-offices, but in how digitization is revolutionizing entire industries. Companies such as Uber, WeChat, Air-BnB, and earlier, Amazon, e-Bay, Google, and Facebook have demonstrated that digital business models are fundamentally different from traditional business models. Typically, these new business models involve platform economies that nurture behemoths that cover the globe.

Digitization has revolutionized entire industries. Knowledge and information intensive industries – retail banking, bookshops, news organizations, music industry, education – have been deeply affected. Transformation to digital is disruptive, offers new value to customers, and involves wrenching changes in industries. But no industry will go untouched by this revolution. In valuing higher technology companies that have gathered war chests to invest in major bets, the investing public is expressing the sentiment that major transformation is round the corner. This transformation might bring the world closer together.

Even as political and social forces are decelerating, even reversing, the trend towards greater globalization, digital technology is bridging distances remarkably. The consequence might be a confluence of sentiments among people of simultaneously being part of a global village and yet having local concerns, having an international perspective and parochial considerations. In this world, the most successful of companies might be those that bridge across boundaries to build global brands, but remain responsive to local considerations.

India's Role in this Changing World

The Indian economy is poised at an interesting juncture. Somewhat insulated from the global economy, it suffered less than others from the financial crisis. Fueled by domestic demand, it has been growing robustly in recent years. The Indian population is relatively young. There is a social compact to pursue economic progress and political desire to facilitate it. Thus, India is ready today, as China was in the early 1990s, or the Asian Tigers were in the decades before, to pursue growth.

But with the world economy slowing down and nations raising barriers to commerce, what stance should India take towards the rest of the world? One approach might be to play tit-for-tat, be open to enterprises and people from countries that are open to ours, and resist those from countries that are barring ours. It would be the natural thing to do, and it would be the wrong thing to do. This approach would feel fair and would ensure that countries that bar Indian business suffer economic loss from their actions. But this approach would also be akin to cutting off your own nose to spite your face, for India would suffer too from not allowing access to the other countries' best products and people.

Another approach, oft vaunted by students of the "Asian miracle" would be to follow a proactive industrial policy of privileging export oriented manufacturing companies in specific export zones to jump start the Indian economy much as Shenzhen, Guangzhou, and Xiamen did in China. This approach would allow focused attention to the development of select coastal regions and specific manufacturing industries. Proponents point to China becoming an increasingly costly source of low cost manufacturing owing to the rising wages in coastal China and the opportunity for other, lower wage countries to replace China as a low cost global hub for manufacturing.

Yet, China grew through exports in an environment in which markets in the rest of the world, including United States and Europe, were more open to international commerce than they are today. Countries worldwide have also become sensitive to nations that pursue aggressive export oriented policies without offering reciprocal access and are less likely to be as receptive as they were in earlier times. The Chinese Government also had the authority to build reserves rather than pay the money earned through exports to its workers, thereby raising their wages faster. India does not face as munificent and trade friendly global environment, nor are its democratically elected leaders able to suppress domestic consumption aggressively.

An approach of making differential investments also places enormous responsibility on politicians and bureaucrats. Exercising this responsibility to pick and choose where to invest and what industries to favor would be a good idea if (a) governments have a superior ability to pick winners and (b) politicians and bureaucrats are decidedly acting for the social good. Both assumptions are open to challenge. Governments' record throughout the world has been very mixed in identifying ex-ante which industries to support. Flexibility

to make differential commitments creates the specter of currying favors and exerting influence to grant favors, unproductive activities that dampen industriousness and vitiate society.

The best approach for a democratic, dynamic, and confident India would be to remain an open civilization, regardless of how other nations are behaving. People and enterprises would be welcome from anywhere in the world, regardless of how open or closed their home countries are to outsiders. With international expansion opportunities limited, companies from all over the world would seek to establish operations in India. That would provide an opportunity for the Indian host government to establish norms whereby entering companies invest in the country and commit to it long term. But beyond establishing norms for investment in India, the government would facilitate all types of business, not privilege particular industries.

Rather than identify specific areas where special rules of commerce and taxation apply, regulations would be simplified for the entire nation. States would be encouraged to compete with one another to access investments and resources. As an outcome of this competition, clustered townships of enterprises would develop in particular geographies.

International companies would provide good quality jobs to Indian workers, and cutting edge products and services to the Indian consumers. Indian companies would have the opportunity to compete with or partner with world-class companies, thereby encouraging productivity and innovation. In an autarky, businesses, assured of their markets, become inefficient, and seek to preserve their rents by preventing entry. In a competitive environment, the efficient and the innovative thrive. Indian businesses have shown across industries, from software to retail food chains, that they can compete with the best of international companies.

Competition in the vibrant domestic market will nurture businesses that are providing high quality goods and services that can compete with the best in the world. These businesses will look beyond Indian shores to markets abroad. And many of the dynamic international markets of tomorrow — China, South East Asia, Africa — are geographically close to India.

In this approach, the government's role would be to: set norms for entry into India that privilege enterprise and job creating investments over "hot money;" enforce rules of competition that provide a level playing field to all and improve social welfare; and ease business operations through infrastructure investments, clear tax regime, smart regulation, speeding up the execution and enforcement of contracts, and simplifying entry and exit. The government would equip its citizens to work effectively in enterprises through education and healthcare. But the government would eschew from activities that involve it intensively in industrial activities, or lead it to pick industries or companies or regions to favor.

In many ways, this is the trajectory India has been moving on for the past few years, perhaps slower than many would like. Even as the tide of globalization ebbs in the world, India should continue on this path of establishing an open economy. This approach would resonate with what the Indian culture has been since ancient times: open to visitors from near and far, trading not only in goods but also in ideas and thoughts, confident and curious, rich through exchange.

Our nation may be at an inflection point, with gathering resolve to push for economic growth, with population assured and eager. At this inflection point, even as clouds gather, and some of the rest of the world becomes introverted, India must recommit with resolve to the path of opening up to the world economy.

As Antonio says eloquently in a different context in The Tempest, history and the environment have set the stage; it is up to the India of today to act decisively and thereby take charge of its destiny.

> We all were sea-swallow'd,
> Though some cast again,
> And by that destiny to perform an act
> Whereof what's past is prologue,
> What to come In yours and my discharge
>
> — William Shakespeare, The Tempest

Value Driven through Business Analytics
Report on Seminar held on 2nd July 2016 at IIBF, Mumbai

Introduction

The Institute organised a Seminar on Business Analytics on 2nd July 2016 at its Leadership centre, Mumbai Corporate Office. The seminar was inaugurated by Mr. A.P.Hota, Chief Executive Officer, National Payments Corporation of India (NPCI). The special address on the topic was delivered by Mr. Kajal Ghose, Chief General Manager, State Bank of India. This was followed by a panel discussion amongst eminent banking experts from varied perspective. The topics, of each speaker, were:

- Mr. Rajat K. Gupta, Executive Vice President, Yes Bank on "Role of Technology in Business Analytics".

- Mr. Jaspal Singh, Business Head, Business Intelligence Unit, ICICI Bank on "How Business Analytics helps in optimizing the business mix of a bank".

- Mr. Vijay Kumar Kottapalli, Senior Advisor – Analytics, State Bank of India on "Use of Analytics in Developing Bank Business and in Resolution of Asset Quality Challenges".

- Mr. Deep Mukherjee, Chief Product Officer, CIBIL on "Effective use of Analytics in credit rating process".

- Mr. Prashant Yadav, Partner and Leader – Analytics Management Consulting, KPMG Services Private Limited on "Lessons in Adoption of Analytics".

Report

Business Analytics means how to assimilate data, integrate, convert and interpret this data for effective business purposes. Though Analytics is a relatively new subject, it has been a part of our life for a long time. The most important component, for any sort of analysis to be carried out, is DATA.

Management Information System (MIS) / Data analysis is a critical requirement for any business to take informed decisions. It helps in understanding the past, present and future. Traditionally, data was available in a structured manner by running queries, using statistical models / packages to have some basic minimal understanding of the activities undertaken. This sort of data was however available subsequently whereby, good business opportunities were delayed or missed, thereby leading to delayed generation of profits.

Presently, with adoption of analytical tools and technology, data is now available real time. Data are captured from various sources, assimilated and disseminated to the teams concerned. The present way of monitoring and tracking of data is also quite different.

Data can be classified into two types:

(i) Primary data – relates to data captured internally from systems used in banks like NEFT, RTGS, Core banking, Internet Banking, mobile banking, ATM cards, credit cards, debit cards etc.

(ii) Secondary data – relates to data that is not made available in bank's database and are captured from external sources like discussions in Social Media, transactions carried out on online shopping websites etc.

Such humongous data are now readily available and also rich in information. But these need to be harnessed into more valuable information. This is where technology has played a significant role. All data available, both primary and secondary, can now be technically integrated, unified and mined to do multiple processing in one single platform or simultaneously across multiple platforms using the Extraction, Transformation and Load (ETL) concept, to help get more valuable information. This is then forwarded to Business Intelligence / Business Analytics Cell and from there on to the departments concerned. For instance, money transferred to a third party, transactions carried out on online shopping websites etc. can now be mined and figured out to integrate the services provided by the websites or offer a product that most suits the individual.

The challenge earlier faced by every organisation was the scale of data that can be analysed. This meant that the systems took time to process the data, for which adjustments or compromises were made to shorten the output time taken. This limited or restricted the capability of analysts to perform their job better. But with technological advancements, a wide platform is provided to analyse vast amounts of data in various dimensions and parameters.

Further, multiple types of reports can be generated with visual graphics, trends, transactions of the previous day and/or for the week / month etc. Each report is rich with the desired information which can be analysed from various aspects. This enables senior or top management to control and monitor the activities. This is the power of Big Data which enables analysis of a rich variety of data at an optimal cost.

From the above, it can be inferred that data should be available:
i.   on various dimensions and parameters
ii. to provide a trend with historical data comparison
iii. to predict / project the requirement

There are three types of Business Analysis. These are:
1. **Descriptive Analysis** – refers to the current / existing database, reviews the inherent problems and analyses what is the way forward to improve the situation.
2. **Predictive Analysis** – is a model which looks at the probability of default or probability of attrition etc. This is called in econometrics as Statistical Arbitrage wherein, a prediction is made to know how many of your good customers are being targeted to shift preferences to another bank. For instance, a customer holding 3 cards of different banks but the share spent on one card is high as compared to the others. So, to increase the share in another card, some additional benefits can be extended.
3. **Prescriptive Analysis** – relates to operational research / activities of the bank. This means that what is the optimum product that can be given to the customer and how operationally this can be implemented to have a win-win situation for both, the bank and the customer.

   The utilities of Data Analysis are manifold. To mention a few:
(a) Requirements of the customer can be derived on the basis the transactions carried out, products invested in and discussions in social media. A grading scale can then be assigned on the basis of which, the next best product can be found suitable to the customer. This can be disseminated to the managers concerned for converting the analysis into actual business, thereby making it a delightful experience for the customer.
(b) Customers can be acquired through reviewing of transactions carried out by existing customers.

(c) Customer can be informed about the loan facilities of the bank when found that loan has been availed from another bank but repayments made from the account holding bank. If the customer is convinced, the loan can then be moved from the other bank.
(d) Customer attrition can also be identified when symptoms of fall in balances or amounts being transferred to another bank is analysed. These can be set right and the customer retained by resolving any issues faced by the customer.
(e) Accounts which are going to turn bad in the next few months can be identified and preventive measures can be taken.
(f) Process analysis can be done, meaning, transactions across a bank's ATMs can be studied for placing appropriate cash at the said ATMs. Such an analysis may help the bank avoid having excess cash at ATMs which do not earn interest for the bank.
(g) Transactions that are fraudulent in nature or likely to be fraudulent can also be detected by carrying out Fraud Analytics. Additionally, this can also help in identifying a real time fraudulent transaction. Hence, this is another important and emerging area of Analytics.
   Policy documents can be devised after analysing on a broad perspective like laying down the cap and threshold limits for extending high and low quality loans respectively. This will help in managing the asset quality along with an effective business mix. Appropriate charging of interest rates across different accounts can be analysed for correcting instances, if any, regarding under charging of interest.

The basic element of analysis is assimilation of widely available data. Banks are in the business of buying and selling goods which happens to be money. And customer, being the focal point, is at the centre of Analytics. Hence, it is very important to chalk out an analytical strategy on what is required to be generated. This helps to set the expectations right, both from the IT perspective as well as the business perspective.

At the time of acquiring customers, an application form is received by the bank. This is the basic or limited information that is known about the customer, called as the "Thin" file which has to be built upon. One of the ways to build upon the file is by keeping

abreast of the customer's demographics. Another way is through market information, i.e. credit bureau, to know the customer's footprint on the industry to enable marketing the relevant products and services as well as to evaluate the risk perspective of the customer.

In this relation, there is a new dimension called "Temporal"; meaning adding different kinds of layers to a customer's behaviour which are not very apparent. For instance, a salaried employee working in Bangalore makes frequent trips to Delhi. This information is made available through the frequent swipes he/she does in the Delhi lounge or Bangalore lounge. Such intricate information, about the customer, lying in various systems, is to be assimilated and harnessed so as to build a customer profile, thus converting the "Thin" file into a "Thick" file.

There are various tools and models that help build insight into this assimilated information. For instance, a customer is using an ATM in a non-home location despite the home location ATM being at a driving distance. The objective then is to push him/her to use an ATM in a home location since there are cost implications for the bank when ATM is used in a non-home location. This can be referred to as a tipping point which can be analysed through analytical models. The analysis drawn down, thus, brings about a two-fold effect – one to ensure that customer uses the home location ATM and the second is to curtail cost. It is to be noted that such tipping points are different for different customers.

Analytics can also be utilised from the credit perspective. In the case of a car loan disbursement, it was observed that the average processing of loan takes less than 30 minutes. This new process was through a Biometric solution wherein the customer, who is interested in buying a car and wants to avail of the loan facility, need not visit the bank branch. The finger print of the customer is captured by the car distributor which is validated with the Aadhaar database. This then connects to the bank system by auto filling the loan application at the back end. Simultaneously, the customer credentials are verified from the credit bureau. Fraud verification is also carried out. If everything is clear, the bank disburses the loan to the car distributor. Hence, with just a biometric and signature on the document, the entire process is complete. Such processes will help a bank to build a robust retail loan book.

Another area for banks is to internally ascertain the quality of assets. The income generated, from the assets, is after taking into account the cost of funds, operating costs, credit costs etc. This calls for management of good quality assets. Analytics has the ability to address each of these components that affect income and also ensure effective management of assets.

There are two aspects to managing asset quality through analytics. These are:

i. **Preventive method** - includes assessment of the loan repaying ability, what rate the loan has to be extended, what is the risk based pricing etc.

ii. **Curative method** - is the collection strategy to be adopted with minimal time, cost and effort.

So, the power of analytics is not only about the back end, but also being able to effectively have a delivery mechanism at the front end. Thus, from the above, it can be inferred that the process of analytics broadly involves three main steps:

1. Assimilation, integration and conversion of data

2. Robust architectures to be put in place to process this data

3. Presentation of this data to management for their useful decision making

For adoption of analytics, the fundamental requirement is economics and human behaviour. One may have the most powerful systems but they are of no use if the organisation actually does not adopt. Research has found that it is of utmost importance for the top management to ask questions and evaluate in complete entirety the recommendations made for utilising analytics in its business. Once these are answered, these have to be percolated down to the bottom level of the organisation. This enforcement, from a top down mandate, has proved successful in organisations since the top management has believed in its utility. Very few organisations have been successful in the bottom top approach for adoption of analytics.

The next important question that arises is what is the right organisational structure or operating model of analytics in an organisation and how does one

allocate resources. Research has, again, proved that organisational structure has no bearing on success or adoption of analytics. The general path followed is a centralised approach because it is easy to manage and scale. This can also be decided on the basis of an assessment of the potential of each geography and through market information, like the bureau, census, etc. These also facilitate to add a layer to the penetration and market share of business. Thus, analysis helps in both, operationally as well as from the business perspective.

The challenge, herein, is very few may be able to understand digital. So, if found suitable, it should be spread across all parts of the organisation. There is a need to have people who understand analytics and business. This will help in translating business problems into analytical problems and translating analytical insights into business insights. When this starts happening, these can then be percolated to the bottom level which ensures that analytics has been adopted in the organisation.

Execution of analytics is another aspect which needs to be cautiously done. To facilitate better decision making, the data should be made available first with insights into the analysis and then allow appropriate decisions to be taken by the management. This is necessary since there are possibilities that the model has not been understood in its entirety, some hidden aspects might have been ignored which can then lead to resistance to advancement of analytics.

Analytics entails three important elements – understand, translate and trust. Trust is a very important element in analytics. The customer has to be convinced that data integrity is maintained. This is because customer's data is now readily available and is built upon regularly. Hence, the challenge is that of maintaining privacy of customer's data. Further, more and more regulations are being implemented which may pose difficulty in accessing customer's data from external sources.

Another big challenge is extracting data from social media for sharing personal information. Though customer segmentation, with the help of Big Data, will help us to recognise that each individual is unique and their requirements are to be tailored, the challenge for the bank is to not allow the customer feel that their weaknesses are being explored and exploited.

The other few challenges are that it may be easy to hire skills but very difficult to retain skills since a career path is required for these analytic professional. They need to be motivated differently by giving them space in the organisation. Performance management processes for such people are to be calibrated and tailored accordingly for their growth in the organisation.

Last, though not the least, is the point of Disruptions. They have always been there and shall continue to be there. In today's requirement, a customer delight is when he/she envisages interest on the website for any requirement and this is immediately attended to by the call centre or relationship manager. Hence, with FinTech companies making its foray into the industry, banking is going to be facing complete disruption. Bankers should therefore recognise the challenges and view them as opportunities for further improving their operations.

Summary

The key learnings from the seminar are summarised below.

1. Data Analysis, presently being done, should graduate to Data Analytics, in order to enable organizations to make informed decisions and process changes. To achieve this, setting up of suitable infra-structure is of paramount importance.

2. Fraud Analytics and Risk Analytics are emerging areas and will be important activities going forward.

3. Customer is the heart of data analytics. Use of analytics will help organizations in knowing 'what' the customer wants, 'when' the customer wants and 'how' to satisfy the perceived needs of the customers.

4. Data Analytics will enable banks, in particular, and other organizations, in general, to move from 'React & Response' stage to 'Predict & Pre-empt' stage.

5. Data Analytics will help banks improve its Business Mix.

6. Social media, which has emerged as a strong communication channel, will be an important source for gathering data.

7. Use of business analytics will better enable harnessing of data/information in a more meaningful and productive manner.

8. Data Analytics helps in developing a robust Customer Relationship Management (CRM) and helps the front end staff in better delivery of products and services to their customers, thus increasing the customer satisfaction index and in turn improving the bottom line for the organization.

9. Data Analytics can help in developing the preventive and curative strategies for the organization concerned.

10. Data Analytics also helps in addressing issues at the policy level by laying down the caps and thresholds. It helps organizations to move from descriptive stage to predictive stage and then to prescriptive stage where they are in a position to prescribe policies for problem solving, fraud handling, CRM, bottom line enhancement etc. on a real time basis.

11. Data analytics should have Top-Down Mandate for successful implementation and use in the organization.

12. Data Analytics, to start with, should be centralized and then eventually decentralized.

13. Trust is very important in the use of Data Analytics. The customers should have the confidence that data pertaining to them will never be misused. Organizations should ensure maintenance of data integrity and customer confidentiality. The organization should make sure that there is no pilferage of the data accumulated from customers and should only be used in an ethical manner to stop frauds, improving CRM, increasing bottom line of the organization; but not at the cost of customers.

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BANK QUEST
THEMES FOR COMING ISSUES

The themes for next issues of "Bank Quest" are identified as:

- Challenges in Infrastructure Financing: April-June, 2017

- Influences/Challenges for Banks post Demonetization: July – September, 2017

- Micro Research Papers 2017: October – December, 2017

- Cyber Security in Banks: January – March, 2018

- International Banking: April – June, 2018

- Risk Management: July – September, 2018

Business Analytics

✒ **Kajal Ghose***

What is Analytics?

While definitions abound, and each of them captures the essence of the term, let us start with the simple one:

Analytics is the application of mathematical and statistical techniques to data, in order to discover patterns and co-relations or to make models that predict, thereby enabling fact-based decision making or planning within the organisation.

Or even simply, Analytics is deriving insight from information, and using it for the benefit of the organisation. But, why has analytics become so important today?

"The use of analytics has pervaded all aspects of business. For business today, analytics is no longer an option but an imperative. However, as the ever increasing pace of change drives businesses to be more nimble, the skill and sophistication behind an organisation's analytical capabilities are distinguishing the high performers from the rest. With a surge in the use of predictive analytics, organisations are increasingly buying to anticipate tomorrow rather than explain yesterday. As a result, analytics-driven solutions are helping to transform business across functions. To stay competitive, companies are looking at effective ways to infuse analytics into every part of their organisation". (From the article 'Analytics Everywhere: Using numbers to drive business transformation', published in Accenture Business Journal for India, 2016, Issue 2, by Mr. Arnab Chakraborty and Mr. Mahesh Narayan).

As the world around us goes more and more digital and our customers interact with us through digital channels, and not through physical interactions (alternate Channels as compared to branch visits to transact), we may be 'losing' the customer, in the sense that the one-to-one relationship, whereby we could understand the customers' need and wants and service them across the counter, is becoming less possible at a physical level. For example, nearly 80% of customer transactions in State Bank of India happen through alternative Channels (ATM, online banking, mobile banking etc.) as opposed to Branch Banking. This means 4 out of 5 transactions are through digital mode and you do not 'see' the customer. To actually get a view of the customer and fulfil his needs, analytics is a must.

This shows how the customer has gone digital. With over 900 million mobile phones in the country people are now comfortable transacting digitally. Around 300 million smart phone users, given a choice, are most of the time transacting through a digital mode. The second aspect is the huge quantities of data being generated. The data explosion is so large that the amount of data generated over the last few years is more than the amount generated throughout our history. While technology has played a huge role in this massive data growth, it has also helped in capturing and utilising this data. The reduction in data storage and technology costs and growth of networks has made Analytics easier.

Analytics itself has grown as a science (and art) with more skilled people and enhanced tools and models being available. The use of analytics has to be all pervasive across products, processes, Human Resources, fraud, and risk to name a few. It has to be across all channels so that not only is all data captured and updated, but is available to the employees, and, more importantly to the customer at his preferred channel.

As we live in a world facing continuous disruption and competition, it is necessary to understand the customer and meet his needs when, where and in the manner he wants it. If today, you want a pizza, you just call. If you want a book or music, you order online. If I want to see a movie, even my movie tickets and snacks are all available for purchase online. However, many industries

* Former Chief General Manager, State Bank of India.

and institutions are still playing catch-up. Banks, for example; If you need a loan you generally have to end up in a branch (and mostly more than once).

As Bill Gates has famously said, you need Banking but you don't need Banks! Disruption is everywhere, as shown by Pay Pal, M Pesa, Airtel money etc. The way of doing business is changing to mostly serve the customers. Here are few examples:

- Air BNB –World's biggest hotel chain provider does not own a single hotel.

- Uber – World's largest taxi operator does not own a single taxi.

- Facebook – World's most popular media owner does not own any content.

- Alibaba.com – World's most valuable retailer does not own any inventory.

To help understand Analytics in a simple but comprehensive way, we can do no better than to look at the success factors that make Analytics work. These have been shown in, 'Analytics at Work' a book by Mr. Thomas H. Davenport, Mr. Jeanne G. Harris and Mr. Robbert Morison. They have grouped the factors as DELTA (the Greek letter Δ or δ). These factors, using analytics, can change a business. The full form of DELTA is:

D for Data (of good quality and retrievable for use), Breadth, Integration, Quality.

E for an Enterprise wide usage (approach to managing analytics).

L for Leadership in Analytics (passion and Commitment).

T for Targets (First Deep then Broad).

A for Analytics (Professionals and Amateurs).

First and foremost is data. The data comes from a huge variety of sources and has to be stored in a proper manner for analytical usage. Data is the new oil, as they say nowadays. It is the base for all that follows. Let us take State Bank as an example. The Bank gets internal structured data from 58 different sources including customer data (Demography, Geography, income, gender etc.), data from the contact centre, Complaint Management and Lead Management Data, Transaction data (70 million, transactions a day), Product Data, Distributer Data, Channel Data, NEFT, RTGS, ECS, employee data, Forex Data.... the list is growing.

This data can be Captured – to undergo an ETL (Extraction, Transform and Load Process). The Bank has nearly 300 TB of this data, with huge amounts moving in every day.

How is this data used for analytics?

Few examples are below. The most easy usage, to get quick wins, is to use it for descriptive or statistical analytics. For example, how many SME loans are being charged at below the minimum rate (believe me, this can actually happen and if corrected, can result in huge gains immediately).

Which Home Loans have not registered the mortgage in the system, how many customers (specially senior citizens), are without nominations, submission of subvention claims to the Government for example, Agricultural gold loans, staff accounts without the staff identifier (Provident Fund numbers in State Bank's case) etc.

Further, analytics would help in bringing in new accounts using data mining on the narration field of the customer, to track how many housing loan repayments to X Bank are going through customers' accounts maintained by A Bank through RTGS, NEFT, ECS transactions etc., car loan repayments to Y Bank, or Insurance Payment to Z Insurance Company. These customers can be contacted with a view to see if their accounts can be held by the Bank too.

A very important usage is to create a Customer One View (COV). Here, the static details of a customer are captured like name, address, mobile number, PAN number, Aadhaar Number etc. The customer's account holding with the Bank are also captured – like types of deposits, (FD, SB, CA) or loans (Home, Car, Educational, Personal etc.), his transaction preferences like using ATM, online banking etc.) and also his insurance (life and general) demat holdings etc. A value is derived at, using all this data, and the customer is rated (as say, Platinum, Gold, Silver, Bronze etc.) and a tool run to see the next best course of action vis-a-vis the customer. The tool throws up the products which should be offered, considering the customer's income, age, place of stay, existing portfolio etc. The various methods like e-mails, branch interface, call centre, online, or ATM etc. can be used to convey the product to the customer.

With agile technology available, it could even go as a pre-approved loan. SBI, for example, has a tie up with Flipkart to give EMI, to over a million SBI customers when they purchase from Flipkart, in real time.

The data can be used for process analytics (now much cash to be kept at over 50,000 ATMs of the Bank). Each ATM is monitored analytically on usage patterns (like first days of the month, holidays, festivals etc.) and an optimum cash loading figure is arrived at. This results in huge savings.

Fraud Analytics (velocity checks, i.e. a card being used too frequently for example, checks on a card being used simultaneously or closely at Chennai & Mumbai, fraud patterns) is an important Analytical capability. Analytics can also predict loans at risk, accounts likely to attrite etc. through models which basically run through similar accounts which have defaulted or attrited over the past two years, and use the findings to run the symptoms across existing accounts, which throw up similar trends in some of the accounts (Action can be initiated to check attrition/defaults).

Risk analytics is a vast area. Risk models are highly developed and can predict probability of default, loss given default etc. Quick, real time availability of data enables the early warning system to work efficiently by taking up with the borrowers in time. Analytics has become big in regulating and compliance areas also. The need to submit accurate and timely data to the regulators is a must. Late or wrong submissions have repercussions. The ADF (Automated Data Flow) is now being mandated by the Controllers.

Data in hand is however, very dynamic. More data needs to come in and it has to be cleansed regularly. Even for the structured internal data, gaps exist in all organisations. When data entry happens at various places by a large number of people, it can result in anomalous entries, due to lack of time, understanding etc. At the entry level, further, new data is needed to be updated constantly. In a Bank which has been in existence for a large length of time (two centuries plus, in SBI's case) legacy issues exist in data. Moving from manual banking to bank-master (Branch stand alone computer system) to core banking can result in data loss. Also a couple of decades earlier, cell phones or PAN or Aadhaar did not exist, so older accounts may not have the data, which has to be obtained and incorporated. Even date of birth can be an issue in rural India.

To this internal data, we have to add external structured data. This data from Credit Bureau and if possible from electricity, cell phone companies etc. is gaining in criticality. For example, while without the credit bureau data, a bank may be pushing for a Home Loan to a customer, the Credit Bureau data may, on availability and incorporation, indicate a customer who has defaulted with another bank(s). The electricity bill amounts give guidance for prospective borrowers. If he is paying a bill of ₹200 a month, a high end car loan may not be warranted. So, also giving a small car loan to a borrower paying bills of ₹20,000 a month be relooked at, considering other factors, of course.

For analytics to succeed in any organisation, it has to be accepted and used across the verticals. Analytics has to select applications with relevance to multiple business areas, and the analytics team has to work with Business and IT jointly. The team has to develop the analytics strategy and a road map for all business units and attempt to extend analytical tools and infrastructure broadly and deeply across the enterprise.

The leadership of the institution has to have a buy-in, for analytics to do well and produce results. Just to have a full fledged data warehouse and analytics team (which has costs), needs foresight and guidance of the top management, to undertake analytics and ensure usage. Business will only go where results can be seen and where these can be traced and monitored. "Low hanging fruits" are available to start with, but the analytical group has also to focus on strategic initiatives, value creation and building distinctive capabilities that will enhance competitive differentiations.

We also have un-structured data to take into consideration. There is again internal and external unstructured data. The internal un-structured data comes in the form of emails, comments from appraisal reports, auditors' remarks etc.

The external un-structured data available is limitless and a big source is the internet. It includes social media posts on facebook, linkedin, pinterest, instagram, twitter, Youtube and others. Also, increasing use is being made of crawling engines and listing tools, which go across the web (with defined geography, say India web) and generates output on special mention words. For example, if you were to use a listening tool and put Home Loans and Bank as a mention, it would generate reports on all the times the words were used

in conjunction over a set period of time. But this data being in un-structured format, cannot be stored in a traditional data warehouse. So, now a 'data lake' is used to capture such big data. Big Data is a combination of some 'V' characteristics.

1. **Volume:** Big data is high volume. The volume which can be considered big will of course depend on the firm's size and the industry it operates in.

2. **Variety:** There are multiple data inflows. As stated earlier, these would be structured, partly structured or unstructured data. The data could be from within or external.

3. **Velocity:** The speed of generation and movement of data is growing. A good system will try to capture the data as close to its time of generation as possible, as this allows business units to make real time or near real time use of the data.

4. **Veracity:** The purity and reliability of the data. In spite of best efforts some data, by their nature will remain unpredictable, like the weather or the economy data and this has to be taken care of.

To quote from an IBM study, published by the IBM Institute of Business value and the said Business School at University of Oxford, "companies clearly see big data as providing the ability to better predict customer behaviours and by doing so, improve the customer experience. Transactions, multi-channel interactions, social media, syndicated data through sources like loyalty cards, and other customer-related information have increased the ability of organisations to create a complete picture of customers' preferences and demands – a goal of marketing, sales and customer needs for decades". Another area of data generation and analytics is going to be from deep learning which an article in 'The Economist', defines as an artificial intelligence technique in which a software system is trained using millions of examples, usually called from the internet which bring us to the 'A' of DELTA.

Today analysts are a set of skilled people in great demand. They are amongst the highest paid professionals and all ranked universities are providing/planning to provide courses on analytics. These range from Ivy League Universities to our IIMs and are being undertaken by more and more management institutes. Grounding in Mathematics, Economics and Statistics, along with technology knowledge makes for a good analyst. The

IIM, Kolkata has a course on Analytics in conjunction with IIT, Kharagpur and Indian Statistical Institute, Kolkata. The course is for two years and spreads across the three institutes (6 months approximately at each place) with an industry project work also.

As the quality of analytics and the analysis they do will be the major factor, while selecting the team of business analysts, technical analysts, data scientists etc, personnel qualifications like MCA, B.Tech, statistics degree holders, B.E.s would prove more apt, especially if they have undergone an analytical course, and also have experience in analytics work (although it is difficult to get many such people in a young industry like analytics).

An analyst is much more than the degree he holds. He needs to have good communication skills, as well as have an understanding of the Business Domain and be able to keep commercial interests of the organisation in mind. They should also have the ability to sift through data and discern the patterns. Of course, model building is a core asset. Not only does an analyst need to do analytics, he has a large role to see that business understands the power of analytics. He has to guide business to use the analytical findings and this requires time, patience and effort. Domain knowledge is a big plus, as are project management skills.

As the world around us changes much more rapidly than any time before in history, as disruption becomes the norm, and as newer technologies like internet of things, artificial intelligence, robotics, block chain technology and a host of other developments are on, the Analyst has to play the key role in taking institutions to the brave new world.

As Mr. Peter Sondergaard has said "Information is the oil of the 21st century, and analytics is the combustion engine".

Let us make the engine run well.

Approaching Analytics – A Common Banker's Perspective

✍ S. Mukhopadhyay*

1. Application of computing in business has grown in expanse and depth very rapidly and added lots of new dimensions in operations, service delivery and business management. Analytics is one such specialised area that can be used to enhance customer experience as well as business manager's capabilities for directing business efforts with focus. When you call a marketing site and get answered in your preferred language with greetings by name, reckon that analytics have played in the background. You look up a marketing site to view some preferred items , say a TV for example; next time you go to your mailbox to check for emails, advertisements appear here and there on the screen , about those preferred TVs and brands- click it and you are in the marketing site with the specific item on the screen. Surely analytics is playing a part in all these.

2. Data volume gets very big in today's human activities at business, say like banking, because business delivery and customer operations are on computer, in almost all activities – which means much more information on customer activities are getting captured in computerised environments, leaving trails and records in terms of computerised records. To be able to understand and direct business efforts internally, or, provide rich and meaningful components and contents in customer interactions, all such data related to customer transactions and behaviour, as also external environmental / market data, are required to be captured, understood, studied and analysed. From all such data, selected portions are extracted, suitably restructured for ease of quick retrieval to help in queries made on this big pile of data, and combined into new data elements forms a new and different database. This process is ETL – Extract Transform Load. These information of different items or activities etc., are then put in a different database ; these databases form the base of the activities like storing of information, retrieval and processing to discover trends, rules, patterns of customer behaviour and some more related information. The various types of activities and handling in this area are termed as Data mining, Data Mart, Master Data Management, etc. Under the overall domain of Data Warehouse. Structured and organised data are made of data elements that follow strict rules of length, content type, permissible range of values, etc. However, there will be much other information which may be in texts, pictures, sounds etc. that may be useful to study and rate. For example, apart from price, a design or colour shade of merchandise, may have reasonable influence on customer preference without customer being able to articulate the same. However, by studying customer preferences, the back end system of a seller can have an insight to use for production and marketing strategies. This class of data will not follow a fixed structure, syntax, size or even the form – these constitute what is called 'unstructured data'.

After we have these data, i.e., original business data and then reconstructed as mentioned above, we need to analyse them to find meaningful insight. This part of activity is Analytics. There are other activities after this to use the findings for internal understanding, relate such findings to the business facts observed (proposing models and testing them for validation), rating of various factors so found and create and test business strategy, customer interaction, marketing strategy etc. Incidentally, always a customer or selling a merchandise, are not the target of the exercise. We bankers may do an Analytics of our MSME loans portfolio, study the repayment histories, the appraisal and sanction procedure, post sanction acts of bank, market conditions, overall external indebtedness of borrower, family earning and loan histories etc.,

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to perhaps arrive at a desired accurate formula for making provisions for bad loans. Because the data is diverse and huge - thumb rules or simple averages or projections based on one or two easily measurable factors, will not do. And, if we desire to know while doing a Money Market deal, probability of this deal to cause the bank to exceed any agreed risk exposure level or limit at the whole bank level, then the Analytics and the resulting action have all to be real time, within the activity session of the deal. The narrations above are of course a simplified and narrow bird's eye view only, the gamut of activities and challenges to understanding data in reality, are much bigger and difficult.

3. Analytics as a part of the integrated data driven operations of an organisation, will usually consist of classifying, segmenting, grouping of data, computing some values (of result, trend, etc.) representation of the same on screen by tables, charts and graphs of different types, dashboards, scoring tables, or similar any other graphic (for on-screen) presentation providing interactive program for business management to study, change a few parameters and see the effect on the result, etc. For example, we can see the impact of a change in, let us assume, transaction charges to be levied for services - - by trying with various different values of transaction charges, and note the expected changes for the same on the profit or market share; this can be as a graph or bar chart or any other desired format of output on screen that appear about immediately (after entering the varying inputs). This class of activities are often called 'what-if" exercise. The practice of visually seeing a change in output as an impact of complex business factor interplay, - is called Visual Analytics. Sometimes depending on the domain or platform to be studied or evaluated , a genre of analytics is named – e.g.– Cloud Analytics, Banking Analytics, Risk Analytics, Loan Analytics, in commercial communication. Basically selection of parameters to study, the data elements to be chosen, the features of the output, the business domain specific data elements, and the format of the result to be shown – may often have some specialities or usage norms; they use business rules and concepts of that domain, and can get bundled and sold under such specific names like in the foregoing example; there are no hard and fast rules however.

The major target of analytics is to understand the dynamics of market factors, operational entities, etc., and then be able to predict market response or customer impact, and then finally to provide suitable links, handles, offers in customer interactions in terms of presentation of the interactive internet screen for customer; the customer can be internal – (like in our example of the loan portfolio understanding above) – who are expected to invoke a favourable action – (like customer gets enthused to purchase an item). With such results for a larger number of sample of customers, the internal team may get helped to select or propose the underlying algorithm and build up a model for implementation and testing

The types of analytics that are specifically tailored to predict results or outcomes to help business plans and strategies, have grown into a distinct genre and are referred as Predictive Analytics. As mentioned above, there are many other typenames based on purpose or business domain (Financial Analytics, Big Data Analytics, Customer Analytics for banks, Risk Analytics for banks – which are termed and marketed as specific products by vendors to service providers / banks / business) or on similar segmentations.

The major driving forces behind banks going in for analytics may be a few – most notables are:

a. Regulatory Reforms, asking for more and more data based information from banks.

b. Profitability/ Cost cutting in view of increasing competition.

c. Achieving Efficiency in operations.

d. For better Risk management.

e. To obtain better insight into business data and customer preferences – these can be customer segment-wise also, providing a farther segmentation.

f. Attempt to redesign business processes.

g. Fraud Control.

h. Loan delinquency avoidance.

i. Customer satisfaction assessment and enhancement.

j. Call centre or workforce efficiency.

k. Cross selling, customer acquisition, etc.

Hardly, an all pervasive project to kick-start many studies and activities in many domains will get done simultaneously, because business dependence is complex based on multiple factors. Any model or strategy, should better be piloted and tested in parts, by adjusting different parameters one by one, and the overall business system allowed to grow with these, in steps of changes to help stabilisation and correct understanding of effects of a change in each of the many factors in a business situation.

4. Banks handle huge data, and need to do more, which they may not be normally doing – say for example while we study loan defaults on the basis of accounts or customer numbers; however, study of relationship of loan delinquency with customer's family/lifecycle issue history or projected competition of alternative service providers that may affect banking usage of customers, etc, is not easy, as, dependable data itself may not be there, or their relationship to business results are not understood well. Over and above, the thinking and capabilities required for data crunching and finding patterns in huge volume of data, are not in the core competence areas of bankers. On the other hand, technocrats are not expected to have the business domain knowledge. In this backdrop, it may be appropriate to see how best a simple banker can get along with Analytics in the best interest of the organisation.

5. The various available products of Analytics in the market as they are, suggest that the developers behind them have gained a reasonable insight in the underlying business. The teams of technology experts and business process experts from the providers' sides have developed these products. The most distinguished and established organisations like Gartner or Forrester rate the capabilities of vendors that get accepted more than for any other ratings in the industry. These ratings tell us company-wise capabilities based on various factors that they explain in these rating releases. However, if we bankers plan to consider a specific genre of product, it will be good to look into the views on the particular product and domain and check that the functionalities and deliverables are in line with what is our plan and our own domain. We may not at the outset, be able to spell out or fully plan the outputs or the resulting product to procure, like we can normally do when we procure a server or few discs or some equipments, or some

fixed functionality products like MS Office, etc. There will be some exploratory components in the solution and the outputs. There can be a facility in the solution provided - for user operated (by the banker who is implementing this solution) day to day analysis, report, parameter changes, etc., on a regular basis, or as and when required. It may be useful to adopt a few core outcomes, like capacity addition for understanding/analysing / reporting etc for management support, as the desirables; specifics of the solution can get defined and refined as we go from here. The banker's team involved in the initiation of the specific analytic must have members knowledgeable in the business process of the underlying specific business area operations, for which an analytic solution is planned to be deployed. In most of the situations, the analytics vendors (that include big names like SAS, IBM ,etc worldwide, as also quite a few niche solution providers are there in the top bracket) have, through the assignments handled, collected knowledge and practices of the business domain and embodied the same in their solutions. So, as such many vendors would be approaching banks with specific solutions – say on credit risk management, or fraud risk management, etc. These are to some extent ready, that a bank can procure, learn operations, put values of parameters, get trained in, and start. This may prove to be a very easy and comfortable option for a functionary in the bank side, because, depth of their expertise or conceptual clarities may not be very great always, due to frequent movements in banks or limited or no experience, or also, the areas are new and growing, or, scope of theoretical grounding and exposure to global knowledge and practices are limited. Whatever it maybe, these together may lead to a situation of vendor dependence for operating expertise and also, thought leadership, This may not be helpful for knowledge enrichment and capacity creation in the bank. It is a good idea to expose the bank team for an analytics task / project, to theoretical concepts and industry best practices-preferably in the domain desired to be controlled or predicted with Analytics. For example – if we need to take up an analytics exercise to find what all to do to improve capital adequacy and block and mitigate factors that erode capital adequacy, even if a vendor arrives with a ready model and solution to fit into – it will be useful to field a team from the bank side consisting of business domain people

thoroughly knowledgeable in the concepts of capital adequacy, Basel committee norms and directives, RBI directives, models in industry use in this field, etc., testing and validation concepts like stress testing and other global practices, and also internal working in the bank to the extent that covers how from all the business departments practically which business figures and data emanate and get fed into required capital adequacy computations, and, to what extent. The team also should have one or two Information Technology person(s) who are thoroughly conversant about which data elements pertinent to this domain are sourced from which accounts or operations in IT, if there are processing issues in IT that may have scopes to have bearing on the data values (say some values are repeated from old data if new data is not updated and some others are left blank if new data is not received – the dependability of the data quality gets differently affected in these two cases), and similar inside views. The IT persons are also to act as bridges with IT for interfacing or aligning any analytics input or output from or to the main banking system (core banking) or its subsidiary systems.

Apart from proper manning and business knowledge gathering on the issue to be subjected to an analytics exercise, the usual project management that the banks do, often in their own practiced ways – will have to be in place as usual for the analytics project also. However, Analytics being a bit advanced in concepts and far more advanced in IT- in terms of processing capabilities and methods than the usual applications that get added besides corebanking, the processing of the analytics activities are to be in the analytics technical domain mostly. However, we need to have some insight and some understanding in gross terms, about the working models and components of analytics.

In most cases, analytics should lead to *Predictive Analytics* that should predict outcome (example - in which case the chance of a borrower failing to repay will become high), and suggest actions and produce the appropriate actionable (say a special notice to borrower, or, a special inspection schedule for the loan officer can be produced by the system, or the account can be included in providing for doubtful accounts to a decided extent), and very desirably-the system should automate the process to a good extent – leaving it for human approval or revision

if desired. The basic purpose is to use superior technical capabilities with control and focus on business goals – not getting overwhelmed or led by technology. Also, providing clean data, appropriate data, data that can be verified to be correct – are very important, as otherwise analysis, modelling, and predictions based on such information will not be useful to business. For the analytics to be useful, the banker is primarily responsible to have clean and correct data in the system. This sounds obvious, but is hardly come across. Incorrect, incomplete, and inconsistent data has been there to an unacceptably high proportion in many banks. Rapid expansions, conversion from manual to branch-based computerisation and thereafter to core banking could not take care of these gaps fully because the older systems and the later systems did not have the same data elements, and often the older data elements were not captured at one place so that many gaps resulted while converting to later versions. Banks have through special drives of data cleansing and de-duplication covered some ground. However, for a particular group data to be adopted for Analytics to provide us with insight and suggest actions –the first requirement will be a special check and cleaning of the data, as also, conscious decisions as to what default rules will apply in case of inconsistency, the actions to be taken for them, and the impact of these imperfections on the results should be understood, and used while appreciating the Analytics outcome.

6. Before coming back to the issue above, it may be useful to again understand the gamut of use of data for business understanding and directions and the entire universe of data warehouse, data mart, Business Intelligence, analytics, visualisation, modelling, predictions, etc., to understand the place of analytics in these and its role.

   a. Gartner defines Business Intelligence (BI) to be a wider activity that "spans the people, processes and applications/tools to organize information, enable access to it and analyze it to improve decisions and manage performance" [http://www.gartner.com/it/page.jsp?id=1620715]. In this context Analytics is defined as "packaged BI capabilities for a particular domain or business problem" [Gartner IT Glossary]. Other definitions put Analytics as a science of analysis, or, tracing of

things to their source, or mapping information to its original causes or principles. In other words, analytics is a way to understand causes of and connections among business events, business conditions, outcomes. So, analytics is expected to enable business managers to appreciate causal relations that are not easily visible, lead to insights some of which may be found to be crucial or significant. This leads to right business decisions that are difficult to derive in normal course in view of the usual deluge of multidimensional information faced in business from diverse sources.

b. In this data driven discovery of possible business truth, often a full fledged creation of Data Warehouse, with few Data Marts, is in place. Often only a specific area is taken up for analytics or in wider terms – BI. The start in either case will be with data collection, capture, appreciation, transformation and then creation of the database for this warehouse or BI system. In this data capture stage itself, there can be rules and approximations based on experience based stored rules, or established practices and algorithms. Particularly if data is not standardised, say in handwriting/picture/ graphics/sounds, or languages with usages not complying with the computer stored ones, or if data elements do not show compliance with established social norms – in terms of demographics, financial standards and occupation/assets, etc. Data from there now will be subjected to classification, segmentation, and study of the same has to be done. The rules to apply in these classifications, finding relations, investigations will have to come more from the bankers and less from the technocrats – as bankers are expected to know which item is meaningful to link with which business phenomenon - say deposit growth may be dependent on customer's age, earning, liabilities, quality of service of the bank unit interacting with the customer, market dynamics related to the customer's profession, customer's awareness and banking operational capabilities, local factors, seasonality etc. as also, priority among such factors. The outputs of these processes are to be presented for management view and considerations. This is

in fact the specific part that in the whole chain of this data based decision support attempt, is the analytics stage per se. Analytics will consist of activities like creation, presentation and analysis of tables, trend graphs or graphics, executive dashboards, reports, scoring, Balanced Score Cards, priority lists, etc., the way desired. It should also offer tools to manipulate the data elements or some combinations or derived results to see the overall effects of such proposed changes. These activities lead to understanding that will be modelled, tested, validated or rejected or amended and retested. The outcome will constitute business understanding and knowledge. From this, actions will ensue as the business managers may decide. These actions can be very diverse like changes in pricing plan, changes in customer facing communication or repeated push of the promotion messages for preferred products around customer activities – not necessarily in the store or website of this business entity. For example, if I was looking up some sofa sets in Amazon or Flipkart or similar other online merchants, (the names are purely to cite an example and does not suggest any preference or recommendation) on my laptop today, it is most likely that for quite a long period I may find sofa-set pictures and prices from such sites on my screen interspersed with other subjects being looked up – that may be a blog on sanitation system in my city or seeing my electricity bill in my mailbox for which the ISP is neither of these merchants. The tendency is to map customer behaviour as close to real time as possible and push the content that have a chance to be settled for; the icons or messages pushed in the web for this, are also provided with means to carry through the preference into desired actions i.e. sale for the item, or joining into the activity being promoted, by invoking a link to the exact page and item of the merchant website or the organisation promoting an item based on the analytics in the background. This gives an idea that there must be collection of customer activities, quantifying them under some types or scores, and automated rule creation in the background, application of such rules to the customer activity information and

then an automated rule based adjustment of customer deliverables (like on screen repeated messages or promo items). These are the outcomes from the analytics, and the rule creation etc are, often programmatically done – new inputs help add to the rule stack. These types of activities are by the software in place; these software have logics to add to knowledge base and rule base – often they are called self learning, or, heuristic etc. A genre of programmes and algorithms employed in this respect collectively go into the domain of 'machine learning', 'artificial intelligence' and similar types of very specialised software.

c. While it is interesting and mind boggling, we bankers will really have to use analytics for our business with control, comfort and be able to direct it to our goals – irrespective of the marvels of the software or technology, and our lack of meaningful knowledge of its internal working. The market often packages ETL tools, BI, analytic applications together to form a base product that is marketed and added on or enhanced; the whole package may get named as an analytic package, which is not our concern. Mostly the packages in the market come with some pre-built analytic packages – built upon previous experiences and interactions with other users / customers. This is good in one way that, this brings lots of experience and use-cases ready to make a start, as we may not have a handle on exactly what will be our desired components of a solution, or how exactly in an analytics environment our needs gets translated into algorithms, products and logic. However blind reliance on vendors and available products, attempting to fit into available constructs, and partially managing external add-on processes to lead to the desired outcome, may not be a good idea in the long run, as, the automation, the speed and ability to interact in-session or on-line will get lost, and, interfaces may pose to be source of error, delay and lack of control.

d. From all of the above, the learning that we bankers need to take is that, if a number of factors are more probable to lead to a certain outcome that is not understood normally, can be understood if our basic business concepts

and targets are known and prevails through the analytics exercise. The products and underlying technology are complicated but we need to be able to articulate our needs and understanding, and accept propositions based on experience and tested results. A general saying these days are that University teachers are required to teach and guide in topics or ideas they did not study as a student, or even did not teach ten years ago. The same open mind and continuous learning is highly recommended for bankers to be able to handle and guide in these new areas, instead of being blindly waylaid by vendors. It is an observation that despite use of frontiers of technologies, often a BI/ Analytics project does not deliver much good, or, benefits are not reasonably derived for the organisation. This mostly will be due to less than required understanding of task, inadequate requirement articulation, inadequate information on existing system, lack of infrastructure or driving of the project from the bank side, and gap in diligence from vendor side. Communication, monitoring and oversight from bank help reduce these gaps. For bankers, attempts to understand the scope and dynamics of BI/Analytics, and willingness to learn, expand views and accept the philosophy of iterative trial, learning, and improvement are expected to help use BI better.

7. The approach to adopting analytics will have to be like for any other project. A simple list can look like below -

a. Fix which business activity to cover, expected outcome, and who champions and who steers the project.

b. Internal discussions to assess what are the areas to enquire about, have deeper understanding, and the possible demands on time, cost, staff skill and knowledge, expected benefit. A business and IT mixed group as mentioned earlier need to dwell upon and act.

c. Decide, and make staff and seniors aware of the oncoming project requirements, impacts, and expectations from employees.

d. Look for solutions, read up market reports, invite vendor presentations.

e. Once the area, nature of attempt and outcome are more or less clear internally, start usual project routines of procurement, team formation, training of core project people, development of project deliverables, requirements in cost / manpower / time etc, commence project with continuous dialogues with vendor's team, regular review, verification against milestones etc.

8. The areas that are supposed to pose big demands are a few :

a. Hardware, IT set-up. The volumes that need be crunched are very heavy compared to what usual business does, as lot of external and market information, and unstructured data may be required to be crunched to understand and validate even small business trends or events. The hardware allocated to this activity will need big capacity and high processing power; the solution vendor will indicate the requirements. Even big memories and specialised data flow processes are adopted like-

   1. Processing - use 'in-memory processing' – for big volume of data, the entire data is taken in the RAM together and processing happens for the whole avoiding 'fetching' from disk during the processing in small lots to process and return, to cut down time required;

   2. Even the programming languages used – say 'R' - are different from what banking software use.

   3. Use of special genre of software or processing methods – like 'machine learning',

   4. And many others like specialised processes to handle Big Data.

b. Technological skill – the Analytics software or process handling skills are more specialised than many other existing banking software items, and solution vendor need to post a capable team for that. Getting bank employees to learn and take over can be started only partially and in a slow phased manner, if desired.

c. Time and cost – the products take time to understand and work with, as also are costly.

As to time, it is better to have a long term view and take up reasonably identifiable parts of it one by one over time, instead of a big bang approach to cover all activities or areas under a big Data Warehouse (reservoir of all data extracted and converted and organised), data centric solutions,/processes , a few Data Marts (a smaller section of data reservoir for a particular business domain/vertical, with capabilities of data extract, reports and dashboards), Analytics in few areas, etc., all together leading to a decision system (also involves – modelling, testing, improvement, stabilisation, resulting in amended business processes).

d. Space.

e. Manpower.

f. Control – of resources, target shifting, rigours in scenario creation and testing.

g. Testing and validation – acceptance and implementation of discovered business rules should be after thorough testing and validation. Despite technical capabilities, any software will produce for which it is programmed, and also ability to cover all possible effects of our action on market or human (customer) behaviour.

9. Analytics adds huge power and speed to information processing and actions; this is very helpful in the present environment of data intensive activities in all walks of life, with ever increasing data volume. Bankers need to have a primary idea of what all constitutes Analytics and what all it can do, and keep focus on their own objectives in use of analytics to derive benefit. Some banks are already employing Analysts, Data Scientists, etc to handle their data warehouse from the bank side or undertaking some analytics projects. This is welcome and is expected to make analytics more widespread and understood. Long back few banks started employing in-house IT personnel, from where the banks' IT capabilities have moved very far now. In this sunshine field of data based decisions, the same is perhaps the future.

☯

Debt-equity phenomenon of Indian companies in the light of Business Analytic

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The term Debt Equity (D/E) ratio has an extra ordinary place in business finance. Howsoever simple may it sound the management of this tricky aspect is, really a colossal task.

In recent times, in India, many well-known and reputed companies have been in trouble to manage their respective debt element. In fact many companies are in the process of retirement of debt in their own advantageous way to get rid of the adverse business situation.

An elegant and classic approach to the problem is the use of business analytic. Its use is a big challenge to analysts, as it needs high degree of analytical skill and knowledge for collection and design of data for future course of action.

Through rigorous analysis cause of the malady and subsequently, the manageable and maintainable limit of D/E ratio for healthy business activities has been suggested.

Introduction:

The concept of business analytic has been utilised to develop the subject i.e. a reasonable debt-equity level for sustenance of a company.

Business analytic, virtually is an art which requires high degree of analytical acumen in the subject under consideration. It is a process by which one can develop and design tactics and strategies for future course of action in the environment the business is being carried on through qualitative, quantitative, statistical, operation research etc. techniques. It needs knowledge in wider areas of business in micro and macro-economic environment along with immense skill and judgement for collection of relevant data, analysis and design of the same, so that a meaningful and worthwhile future programme of action can be taken so as to get competitive edge over others. Therefore, it is a big challenge to analysts as resultants must have sound backing.

Present scenario in India in recent times:

Over-leveraging or use of excessive debt has led to sharp deterioration in business profitability of a number of companies in India in recent times (2011-15). This is especially true after the 2008 global financial crisis, which affected India's economic growth and many companies found it difficult to service the debt due to shrinking of sales and margins. (http://www.businesstoday.in/moneytoday/stocks/debt-companies-sell-assets-raise-equity-good-investment-bets/story/209735.html, September 2014).

According to a CRISIL Report published on July 7, 2015, in the past 18 months, "a total of 21 companies have announced 36 deals to sell assets/equity to raise ₹ 80,000 crore, which is nearly a fifth of their debt Sept 2014. Total debt of companies in the BSE 500 index (excluding banking and finance companies) was

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₹ 4.5 lakh crore on 31 March 2007. It rose five-fold to ₹ 20 lakh crore till March 2013. The interest paid rose from ₹ 22,000 crore to ₹ 1.2 lakh crore". (http://www.businesstoday.in/moneytoday/stocks/debt-companies-sell-assets-raise-equity-good-investment-bets/story/209735.html , September 2014).

"In 2012-13, the number of companies that had debt-equity ratio of more than three was 69 (of the 966 NSE-listed companies). This number rose to 85 in fiscal FY-15. Similarly, the number of companies with debt equity of over five is 50 per cent more than that seen two years ago. It is also reported that for companies with debt equity of over three times, the situation is far worse. (http://www.thehindubusinessline.com/portfolio/india-inc-caught-in-a-debt-trap/article7880729.ece, 15/11/2015).

The reduction of earning power of the companies has impacted also the profitability of the Banks. They have also started facing the heat as companies show inability to service the debt. The Net Non-Performing assets, or NNPAs, of commercial banks rose from ₹ 19,000 crores in 2007 to ₹ 94,000 crores in 2013, currently in 2016 the NNPA of banks have surpassed the mark of 4.5%.

RISE & RISE OF STRESSED LOANS

The RBI's projections show the gross NPA of banking sector could go up to 8.5 % by March 2017

(in %)	Net NPA	Gross NPA	Stressed assets*
March 2013	-	3.4	9.2
September 2013	2.3	4.2	10.2
March 2014	2.2	4.1	10
September 2014	2.5	4.5	10.7
March 2015	2.5	4.6	11.1
September 2015	2.8	5.1	11.3
March 2016	4.6	7.6	11.5

The stress in the banking sector, which mirrors in the corporate sector, has to be dealt with in order to revive credit growth

— RAGHURAM RAJAN, RBI Governor

(http://www.thehindu.com/business/Economy/financial-stability-report-released/article8784187.ece 28/6/2016)

Gross bad loans at commercial banks could increase to 8.5 per cent of total advances by March 2017, from 7.6 per cent in March 2016, according to a baseline scenario projection by Reserve Bank of India (RBI) in its Financial Stability Report (published on 28/06/2016).

As per latest data available with the Central Bank, the gross non-performing assets (NPAs), or bad loans, of India's state-run banks, measured as a percentage of their advances, have swollen from 5.4 per cent as on March 2015 to 11.3 per cent 15 months later. As against a net profit of ₹ 30,869 crores in March 2015, they incurred a net loss of ₹ 20,006 crore a year later. During this period, the net profit of private banks registered a growth from ₹ 35,832 crore to ₹ 39,672 crore. While foreign banks also made a total net profit, it came down from ₹ 12,764 crore to ₹ 12,619 crore. (http://contentlinks.dionglobal.in/IB/LiveNewsDetails.asp?NewsType=EOD&NewsId=652385 Aug-25-2016. 09:29 Dion Global Solution News Wire).

To manage debt *under the prevailing lending rates in recent times is, thus, one of the crucial events for* companies as the same has affected profitability and resulted in increase of NNPA of banks to a considerable extent.

To get rid of the menace of the '**debt trap'**many companies resorted to sale of assets.The strongest push to sell assets has come from banks and other lenders. (http://www.businesstoday.in/moneytoday/stocks/debt-companies-sell-assets-raise-equity-good-investment-bets/story/209735.html).

Amongst many companies, following well known reputed companies in recent times took steps to sell their assets to retire the debt.

(1) **GVK Power and Infrastructure Ltd.** has agreed to sell a 33% stake in Bangalore International Airport Ltd (BIAL) to India-born Canadian billionaire PremWatsa's Fairfax India Holdings Corp. and Fairfax Financial Holdings Ltd, for ₹.2,149 crore, with the object of liquidating debt.

It is reported that on completion of the deal, GVK Power and Infrastructure's debt will decline by ₹.2, 000 crores and its interest costs will drop by some ₹.300 crore a year.

(2) **JP Associates** also agreed to sale its cement factories in five states to Ultratech Cement. Jaiprakash Associates has missed an interest payment due on 7 March 2016 on its bonds worth US$150m. The interest will be paid later from the proceeds of its recent US$2.4bn sale of cement assets.

(3) **Tata Steel** sold its land in Borivali, Mumbai, to Oberoi Realty for ₹ 1,155 cores to service the debt.

(4) **Bharti Airtel** has raised ₹ 2,100 crores by selling a 4.5% stake in Bharti Infratel. It plans to sell 3,100 telecom towers in four African countries to Helios Towers to retrive the debt.

(5) **Lanco Infratech** has sold 1,200 megawatt Udupi power plant in Karnataka to Adani Power for Rs 6,000 crores. Lanco will receive ₹ 2,000 crores from the transaction, while Adani will acquire Udupi Power's ₹ 4,000 crore debts.

Objective of the study: Our effort has been confined to analysis of debt equity ratio of different companies, thereafter, to identify the effects of various degrees of debt equity level in different companies in respect of their earning power and dividend distribution ability and stock price level in recent times. **Finally, to develop a danger zone or signal point of debt equity ratio beyond which a healthy profit making company should trade with caution.**

Collection of data: Data have been collected from secondary reliable sources like Indiabulls.com

Data analysis and interpretation of findings: we have divided 35 companies (on judgemental sampling basis) in four categories with rising debt equity (D/E) level.

Group A represents companies with D/E ranging from 0 to 0.50

Group B represents companies with D/E ranging from 0.25-0.75

Group C represents companies with D/E ranging from 0.2 to 2.5

Group D represents companies with D/E above 2

GROUP A:

Table 1 shows D/E of Group A companies

Company	Mar'15	Mar'14	Mar'13	Mar'12	Mar'11
Lupin	0.05	0.07	0.18	0.36	0.33
ACC Ltd.	0	0	0	0.01	0.07
Heromotocorp	0	0	0.06	0.23	0.5
Bajaj Auto	0.01	0.01	0.01	0.02	0.06
Cipla Ltd.	0.15	0.12	0.1	0	0.08
Maruti Suzuki india Ltd.	0.01	0.08	0.08	0.08	0.02
ITC Ltd.	0.01	0.01	0	0.01	0.01

Table 2 shows the EPS of these companies in the same period (in ₹)

Company	Face Value	Mar'15	Mar'14	Mar'13	Mar'12	Mar'11
Lupin Ltd	₹ 2/-	53.47	40.96	29.36	19.43	19.33
ACC Ltd.	₹ 10/-	31.3	61.88	58.31	56.42	69.29
Heromotocorp	₹ 2/-	119.47	105.62	106.07	119.09	96.55
Bajaj Auto	₹10/-	104.56	116.82	108.26	105.24	119.39
Cipla Ltd.	₹ 2/-	14.71	17.29	19.24	14.25	12.32
Maruti Suzuki India Ltd	₹ 5/-	126.04	94.44	81.74	58.18	82.46
ITC Ltd.	₹ 1/-	12.06	11.18	9.63	8	6.48

Table 3 shows the rate of dividend of these companies in all these years

Company	Face Value	Mar'15	Mar'14	Mar'13	Mar'12	Mar'11
Lupin Ltd.	₹2/-	375%	300%	200%	160%	150%
ACC Ltd.	₹10/-	170%	340%	300%	300%	280%
Heromotocorp	₹2/-	3000%	3252.50%	3000%	2250%	5250%
Bajaj Auto	₹10/-	500%	500%	450%	450%	400%
Cipla Ltd.	₹2/-	100%	100%	100%	100%	140%
Maruti Suzuki India Ltd	₹5/-	500%	240%	160%	150%	150%
ITC Ltd.	₹1/-	625%	600%	525%	450%	445%

Table 4 shows yearly high/low of stock prices of these companies (in ₹)

Company	Face Value	Mar'15	Mar'14	Mar'13	Mar'12	Mar'11
Lupin Ltd.	₹2/-	2127/1364.60	1500/855	946.35/569	631.90/412.15	495/363
ACC Ltd.	₹10/-	1774.8/1302	1570/971.25	1452.70/912.05	1514.95/1083.10	1233/917
Heromotocorp	₹2/-	3149.2/2252	3271.80/1907	2214.70/1434.05	2278.50/1702.65	2248/1377.95
Bajaj Auto	₹10/-	2655/1913.80	2690/1796	2228.95/1657.50	2165/1410	1822.15/1189.60
Cipla Ltd.	₹2/-	752.45/572	671.95/366.70	450/354.40	430/286.50	380.80/273.60
Maruti Suzuki India Ltd.	₹5/-	4789/3321.05	3459.75/1541.25	1829.90/1217	1537/916.85	1452.20/905.55
ITC Ltd.	₹1/-	409.70/294.50	400/311	380/272.20	306.50/197	216.10/150

Table 5: Analysis and interpretation of data in various tables of group A

Company	Face Value	Yearly D/E	Yearly EPS	Yearly dividend	Yearly stock pricehigh	Yearly stock pricelow
Lupin Ltd.	₹2/-	Decreasing trend	Increasing trend	Increasing trend	Rising trend	Rising trend
ACC Ltd.	₹10/-	Almost nil in period under consideration	Decreasing trend	Fluctuating	Rising trend	Rising trend

Heromotocorp	₹2/-	Decreasing trend	Increasing trend	fluctuating	Rising trend	Rising trend
Bajaj Auto	₹10/-	Decreasing trend	Trend : Slight decrease	Increasing trend	Rising trend	Rising trend
Cipla Ltd.	₹2/-	Increasing trend	Fluctuating ; with rising D/E the EPS is decreasing	No change During the period	Rising trend	Rising trend
Maruti Suzuki India Ltd .	₹5/-	Fluctuating at very low level	Increasing trend	Rising trend	Rising trend	Rising trend
ITC Ltd.	₹1/-	Constant	Rising trend	Rising trend	Rising trend	Rising trend

Interpretation of table 5 clearly says that low D/E is a favourable aspect for these companies. The concept of leveraging is definitely ignored by them presumably because of their excellent performances and possession and accumulation of huge reserves over years (Table 5.1).

Table 5.1

RESERVE (₹ in Crores)	2016	2015	2014	2013	2012	2011
ACC	8233.19	8029.73	7625.43	7184.48	6791.1	NA
Hero Moto Co	6500.06	5582.7	4966.3	4249.89	2916.12	NA
Lupin Ltd.		10894.25	8784.16	6841.89	5114.67	3923.56
ITC Ltd.		33068.09	30842.59	26311.71	22239.57	18552.52
Bajaj Auto		12756.05	10805.95	9877.89	7775.93	5792.35
Maruti Suzuki	24167.4	21345.4	18876.8	15530	14164.3	NA
Cipla	10619.68	9880.8	8858.1	7478.35	6505.55	NA

NA=not available.

The stock prices are clear indication of their sound financial position.

Group B

Table 6: Following companies are maintaining low D/E level varying between 0.25 to 0.75

Company	2015	2014	2013	2012	2011
Ultratech Cement Ltd.	0.39	0.4	0.41	0.43	0.37
Reliance Industries Ltd.	0.68	0.67	0.49	0.49	0.54
GIPCL	0.27	0.34	0.46	0.58	0.73

Table 7: The earning power of these companies (EPS in ₹)

Company	Face Value	2015	2014	2013	2012	2011
Ultratech Cement Ltd.	₹10/-	76.47	80.44	97.66	87.69	49.9
Reliance Industries Ltd.	₹10/-	80.07	76.52	71.11	66.22	64.72
GIPCL	₹10/-	8.35	12.29	14.47	7.83	10.73

Table 8: The dividend behaviour is given in the following table of these companies (in percentage)

Company	Face Value	2015	2014	2013	2012	2011
Ultratech Cement Ltd.	₹10/-	90	90	90	80	60
Reliance Industries Ltd.	₹10/-	100	95	90	85	80
GIPCL	₹10/-	25	25	25	25	25

Table 9: Yearly High / low of stock prices are given here below (in ₹)

Company	Face Value	2015	2014	2013	2012	2011
Ultratech Cement Ltd.	₹10/-	3399//2530.8	2868/1635	2066.25/1404.95	2074.8/1093.75	1228/890
Reliance Industries Ltd.	₹10/-	1067/796.75	1142.50/794	954.80/765	881/671	1090/690
GIPCL	₹10/-	94.40/65.50	106.40/53.05	82.90/53.55	84.10/56.40	104.95/64.25

Table 10: The analysis and comments of the afore said tables are given in the following table

Company	Face Value	Debt/equity (D/E)	EPS	Dividend	Stock price- high	Stock price- low
Ultratech Cement Ltd	₹10/-	Constant level	High fluctuated earning	Increasing trend	Increasing trend	Increasing trend
Reliance Industries Ltd.	₹10/-	Moderately increased	Increasing trend	Increasing trend	Maintaining a steady level with moderate fluctuation	Increasing trend
GIPCL	₹10/-	Decreased significantly	Decreasing trend—but at moderate level	Steady level	Maintaining a steady level with moderate fluctuation	Maintaining a steady level with moderate fluctuation

The findings of the Table 10 show that these companies are maintaining low D/E ratio in spite of their favourable performances. Trading on equity or leveraging has been kept at a manageable point. Dividend scenario and stock prices are clear indication of their sound health.

Group C :

Table 11:

Company/Face Value	Mar'15	Mar'14	Mar'13	Mar'12	Mar'11
PTC India Ltd ₹10/- Debt/Equity	1.6	1.3	0.58	0.28	0.19
EPS in ₹	8.66	12.09	6.7	6.92	5.63
Dividend %	22	20	16	15	15
Hindalco Industries Ltd ₹ 1/- Debt/Equity	1.75	1.56	1.62	1.3	1.01
EPS in ₹	4.14	10.91	15.81	17.74	12.83
Dividend %	100	100	140	155	150
Bharti Airtel ₹ 5/- Debt/Equity	1.07	1.27	1.45	1.36	NA
EPS in ₹	13.28	7.55	5.97	11.21	NA
Dividend %	77	36	20	20	20
NTPC ₹10/- Debt/Equity	1.15	0.87	0.81	0.76	0.7
EPS in ₹	12.11	13.83	15.27	11.9	11.34
Dividend %	25	57.5	57.5	40	38
Larsen & Toubro Ltd ₹2/- Debt/Equity	2.01	2.13	1.62	1.43	1.15
EPS in ₹	51.26	52.89	84.59	76.64	73.19
Dividend %	812.5	712.5	925	825	725
Tata Motors Ltd ₹2/- Debt/Equity	1.23	0.83	1.16	1.17	1.6
EPS in ₹	43.45	43.47	31.01	42.59	146.13*
Dividend %	0	100	100	200	200
Tata Steel Ltd ₹ 10/- Debt/Equity	2.28	1.74	1.68	1.23	1.54
EPS in ₹	-40.42	37.01	-72.67	55.49	93.71
Dividend %	80	100	80	120	120
Jindal Steel & Power ₹ 1/- Debt/Equity	1.68	1.15	0.72	0.61	0.52

Company/Face Value	Mar'15	Mar'14	Mar'13	Mar'12	Mar'11
EPS in ₹	-13.97	20.88	31.03	42.41	40.18
Dividend %	0	150	160	160	150
J K Lakshmi Cement Ltd ₹ 5/- Debt/Equity	1.29	1.13	0.93	0.77	0.8
EPS in ₹	8.75	7.98	14.87	8.89	4.83
Dividend %	40	40	50	40	25
Gitanjali Gems Ltd ₹ 10/- Debt/Equity	2.12	2.12	1.39	1.28	1.24
EPS in Rs	9.73	3.64	64.27	53.47	41.81
Dividend %	0	0	30	30	30
Usha Martin ltd ₹ 1/- Debt/Equity	2.16	1.76	1.48	1.27	0.9
EPS in ₹	-8.31	0.35	2.59	0.11	4.5
Dividend %	0	0	15	0	100

Table 12: Yearly high /low of stock prices of group C companies (in ₹)

Company	Face Value	2015 (high/low)	2014 (high/low)	2013 (high/low)	2012 (high/low)	2011 (high/low)
PTC India Ltd.	₹ 10/-	101.90/50.20	104.75/52.05	81.25/34.70	79.60/39.20	129.50/38.10
Hindalco Industries Ltd.	₹ 1/-	161.95/67.55	198.7/96.95	137.00/83.05	164.90/100.15	251.90/113.00
Bharti Airtel	₹ 5/-	452.45/304.65	419.9/282.10	373.50/266.95	400.90/238.50	444.70/304.25
NTPC	₹10/-	164.70/107.20	168.80/110.90	167.25/122.65	190.30/138.95	203.15/152.00
Larsen & Toubro Ltd.	₹2/-	1892.95/1265.5	1774.70/951.60	1661.00/678.10	1719.50/991.00	1998.10/971.00
Tata Motors Ltd.	₹2/-	612.05/279.15	550.80/331.05	405.00/252.10	320.60/178.65	1334.30/137.65*
Tata Steel Ltd.	₹ 10/-	421.20/200.00	578.60/332.20	448.10/195.40	500.90/332.35	713.80/334.05
Jindal Steel & Power	₹ 1/-	208.00/56.00	350.00/125.05	472.60/181.55	663.40/321.10	735.00/435.55
J K Lakshmi Cement Ltd.	₹ 5/-	430.00/301.95	425.00/64.00	171.60/49.05	165.25/36.85	59.75/35.50
Gitanjali Gems Ltd.	₹ 10/-	57.35/32.65	108.75/43.75	649.50/48.10	541.25/296.50	387.40 /156.35
Usha Martin Ltd.	₹ 1/-	34.35/ 10.15	47.40/ 21.25	35.20/ 20.30	43.25/ 21.95	76.45/ 21.80

Table 13: The analysis and comments of the tables 11 & 12 are given in the following table

Company	Face Value	Debt/equity	EPS	Dividend	Stock price- high	Stock price- low
PTC India Ltd.	₹ 10/-	Increasing trend	Increasing trend	Increasing trend	Uptrend halted	Rising trend
Hindalco Industries Ltd.	₹ 1/-	Rising trend	Declining trend	Down trend	Down trend	Down trend
Bharti Airtel	₹ 5/-	Down trend	Up trend	Rising trend	uptrend	Stable
NTPC	₹10/-	uptrend	Rising but stable	Down trend	Down trend	Down trend
Larsen & Toubro Ltd.	₹2/-	Up trend	Down trend	Not rising	Decreasing trend	stable
Tata Motors Ltd.	₹2/-	Down trend	At stable point	Declining	Rising trend	Rising trend
Tata Steel Ltd.	₹ 10/-	Rising trend	Declining trend	Declining	Declining trend	Declining trend
Jindal Steel & Power	₹ 1/-	Rising trend	declining	Declining	Declining trend	Declining trend
J K Lakshmi Cement Ltd.	₹ 5/-	Rising trend	Rising (D/E) <1, declining when D/E>1	Rising (D/E) <1, declining when D/E>1	Rising trend	Increasing trend
Gitanjali Gems Ltd.	₹ 10/-	Rising trend	declining	Declining	declining	declining
Usha Martin Ltd	₹1/-	Rising trend	declining	Declining	declining	declining

It can be noted that with increase of D/E level the earning power of these companies has been affected. The leverage effect has been noted at low D/E level. Companies which have reduced the D/E level in the period under consideration have reaped the benefit; Bharti Airtel, Tata Motors are the examples.

Group D :

Table 14: This group comprises companies with debt equity level mostly above 2 and up to double digit level

Company/Face value	Mar'15	Mar'14	Mar'13	Mar'12	Mar'11
1.J P Associates ₹2/- D/E	4.19	6.07	4.45	4.02	3.89
EPS (₹)	-7.13	-3.72	2.08	2.98	8.43
Dividend %	0	0	25	25	40
2.Lanco Infratech Ltd ₹ 1/- D/E	NA	23.93	8.54	5.96	3.18

Company/Face value	Mar'15	Mar'14	Mar'13	Mar'12	Mar'11
EPS (₹)	-8.27	-9.44	-4.46	-0.46	1.85
Dividend %	0	0	0	0	0
3.Bhushan Steel Ltd ₹2/- D/E	4.98	3.53	2.96	2.66	2.66
EPS (₹)	-55.48	2.27	40.03	47.49	47.26
Dividend %	0	25	25	25	25
4.GVK Power & Infrastructure Ltd ₹1/- D/E	11.58	7.91	5.48	3.99	1.58
EPS (₹)	-5.29	-2.33	-2.13	0.38	0.98
Dividend %	0	0	0	0	0
5.MTNL ₹10/- D/E	8.1	2.8	NA	3.81	1.13
EPS (₹)	-46.05	124.14	-84.48	-65.15	-44.4
Dividend %	0	0	0	0	0
6.Punj Lloyd Ltd ₹2/- D/E	6.36	2.81	1.96	1.7	1.3
EPS (₹)	-34.36	-16.51	-0.21	2.77	-1.79
Dividend %	0	0	0	7.5	7.5
7.IVRCL Ltd ₹2/- D/E	11.22	3.94	2.31	2	1.38
EPS (₹)	-33.9	-27.81	-7.84	-4.64	1.89
Dividend %	0	0	0	0	30
8.GMR Infra Ltd Re1/- D/E	9.35	6.4	5.28	4.6	3
EPS (₹)	-6.27	0.02	0.22	-1.55	-2.4
Dividend %	0	10	10	0	0
9.Aban Offshore Ltd ₹2/- D/E	2.51	3.05	4.05	4.64	5.76
EPS (₹)	89.8	83.88	38.24	68.1	26.9
Dividend %	180	180	180	180	180
10.ABG Shipyard Ltd ₹10/- D/E	11.98	3.63	2.27	2.33	1.82
EPS (₹)	-167.33	-43.6	19.64	36.49	38.1
Dividend %	0	0	0	0	40
11.KSK Energy Ventures Ltd. ₹10/- D/E	5.69	4.66	4.21	3.39	2.35

Company/Face value	Mar'15	Mar'14	Mar'13	Mar'12	Mar'11
EPS (₹)	-7.67	-4.59	3.83	3.31	4.77
Dividend %	0	0	0	0	0
12.CESC Ltd ₹ 10/- D/E	2.33	2.18	2.14	1.44	1.09
EPS (₹)	14.98	39.35	36.77	19.68	22.28
Dividend %	90	80	70	50	40
13.Tata Power Co Ltd Re1/- D/E	2.71	2.96	2.97	2.64	1.68
EPS (₹)	0.62	-1.1	-0.35	-4.58	8.68
Dividend %	130	125	115	125	125
14.LIC housing Fin Ltd Rs2/- D/E	10.56	9.42	8.99	8.38	9.05
EPS (₹)	27.65	26.12	20.76	18.23	20.05
Dividend %	250	225	190	180	175

Table 15: Yearly high/low of stock prices (in Rupees) of these companies

Company	Face Value	2015 (high/low)	2014 (high/low)	2013 (high/low)	2012 (high/low)	2011 (high/low)
1.J P Associates	₹2/-	29.45/7.95	89.85/23.05	102.55/28.40	106.75/50.45	110.55/51.25
2.Lanco Infratech Ltd.	₹ 1/-	7.4/2.46	14.94/5.31	15.22/4.96	25.1/8.95	66.4/8.50
3.Bhushan Steel Ltd.	₹2/-	103.30/40.50	490.00/84.75	504.00/421.00	513.45/305.50	530.00/296.60
4.GVK Power & Infrastructure Ltd.	₹1/-	11.25/6.76	20.85/8.51	15.75/5.52	20.4 0/10.90	43.40/9.56
5.MTNL	10/-	30.85/14.45	39.10/13.76	28.70/9.71	45.25/20.70	58.45/22.50
6.Punj Lloyd Ltd.	₹2/-	40.75/20.75	60.85/24.90	64.10/20.25	65.90/38.40	117.40/37.05
7.IVRCL Ltd.	₹2/-	21.30/6.52	30.75/9.80	47.90/9.80	75.20/27.20	135.75/27.10
8.GMR Infra Ltd.	₹1/-	20.70/9.58	38.30/15.35	25.30/10.65	34.40/16.75	47.60/17.70
9.Aban Offshore Ltd.	₹2/-	529.90/202.65	939.90/360.95	407.35/200.05	571.50/320.00	833.65/324.45
10.ABG Shipyard Ltd.	₹10/-	260.00/62.05	327.30/200.00	415.85/227.00	463.20/295.95	434.40/311.35
11.KSK Energy Ventures Ltd.	₹10/-	92.80/29.20	126.00/53.65	70.20/41.40	80.50/35.00	136.95/33.40
12.CESC Ltd.	₹ 10/-	751.30/452.00	828.10/399.00	468.50/252.70	345.50/188.80	384.90/186.30
13.Tata Power Co Ltd.	Re1/-	92.40/55.55	115.25/71.45	112.50/68.25	121.50/83.00	*1413.00/80.65
14.LIC housing Fin Ltd.	₹2/-	526.00/389.35	463.30/186.55	300.00/152.00	295.30/214.20	245.00/150.40

*Stock split to ₹1/-

Table 16: The analysis and comments of the tables 14 & 15 are given in the following table

Company	Face Value	Debt/equity	EPS	Dividend	Stock price- high	Stock price- low
1.J P Associates	₹2/-	Rising trend	Downtrend	declining	Downtrend	Downtrend
2.Lanco Infratech Ltd.	₹1/-	Rising trend	Downtrend	Nil dividend	Downtrend	Downtrend
3.Bhushan Steel Ltd.	₹2/-	Rising trend	Downtrend	declining	Downtrend	Downtrend
4.GVK Power & Infrastructure Ltd.	₹1/-	Rising trend	Downtrend	Nil dividend	Downtrend	Downtrend
5.MTNL	₹10/-	Rising trend	Downtrend	Nil dividend	Down trend	fluctuating
6.Punj Lloyd Ltd.	₹2/-	Rising trend	Downtrend	declining	Down trend	fluctuating
7.IVRCL Ltd.	₹2/-	Rising trend	Downtrend	declining	Down trend	fluctuating
8.GMR Infra Ltd.	₹1/-	Rising trend	Downtrend	Nil to low dividend	Down trend	fluctuating
9.Aban Offshore Ltd.	₹2/-	Decreasing trend	Rising trend	At constant level	fluctuating	fluctuating
10.ABG Shipyard Ltd.	₹10/-	Rising trend	Decreasing trend	Decreasing trend	Downtrend	Downtrend
11.KSK Energy Ventures Ltd.	₹10/-	Rising trend	Decreasing trend	Nil dividend	fluctuating	fluctuating
12.CESC Ltd.	₹ 10/-	Rising trend	Rising trend	rising	uptrend	uptrend
13.Tata Power Co Ltd.	₹1/-	rising	declining	rising	Down trend	Down trend
14.LIC housing Fin Ltd.	₹2/-	rising	rising	rising	Up trend	Up trend

It can be noted that very high D/E is creating problem for these companies. Aban offshore has shed D/E level and fared better. LIC Housing Finance and CESC have effectively managed their respective high D/E whenever the D/E level surpassed the 3 mark the problem emerged vehemently.

Table 17: Analysis of Group comparison Table:

Group	Group A (7 companies)	Group B (3 companies)	Group C (11 companies)	Group D(14 companies)
D/E ratio	Below 0.5	>0.25 to <0.75	0.2 to 2.5	Above 2 to double digit
EPS status and no. of companies	Almost rising in every case (7)	Rising (2) to declining (1)	Rising (4), declining (6), fluctuating (1)	Rising – 3 Declining- 11
EPS/Face Value in 2015 and no. Of companies	>50, one	>7, two	>20- two	>40- one
	>20<50, three	<1, one	>8<20- one	>12- one
	>10<20, five		>2<8- two	<2- one
	<10, two		>1<2- two	<1- one
			<1- one	Negative - ten
			Negative - three	
Dividend, and no. of companies	No change to rising-five	Rising – two	Rising – two	Rising –three
	Fluctuating but at high level-two	No change- one	Declining-six	Stable dividend-one
			Fluctuating-three	Declining- five
				Nil dividend- five
Dividend level in % during 2014 and 2015, and no. of companies	>=300% -five	>=90%- two	>700%- one	Above 200%-one
	<300% - two	25%- one	>=100- one	>100%<200% - two
			>20%<100%- five	>80%<100%-one
			Skipped dividend in one year- two	0 to very low-ten
			Nil- two	
Stock price	Rising both at high and low for all	Either increasing or maintaining steady level	Uptrend in four companies	Uptrend -2 companies
High/low and no of companies			Downtrend in seven companies	Downtrend -10 companies
				Fluctuating -2 companies

EPS is expressed in ₹

Discussion:

The aforesaid group comparison table enables us to develop the following points to take decision on debt equity level of different categories of industry.

For a new company, debt is essential for its initial stage. But, the company in order to survive for a long time, depending on its earning power, needs to review its D/E level periodically and gradually restructure its debt quantity to a level which is manageable in the context of its business activity. Our experience, in the light of the facts, obtained from various tables says that aggressive use of debt temporarily magnifies the earning by leveraging, but its (D/E) long continuity affects the health of the business. However, certain group of business like power (D/E of CESC and Tata Power can be noted), financing need higher D/E level because of their huge investment demand and high gestation period. Table 18 can be noted.

Table 18:

Debt / Equity	2016	2015	2014	2013	2012	2011
GIC Housing Finance	8.38	7.58	6.71	6.17	6.37	
LIC Housing Finance		10.56	9.42	8.99	8.38	9.05
Bajaj Finance	5.05	4.71	4	2.85	4.57	

Here, it is noted that companies with almost zero debt are functioning excellently in recent times (2011-15). The gradual increase of debt to below or 1:1 level also usually works well or does not affect the health of the business.

The gradual increase of debt beyond 1:1 level is a factor that needs to be monitored very cautiously. Many companies, here in our study, performed quite in a better way when D/E was low (below 1:1) and as the same approached 2:1 or more, the performances had been affected (Hindalco, L&T, Jindal steel, Gitanjali Gems, Usha Martin, Tata Steel etc. of Group C companies) as evident from earning.

The leveraging effect was noted for JK Lakshmi, Gitanjali Gems, L&T, PTC India, Hindalco, NTPC etc. when D/E was low (below 1:1). In some cases even up to the level of 1.5:1 worked well for the companies.

We can cite one example of Suzlon Energy, out of many, where excessive use of debt resulted in disaster. The company decided to acquire RE power, a German company, by resorting to heavy debt in 2007. Debt component which was ₹450 Cr in 2006 jumped to ₹5162 Cr in 2007, further jumped to ₹15190 Cr at the end of 2012-13. The interest cost was ₹1800 Cr, the same was more than operating profit. The stock price which was ₹284/- in 31/12/2007 slumped to ₹21.50 in July 2014 and in August 2016 it was ₹16.50 (19/8/2016 on NSE) (http://www.businesstoday.in/moneytoday/stocks/debt-companies-sell-assets-raise-equity-good-investment-bets/story/209735.html).

Our findings of the various analysis and experiences, on the performances of the companies with D/E level over 2:1 or more, are not at all encouraging as sustenance of debt at twice the level of equity is probably a tough job. Except for a few companies (L&T, LIC Housing Finance, Aban Offshore), the D/E greater than 2:1 is not profitably maintainable over years **because moderate distortion in revenue earning has the potential to hammer the leverage factor because of fixed interest burden.** The companies in group D can be noted.

Conclusion:

This study and analysis is an eye opener for us in dealing with debt equity matter. Though, debt offers a chance to effect leveraging in the business i.e. to magnify the earning, the over use of debt is thus like a poison under the prevailing lending rates in recent times. **As we all know business conditions always do not remain favourable for all time to come, the tougher economic and business situations restrict a company to earn a return at EBIT stage continuously over and above the interest component of debt. If interest component exceeds EBIT the debt becomes the "FOE" and not "FRIEND". Therefore, surveillance of debt equity level will be a continuous**

process and at the same time dynamic and flexible D/E concept should be followed by a company, to avoid any untoward incident in the profitability and, for survival of the same.

Our findings reveal that up to a point of **D/E 1.25:1** is quite safe and manageable for profitable companies **beyond which there remains a chance or probability to develop imbalance. This is a danger zone or signal point beyond which companies should trade with immense caution.**

However, it does not mean that companies should avoid higher D/E, but close and continuous monitoring is essential at higher level of D/E.

From the stand point of financial institutions both the flexibility and variability of Debt Service Coverage Ratio (DSCR) according to industry type and the lending rates needs continuous shaping and reshaping.

Reference:

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डिजिटल होती बैंकिंग

✍ विजय प्रकाश श्रीवास्तव*

एक देश के विकास को मापने के बहुत से मानक हैं जैसे सकल घरेलू उत्पाद, प्रति व्यक्ति आय, बुनियादी सुविधाओं की उपलब्धता, साक्षरता का स्तर आदि। इनमें एक और मानक जुड़ गया है वह है प्रौद्योगिकी का उपयोग। संगठन प्रौद्योगिकी को तो अपना ही रहे हैं, लोगों के जीवन में भी प्रौद्योगिकी का दखल बढ़ता जा रहा है। प्रौद्योगिकी को अपनाने के अनेक लाभ हैं जिसके कारण इस पर लोगों एवं संगठनों की निर्भरता बढ़ रही है। विकसित देश प्रौद्योगिकी के उपयोग में विकासशील देशों से आगे हैं। भारत को भी यदि विकसित देशों की श्रेणी में शामिल होना है तो अपनी विभिन्न व्यवस्थाओं एवं कार्य प्रणालियों में प्रौद्योगिकी का और अधिक उपयोग करना होगा। इनमें बैंकिंग भी शामिल है।

किसी भी देश की अर्थव्यवस्था में बैंकिंग कारोबार की निहायत ही महत्वपूर्ण भूमिका होती है। बैंकिंग सही तरीके से अपना काम करे तो ही अर्थव्यवस्था मजबूत होगी। अपने देश में हमने ऐसा होते हुए देखा है। 1969 एवं 1980 में बैंकों के राष्ट्रीयकरण के पश्चात विकास की बहुत सारी योजनाएँ बैंकों के माध्यम से लागू की गईं। विगत अर्द्ध शताब्दी में देश ने जो प्रगति की है वह बैंकों के योगदान के बगैर संभव नहीं हो सकती थी।

राष्ट्रीयकरण के पश्चात बड़ी संख्या में बैंकों की शाखाएँ खुलीं। दूरस्थ, ग्रामीण क्षेत्रों में शाखाएँ खोलने पर अधिक ज़ोर दिया गया ताकि बैंकिंग सुविधाओं का लाभ गरीब, वंचित तबके को मिल सके। बैंकों ने कृषि, कुटीर उद्योगों, शिल्पकारों आदि को प्राथमिकता के आधार पर ऋण देना शुरू किया जिससे उनकी आय में वृद्धि हुई और जीवन स्तर को ऊंचा उठाने में मदद मिली। ग्रामीण विकास में बैंकों के इस तरह के योगदान की ऐसी मिसाल दुनिया में शायद ही कहीं और मिले।

इन सबके बावजूद हमारे देश में बैंकिंग सेवाओं की उपलब्धता वांछित स्तर की नहीं है। अभी भी आबादी का एक हिस्सा ऐसा है जो बैंकिंग सेवाओं की पहुँच से बाहर है। वित्तीय साक्षरता की कमी की वजह से भी कुछ लोग बैंक की बजाय महाजनों व साहूकारों के साथ लेन-देन करने को वरीयता देते हैं। ऐसा विशेषकर ग्रामीण इलाकों में देखने को मिलता है। यह आश्चर्य की बात ही कही जायेगी कि बहुत से लोग जो आज मोबाइल फोन का उपयोग कर रहे हैं, बैंकिंग से दूर हैं। डिजिटल बैंकिंग की संभावनाओं को इससे जोड़ कर देखा जाना चाहिए। आशय यह है कि सरल प्रौद्योगिकी आधारित बैंकिंग अधिक से अधिक लोगों को अपने दायरे में ला सकती है। मौजूदा बैंक ग्राहकों को तो इसका लाभ मिलना शुरू ही हो गया है।

डिजिटल बैंकिंग को भिन्न तरीकों से परिभाषित किया जा सकता है। सबसे आसान व्याख्या के अनुसार आधुनिक प्रौद्योगिकी का उपयोग कर मशीनों व इलेक्ट्रानिक माध्यमों से लोगों तक पहुँचने वाली बैंकिंग डिजिटल बैंकिंग है। आज के समय में हम 'कहीं भी और कभी भी' बैंकिंग की बात तो सुनते रहे हैं। डिजिटल बैंकिंग इसमें 'कैसे भी' जोड़ देना संभव कर देती है क्योंकि ग्राहक के पास विभिन्न चैनलों के उपयोग का विकल्प उपलब्ध है।

बैंकों का परंपरागत रूप एक भवन या बड़े हाल का रहा है जिसमें लोग अलग-अलग काउंटरों पर भारी भरकम बही खातों के साथ दिखते थे। इन काउंटरों पर लोगों की भीड़ हुआ करती थी। काउंटरों के पीछे भी कुछ लोगों को पर्यवेक्षी स्टाफ के रूप में बैठाया गया होता था। बड़ी मुश्किलों से बैंकों का कंप्यूटरीकरण हुआ। बही खातों की जगह कंप्यूटरों ने ले ली। एक ही जगह पर विविध बैंकिंग सेवाएँ मिलने के कारण काउंटरों की संख्या कम होती गई। कोर बैंकिंग प्रणाली ने एक शाखा में खाता खोल कर बैंक की किसी और शाखा से लेन-देन कर सकने की सुविधा की शुरुआत कर दी। बैंक में और बैंक से दूर जगह-जगह पर एटीएम उपलब्ध होने से नकद लेन-देन के लिए बैंक शाखाओं में आना जरूरी नहीं रह गया। फोन एवं इन्टरनेट बैंकिंग आने से लोग घर बैठे बैंकिंग करने लगे। इन सबको डिजिटल बैंकिंग में शामिल किया जा सकता हैं। लेकिन डिजिटल बैंकिंग इससे कहीं बढ़ कर है। प्रक्रिया के साथ-साथ इसे एक अनुभव के रूप में भी देखा जाना चाहिए।

मुख्य प्रबंधक, बैंक ऑफ इंडिया*

आज हम ई मेल, फेस बुक, एस एम एस की दुनिया में रह रहे हैं। अगर इन माध्यमों को पूरी सुरक्षा के साथ धन के आदान-प्रदान की सुविधा से सम्पन्न कर दिया जाय तो यह बहुत बड़ा बदलाव होगा। डिजिटल बैंकिंग ही इस सम्भावना को सच कर सकती है कि पैसा भेजना ई मेल भेजने जितना आसान हो जाय। आज की सम्पन्न प्रौद्योगिकी इस तरह की बैंकिंग के लिए मजबूत आधार उपलब्ध कराती है। स्मार्ट फोनों की कम्प्यूटिंग शक्ति, उच्च गति की कनेक्टिविटी, सूचनाओं का तुरंत आदान-प्रदान, डेटा स्टोरेज की बढ़ी हुई क्षमता का लाभ लोगों तक आसानी से पहुँच रहा है। इन सब की भूमिका डिजिटल बैंकिंग को बढ़ावा देने में भी है।

डिजिटल बैंकिंग में जिन बातों का समावेश होगा, वे हैं -

- पूर्णतः डिजिटल उत्पाद

- पूर्णतः कागज रहित

- ग्राहकों के साथ सीधा संपर्क

- कोर बैंकिंग पर आधारित

- सूचना प्रौद्योगिकी का भरपूर उपयोग

- ग्राहक संबंध प्रबंधन (सी आर एम) के जरिए विस्तार

- निरंतर उपलब्धता

वैश्वीकरण के इस दौर में लोग शिक्षा, पर्यटन, कारोबार, करियर आदि के लिए दूसरे स्थानों एवं देशों की यात्रा रहे हैं। उन्हें स्थानीय नहीं वैश्विक बैंकिंग की जरूरत होगी जो डिजिटल बैंकिंग के जरिए ही संभव है।

सरकारी समर्थन

विगत तीन वर्षों में सरकार द्वारा कई नारे घोषित किए गए हैं जिनमें से एक है डिजिटल इंडिया का नारा। अगर देश को डिजिटल बनाना है तो इसमें डिजिटल बैंकिंग का काफी बड़ा योगदान होगा। हमारी अर्थव्यवस्था में नकदी का प्रयोग न्यूनतम रखने की सरकारी पहल करीब 2 वर्ष पहले ही शुरू हो गई थी। 8 नवंबर 2016 को सरकार ने 500 एवं 1000 रुपयों के पुराने नोटों के विमुद्रीकरण का एक बड़ा कदम उठाया। इसके पीछे कई उद्देश्य बताए गए हैं जैसे काले धन को बाहर लाना, भ्रष्टाचार को रोकना, आतंकी संगठनों की धन शक्ति का खात्मा आदि। इन सबके साथ एक जो और महत्वपूर्ण उद्देश्य है वह है लोगों को लेन-देन में नकदी की बजाय अन्य माध्यमों का प्रयोग करने हेतु प्रेरित करना।

दुनिया के जिन देशों की अर्थव्यवस्थाओं में नकदी का सबसे अधिक प्रयोग होता है उनमें भारत भी शामिल है। हमारे यहाँ सकल घरेलू उत्पाद से नकदी का अनुपात 12 प्रतिशत है जिसे घटा कर सरकार आगामी तीन वर्षों में 6 प्रतिशत के स्तर पर लाना चाहती है।

कुछ लोगों को नकद आधारित लेन-देन भले ही भाता हो लेकिन अर्थव्यवस्था को कुल लाभ की दृष्टि से इसे प्रोत्साहित नहीं किया जाता। लोग नकद लेन-देन इसलिए पसंद करते हैं क्योंकि इसमें सौदा तुरंत पक्का हो जाता है, क्रेडिट मिलने का इंतज़ार नहीं करना पड़ता; लोगों को इस लेन-देन की लागत शून्य लगती है और वे इसके उपयोग के अभ्यस्त हो चुके हैं। पर जहां नकद संव्यवहारों की बहुतायत हो वहाँ वित्तीय धोखाधड़ियों की संभावना भी बढ़ी होती है। नोटों के मुद्रण पर बेतहाशा खर्च आता है। इसके साथ इनके भंडारण, निगरानी एवं एक स्थान से दूसरे स्थान तक ले जाने में भी भारी राशि व्यय होती है। नकद राशि चुरा कर कोई भी इसका उपयोग कर सकता है। कई अन्य लिखतों को अहस्तांरणीय रखा जा सकता है लेकिन नकदी को नहीं। रिश्वतखोरी एवं अवैध लेन-देन के लिए ज्यादातर नकद राशि का ही इस्तेमाल होता है। नकदी का बहुतायत से प्रयोग हमारी अर्थव्यवस्था में मौजूद संभावनाओं को बाहर लाने में रुकावट है।

विमुद्रीकरण की घोषणा के पश्चात देश में एक बड़ा बदलाव देखने को मिल रहा है। मोबाइल वालेट की सुविधा प्रदान करने वाली कंपनियों का कारोबार अचानक काफी बढ़ गया है। अवसर की अनुकूलता को देखते हुए वे अपनी सेवाओं का खूब प्रचार प्रसार भी कर रहीं हैं। बिलकुल छोटे व्यापारी भी अब इससे भुगतान स्वीकार करने लगे हैं। कार्ड भुगतानों की संख्या में भी अच्छी खासी वृद्धि देखने को मिली है। बैंकों को नए क्रेडिट व डेबिट कार्ड हेतु मिलने वाले आवेदनों की संख्या बढ़ गई है। जिन व्यापारियों के यहाँ कार्ड से भुगतान स्वीकार्य नहीं था अब उनके यहाँ भी कार्ड स्वाइप करने वाली मशीन दिखती है। ऐसा लोगों द्वारा खुद किया जा रहा है। पर सरकार विमुद्रीकरण के उपरांत अपनी तरफ से भी डिजिटल भुगतान पर बहुत ज्यादा ज़ोर दे रही है।

दिसंबर 2016 में सरकार ने डिजिटल माध्यमों से किए जाने वाले भुगतानों के लिए कई प्रोत्साहनों एवं रियायतों की घोषणा की है। ऑनलाइन बुकिंग करने वाले रेल टिकट धारकों को 10 लाख रुपए तक की दुर्घटना बीमा का लाभ मिल सकता है। डिजिटल भुगतान करने से पेट्रोल व डीजल की खरीद पर 0.75 प्रतिशत तथा उपनगरीय रेल के सीजनल टिकटों पर 0.5 प्रतिशत की छूट मिलेगी। सरकारी अनुमानों के अनुसार इससे डिजिटल भुगतानों में 30 प्रतिशत की

वृद्धि होगी। पॉइंट ऑफ सेल मशीनों का मासिक किराया घटा कर अधिकतम 100 रुपए प्रति माह कर दिया गया है। सरकार समाचार पत्रों तथा टेलीविज़न पर विज्ञापन के जरिए लोगों को भुगतान की डिजिटल पद्धति अपनाने को कह रही है। मध्यम एवं अल्प आय वर्ग को ध्यान में रख कर मोबाइल को बटुए के रूप में प्रचारित किया जा रहा है। मानव संसाधन विकास मंत्रालय ने अपनी तरफ से एक वित्तीय साक्षरता अभियान चलाया है। मंत्रालय भारतीय प्रौद्योगिकी संस्थानों एवं केंद्र सरकार द्वारा वित्त पोषित उच्च शिक्षण संस्थानों में एवं उनके परिसरों के भीतर दुकानों आदि में पूर्णतया डिजिटल भुगतान की व्यवस्था लागू कर रहा है। डिजिटल अर्थव्यवस्था को बढ़ावा देने हेतु सरकार के अंतर्गत स्वतंत्र विनियामक की व्यवस्था करने जा रही है? अन्य भुगतान प्रणालियों को बैंकों के साथ जोड़ने की योजना भी है। सरकार की कोशिश डिजिटल भुगतानों की लागत को कम करने की भी है।

डिजिटल बैंकिंग का केंद्र मोबाइल फोन

इस बात के पूरे संकेत मिलने लगे हैं कि आने वाले समय में मोबाइल फोन ही डिजिटल बैंकिंग का सबसे महत्वपूर्ण केंद्र हुआ करेंगे। एक तो मोबाइल फोनों की पहुँच बहुत व्यापक हो गई है दूसरे प्रौद्योगिकी की दृष्टि से भी ये काफी उन्नत होते जा रहे हैं। इस समय बिकने वाले आधे से ज्यादा मोबाइल फोन स्मार्ट फोन श्रेणी के होते हैं। वर्ष 2020 तक यह संख्या 80 प्रतिशत हो जाने वाली है। लेकिन समस्त बैंकिंग सुविधाओं के लिए स्मार्ट फोन जरूरी हो ऐसा नहीं है। साधारण मोबाइल फोन पर भी कई प्रकार की डिजिटल बैंकिंग सेवाएँ हासिल की जा सकती हैं। विभिन्न उद्देश्यों हेतु विकसित एप्स ने मोबाइल फोनों की उपयोगिता और बढ़ा दी है। इनमें से कई एप डिजिटल भुगतान के काम आते हैं अथवा इस सुविधा से युक्त है। डिजिटल वालेट के लिए मोबाइल का काफी प्रयोग हो रहा है। मोबाइल कनेक्शन को आधार नंबर से जोड़ कर डिजिटल बैंकिंग का चैनल बनाया जा चुका है। अब कोशिश अधिकाधिक लोगों को इस दायरे में लाने की है। अंतर्राष्ट्रीय स्तर पर ऐसे अनेक उदाहरण हैं जिनमें वित्तीय समावेशन हेतु मोबाइल आधारित डिजिटल बैंकिंग का व्यापक रूप से प्रयोग किया गया है।

सम्मिलित प्रयास

डिजिटल बैंकिंग को मिले सरकारी समर्थन की बात हम पहले ही कर चुके हैं। देश में कुछ और संस्थाएं हैं जिनके योगदान की चर्चा यहाँ करना जरूरी है। देश के केंद्रीय बैंक के रूप में भारतीय रिज़र्व बैंक अपनी भूमिका निभा रहा है। भारतीय राष्ट्रीय भुगतान निगम (एनपीसीआई) देश को डिजिटल बैंकिंग का मजबूत ढांचा देने में लगा हुआ है। इसके द्वारा जारी रुपे कार्ड की स्वीकार्यता भी बढ़ती जा रही है। कुछ समय पहले इस संस्था द्वारा जारी यूनाइटेड पेमेंट इंटरफेस (यूपीआई) को अधिकांश बड़े बैंकों ने अपना लिया है। वित्तीय संव्यवहारों को डिजिटल बनाने में इस इंटरफेस का व्यापक उपयोग होगा। प्रौद्योगिकी उन्नयन एवं सुरक्षात्मक उपायों के विकास हेतु भी निगम के प्रयास जारी हैं। डिजिटल बैंकिंग में हैदराबाद स्थित इंस्टीट्यूट फॉर डेवलपमेंट एंड रिसर्च इन बैंकिंग टेक्नोलॉजी (आईडीआरबीडीटी) के अध्ययन एवं शोध के निष्कर्ष संबन्धित एजेंसियों के लिए मार्गदर्शन का कार्य कर रहे हैं। सरकारी व निजी बैंकों ने समय के अनुसार बैंकिंग के इस नए रूप की महत्ता को स्वीकार कर लिया है और इस हेतु व्यवस्थाएँ जुटाने में लगे हुए हैं हांलाकि कई मामलों में उनके प्रयासों में तेजी लाने की जरूरत है।

सुरक्षा संबंधी पहलू

सुरक्षा के दृष्टिकोण से बैंकिंग कारोबार निहायत संवेदनशील है। वित्तीय धोखाधड़ियों के जितने भी मामले सामने आते हैं उनमें बहुसंख्यक बैंकिंग सेवाओं से जुड़े होते हैं। अनधिकृत व्यक्तियों द्वारा औरों के चेक चुरा कर उनके खाते से धन निकालने की घटनाएँ पहले भी होती रहीं हैं पर विगत 2 वर्षों में चेक की नकली प्रतिकृति बना कर आहरण के मामले अचानक बढ़ गए हैं। क्रेडिट व डेबिट कार्ड को लेकर की जाने वाली धोखाधड़ियों की संख्या भी काफी बढ़ चुकी है। सवाल यह उठता है कि क्या परंपरागत अर्थात पुरानी बैंकिंग की तुलना में डिजिटल बैंकिंग ज्यादा सुरक्षित है? अभी तक ऐसा कोई योजनाबद्ध अध्ययन सामने नहीं आया है जिसके निष्कर्षों के आधार पर इस प्रश्न का स्पष्ट उत्तर दिया जा सके। परंतु यह बात साफ है कि डिजिटल बैंकिंग में सुरक्षा के ज्यादा उपाय मौजूद हैं जिन पर नियंत्रण रखना तुलनात्मक रूप से आसान है। जहां पुरानी बैंकिंग में हस्ताक्षर मिलान के आधार पर संव्यवहारों को अधिकृत करने की व्यवस्था है वहीं डिजिटल बैंकिंग में पिन व पासवर्ड का उपयोग होता है। धोखाधड़ी की संभावनाएं सभी प्रकार की बैंकिंग में मौजूद हैं। असली जैसी नकली हस्ताक्षर किए जा सकते हैं, डेबिट/ क्रेडिट कार्ड की क्लोनिंग की जा सकती है, पास वर्ड, पिन आदि की चोरी हो सकती है। डिजिटल बैंकिंग में बायोमेट्रिक प्रणाली, आवाज व चेहरा पहचानने की इलेक्ट्रॉनिक पद्धति अपनाना संभव है। ग्राहकों को न्यूनतम असुविधाओं के साथ सुरक्षा की अतिरिक्त परतें जोड़ी जा सकती हैं। सुरक्षा की चुनौती परंपरागत बैंकिंग में भी थी और डिजिटल बैंकिंग में भी है। डिजिटल बैंकिंग में ऐसे खतरों का आकार बड़ा हो सकता है। सुरक्षा

के मजबूत प्रावधान आम लोगों को डिजिटल बैंकिंग अपनाने हेतु आश्वस्त करेंगे और तब इसमें लोगों का भरोसा बढ़ेगा।

लाभ ही लाभ

डिजिटल बैंकिंग के बहुत सारे फायदे गिनाए जा सकते हैं। सबसे बड़ा फायदा बैंकिंग प्रणाली से कागज़ों का खात्मा है। यह कागज़ हमें कई रूपों में दिखाई देता है जैसे प्रचलन में उपयोग की जा रही नकदी, भुगतान लेने देने के लिए जारी चेक, आवेदन पत्र, ज्ञापन, विवरणियाँ आदि। हम देखते रहे हैं कि कागज़ों के एक से दूसरी जगह तक जाने में कितना समय लगता है और कई बार गारंटी भी नहीं होती कि ये सही स्थान तक पहुंचेंगे। डिजिटल प्रणाली को अपनाने से ये कमियाँ दूर होंगी। कागज़ों के उपयोग में कमी का एक बड़ा लाभ हमारे पर्यावरण को होगा। वित्तीय लाभों के अंतरण में इलेक्ट्रॉनिक संव्यवहारों से यह सुनिश्चित किया जा सकता है कि ये लाभ सही व्यक्ति तक पहुंचें। एक और बड़ा लाभ सरकार को करों से होने वाली आय में वृद्धि का है क्योंकि डिजिटल बैंकिंग में संव्यवहारों की ट्रैकिंग आसानी से की जा सकती है और कर योग्य आय छुपाना मुश्किल होता है। डिजिटल बैंकिंग की प्रणाली स्थापित करने हेतु बुनियादी सुविधाओं पर भले ही शुरू में ज्यादा खर्च करना पड़े आगे चल कर यह प्रणाली किफ़ायती साबित होती है तथा प्रति डिजिटल संव्यवहार की लागत भौतिक संव्यवहार की तुलना में कम बैठती है। इस तरह के संव्यवहारों में पारदर्शिता को लेकर समस्याएँ नहीं आतीं।

आर्थिक लाभों से इतर लाभों को भी गिनाना यहाँ उचित होगा। डिजिटल बैंकिंग ज्यादातर रियल टाइम में काम करती है। उदाहरण के लिए एक खाते से दूसरे खाते में पैसा मिनटों के भीतर अंतरित हो जाता है। इसकी तुलना चेक समाशोधन प्रणाली से करें जिसमें अमूमन तीन दिन का समय लगता है और तो और अधिकांश मामलों में डिजिटल बैंकिंग घर बैठे की जा सकती है। धन, समय और श्रम तीनों की बचत से डिजिटल बैंकिंग का पक्ष मजबूत होता है। नयी पीढ़ी को आकर्षित करने के लिए भी डिजिटल बैंकिंग ज्यादा काम आएगी क्योंकि यह पीढ़ी ऑनलाइन रहने में ज्यादा यकीन रखती है। जिस तरीके से यह पीढ़ी नयी प्रौद्योगिकी को अपना रही है उससे ताल मेल बैठा कर इसे बैंकिंग सुविधाएं प्रदान करना भी एक चुनौती है। पर इस चुनौती को पूरा करने वाले बैंकों को ग्राहकों का एक बड़ा वर्ग हासिल हो सकेगा।

क्या करना है बैंकों को

वर्ष 2015 में भारतीय रिज़र्व बैंक द्वारा भुगतान बैंकों की स्थापना हेतु लाइसेन्स जारी किए गए। आधुनिकतम प्रौद्योगिकी का उपयोग करते हुए ये बैंक शुरू से ही डिजिटल मॉडल को अपनाने वाले हैं। जो और नए बैंक जैसे आईडीएफसी बैंक व बंधन बैंक खुले हैं वे भी डिजिटल बैंकिंग की राह पर ही चल रहे हैं। नए खुले बैंकों के यहाँ विरासत का कोई मुद्दा नहीं है। लेकिन सरकारी बैंकों की स्थिति भिन्न है। इन बैंकों के सामने डिजिटल बैंकिंग को लागू करने में अपेक्षाकृत ज्यादा चुनौतियाँ हैं क्योंकि वे एक खास ढर्रे पर बैंकिंग करते रहे हैं। नए वातावरण में सफल होने के लिए इन बैंकों के प्राचीन स्टाफ एवं शीर्ष प्रबंधन को अपनी पुरानी मान्यताओं का त्याग करना होगा। अभी तक बैंक शाखाओं को बैंकिंग व्यापार का मूल केंद्र माना जाता रहा है तथा इलेक्ट्रॉनिक चैनलों जो डिजिटल बैंकिंग में शामिल हैं, को वैकल्पिक वितरण (अल्टरनेट डिलिवरी) चैनल के नाम से जाना जाता है। जब बैंक डिजिटल संव्यवहारों को प्रमुखता से अपनाएँगे तो डिजिटल चैनल मूल बैंकिंग चैनल होंगे और शाखा वैकल्पिक वितरण चैनल हो जायगी। इसे कोई मामूली बदलाव नहीं माना जाना चाहिए।

डिजिटल बैंकिंग को सिर्फ बाहरी ग्राहकों को प्रदान की जाने वाली सेवाओं तक सीमित करके देखना ठीक नहीं है। अपनी आंतरिक प्रक्रियाओं को भी डिजिटल बनाने पर बैंकों को पर्याप्त ध्यान देना होगा। इनमें शामिल हैं- कार्मिकों के कार्य निष्पादन मूल्यांकन की प्रणाली, उन्हें देय लाभों एवं अधिलाभों का भुगतान, कार्मिक डेटाबेस एवं इससे जानकारी निकालना, संगठन के भीतर सम्प्रेषण, कार्मिक एवं ग्राहक शिकायत समाधान प्रणाली आदि। बैंकों के पास आंकड़ों का भंडार पहले से ही रहा है। डिजिटल होना उन्हें इन आँकड़ों के बेहतर रख रखाव, विश्लेषण एवं ग्राहक संबंध प्रबंधन में भी सहायक होगा। डेटा अनलिटिक्स का उपयोग कर वे इन आँकड़ों का लाभ ग्राहक सेवा की बेहतरी, क्रास सेलिंग एवं विपणन आदि के लिए कर सकते हैं।

यह भी ध्यान में रखना होगा कि हमारे देश की आबादी के स्वरूप को देखते हुए निकट भविष्य में अर्थव्यवस्था एवं बैंकिंग को पूरी तरह डिजिटल बना पाना न तो संभव है और न ही व्यावहारिक। इन महती लक्ष्यों की प्राप्ति हेतु संबन्धित बुनियादी सुविधाओं को पहले मजबूत बनाना जरूरी है जिस हेतु बड़े निवेश की आवश्यकता होगी। ऐसा माना जा रहा है कि डिजिटल बैंकिंग अभी अपने शुरुआती दौर में है। आगे इसे विकास के कई चरणों से गुजरना है। आने वाले समय में ही हमें इसका विकसित रूप देखने को मिलेगा।

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Summary of Macro Research Project

Title of the Macro Research Report: Rethinking Priority Sector Lending for Banks in India.

Researchers: Mr. Sumit Jain, Dr. Tapas Kumar Parida & Dr. Soumya Kanti Ghosh, State Bank of India.

Year: 2014-15

Executive Summary

Revisiting or rethinking about priority sector lending (PSL) is a daunting task given the fact that plethora of committees and researchers have already pondered over it. Still we endeavour to take-up this mammoth task in order to provide bankers' point of view. A practitioner's view is always more reliable and authentic than regulators' or researchers' view as he/she knows the ground realities in wider set of information. In this study, our objective is quite different from the others as we revisit PSL norms from the Bankers' Perspective. Since the advent of PSL norms, two things have not changed so far, one is the overall PSL target of 40% of ANBC and second is sub-target fixed for agriculture (18% of ANBC), although some the committees set up by Government/RBI has pitched for their reduction as well. Since the inception of PSL norms, a substantial literature is available by many researchers/academicians and industry experts but most of the findings are generalised observations, without any statistical or mathematical evidences. On the one hand, the studies, which are based on secondary data are focused on trend analysis and achievement of targeted number, while the primary survey studies mostly focuses on 4/5 branches or 2/3 villages or a single district, to figure out the impact of priority sector lending. To the best of our knowledge, we did not find any single comprehensive and schematic effort has been made to analyse the subject based on the experience of bank managers and borrowers.

So, this study is conducted to fill the desired gap in literature. In this study, first, we made an attempt to explore the mind-set of bankers regarding various aspects of PSL with the help of a primary survey. Further, we made a statistical analysis to see the impact of PSL on economy as general and banking as particular. The primary survey is conducted with 100 bank branches (85 branches of public sector banks and 15 branches of private sector banks) and the survey results indicate that most of the bankers are in favours of PSL targets in India but some of the respondents also indicate to change the 40% target. Lending to housing is the easiest and darling to most bankers, while lending to new sectors like social infrastructure and renewable energy is challenging.

The most interesting fact is that 64% of the respondents are not happy with the calculation of 40% target on ANBC. They want that since lending is proportional to Net Lendable Resources (Aggregate Deposits minus CRR minus SLR), the 40% target should be calculated on NLR only. We did one exercise on it and found very interesting results. Also there is a dire need to link PSL targets with the changing contours of the economy in the form of reduction in agriculture target and inclusion of new sectors like, start-up industries, cold storage, etc. in the PSL portfolio. The issue of non-performing assets in priority sector is primarily due to unclear laws regarding sale of stressed assets.

Most of the bankers indicated that high cost in managing priority sector accounts is the most crucial factor that obstruct banks to lend to priority sectors. Even international experience shows that directed credit programs proved very costly, with the highest costs borne by the banking industry. Hence we did sector-wise and on consolidated basis a cost analysis. The results indicate that the 1% increase in agriculture, exports and MSME lending leads to 0.61%, 0.43% and 1.11% increase in agriculture GDP, exports GDP and MSME GDP, respectively.

International experiences indicated that directed credit programmes although benefit industrial sectors, generate spill-over effects, and contribute to general economic growth yet they might not always be efficient in making financing available to certain sectors. Furthermore, in most of the countries, low repayment rates led to high NPAs that locked up bank assets, affecting the banks' profitability and efficiency.

At last, as an anecdote, we have hypothetically recreated a banking scenario devoid of PSL norms and surprisingly found that sectoral GDP growth would have been more if credit flow to them without any PSL target or limit.

Based on our research, analysis and survey we have proposed the following recommendations:

- The overall target for PSL needs to be reduce to 35% from 40% in a phased manner by March 2020.

- The target for agriculture needs to reduce to 15% from 18% with no distinction like direct and indirect agriculture.

- Need to add more sectors (like start-up industries) under MSME target.

- Need to rationalize home loan limits.

- Ceiling of export credit needs to increase from 2% to 5% of ANBC.

- The PSL targets need to be calculate on 'Net Lendable Resource' instead of ANBC.

Peer-to-Peer Lending

Peer-to-peer (P2P) lending is an innovative form of crowd-funding with financial returns. It involves the use of an online platform to bring lenders and borrowers together and help in mobilising unsecured finance. The borrower can either be an individual or a business requiring a loan. The platform enables a preliminary assessement of the borrower's creditworthiness and collection of loan repayments. Accordingly, a fee is paid to the platform by both borrowers and lenders. Interest rates range from a flat interest rate fixed by the platform to dynamic interest rates as agreed upon by borrowers and lenders using a cost-plus model (operational costs plus margin for the platform and returns for lenders).

One of the main advantages of P2P lending for borrowers is that the rates are lower than those offered by money lenders/unorganised sector, while the lenders benefit from higher returns than those obtained from a savings account or from any other investment.

Although there has been significant growth in online lending platfroms globally, there is no uniformity in the regulatory stance with regard to this sector across countries. While P2P lending platforms are banned in Japan and Israel, they are regulated as banks in France, Germany and Italy, and are exempt from any regulation in China and South Korea. Differences in regulatory stance emanate ideologically. It is argued that regulation may stifle the growth of this nascent sector. On the other hand, proponents of regulation argue that the unregulated growth of this sector may breed unhealthy practices by market plyers and may, in the long run, have systemic concerns given the susceptibility of this sector to attract high risk borrowers and also weaken the monetary policy transmission mechanism.

In India, there are currently many online P2P lending platforms and the sector has been growing at a rapid pace. The Reserve Bank released a consultation paper on P2P lending in April 2016. The paper deliberated the advantages and disadvantages of regulating P2P platforms and underscored the need to develop a balanced regulatory approach that would protect lenders and borrowers without curbing the underlying innovations. Accordingly, P2P platforms are proposed to be regulated as a separate category of NBFCs. The feedback received on the paper from various stakeholders is being examined to finalise the regulatory framework.

Source: Annual Report 2015-16, Reserve Bank of India.

Name of the Book : The Big Data- Driven Business

Author: Russell Glass & Sean Callahan

Publisher: Wiley India Pvt. Ltd., New Delhi.

Pages: 224

Price: ₹ 499/- (US$30.00)

Reviewed by: Mr. Ramdas Kamath, Assistant General Manager & Faculty, State Bank Staff College, Hyderabad.

About the Authors:

Russell Glass is the Head of B2B Marketing Products for Linkedin. He is a well known and seasoned technology entrepreneur. He was CEO of company Bizo, a B2B audience marketing company which was subsequently acquired by Linkedin in 2014. His contribution in B2B marketing ecosystem by injecting deep knowledge helped in building next generation of content based marketing products for the country. He also held senior positions at four venture-backed technology companies.

Sean Callahan is a Senior Manager of Content Marketing in Linkedin. Formerly, he was a Marketing Director at Bizo and also an Editor and Reporter at Crain Communications. As a freelancer journalist he has worked with New York Times, The Washington Post, Chicago Tribune, Sun Times etc.

About the book: This book specifically focuses on "How to use BIG DATA to win customers, beat competitors and boost profits". It's a hands on guide for any company with the examples of success stories of big data driven companies like Dell, Google, Amazon and many more. It also provides tools and strategies needed to put to use big data in a very effective manner and achieve the target.

Book Review: In the present competitive scenario, tackling competitors and boosting profits is the biggest challenge. Strong, valuable and closely relevant data base plays a vital role in devising workable and effective strategy in this direction. Data mining, data crunching, data scrubbing are very common and routine key words nowadays in all big industries/organizations. Major companies are keen on improving their database and its quality. However, 'using the data' and 'effectively using the data' are two different things. So much of data may at times leads to confusion in decision making. In this book the authors categorizes people in to three according to their perception and about 'big data'

First category is of "Pioneers", who are embracing the troves of data that they have access to and who are truly transforming the way businesses are run and how customer communication is done to fetch better favorable results.

Second category is of "Frozen" people, who either don't know how to get started or don't seem to want to uncover the truths that data might deliver.

And the last category is of "Denialists", who don't believe that big data has any value to deliver and whose businesses are dead or dying.

This book speaks more about the first category of people highlighting the fact, how data driven and customer focused companies reap the benefits. The Companies that most effectively use big data to gain insight into their customers and act on that data will definitely win. The authors justify their views with the success stories of big data driven companies like Google, Amazon etc. One such excellent example quoted in the book evidencing results of using the data effectively and ignoring it, is given below:

"Blackberry, which had what appeared to be an unassailable market share in smart phones, particularly among enterprise customers, initially shrugged off the launch of the Apple iPhone. But Blackberry was ignoring the data. Blackberry described the iPhone as a niche product aimed at consumers, but the revolutionary phone from Apple was making huge inroads not only with consumers but with Blackberry's core business customers. By the time it became widely known that the iPhone, with its touch screen and excellent internet access, was a serious competitor for business customers, Blackberry was steamrolled by Apple's momentum, even losing its place in the enterprise to Apple and Google's Android.

Both Blackberry and Apple had access to data about the marketplace. One Company, however, didn't have the culture to take advantage of the data. The other did and triumphed."

The book also gives detailed inputs on how technology bridges the gap between Marketing & Sales, how to use the data to understand the customers in a better way and pursue the prospects, how the data can be a matter of Corporate Life or Death, how to use data responsibly. While the book started with the thought, Big Data, Big Benefits", it is concluded with "Big Data, Big Future". It emphasized that behind first appearances and gut feelings, there is always the power of data. Copernicus used the data to prove that the earth revolves around the Sun whereas Nate Silver used the data to find the signal in the noise to predict that Barack Obama would win the Presidency in 2008 and 2012.

Finally, the authors agree that the data is there, but it takes people to see it, organize it, to interpret it and to put their conclusions into an action. It is very much imperative the right people look at the right data in the right way and draw the correct conclusions. The book not only motivates but also gives proper direction on how to use data effectively to derive desired results.

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Indian Institute of Banking & Finance,

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   Essential figures, charts and diagrams should be referred to as 'Figures' and they should be numbered consecutively using Arabic numerals. Each figure should have brief title. Diagrams should be kept as simple as possible. in the text, the position of the figure should be shown by indicating on a separate line with the words: 'Insert figure 1'.

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   Use of tables, wherever essential, should be printed or typed on a separate sheet of paper and numbered consecutively using Arabic numerals (e.g. Table-1) and contain a brief title. In the body of the article, the position of the table should be indicated on a separate line with the words 'Insert Table 1'.

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   Words to be emphasised should be limited in number and italicised. Capital letters should be used only at the start of the sentences or for proper names.

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1.	Place of Publication	:	Mumbai
2.	Periodicity of Publication	:	Quarterly
3.	Publisher's Name	:	Dr. Jibendu Narayan Misra
	Nationality	:	Indian
	Address	:	Indian Institute of Banking & Finance Kohinoor City, Commercial-II, Tower-1, Kirol Road, Kurla (W), Mumbai-400 070.
4.	Editor's Name	:	Dr. Jibendu Narayan Misra
	Nationality	:	Indian
	Address	:	Indian Institute of Banking & Finance Kohinoor City, Commercial-II, Tower-1, Kirol Road, Kurla (W), Mumbai-400 070.
5.	Name of Printing Press	:	Onlooker Press, 16 Sasoon Dock, Colaba Mumbai - 400 005.
6.	The name and Address of the Owners	:	Indian Institute of Banking & Finance Kohinoor City, Commercial-II, Tower-1, Kirol Road, Kurla (W), Mumbai-400 070.

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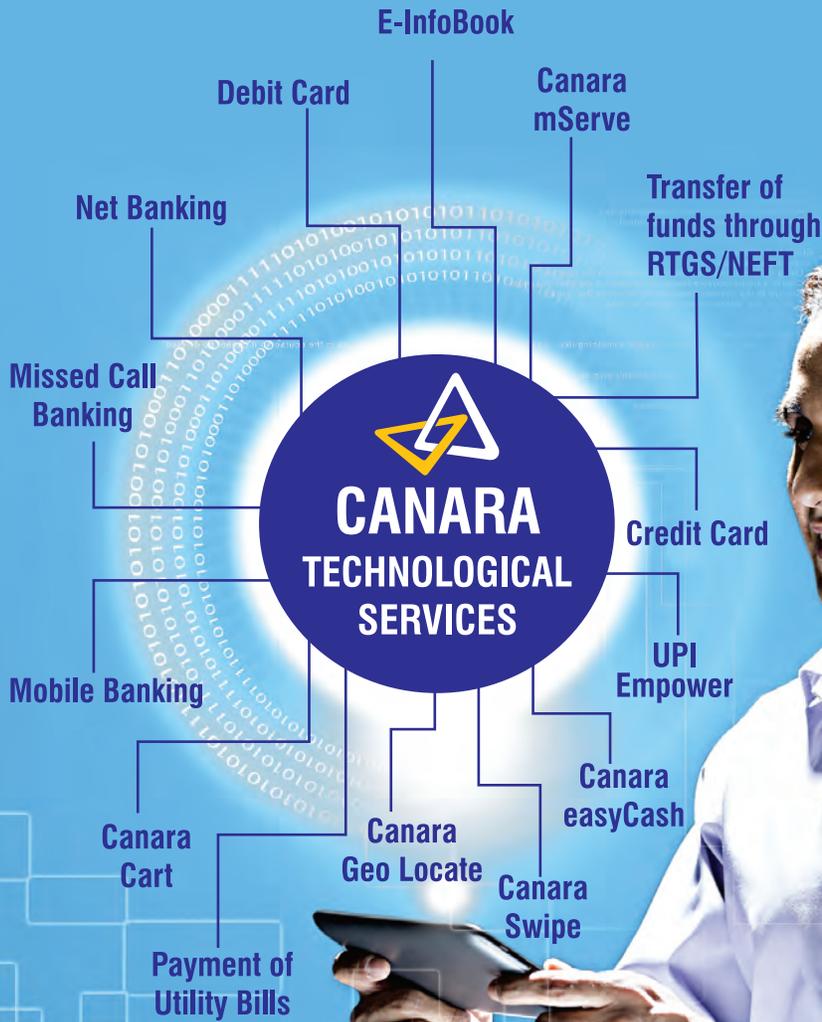
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