SPM MIRROR

PANDIT DEENDAYAL PETROLEUM UNIVERSITY
A RESERVOIR OF KNOWLEDGE

NOVEMBER, 2017

Dr. Pramod Paliwal

Professor and Dean
of School of Petroleum
Management

FROM THE EDITORIAL ADVISOR'S DESK

Knowledge is the life blood of present day industry. Student minds must be nourished with knowledge and wisdom delivered from experts of various business functions, in order to keep them abreast with industry scenario. Keep that in mind SPM organized Business Management Symposium, a yearly affair which gives real work place managerial insights an academic gateway. BMS 2017 was a confluence of industry veterans and leaders belonging to various business domains,

Since businesses and the economy in which they exist aim to maximize monetary benefits, it becomes inevitable to mention Monetary Policy for this quarter. Almost a year since demonetization came into effect and more than a quarter since GST implementation this year, RBIs monetary policy guidelines sets the stage for the future course of action and hence most anticipated. Slower growth and increased inflation estimates are a reflection of subdued economic activity in the past.

On a positive note public sector bank recapitalization initiative by Indian government and improvement in ease of doing business ranking by World Bank has come as a breather for Indian Economy and helped prevail a positive sentiment. This has been outcome of structural changes implemented in the form of GST and demonetization. A major boost to Indian Government's efforts recently was the International Rating Agency Moody's upgrading of India's sovereign ratings to Baa2 from its lowest investment grade Baa3 citing the NDA government's "wide-ranging program of economic and institutional reforms" among the reasons for the move. Another major development came in form of Uday Kotak committee addressing corporate governance, which it has recommendations on composition and role of board of Directors, minimum board strength, independent directors and shareholder meeting and cash flow statement.

SPM had a lot to offer for students to come together and engage themselves with activities around the campus. The campus was celebration and festivals galore starting with nine days long Navratri, Convocation, Diwali, and PDPU Memorial Day Celebration. All the events added color, music, lights and memories of happiness and achievement to student life. This issue captures all the shades of student life this month from academic endeavors to celebratory breaks.

This issue of SPM Mirror brings views from students on:

- India's Solar Dream and Chinese Trader
- Outlook 2017 (An Interpretation of Shell's LNG Outlook)
- Is India ready for Electric Vehicle?
- Cross Border Power Exchange

MONEY FROM THIN AIR?

Shikhar Kejriwal PGP'16

Have you ever thought how money is created? Is it created merely when the central bank of nation prints the currency and puts it in the system? If so, what give that piece of paper its value? Almost everyone will agree that money is the only faith that has never been doubted or questioned upon, but why? WHAT MAKES MONEY, MONEY? And why are we chasing it throughout our lives?

We live in a world where 1% of our population holds and controls more than 40% of the world's wealth, and more than 50% of the population lives on less than $2 USD a day. Have you ever thought why there are people poor if there is so much money in the world? It is because it's the poor that make the rich, rich.

To understand this, we have to dive into how actually money is created and circulated in the system. The banking system we practice is called "Fractional Reserve Banking" and is very well stated in "Modern Money Mechanics" published by the US Federal Reserve. The whole process of money creation is very complex but I've tried to simplify and generalize it for the sake of our understanding.

Suppose one day, the government approaches the Federal Reserve with a demand for $10 billion. The Fed Reserve will agree to it in exchange for $10B in government bonds from the government. These bonds are called "Treasury Bonds". The govt. will draft an official document (the Treasury Bond) and will put a value of $10B on it. In exchange for the bond(s), the Fed Reserve will give the government $10B in notes. The govt. will then take the notes and deposit them into a bank account, and it is at this step that this $10B is added to the money supply. In reality, this transaction takes place electronically.

The govt. bonds are an instrument of debt, meaning (a promise by the govt. to The Fed Reserve) that the govt. will have to pay back the Fed Reserve the principal amount($10B) with an added interest to it. If you think closely, the money is created out of thin air in this process.

In our banking system, the banks are required to hold some(a percentage) amount of its deposits as reserves. This reserve amount is held in form of liquid assets and cannot be loaned out.

For the sake of our argument, we take the reserve amount to be as 10%.

Thus, deposit one:

$10,000,000,000 = $1,000,000,000(10% reserve) + $9,000,000,000(excess)

Now, this $9B will be loaned out to others who will have the demand and will again be deposited in some bank as a part of their reserves.

This $9B is actually not coming out of the previous $10B, but is created because there is a $10B deposit backing it and there is a demand for $9B. Thus, this $9B is added "extra" to the money supply. This is called the expansion of money supply. The money supply is expanded because the loan does not come out of the $9B reserves, it actually is generated because the bank accepts "promissory notes" in exchange of the loan. This is done so that there is more money in the circulation.

Deposit two:

$9,000,000,000 = $900,000,000(10% reserve) + $8,100,000,000(excess)

Now the money in circulation is $19B.

In the third deposit cycle, $8.1B is available for loans in exchange for which, the banks will accept more promissory notes. It is interesting that the $8.1B that the banks have loaned out, never really existed in the system in the first place. Thus, all money is created from loans and out of thin air.

Deposit three:

$8,100,000,000 = $810,000,000(10% reserve) + $7,290,000,000 (excess)

This cycle can be repeated infinite times and approximately, an additional of $90B on top of the initial $10B deposit can

be created out of thin air.

Thus, for any amount of deposit, the sum total equal to ten times that amount enters the money supply.

We can calculate this using the simple formula of the sum of an infinite geometrical progression:

Sum = $10B/(0.1) = $100B

A simple inference can be drawn here: "all the money in our pocket is owed by us to someone, that someone owes that money to someone else and so on. And that if ALL the debt in the system was to be paid off, there would be no currency circulating in the system."

Of course this pay off will never happen as if it was to happen there rises two situations:

1. Only the principal amount can be paid back as the interest amount required is never created in the system
2. The Fed Reserve (which is a private organization) loses its control over the economy and becomes meaningless

This system is also responsible for the poverty that it has put into the system because for the rich to get richer, someone has to go poorer. Since all the money in circulation I essentially debt, for someone to successfully pay off his debt with interest, he will need the "extra" money for the interest. Now there is limited money in circulation and that interest results in poverty and inflation. Because for someone to pay off his debt, someone else has to default as he will not have enough to pay his interest even if we assume that the principal amount can be paid back in full which leads to either more debt or property foreclosure i.e. poverty. This is on a very individual level.

Now consider a third world nation which is rich in minerals but lacks mining abilities and thus the nation is poverty ridden and quality of life is extremely poor. An institution like The World Bank or The International Monetary Fund will approach the nation's government and propose that they take a loan from them to develop mining and related activities. The govt. agrees and money flows in their economy. One would assume that this is a good thing. But the real scenario is that the money is actually paid to corporations who will set up factories to exploit the nation's natural resources and will demand money for doing so. All this happens only after lining the pockets of the govt. officials. Thus, on paper money flows into the economy and is distributed to corporations instantaneously. The public never sees a dime of it. Now the WB or the IMF will ask for the money back with interest, there is no money to give back. Thus, the nation will pledge its natural resources to the debtor. We should pay special attention that all this happens "by the book" and there is nothing illegal about it.

P.S.: The article above is my personal understanding of the matter and is no solid proof for anything and thus cannot be quoted anywhere, but I hope that I have planted a seed of thought and that you will be curious enough to further understand what drama goes behind money and why it is an essential to our life-force.

IS INDIA READY FOR ELECTRIC VEHICLES?

Vishal Samnani PGP-16

Government of India is determined to bring electric vehicle into India at a greater level. This is also backed by their commitment at Paris Climate Summit followed by their ambition to cut down on carbon emission. Government of India is confident that this move will help bring down their import bill on crude imports.

Government sentiments here are at the right place but it's the execution that lacks preparation. Considering the fact electric vehicles to be the future there are certain limitation they are facing, before prompting them to be adopted in mass. The biggest of these limitations are charging time and charging infrastructure.

Government has to come up with solid background policy framework, without hurting the automobile industry as they have already witnessed a plethora of reforms since the NDA tenure.

But the focus of this article is into the practicality of this industry and since battery storage being the important lifeline of this industry, it is important to evaluate the possibilities of growth of this industry.

Battery technology around the globe has gained traction and the most feasible solution has come out in form of Lithium battery. If we assume that technology of battery has developed enough to provide high power & Energy density, provided sufficient infrastructure is in place, the greatest limitation for India will come in form of material that is being used to make battery. That is Lithium and Cobalt.

Internationally it has been observed that price of Cobalt has soared more than 35% in comparison to last year and ended up to the high of $56000/ton on London Metal Exchange.

Cobalt is actually produced during mining of Nickel and Copper. Consequently in 2016 itself India started with a production of nickel, that to 50 tons/annum. Total consumption of India is 45000tons/annum.

Presently, there is no production of cobalt in the country from indigenous ores. The refined production of cobalt was reported to be around 1,187 tonnes in 2010, 1300 tonnes in 2011 and 580 tonnes in 2012 from imported feed material. The remaining demand of cobalt is met through imports.

This puts up the serious question on feasibility of EV project, as India relies completely on imports for cobalt which is one of the key materials for making battery. Currently India meets its maximum demand from Democratic Republic of Congo, which has been politically unstable; this also raises the question on security of supply. With lithium again the scenario is no different than cobalt, as a matter of fact according to Journal of Industrial Ecology, about 80 % of world reserves are present in only nine deposits, present in Bolivia, China, USA, Argentina,, Chile and Democracy of Republic Congo.

For now, 100% of Li-ion batteries or cells are imported. Lithium-ion batteries are commonly used in portable electronic devices, solar power plants as well as electric vehicles due to their high energy density and high charge and discharge rate capabilities, as compared with other type of batteries such as Ni-MH or Lead Acid.

Currently the price of Lithium is hovering around $14000/ton which is 30 % higher than last year. It is expected to be in the bearish run for a long time, since most developed nations are planning to turn all electric.

Looking at current scenario in terms of battery storage technology and availability of lithium story is quite different, especially for India. Currently the world storage battery capacity is around 45GWH for consumer products, for electric vehicles it is around 25Gwh. This comes from the backdrop EV population around the globe stands to be 20million, which is bound to increase up to 600 million as per Bloomberg by 2030.

On an average battery in EV vehicle requires around 18Kg of Lithium (for 16Kwh battery). So with 600 million cars on the road, the requirement for lithium will be around 10800000 metric tons. Since the reserves of lithium are limited, it will put lithium on higher price basket. This again raises problems for country such as India, which again has to depend on import of Lithium.

The other challenge India will face will be in terms of justifying shift from HSD to EV. As per data from PPAC consumption of HSD in India stands at 74.6 MTPA which is growing at the CAGR of 3.67%. Out of which 48MTPA is consumed in transportation, whereas total gasoline consumption is around 21.8MTPA.

The consumption pattern for HSD in transport segment is shown below:

Source: PPAC (Monthly report of indigenous crude oil and petroleum products,)

Particulars	MMT	MBD
Commercial Vehicles	6.17754	0.12
Private Vehicles	9.08665	0.18
3-Wheelers	4.41549	0.09
Truck	19.52075	0.39
Buses	6.59905	0.13
Railways	2.23884	0.04
Others(Shipping & Aviation)	0.33168	0.01
Total Consumption	**48.37**	**0.971376**

From the above table it becomes imperative that more than 50% of HSD is consumed in Trucks & Bus segment. So for electric vehicles to penetrate, they will create dent in the demand of diesel consumption of private vehicles assuming battery storage technology has improved, so overall impact on Diesel consumption will be around 9MTPA. Since decent EV stands to be little costlier than ICE cars, it will surely be product for rich during initial years.

It surely looks overrated that India will roll only electric vehicle by 2030. In case if India is able to achieve this target, than total electricity consumption for electric vehicles on road will stand tall at 750GW, which is more than twice of current installed capacity of Power Plants.

Conclusion: India ones again faces a tall and firm challenge in terms of securing material supply for battery, proper charging infrastructure and most importantly consumer behaviour. Even if above mentioned challenges are met, the other limitation will come in terms of burgeoning power requirement. For which India will either rely on coal, which is a dirty fuel or Natural gas whose production is falling in current domestic mature fields, so India turns up importing more than 50% of its requirement. Ultimately India has to play on all the fronts of energy to diversify their energy risk.

CROSS BORDER POWER EXCHANGE

Saswata Mojumdar PGP-16

International borders are key to any cooperation dynamics in a sub-region deeply enmeshed in issues of national security. This sub-region, also known as the South Asia Growth Quadrangle or Bangladesh, Bhutan, India and Nepal (BBIN) initiative in the eastern fringe of South Asia consisting of Bangladesh, Bhutan, Nepal, and India's North East Region (NER) and West Bengal has remained a symbol of vibrant social, economic and cultural exchanges. This Eastern frontier has over 52 percent (7,917 km) of the total land borders of 15,106 km of India, i.e., 4,096 km with Bangladesh; 633 km with Bhutan; 1,346 km with China; 1,643 km with Myanmar; and 199 km with Nepal. The varied nature of these borders (fenced, open, porous, barbed wire-based, and natural boundaries) and related orthodox national security-centric discourse and policies have, unfortunately, impeded the growth of any meaningful tran's boundary cooperation.

There are eight reinforcing factors that are bound to promote energy exchanges and, more specifically, power trading in the BBIN sub-region soon:

- A huge power crisis in most BBIN countries (except Bhutan) is leading to long hours of load-shedding and is clearly affecting social, economic and commercial activities. Such energy shortage threatens to lead to political instability, as tremendous public pressure is being exerted on the respective governments to find solutions to the crisis. Most people are willing to pay for electricity. However, as there is no short-term solution in sight, cooperation with immediate neighbouring countries has now emerged as a key instrument.
- Nevertheless, massive power sector reforms have taken place in the BBIN countries. Open-access provisions and cross-border power purchases have figured prominently in all these reforms. New actors including independent power producers (IPPs) are emerging while power exchanges are gradually being set up.
- Moreover, trans-border public and private investment has emerged as a new practice like in Nepal's Arun III (900 MW) developed by SJVN, joint venture Group of Himachal Pradesh and Government of India, Upper Marsyangdi 2 (600 MW) and Upper Karnali (900 MW) both being developed by India's Bangalore-based private sector GMR Energy group.
- As indicated in declarations of various SAARC Summits, there is increasing realisation among the leadership of South Asian countries to speed up energy exchange.
- There are various levels of preparation for energy trading that have been undertaken in the past decade or so which have now started bearing fruit. Several organisations in the region and outside have been consistently working towards fostering cooperation in South Asia's energy sector. This includes the technical and professional public sector organisations such as Petro Bangla, Power Grid and Power Trading Corporations of India, Electricity Authorities of Nepal, Sri Lanka, Bhutan and Pakistan. At the same time, international agencies like the World Bank, United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), Asian Development Bank, United States Agency for International Development (USAID) and United Nations Development Programme (UNDP) have also been active in the arena of promoting power exchanges and trading.

Sl. No.	Year	Summit Location	Particulars
1	2004	Islamabad, Pakistan	Concept of Energy Ring was first discussed
2	2005	Dhaka, Bangladesh	Besides establishing the SAARC Energy Centre in Islamabad underlined the need to constitute a South Asian Energy Dialogue process, involving officials, experts, academics, environmentalists and NGOs, to recommend measures to tap potentials of cooperation in energy sector
3	2008	Colombo, Sri Lanka	Emphasising the tremendous potential for developing regional and sub-regional energy resources in an integrated manner directed that the recommendations of the Energy Dialogue (held in 2007) be implemented through an appropriate work plan.
4	2010	Thimpu, Bhutan	Authorised the SAARC Energy Centre in Islamabad to prepare an Action Plan on Energy Conservation.
5	2011	Male, Maldives	Inter- governmental Framework Agreement for Energy Cooperation and conduct a Study on the Regional Power Exchange and Market for Electricity
6	2014	Kathmandu, Nepal	Signed the SAARC Framework Agreement for Energy Cooperation, whose Articles 12 and 13 provide for non- discriminatory transmission access for cross-border electricity trading. Following this, Nepal and India signed an Agreement on Electric Power Trade, Cross-border Transmission Interconnection and Grid Connectivity in 2014 and set up a Joint Working Group for planning and identification of cross-border interconnection.

There are various levels of preparation for energy trading that have been undertaken in the past decade or so which have now started bearing fruit. Several organisations in the region and outside have been consistently working towards fostering cooperation in South Asia's energy sector. This includes the technical and professional public sector organisations such as Petro Bangla, Power Grid and Power Trading Corporations of India, Electricity Authorities of Nepal, Sri Lanka, Bhutan and Pakistan. At the same time, international agencies like the World Bank, United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), Asian Development Bank, United States Agency for International Development (USAID) and United Nations Development Programme (UNDP) have also been active in the arena of promoting power exchanges and trading.

Various studies have been, and continue to be conducted on key issues of energy generation, transmission and distribution on a cross-border basis. Various academic and professional organisations have brought forward attractive and doable policy suggestions, too. Further, trans-border collaborative research is ongoing among organisations like the South Asia Network of Economic Research Institutes (SANEI), Coalition for Action on South Asian Cooperation (CASAC-New Delhi), South Asian Centre of Policy Studies (SACEP- Kathmandu), Bangladesh Unnayan Parishad (Dhaka), Centre for Policy Dialogue (Dhaka), Institute for Integrated Development Studies (Kathmandu), Centre for Policy Research (New Delhi), and Tata Energy Research Institute (New Delhi).

Significant levels of transmission systems are already in place across BBIN and they are now being interconnected across borders. For instance, the 400-KV Muzaffarpur - Dhalkebar transmission line between India and Nepal has just been inaugurated. The Nepal segment is being implemented by the government of Nepal, under a line of credit of US$ 13.5 million. Some 80 MW of power would flow immediately through this line, with an initial charge of 132 KV. Thereafter, it will be augmented to 200 MW in October 2016 at 220 KV, and then to 600 MW by December 2017 at 400 KV.

Financial institutions, including multilateral and bilateral agencies, are keen to invest in energy-trading activities. China and Japan are emerging as new actors in the harnessing of trans-border energy in the region. For instance, in the $ 46-billion China-Pakistan Economic Corridor Project launched in 2015, out of the 51 agreements there are 20 that are related to energy. Ground-breaking activities have already been done for five projects worth 1,850 MW.11 Japan has started constructing a 1,200-MW Matarbari Ultra Super Critical Coal-Fired Power Project in Chittagong Division in Bangladesh.12 All these are likely to generate surplus power in both Pakistan and Bangladesh, thereby once again opening the possibility of cross-border exchanges.

Extra-regional linkages are fast emerging. For instance, under the Central Asia South Asia (CASA) 1000 project, three to six terawatt hours of hydroelectricity is likely to be transferred during the summer of 2016 from Kyrgyz

Republic and Tajikistan to South Asia. Other initiatives like TUTAP (Turkmenistan-Uzbekistan-Tajikistan-Afghanistan-Pakistan) interconnection with Afghanistan and buy-back arrangement of 80 percent of India's 1,200-MW Tamnthi Dam (Chindwin river in western Sagaing region) in Myanmar initiated with NHPC of India in 2007 are going to make the power exchanges rather attractive.

INDIA BANGLADESH POWER PROJECTS

India and Bangladesh have four far-reaching projects underway:

a.250 MW (out of 500 MW) exports from India that started in 2013.

b.A grid inter-connection between Bheramara (Bangladesh) and Berhampur (West Bengal) in India is completed. In this, a loan from ADB has played a critical role.

c.1,320-MW coal-based unit at Rampal in Bangladesh by National Thermal Power Corporation (NTPC) of India costing $1.5 billion is likely to commissioned by 2017

d.100 MW export to Bangladesh from Palatana Project in Tripura.

POWER EXCHANGES: EMERGING MODELS

Based on some successful interconnection experimentations in the past within and outside the region, changing institutional linkages, actions of private, bilateral and multilateral agencies and the willingness of the regional political regimes, broadly five models of power exchanges are now emerging in the BBIN sub-region.

Besides India-Nepal power exchange, India-Bhutan interconnection is a prime example of a promising bilateral exchange. Installed hydropower capacity of 1,615 MW in Bhutan constitutes less than six percent of its total hydropower potential of 30,000 MW. Most of these projects (mainly Chukha, Kurichu, Dagachu, Basochhu, and Tala) have been built with Indian support- initially on an economic assistance basis which now has much higher soft loan content. Unlike in the past where Indian participation emanated wholly from public-sector organisations such as the National Hydro Power Corporation, private sector participation has steadily increased, and today corporations like Tata Power Company has entered the picture. Thus, all the surplus power (roughly 75 percent of total generation) is exported to India (5,179.26 million GWh in 2014) earning over Nu 10690 million (1 Nu= 1 Indian Rupee) in 2014 and thereby contributing over one-third of government revenues and over nine percent of the country's GDP.16 With a forward-looking bilateral Power Purchase Agreement (PPA) in place, the transmission to India is handled by both public and private agencies. Bhutan, with the highest per capita consumption of 2,400 kWh in South Asia, has a target of generating 10,000 MW by 2020 at a total cost of US$ 10-12 billion. Bhutan is keen to diversify its market partners in South Asia and explore the possibilities of bringing in other South Asian countries and Myanmar, too, in its export trajectory.

The success story of Greater Mekong Sub- region (GMS) is another model where Cambodia, Lao People's Democratic Republic, Myanmar, Thailand and Vietnam and two provinces in China viz., Yunnan and Guangxi Zhuang Autonomous Region, have come together to generate and exchange power. With an area of 2.6 million sq. km. and a population of over 320 million, generation takes place mostly in Laos, Thailand and Vietnam and transmission and distribution in Cambodia, Laos, PRC and Viet Nam. There are bilateral agreements on border power trade between countries (e.g. Malaysia-Thailand, Thailand-Laos, Laos-Vietnam) and cross-border power interconnections like 500 kV DC Interconnection (PRC Lao PDR Thailand); 500 kV GMS Power Interconnection (Thailand Lao PDR Vietnam) and GMS Power Transmission Project (Cambodia).

This model is replicable in BBIN countries where Bhutan and NER of India would be the generation hub and Bangladesh, the rest of India, and other South Asian countries (and even China and Myanmar) could be the export destinations. For instance, NER alone has hydro power potential of over 58,000 MW (40 percent of the national potential). However, it has hardly harnessed 1,242 MW (2.1percent of total potential) and 2,810 MW of hydro power is under-developed. Its Natural Gas reserves of 151.68 billion cu. ft. could generate 7500 MW for 10 years and coal reserves of 864.78 million tonnes could generate 240 MW/day for a period of 100 years. The recently released Hydro Carbon Vision 2030 for North East India makes a comprehensive attempt in relocating the NER in the energy map of India where cross-border exchanges have become a core strategy.

The Pool-based approach could be another major forward-looking venture for the BBIN sub-region. Interconnection of power systems of contiguously located countries and their coordinated operation would also provide immense technical and economic benefits.

The power exchange between Tripura and Bangladesh triggered by 726 MW Combined Cycle Gas Turbine (CCGT) at Palatana (Udaipur, Tripura) provides a new direction for the NER in terms of local integrative exchange. This Tripura gas reserves-based project is an exclusive generation-load centre location-based model between contiguous cross-border geographies. The ONGC Tripura Power Company Ltd is sponsored by Oil and Natural Gas Corporation (ONGC), Infrastructure Leasing and Financial Services Limited (IL&FS) and Government of Tripura (GoT) for implementation of this project. Besides the power deficit areas of NER this project has started exporting 100 MW to Bangladesh in lieu of the services provided by it in transporting the project related equipment's and goods and service through its waterways via Calcutta and through its roads to the project site. The

development and operation of the transmission system is undertaken by North-East Transmission Company Limited (NETCL) a joint venture of ONGC Tripura Power Company (OTPC), Power Grid Corporation of India Ltd (PGCIL) and the North-Eastern Region beneficiary states. The level of confidence this project has generated is demonstrated by the fact that simultaneously a 10 gigabit per second (GBPS) bandwidth gateway of internet connectivity for the entire North Eastern states has been secured via Bangladesh. For the first time, India's Northeast region gets bandwidth through the Bay of Bengal base far away from the traditional sources of southern and western India.

The physical boundaries in the BBIN sub-region are such that it is only India which shares common borders with almost all its neighbouring countries; no other two countries (except Afghanistan and Pakistan) have common borders. However, there are distinct advantages for a country like Bangladesh to import power from Bhutan both because of the lower tariff and supply reliability. Power generating countries would also like to diversify the markets. For instance, Bhutan is keen to expand the market for its power exports. At present, India is the only buyer for its power. This is more so as several hydro plants are under construction in the NER, which may lead to the diminution in the demand for Bhutanese power in India. There are expansive transmission lines that exist in all the bordering states of India. Therefore, NER as a transit corridor for power transfer to neighbouring countries including Bangladesh and Myanmar could give a major boost to both the power trading activities and the process of regional cooperation and integration. India could also ensure full use of the transmission lines thereby fetching substantial revenue as wheeling charges.

• ABOUT THE AUTHOR

Mahendra Lama is Professor of South Asian Economies at the Jawaharlal Nehru University, New Delhi. He is Founding Vice Chancellor of the Central University of Sikkim.

• ENDNOTES:

Lama, Mahendra P. (2005), Sikkim-Tibet Trade via Nathu la: A Policy Study on Prospects, Opportunities and Requisite Preparedness. Gangtok: Nathu la Trade Study Group for the Government of Sikkim,, Gangtok, 2005; Mahendra P Lama Sino-India Borders: e Changing Perspectives, Public Lecture, Sophia University, Tokyo, January 2005.

Paper presented by R K Agarwal, Executive Director, SJVN Ltd on INDIA-NEPAL POWER TRADING Regulatory: Commercial & Investment Issues and Harvinder Manocha, Chief Project Ocer, GMR, on India- Nepal Power Trading : Regulatory, Commercial and Investment Issues, in the India-Nepal Energy conference organised by Confederation of Indian Industry, 4th September 2015, New Delhi.

Lama, Mahendra P, (2000)Designing Economic Condence Building Measures : Role of India in South Asia in India's Pivotal Role in South Asia, CASAC, New Delhi, September. and Mahendra P Lama, Economic Reforms and Cross Border Power Trade in South Asia, South Asian Survey, Delhi, (January June, 2000).

Ministry of Finance, National Revenue Report 2014-15, Royal Government of Bhutan, 2015; National Statistics Bureau, National Accounts Statistics 2015, Royal Government of Bhutan, 2015.

Hydro Carbon Vision 2030 for North East India, Ministry of Petroleum and Natural gas, Government of India, New Delhi, 2016.

OUTLOOK 2017 (AN INTERPRETATION OF SHELL'S LNG OUTLOOK)

Ritwik Mukherjee PGP-16

Could gas be the fuel of the future?

Some investors still have their hopes on crude, longing contracts at almost $100 for a barrel of crude. Well, Shell begs to differ. Gas will play an important role in meeting the growing energy demand.

With the Paris Agreement slowly moving towards pushing member countries to curb their carbon emissions, it seems likely that the member countries will plan to curb their carbon emissions. The expected global energy demand growth is expected to rise by an average of 16.67% in the coming 13 years, with gas proving to be the only commodity expected to rise by an average of 45%.

Renewables will be expected to rise by 18%, 3% more than oil. The expected rise of gas will be touching 8,000 billion cubic metre by 2030 (an astounding 226,534,772,736 cubic metre). That sure is a lot of digits!

Global gas demand will be expected in most sectors, starting from power to transport. Some of the noticeable changes are:

- Demand from the Power sector is expected to rise till 2030, main source of fuel being Gas. Current global consumption of gas in the Power sector is a little below 1,500 billion cubic metres. But, with the increase of consumption of gas, it is expected to rise by 45%, which would be touch 1,500 billion cubic metres.
- The industry will be expected to consume a rough 26%. The increase will see the industry expect a consumption of 1,300 billion cubic metres of gas.
- The residential, commercial and agricultural sector is not so far behind. The sector is expected to increase consumption by 22%. The current global consumption is a little under 1,000 billion cubic metres, expected to reach 1, 3000 billion cubic metres.
- The transportation sector is expected to grow the least, with an increase in consumption by only 7%. A significant change in pattern of consumption is not expected.

Although, if you do see the demand pattern region-wise, Asia will be expected to consume the most (an increase by 39%), followed by the Americas, Middle East and Rest of the World.

One of the fundamental questions to ask oneself, is that would Gas Power plants be a more feasible option? As opposed to a capital cost of $2,900-$6,599 per KW for building coal-fired power plants, a natural gas power plant would only require a meagre $676-$2,095 per kilowatt (KW). Typically, natural gas power plants have capacities ranging from 85-620 MW, as compared to a coal-fired power plant having a capacity of 520-1,300 MW.

We all have a fair idea, that in the era of renewables and other substitutes coming in for fossil fuels, gas could very well prove to be an alternate. The emissions are negligible, and the average time required for gas-based power plants to come online are relatively minimal.

The supply of LNG started from around 150 MMTPA in 2006, and has been increasingly growing at a rate which saw the commodity reach a volume of 265 MMTPA, supplied in 2016, and is expected to reach 330+ MMTPA by 2020.

Shell expects the 2016 import growth dominated by China, India and a few new entrants like Egypt, Pakistan, Jordan and Poland.

As per the principle of convergence, spot prices and futures tend to converge at some point or the other. Similarly, global LNG prices linked with the Henry Hub, NBP, and Platts have seen a decline in the prices after the global drop in crude prices. In the coming years, the prices are expected to touch $5/ MMBTU, as compared to the price revision by Platts, which shows the prices slowly rising towards $10/MMBTU.

2008 saw contracts ranging to almost 15+ years, but as time is passing and buyers are experiencing the volatility of prices, the contract lengths have reduced drastically to a little less than 6 years, in the past year. Contracted volumes have reduced as well, from 2.0 MTPA to around 1.0 MTPA.

Wood Mackenzie has clearly stated the requirement of an increase in fixed investment decisions. The demand for LNG will continue to increase, but the LNG supply under construction might not be sufficient to cater to the demands. As per reports, the demand supply equilibrium will stay put till 2020, but without increase in investments, the gap will only increase.Would LNG be the gas for the future? Europe is starting to make us believe just that. The European gas supply sees and increase in the share of LNG in their demand for gas, reducing dependency on Russia, Algeria and Norway.

Southeast Asia expected to become net LNG importer by 2035, with China increasing its demand for LNG by 16%. The demand potential is seen to be around 600 billion cubic metres by 2030, with LNG second to conventional resources.

After reading about 20 odd pages about the future for gas and LNG, one can only say that with the increasing constraints on fossil fuels, and the apprehensions of investors to believe in the hydrocarbon industry, gas could very well be the next step to a cleaner environment. Considering a competing platform, gas could give others fuels a run for their money. Question is, will we be ready to adopt gas in our energy mix, as easily as others?

INDIA'S SOLAR DREAM AND THE CHINESE TRADER

Siddharth Dixit PGP-17

On January 11th 2010 the Jawaharlal Nehru National Solar Mission was launched as part of India's National Action Plan on Climate Change. The Mission had set the ambitious target of deploying 20,000 MW of grid connected solar power by 2022 and aims at reducing the cost of solar power generated in the country through (i) long term policy, (ii) large scale deployment goals, (iii) aggressive R&D and (iv) domestic production of critical raw materials, components and products. It has been envisaged to achieve grid tariff parity by 2022.

As of March 31st 2017, the current Indian Solar capacity (installed) that is operational has reached to 12,289 MW. With an average cumulative capacity increase of 94.03% (YoY) from 2010 – 2017 (31st March) and the last years capacity addition was 76% (2016 to Q1 - 2017) at this pace the target of 20,000 MW will be reached even before 2020. But after the 2015 Paris Climate Agreement the target was extended to 1, 00,000 MW by 2022. This huge increase in target by the government provided stimuli to companies to enter the relatively new sector and created road for the Indian solar market to become the 3rd largest solar market in the world by end of F.Y. 2017.

But all is not as good as it looks. India follows the auction strategy for new utility scale solar parks and establishments. The pace of new tender announcement and completed auctions has slowed down significantly in the last few years (-68% & -59% respectively). This creates obstacles for large players as the opportunities are decreasing and new entrants are coming up.

The decline in tenders can be justified by the concentration of current established generating parks in states of Rajasthan, the western belt and the southern states of Andhra Pradesh, Telangana, Karnataka and Tamil Nadu. The southern states have frontloaded capacity build out: Karnataka (69% of 2022 target); Andhra Pradesh (74%); Telangana (70%). Other states such as Gujarat and Maharashtra are currently power surplus states and hence not enthusiastic about new projects.

The biggest news for the solar power market in India came in May 2017 when solar power tariff hit a new low of Rs2.44 per unit at the auction of 500 megawatt (MW) of capacity at the Bhadla solar park in Rajasthan. Acme Solar Holdings Pvt. Ltd and SBG Cleantech Ltd placed winning bids of Rs2.44 per kilowatt-hour (kWh) and Rs2.45 per kWh, respectively, to win contracts to set up plants in the park being developed by Infrastructure Leasing and Financial Services Ltd (IL&FS).

The tariffs declined largely as power companies bet on falling prices of solar panels and their confidence stemmed from a 26% decline in prices in 2016 alone. To understand this, we must know that other from the reality cost (Land Cost) the biggest investment is in the cost of panels, up-to approximately 70% - 80% of the total project cost. It is this place where the Chinese solar panel manufacturers come into the scenario. China, which accounts for more than 80 percent of global solar panel production, is also the biggest market for solar panels. It has added 23 gigawatts of new solar capacity in the first half of this year, almost double the 13 gigawatts India has installed to date and the government in China is seeking to double installations by the end of 2020. Meaning a higher level of increased demand for the panels in China itself. For us in India about 84 percent of solar panel requirement in the country is met through imports from China.

So, where is the problem? The problem is the sudden rise in cost of Chinese solar panels. The rise in cost had two factors leading to it first the U.S. International Trade Commission imposing anti-dumping duty on Chinese solar panels, which in-turn made the American solar rooftop services providers to stock up panels fearing tariffs. The second factor was China extended its feed-in tariff regime (Feed-in tariffs is a mechanism for payments to anyone generating renewable power and supplying to the grid) instead of moving to an auction-based system, keeping the panel demand high in the local market. Hence, the consumers of Chinese panels saw an increase in price of approximately 20% in the last six months.

The consequence of all the above-mentioned developments in the market is Indian companies are facing a dilemma to maintain the low per unit costs in the new tenders or to quote higher prices. In case of higher pricing the companies have a fear to lose the contract due to the state governments renegotiating the PPA's (Power Purchase Agreement) to lower cost for existing and under development plants to bring down costs for DISCOMs. Additionally, the Ministry for Corporate Affairs has launched an investigation for dumping of sub-standard solar panels by China, Malaysia and Taiwan.

So, is the future again going to be dark for the budding in this sector? According to experts and industry leaders it is not. The sun is predicted to shine brighter in the Indian market. The reason being the untapped solar rooftop market. Indian rooftop solar has a small share of 10-12% of overall installed capacity which is very less compared to developed markets such as Germany, USA, China, Spain and Australia. The government also identifying the same and has set a target of 40 GW of rooftop solar capacity by 2020 which is part of the 100GW plan. To attain the same target the government has come up with different subsidies and financial assistance plans. As for utility scale companies the funds are flowing in the form of Bonds, Mergers & Accusation (M&A) and IPOs. The biggest example of green funds in India is the Yes Bank Green Infrastructure Bond to raise INR 500 Crore ($ 76.563 million) for renewable and energy efficiency projects.

The coming years will see a rise of solar power and increased share of renewable in the country's power mix. The price obstacles in their current levels are still making renewable a better alternative to cost heavy coal power, with experts and agencies stating a variable cost of more than INR 3 per unit for just generation stage.

Charanka Solar Park Gujarat

Sources: Bridge to India: India Solar Handbook 2017
Rising Chinese Solar Panel Prices May Put Indian Projects at Risk by Bhanvi Arora in Bloomberg | Quint on August 20, 2017

DIGITIZATION AND DATA ANALYTICS

Nimesh Shah PGP-17

Over the last few years, the world has witnessed a tremendous wave of digitization that has influenced our professional as well as personal lives. An imperative of digital innovation has emerged and there is a need for businesses to use digital channels to engage with their key stakeholders and pursue innovation to reform their own business model before the competition does. Companies that make this transformation will have a competitive edge and accelerate exponentially while the rest would run the risk of becoming obsolete.

Digitization at its simplest means the conversion of analogue information into digital information. With the rapid technological advancement, it has become increasingly easy to do so; the real challenge, however, is to face the implications of this digital change.

Digitization and Data Analytics in E-commerce Industry

India's e-commerce industry has witnessed exponential growth in the recent years. As estimated by NASSCOM, it is driving 1.2 million transactions every day and the market is expected to touch $33 billion by 2017. At the current rate, India's e-commerce marketplace is set to become the second largest market in the world by 2034, just behind China. From a technology view point, the e-commerce business is heavily influenced by data analytics. From creating detailed user profiles to targeted pricing, testing of new product interest levels, buying pattern analysis and hybrid recommender, enterprises have leveraged data to build e-commerce business.

Amazon v/s Flipkart

In the e-commerce marketplace, Amazon is the undisputed king not only in the US but also in India. Amazon is one of the most metric-driven company using state-of-the-art big data and analytics tools. Some of the analytics platforms it uses include Hadoop and S3 database to work out vast amount of data in the areas of customer analytics, supply chain analytics, seller and trust analytics.

In addition, it uses Machine Learning to identify and correct faulty addresses to ensure timely delivery, show relevant products and ads for search queries and provide a seamless customer experience. Hybrid Recommender; cross selling related products based on consumer purchase monitoring has emerged as an effective data analytical tool in boosting sales for Amazon.

Major Parameters used by Amazon's Recommender System:

1. Customer's Purchase History

2. Products Liked and Rated by Customers

3. Items in Wish list or Virtual Shopping Cart

4. Purchase Preferences over Similar Competitor Products

5. Customer's Preferred Shopping Categories

Amazon's computing infrastructure gives it the hardware to be able to process billions of transactions and handle big data inputs.

Flipkart

Flipkart, on the other hand is competing in the e-commerce game by increasing its computing infrastructure in a phased manner. It uses Computerized Maintenance Management Software (CMMS) to implement solutions and get desired outcome. In order to engage the customer in the shopping process it has launched a conversational search experience that guides users

with broad intent. On the AI end, Flipkart populated local Indian data to get a better understanding of the customer's buying patterns.

Major Parameters Flipkart leverages for BDA:

1. Region wise Demand Prediction and Inventory Stocking

2. Warehouse and Fulfilment Centre Automation

3. Algorithms to Accurately Calculate Delivery Date

4. More Focus of Semantic-based Searches

5. Adopting Mobile-first Strategy to Tap Growing User Base

Although Amazon scores big on its in-house Computing Infrastructure and Machine Learning capabilities, Flipkart is set to leverage Microsoft Azure's AI and Analytics capabilities to improve merchandising, marketing and customer experience. Flipkart owned fashion e-retailer Myntra has also developed tools that crunch data to produce insights about buying habits that it shares with the branches associated on its site. With this user data, it is also mulling a data driven pricing approach and merchandising options to recommend similar items to users on web and mobile platforms.

Data Analytics in the Income Tax Department of India

Tax Evasion is one of the biggest problems that are hindering the progress of the country. In the year 2013, IT department made use of data analysis for the first time in the form of Non-filers Monitoring System (NMS). In this the data obtained from 3 sources namely, Annual Information Return (AIR), Tax collected at Source (TCS) and Tax Deducted at Source (TDS) was correlated with AIR to find out if any misappropriation of income exists . NMS in 2 years helped the IT earn 12000 Crore and has unearthed 1 Crore new tax assesses.

To complement NMS, the IT department tied up with L&T InfoTech Ltd., MapmyIndia, Teradata and EY for the implementation of Project Insight since May, 2017. The project is will help in scrutinizing tax evaders in a non-intrusive way by using an integrated platform that will use data mining and big data analytics. Non-intrusive meaning there will be minimal humane intervention and identifying suspicious people after sifting through the data will be done by the algorithm in the software only.

This will help in maintaining complete transparency also. A very recent example of large scale implementation of big data analytics by the IT officials was combing of the personal bank deposits and matching the accounts with tax related data. The analytics tool matched the tax returns filed by people and companies before and after demonetization. Any discrepancies in the data were red flagged and the IT department would then decide on the course of action.

This move would have been impossible without the use of big data analytics as combing through lakhs of accounts is virtually impossible. The move also helped in differencing tax payers from black money holders. On 31st January, 2017 the Income Tax Department (ITD) initiated Operation Clean Money. In the initial phase of the operation e-verification of large cash deposits made during 9th November to 30th December 2016 was done. Data analytics had been used for comparing the demonetisation data with information in ITD databases. In the first batch, around 18 lakh persons had been identified whose cash transactions did not appear to be in line with the tax payer's profile.

Outlook

In the present scenario of availability of cheap computing power, the growing usage and popularity of data analysis tools, it is becoming increasingly imperative to evaluate and implement optimal solutions proactively. Small companies and start-ups are using the power of same platforms to compete with the big league and are creating a democratized landscape launching their e-stores in the e-retail space. This e-commerce boost has paved way for niche data analytics start-ups that specialize in providing definitive consumer and marketing insights backed by research and data.

Regarding the future of data analytics with IT department there can be integration of indirect taxes and direct taxes on a common portal so as to have a complete overview of the tax payer distribution and where should the IT department focus on improvement. The future of the IT department is very bright as the integration of data analytics into its operations will not only increase credibility but also the tax payers' base in the country leading to a happy and developed India.

5 WAYS WITH WHICH YOU CAN BEAT FAILURE

Akshita Pandey PGP-17

Failure, a state which not many can handle; is a state which has its own significance in one's life. It teaches one to be grounded, not to develop ego and motivates one to perform better next time. Following is a step by step guide through which you can deal with failure and work hard to not see it again!

1. GAIN COURAGE, STAND UP AND BE READY TO BOUNCE BACK!

No doubt it is difficult to cope up with failure, but what one needs, are, 3 important things to keep in mind at this stage.

a. 1st : keep your calm, accept the failure and just give time to settle

b. 2nd: stop getting affected by remarks people give you.

c. 3rd: gain courage, fill you mind with positivity to give another try.

After the above steps, set your goal in your mind and aim for it without any further distractions. "Instead of looking at 100 reasons to quit, look at 1000 reasons not to give up"

2. GO BACK, SEE WHAT WENT WRONG

Many a times, we are very confident about our preparation whether in an exam or in a meeting at work. If things, didn't go as expected, why not try and look back again? Why not try to know what exactly are our weak points that require an improvement?

This exercise will not only familiarize you with your weaknesses but can help you focus on those weak areas to make them strong. Always remember, "Mistakes are you biggest teachers"

3. WORK ON WEAKNESSES

Once, you know what your weaknesses are, comes the tough part! You need to work on them, day and night, to make them strong. Many lose their patience in this process. But you need to understand, if failure was so easy to overcome, then value of your efforts would always be hidden!

Lionel Messi said "I start early and I stay late; day after day, year after year, it took me 17 years and 114 days to become an overnight success"

4. MOTIVATION AND A GOAL

It's very important to have a motivating factor in your mind, when you want to achieve something. The motivation can be of any sort or any kind. Be it money, be it luxury, or be it happiness. Being aware about your specific goal combined with motivation can bring out the real flavor of your efforts!

5. HAVE CONFIDENCE

It is necessary to have confidence in yourself, but in this process, again, be cautious about not getting carried away and be very careful about not having put the prefix 'over' before confidence!

This over confidence can ruin the efforts that you took!

At the end, don't lose hope. When the sun goes down, the stars come out!

INDUSTRIAL RELATIONS

Sandipsinh Jadav PGP-17

“Most people like hard work: Particularly when they are paying for it.” - Franklin P. Jones.

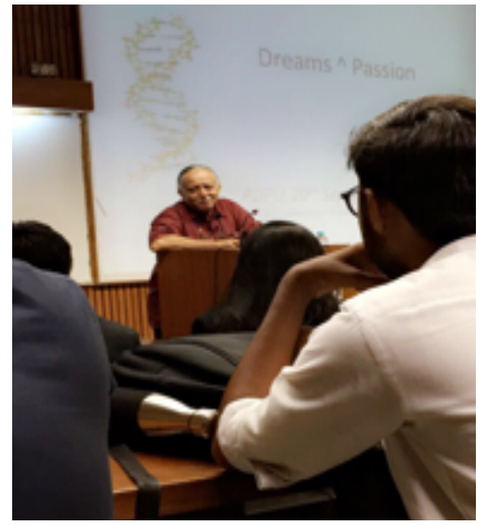
We have seen many times that labours are on strike due to payment issues, issue related to facilities, working hours, unfair wages, over-time, single payment during overtime and many other reasons. These type of issues may create conflicts between employees and employer, which may have its effect on production, productivity, quality and growth of any organization. Small problems may pose to be dangerous and become big and bigger if they are not solved at the very beginning. Employees are an asset. Any organization cannot afford to lose their asset. Role of HR in employment relation is very important in terms of problem listening, solving and way of talking, explaining and trust building.

What is Industrial Relations: -Industrial Relation is increasingly being called employment relations or employee relations. It is the relation between employee and employer. This move is sometimes seen as further broadening of the human resource management trend. Indeed, some authors now define human resource management as synonymous with employee relations. Other authors see employee relations as dealing only with non-unionized workers, whereas labour relations is seen as dealing with unionized workers. Good employee-employer relation is the key to solve many misunderstandings and problem to the solutions. Taking an analogy, termite is a very small creature, although it can eat up a whole big wood log. We see that wood is safe from outside an untouched but we fail to see that wood is not so from the inside. And come to know only when the fragments are left. Employee-employer relation is also a similar case. We cannot predict future. Small problem may arise, multiply and become big in a very small period of time which in turn will affect growth, productivity, quality, production and many other aspects in an organization and organization as a whole. Industrial relation is a vital aspect of Human resources as well as to an organization.

Industrial relations / Employee relations is a tool to prevent the issues from arising in the future. The better approach towards solving any problem is not to take corrective measures but to instead prevent it from happening in the first place. What better tool can be than to have a strong Industrial Relation base in a company? To be continued further in a detailed manner.

GUEST SESSION BY

MR. SUNIL R PAREKH STRETEGIC ADVISOR, ZYDUS



Students of School of Petroleum Management had an opportunity to learn directly from Mr Sunil R Parekh, Strategic Corporate Advisor, Zydus Group & Jubilant Bhartiya Group, organized by Guest Lecture Committee. Students received sapient advice from the guest. Mr Parekh encouraged the students to pursue their dreams and passion.

He persisted thinking over a problem until a viable solution is observed. According to him, no idea is worthless, it is just the priorities that matter. He illustrated this thought by explaining the concept of ‘Water studio’, how an unconventional idea was successfully executed.

He explained the importance of developing technology and how to sustain in such a dynamic world. In order to sustain in such an era, nonfunctional outlook won’t fetch the desired results. He further elaborated by illustrating the Mars Orbiter Mission by ISRO and how the scientists, utilized the available resources and successfully accomplished a task that had high-riskinvolved in it.

“Search within and focus, a very enjoyable gold mine is waiting.” He is a strong propagator of innovation. He believes where there is a problem, there is a solution and where there is a solution, and innovation takes birth. Everybody has creative instinct. Their goals and efforts are what make them different. He insisted on having dreams that guide us towards the right direction. It is the only thing that will keep us on the right track.

He elucidated, in order to understand one’s passion, it is necessary to spend time with oneself. Often spending time with near and dear ones helps. They often help to bring out the blind spot. Considering their opinions, the decisions that are taken should be self-made. “Spot your own, serious long-term individual interest. It connects directly with the goals.” The most important element in anything is the person behind it.

What our guest was trying to convey to the students was simply relatable. He further reiterated thinking is the key to everything. Ponder over the situation. Nothing in life comes easily. An easy going life is what a directionless person has. Having curiosity intact throughout life is a characteristic of a lucrative development of an individual. The thought-provoking session ended on a high note. Everyone was intrigued by the analogies presented by the guest.

ALUMNI SESSION

Aalap Pandya
PGP-13

To give an insight into current scenario of banking sector Mr. Aalap Pandya DM ICICI Bank was present on campus on 22 September 2017 to conduct an interactive session with the students. Mr. Pandya is an alumnus of School of Petroleum -2013 batch. The interaction was based around banking sector and its present condition .Students learnt about kind of job profiles it has to offer to management graduates.

The speaker spoke about job prospects that the present market holds and advised students to choose wisely from the lot. Also, students learnt about types of banking in general, specialized areas of expertise and how an aspirant must pursue to excel in the same. Speaker shared learnings from his experience till date in the industry.

The session was very interactive where student queries were answered thereby developing their understanding of the sector. Students came to know about challenges the sector poses being one of the most critical and dynamic industries. Pros and cons of government and private sector banks were enumerated. Also, how should the candidates prepare themselves to get into banking, what kind of skills and expertise should be developed was also discussed. The session turned out to be very fruitful and beneficial successfully put together by Alumni Relationship Committee.

Abinav Sengupta
PGP-12

SPM had a moment to interact with one of its alumni Mr Gupta who recently works with Axynko capital service Pvt. ltd. It was an interactive session. He discussed about the important takeaways from the institution which helps in the workplace. He emphasised on conducting clubs so as to ensure that the students are well aware of the present market scenarios. He discussed about his journey during college and how one needs to market oneself. His insights were valuable for the management students. It involved thought-provoking discussions, engaging topics and the required skillsets.

Many queries were answered and the students were given guidelines on how to prepare themselves for future in a working environment. The session was concluded on a happy note which involved his memories with SPM and how one should balance between the work culture and personal state of mind.

Siddhartha Bhatnagar
PGP-13

Technology has the capability to bring people closer, which proved highly beneficial for the budding managers at SPM. The students had an interactive Skype session with our alumnus, Mr Siddhartha Bhatnagar (PGP'13). Mr Bhatnagar is a Business Analyst at Cybage Software.

The session began with Mr Bhatnagar reminiscing his days in SPM. The students gained preliminary knowledge regarding the IT industry and what actually is business analytics. The students learnt that the business case for analytics is strong and various research studies have discovered strong relationships between a company's performance in terms of profitability, revenue, and shareholder return, and its use of analytics. Analytics is the process of using computational methods to discover and report influential patterns in data with a goal to gain insight and often to affect decisions, was explained to the students.

Further, the students were briefed about "Big Data" and the role of analytics in it, and that advanced data mining techniques and associated tools can help extract information from large, complex datasets that is useful in making informed decisions in many business and scientific applications including tax payment collection, market sales, social studies, biosciences, and high-energy physics.

The skillsets required for a job in the IT industry, as well as for the job of a business analyst were explained to the students. The session was highly interactive, with many questions being asked by the students, and being answered by Mr. Bhatnagar with equal fervour. The students were guided as to how to prepare better for their SIPs as well as placements.

The session was then concluded on a positive note.

GUEST SESSION BY

MR. ABHISHEK RANJAN, GLOBAL HEAD OF SUSTAINABILITY, BRILLIO

Mr Abhishek Ranjan, Global Head of Sustainability, CSR and BFSI Industry Marketing, Brillio. He briefly discussed with the students about the drivers for sustainability and responsibility. He discussed about the present day challenges in a workplace. The most important question which was addressed by him was, "Why sustainability and what are the functions and roles within sustainability and CSR management". Light was thrown on the top ten drivers which are management mandate, operational – efficiency, labour satisfaction, corporate citizenship, changing consumer preference, cause -based marketing, supply chain, circular economy, social license and compliance.

Mr Ranjan started the lecture by giving insights into email marketing. Email marketing has evolved rapidly alongside the technological growth of the 21st century. Mr Ranjan believes in having a pleasing email design as a basic rule of email marketing. The most important part of your content is actually not part of your content. It is the subject line of the email. If the subject line does not spike your subscribers' interest, you will get a very low open rate. The attention span of the readers is hardly few seconds and the marketers have to make sure to grab the attention in just those few seconds. He further said having a touch of personalization in your email will attract more positive responses.

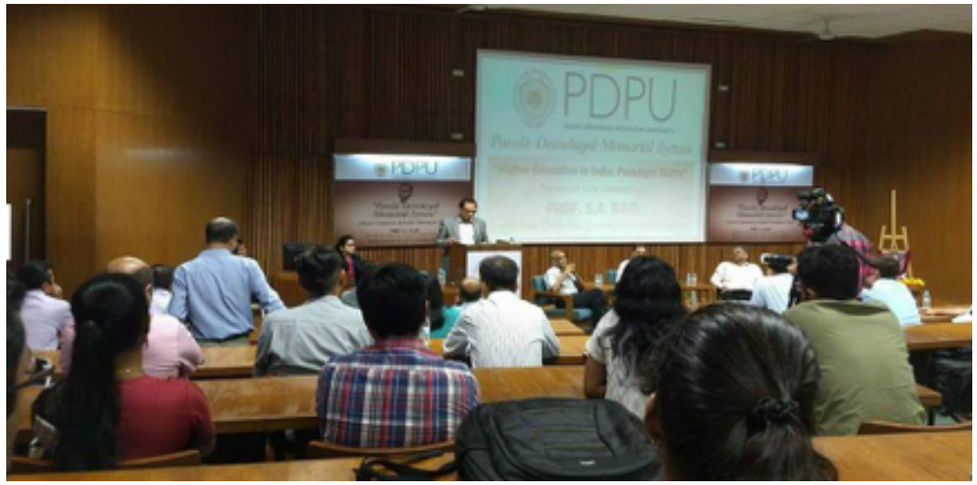
"Educating your customers and fans online and helping them solve problems is more important now than ever".

Social media builds trust in a relationship through sharing knowledge and spending time with customers. It is a two-way communication process where buyer's opinions are equally important. Buyer must be educated and informed about whatever is necessary for him to know. Engage, educate and entertain your customers. Mr Ranjan says one of the features of marketing is that a product should not need to be pitched or sold. It should be bought by customers automatically.

He then guided students through the art of writing and promoting blogs. He says, using keywords and call to action buttons should be used vigorously, but one should be very alert at the same time. It is the keywords and web content that makes it possible for people to find your site via search engines. It affects the visibility of your website or weblog in a search engine. His further advice to have their content in story form as a story sells far better than the facts based approach.

Mr Ranjan broadened students' horizon by delivering an erudite and enlightening session.

PDPU MEMORIAL DAY



"Education is an investment. An educated individual will indeed serve society."

- Pandit Deendayal Upadhyay

A memorial lecture was organised on account of the 101st birth anniversary of Pandit Deendayal Upadhyay. Vice Chancellor of Central University of Gujarat, Professor S. A. Bari graced the occasion with his benign presence. He spoke about 'Higher Education in India: Paradigm Shifts'.

Professor Bari believes knowledge is not only going to be the driver of the Indianeconomy but also, it is going to percolate into all the stratum of Indian society for a better quality of life and living conditions. The new globally competitive environment that is emerging in the country, the Indian student is now required to develop a versatile personality to cope up with the speedy changes in the world at large

He delineated the state of the current education system in India. The current challenge in India remains a 20th century challenge of quantity and quality for its primary and higher education systems. The inability of governments to really revamp educational system, especially rural education, is one of the greatest looming challenges for Indian education in the years ahead.

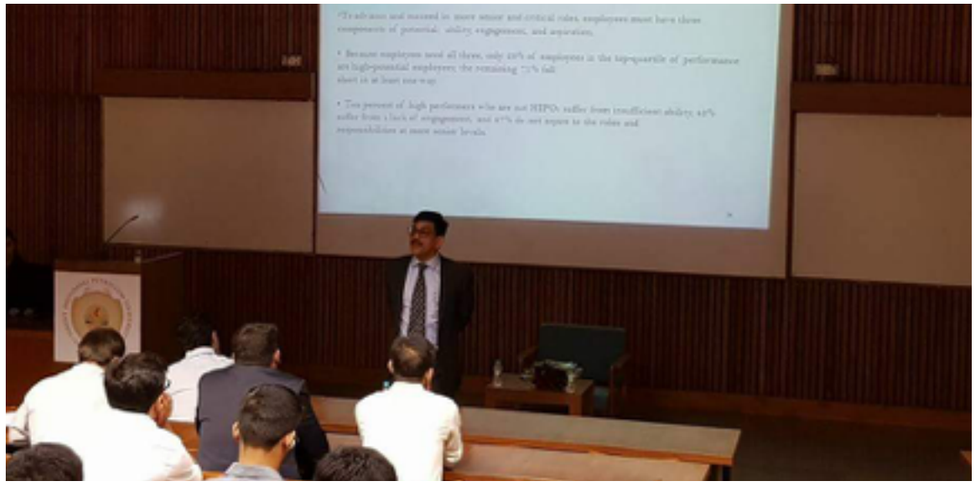
He also differentiated the Indian education system from the foreign education system. Indian educational system has different needs altogether and inorder to cater those needs, distinctive measures are to be taken. Following western system might not fulfil the requirements. India has a lot to go in improving higher education in spite of different ranking schemes. The NIRF and HRD is one such ranking which is not very concrete.

He further highlighted the scope of technology in education. He considers a robotics and artificial intelligence as a revolutionary change. There's no escape from technology in order to achieve success. Finally, he explained how far India has come and how far it has to go.

Professor Bari was very knowledgeable and crisp in his talk. All his findings were backed up with sufficient statistics. He further boosted the confidence of already enthusiastic students. Students carried bundles of knowledge from the expertise of our guest.

GUEST SESSION BY

MR. PRAVEEN KUMAR SENIOR VICE PRESIDENT HR, KTPL



Guest lectures are an important part of the pedagogy of SPM. Eminent personalities from various industries and institutions are invited to lend valuable information from their expertise to the students.

On 2nd October, i.e. on Monday the students of SPM got one more chance to meet such an illustrious dignitary. Mr Praveen Kumar, who currently holds the position of senior vice president at Kalpataru Power transmission Limited Ltd visited SPM as a guest lecturer.

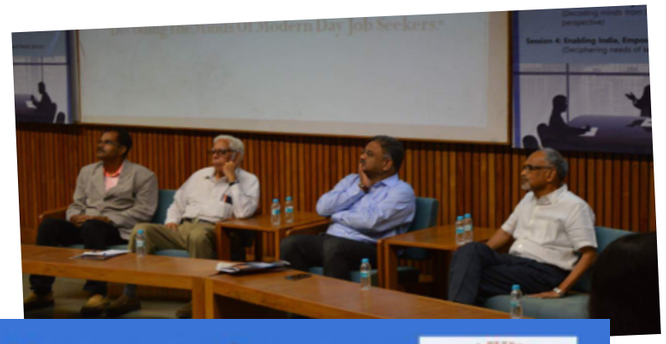
Mr Praveen Kumar started his lecture by sharing his knowledge of HR and providing insights about self-assessment and personal growth. He further discussed about how work can be prioritized based upon its significance and also the importance of time management. Stressing on the significance of motivation in an individual's carrier he explained how incentives can motivate a person, but only to a certain extent whereas self-motivation keeps a person going in spite of all the odds.

The session focused on HR experiences of the guest, differences between a product company and a service company and discussion on pubic vs. private companies. It ended as an interactive session where students were bestowed with knowledge about needs in public and private companies, challenges in HR and other valuable insights significant in an individual's career.

BUSINESS MANAGEMENT SYMPOSIUM 2017

A significant portion of management education comes through learning from real life experiences. And the best way is to learn directly from the horse's mouth. On 6th and 7th October, 2017 that is on Friday & Saturday, one of the most awaited events at PDPU - the 'Business Symposium' was organized by SPM. The theme of the BMS 2017 was 'Decoding the minds of modern day job seekers.'

The session one commenced after the inauguration of the Business Management Symposium by Dr.T. K. Reddy, Director General, PDPU, Dr. C. Gopalkrishan, Director of SPM, Dr D. M. Pestonjee and Dr. Ashutosh Muduli, Chairperson, Business Management Symposium 2017.



Session one focused on how Finance and Technology join hands. The prestigious guests invited to speak on this topic were Mr Ankit Kanodia, Mr Bharat Panchal, Mr Pratik Soyantar, Mr Rajesh Dhuddu and Mr T S Babu. The guests discussed on how the advent of futuristic technology has exposed the managers to formidable challenges in various domains like marketing, finance, people management, etc.

Session 1

S.No.	Name	Designation	Company	Location
1	Mr Bharat Panchal	Sr. VP & Head	NPCI	Mumbai
2	Mr Rajesh Dhuddu	Sr. Vice President	Quattro	Gurgaon
3	Mr T.S. Babu	Head HR	KSIPL	Ahmedabad
4	Mr Ankit Kanodia	Partner	Smart Sync Services	Ahmedabad

The first session was initiated by Mr Bharat Panchal. Mr Panchal illuminated the revolutionary story of digital India and major evolutions in the 21st century. Mobile phones surpassing landlines, online media and demonetization were considered as major revolutions in the country by him. The students gained further insights about digital payment schemes such as RuPay cards, CTS - Cheque Truncation Scheme, the highly sought after BHIM App - Bharat Interface for Money and the UPI App - Unified Payment Interface.

Mr Rajesh Dhuddu who holds the position of Senior Vice President at Quattro discussed about Technology driving Future payments. He discussed how the advancement in technology has resulted in the development of economy and GDP. The students learnt about the emerging trends of Crypto currencies, Block chain and its significance.

The session was carried forward by Mr T. S. Babu. Mr T S Babu incumbent Head HR, KSIPL provided further insights about the Evolving Disruptive Technologies and the Fin-Tech Revolution. The students learned how crucial it to adapt the new technology if one needs to sustain in the era. It was conceived that the skills for success in the long run are ability to adapt, multitasking, cognitive ability, and updating oneself to the changing market needs.

Mr. Ankit Kanodia, the last guest of session one, who is currently a Partner in Smart Sync Service, Ahmedabad addressed the students about the evolution of medium in Equity Investments in India. The students gained knowledge about the development of the stock exchange and also learnt how technology has enabled the users to connect on a business platform, which has made trading very convenient. The students gained further insights regarding the investment techniques in the stock market.

The second session on 6th October beginning from 2:30 pm-4:30 pm was on the topic "Moving fast with Fast Moving Goods"

S.No.	Name	Designation	Company	Location
1	Mr Subhanish Malhotra	HR Business Partner	Arvin Ltd.	Ahmedabad
2	Ms Smita Nair Jain	Senior Divisional VP	Sears Holdings	Hyderabad
3	Mr Ganesh Kashid	BPHR	We Work	Bengaluru
4	Mr Saleel Bhatt	Business Head	Globe Textiles	Ahmedabad

The session discussed how young minds need to decipher and identify the critical competencies capable of fostering creativity and innovation. Increasing growth and competition in FMCG sector has forced the decision makers to establish a competitive edge through innovation. Innovative products and processes require a creative mind. Speakers also focused on how digital marketing is shaping the future of marketing. The discussion also considered how the traditional marketing and the need for a presence in the offline market still persists.

The third session on 7th October beginning from 10 am-1 pm was on the topic "India Transforming into Service Hub"

S.No.	Name	Designation	Company	Location
1.	Mr. Biplob Banerjee	Exe VP HR & CSR	Jubilant Food Works	Mumbai
2.	Mr. Hiral Dholakia	Senior Director HRD	J Walter Thompson – South Asia	Mumbai
3.	Mr. Shreetam Subhrankar	HR Business Partner	Amazon	Hyderabad
4.	Mr. Inder Kumar R	Leadership Development	Deloitte – Office of the US	Hyderabad

The session discussed the introduction of the Service sector in India. The session aimed at knowing how to encourage regulatory framework and ease of trade barriers at both domestic and international levels through agreements that will enhance India's competitiveness at a global level. Also, to increase the quality of employment and not just numbers which will lead to a quality labour force for the country. The session also focused on the Employability of the Employable, Importance of Feedback and Skills required in Service Sector.

Session 4

S.No.	Name	Designation	Company	Location
1.	Ms Aparna Sharma	Independent Director	T S Alloys	Mumbai
2.	Mr Ramesh Shankar S	Executive V P & Head H R	Siemens	Mumbai
3.	Mr Sandeep Tyagi	Director H R	Samsung Electronics	Delhi
4.	Mr A L Jagannath	Senior Director, Dell -EMC Alliance	VMware Software India	Bangalore
5.	Mr Dheeraj Gupta	Supply Chain & Logistics Specialist	ABB	Vadodara

The closing session of BMS 2017 focused around Generation of millennial, their skills and aptitude, challenges faced and ways to empower them. The speakers spoke about organizations of the future and how they are adapting to accommodate millennial. Students learned about industries ranging from advertising to logistics and manufacturing. The talks delivered focused upon demographics of human resource in times to come. Speakers from electronics and electrical manufacturing majors such as Siemens and Samsung highlighted that discipline and passion are most sought after traits in candidates pursuing to be in such geographically and culturally diverse technology and engineering organizations. Whereas speaker from Supply Chain and Logistics functions encouraged students to consider it as career option given its growth potential, particularly those who possess entrepreneurial skills.

INTERACTIVE SESSION ON GOONJ (NGO)

गूंज..

GOONJ.. a voice, an effort

The School of Petroleum Management had an opportunity to interact with one of the team members from an NGO called Goonj. Ms Susaana Cherian who looks after the Mumbai branch was in the campus. Goonj is a non-governmental organisation headquartered in Delhi, India which undertakes disaster relief, humanitarian aid and community development in parts of 22 states across India. Goonj is the first to highlight clothing as a basic but unaddressed need which deserves a place on the development agenda.

Goonj is turning the discarded and under-utilised material of cities into a tool to address ignored basic needs and development issues of rural India. Goonj's work is not about collecting and distributing material but about changing the age old tradition of giving old material as charity and repositioning it into regular and dignified giving. In the race of development everyone is too focused on machines i.e. the big, known issues, ignoring the needles- the most important basic needs. At Goonj the focus is on these needles.

It was founded in 1999 by Anshu Gupta. For his work with Goonj, he was awarded the prestigious Ramon Magsaysay Award in 2015. In 2012, he was named India's Social Entrepreneur of the Year 2012 by Schwab Foundation, a sister organization of World Economic Forum. Goonj's work over the last 18 years has evolved a parallel economy which is not cash based but trash based. Urban material is emerging as a parallel currency which is not only addressing basic needs but also having a macro impact on curbing migration, improving sanitation & health and enhancing economic activities etc. Goonj has over the years turned massive disaster wastage into a resource for development work; right from Gujarat Earthquake to Tsunami, Bihar Floods (2008), Andhra Floods, Uttarakhand Floods, J & K Floods and Chennai floods more recently.

Ms Suzanna, not only gave information of what Goonj was all about but also had ignited the spirit amongst the students and helped bring out the hidden moral fibre in them. Proof of which we see in these ignited souls and their recent efforts in the university. These self- volunteered students have started a massive university level campus donation drive on the similar lines under the tag of Goonj.

NAVRATRI (GARBA NIGHT) AT SPM

The School of Petroleum Management witnessed one of the most awaited cultural events of the year, Navratri, this September 2017. These nine days of the month are something which people especially in Gujarat eagerly wait for. The atmosphere is filled with exuberance, spirit, enthusiasm and fervour with the people all dressed up in traditional attire. It was nonetheless in the campus too.

The campus was decorated by the Cultural Committee in a very beautiful manner and the event enthusiastically arranged. The students performed evening prayers for the Goddess too. With the end of the tenth day, the School of Petroleum Management strives to maintain the same enthusiasm for the year to come until the next season.

VIGILANCE DEPARTMENT AT PDPU

The week from 30thOctober to 4th November is observed as Vigilance Awareness Week in India. The selection of this week is done as Sardar Vallabhai's birthday falls in this week. He was a person of iron will and wanted the country to be transparent. This falls in complete sync with the Central Vigilance Commission's (CVC's) goal.

This year, on 2nd November HPCL's CVC department came to PDPU to spread awareness on vigilance and what a responsible citizen should do. Around 100 students took the oath of not supporting non-transparency in any way. The event was of around 30 minutes and was compered by Jainam Shah, a student of SPM. The oath was administered by the DG of PDPU, Mr Reddy in presence of GM of HPCL North-West zone and Chief Manager CVC, HPCL.

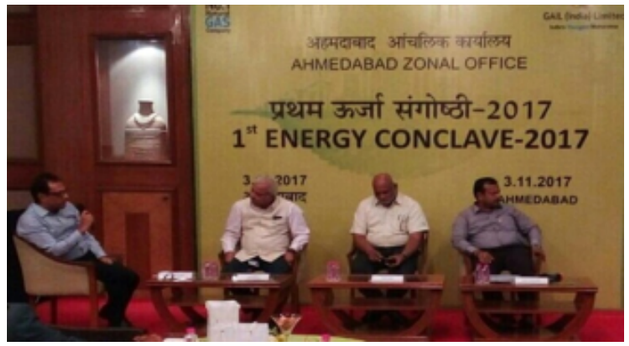
Later in the day with the help of Krutika Ayachit and Nishit Shah, both students of GM around 100+ pledges were taken by various students of PDPU. The event received great appreciation from the Chief Vigilance Manager of HPCL, Mr Anand.

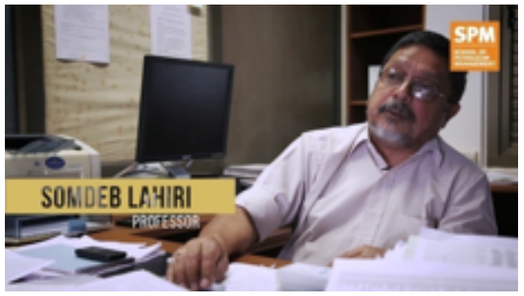
These type of events are necessary so that a positive mind-set can be formed in the minds of the people of India.

FACULTY FOYER

Dr. Pramod Paliwal Professor and Dean School of Petroleum Management participated as a Speaker & Panelist at CHARGE Energy Branding Conf. at Reykjavik Iceland (9-10 Oct 2017). He shared stage with Energy & Utility CEOs and Policy Makers from across the world expressing his views on communication andtransparency of the hour for the Energy utilities companies. His co-panelists included industry leaders like CEO-IKEA Iceland, Head of Global Brand Mgt.-Innogy, CEO-The FCTR E and COO- EPEX SPOT.

Prof. Pramod Paliwal also addressed 1st Energy Conclave 2017 on 3 November 2017 organized by GAIL (India) Ltd. Ahmedabad. He also moderated the Panel Discussion on CGD Sector.





Prof. Somdeb Lahiri Faculty School of Petroleum Management presented his work in the field of Economics under the paper titled "On a theorem due to Alan D. Taylor about aggregation of preferences" at 87th Annual Meeting of Southern Economic Association (SEA) at Tampa,Florida (USA) held on 17-19 November 2017.SEA is a professional organisation with members across the world, aimed at encouraging researchers and scholars in field of economics and public affairs.The paper was presented on 19th November in the session on - Issues in Political Economy and Applied Microeconomics , which was also chaired by Professor Lahiri.Earlier he had presented the paper at the Mini-Conference on Networks and Games, held atIndian Statistical Institute, Kolkata on July 3 &4, 2017

ON TWO FEET AND WINGS BOOK REVIEW

Shriharsh Patnaik PGP-17

Childhood is a time to learn new things and venture into the world in the comforting and secure shield of parents and loved ones. And "On two feet and wings" written by Abbas Kazerooni delves into his childhood incident and experiences which evokes giggles, sympathy and sadness from the readers for the protagonist (young Abbas).

This novel is set in the 1980's in the backdrop of Iran-Iraq war and provides a landscape view of that time along with the strangeness, pain and comforting relationships that are indexed by odd and fascinating events in Abbas's childhood. One of the things the Iran/Iraq war is famous for was their use of child soldiers. It got to where 9-year-olds were about to be "recruited." Knowing 9-year-old Abbas would be called up soon, Mr and Mrs Kazerooni were desperate to get their son to England, via Istanbul for a visa.

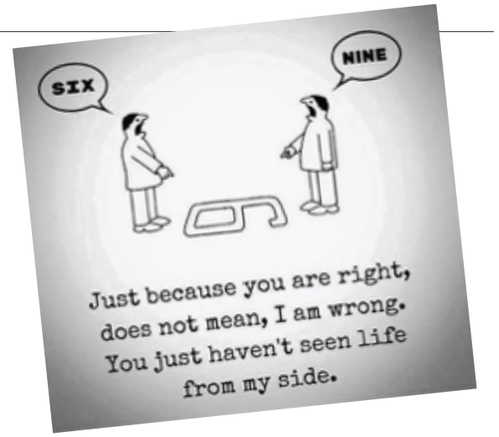
Because of the harsh regulations of the regime, the only option his parents had was unthinkable: send Abbas on his own. His Abbu set it up with someone to meet him at the airport and help him get his visa. And the man did meet him. Then gave him a list of cheap hotels and left. Abbas didn't even speak the language. During his three month stay in Istanbul he encounters the full spectrum of human behaviour and emotions. He's unbelievably sharp for a 9-year-old and has a brilliant entrepreneurial mind. He comes up with ways to not only survive, but make money and friends as he waits to get his visa. He also turns out to be unbeatable at cards. Oh, and he discovers television, in particular, Knight Rider and Bollywood. The thing is, it's a true story. His parents really did have to send him on his own, and he really did meet kind, wonderful, helpful people there. There's a wonderful moment at the consulate where they show him the shiny new visa affixed to his passport. There are more very sweet moments than I can list here. This is my favourite: When the head of the consulate takes a personal interest in his story, he calls Abbas back to his office and offers him hot chocolate and cookies, because that's his son's favourite and helps him.

At the end of the book, Mr Kazerooni thanks the reader for reading his story. Besides the entire book, there are some particularly poignant moments, such as when he says, "There were many stories like mine, and my tale was by no means the most difficult or the most tragic."

"One of the luckiest things that can happen to you in life is to have a happy childhood and a loving home" -Agatha Christi

RIGHT OR WRONG? THAT IS THE QUESTION

Ritwik Mukherjee E&I PGP'16



"I love the grey area between right and wrong" – Dan Brown

Ever been in that position, where a choice will change your life? A choice which is a fundamental decision between right and wrong? The very thought which consumes you all night, the inner struggle which gives you a sleepless night, ultimately making the decision more difficult.

I remember when we were babies, the only decision we had to focus on was if we needed to poop in our diaper or in front of everyone. If we needed to run around naked in front of our parents, or wear the little clothes they tried to force us into. But, life tends to throw curve balls at us as we grow up. Decisions get tougher, and maintaining the fine line between the right and wrong just gets blurry by the day.

The decisions seem to loom over our heads, and it shows on everyone's faces. Everyone is forced to deal with this struggle in various other situations, but the problem is the same. Like life wasn't curve balling us enough?

We're being selfish, reckless or just not thinking clearly.

We are all taught at a very young age what the difference between right and wrong is. The right path is always in front of us, but we tend to neglect it out of our own selfish reasons. The situation is simple. One cannot always decide and ends up misinterpreting the information needed to base choice around.

It is just so difficult with the negativity that follows. Training yourself when at, crossroads could probably be the most stupid thing you could do. The truth is we will never automatically know what is right or wrong.

Forget thinking about yourself, how will the decisions affect those around you? How can we prepare for an unknown outcome? We cannot, and that probably makes choosing the right choice more difficult, not knowing if it is the right decision.

One day, Alice came to a fork in the road and saw a Cheshire cat on a tree. "Which road do I take?" She asked. "Where do you want to go?" asked the Cheshire cat. "I don't know", Alice answered. "Then, it doesn't matter." said the Cheshire cat.

The Cheshire cat was right. Is there even a clear-cut definition of what is right and what is wrong? I personally don't think so. What could be right for someone, could clearly be wrong for someone else. One cannot expect to please the world, can they? Ultimately, it doesn't matter which path you choose to take, fate tends to take its own course and whatever must happen, will happen. You cannot force someone to decide, especially when the stakes are high, or low nonetheless. You certainly cannot expect that a decision will lead you on the right path, because the choice which YOU think is right, might lead to a wrong choice in the future.

Grappling with a decision on what to do does nothing for you, because life is full of decisions that need to be made. As much as you think that there is a brick wall at the end of the road, there isn't. There are always going to be forks on the roads, Cheshire cats on trees, because the road is never-ending.

Hold onto the comfort. That is all you can really ask for, or hope for.

SPM MIRROR TEAM

PGP'16

AAYUSHI SHAH | TANYA SHARMA | PRATIKSHA VERMA | KAVAN OZA
RAJKIRTI PANCHAL | SHIKHAR KEJRIWAL

PGP'17

GOPAL PARMAR | RIDDHI THAKKAR | ISHA GANDHI | AASTHA SINHA
VYOM SHAH | DHRUVAL PATEL | KRUTIKA AYACHIT | RICHA TIWARI

PANDIT DEENDAYAL PETROLEUM UNIVERSITY
SCHOOL OF PETROLEUM MANAGEMENT
Off Koba-Gandhinagar Highway, Raisan, Gandhinagar- 380027, Gujarat, India.
Ph: + 91 79 23275107, +91 79 23275112 | Fax: + 91 79 23276364
Visit us at www.spm.pdpu.ac.in