



Connecting Thinkers...

Editors' Message



Dear Thinkers,

While working on Thinklet this time, I was suddenly reminded of a two-day seminar organized in collaboration with Sahitya Academy focusing on the 'little journals'. One such publisher who used to religiously mail his journals to all of us, sent an issue saying that the particular issue would be the last one. He cited all the classic reasons which had been discussed in the seminar, but mostly laid emphasis on 'lack of money' and 'lack of writers/ contributors'. We all acknowledged that though both are interdependent and perhaps complimentary to each other, it is perhaps the latter which is a more serious reason for a journal to fold up. It is clear that any journal's existence and presence is driven by the people who contribute to it. Unless this was ensured, we were certain that the publisher's latest edition, could unfortunately, also be his last one .

Since we started working on Thinklet, this thought has got reinforced. It has led us to introspect about sustainability of all the things we do, and are a part of. Whether it be our day to day routine, or specific tasks, it is our interest and resilience which contributes to its sustenance. The question to be answered is 'HOW'? This does not have to be a standard response, since it is a case of 'to each his/her own'.

So friends, whether it is your research work, a paper to be published or our Thinklet, we have to set aside time to introspect 'how do we sustain it'. At Thinklet, we are emboldened by your response and hope to keep up the same for many, many years to come.

Keep Reading! Keep Writing! Keep Contributing!

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GUIDE'S COLUMN

Economic Model Building for Happiness Index

Economists build models about economy and society. An economic model is a simplified representation of a real life situation. Models can be built at micro or macro level, for short-term or long term perspective with descriptive, analytical or predictive purposes. Micro economic models are equilibrium models (based on the market forces of supply and demand); macroeconomic models are disequilibrium models aimed at driving the economy from short-run disequilibria towards long-term and sustainable equilibria. Ultimate outcome of any model is growth, development, sustainability or welfare (happiness). Economic models can be constructed at different levels of details, sophistication and abstraction. A simple economic model is built on the assumption of *ceteris paribus* to explain the relationship between two variable one being the dependent and the other independent variable. A model can become more complex as the number of the variables increases and the *ceteris paribus* assumption is relaxed. As model implies abstraction from reality, setting a number of assumptions is essential to simplify the complexities of the real phenomena. Assumptions have to be carefully chosen, these have to be consistent to retain the realism and attain a reasonable degree of generality. The degree of abstraction depends on the purpose for which a model is constructed. The validity of these models is judged by several criteria - the extent of information, its generalisability and simplicity. Predictive performance of these models is very significant when the purpose of the model is to forecast the effects of a certain change in the system. Realism of assumptions and explanatory power are very important when the purpose of the model is to explain the behaviour of the economy as it does. Finally, these economic models are constructed so as to be testable, verified or refuted.

Smith's inquiry was about the nature and causes of the wealth of the nations. In contrast, happiness inquiry perhaps is more interesting, as it enquires into the nature and causes which affect the happiness of people and economy that leads to the comfort of the lower orders of the society, which is the most numerous class of any nation. The wealth of a society may increase without having any tendency to increase the comforts of the laboring part of it. Health, the command of the necessaries and convenience of life are the universally acknowledged as ingredients of happiness of man (Malthus). Wealth has tripled over the past 50 years. However wellbeing has remained flat. Mental illness has increased at an even more rapid rate. The trend of income inequality in India shows income of 0.1 percent income earners in France and China rose at six times faster than the income of the bottom 50 percent (Thomas Picketty & Lucas Chancel, 2016). India's the growth rate of top 1 percent was 13 times higher while it was nearly 77 times higher in the US. Why the benefit of higher growth hasn't been spread over to all the classes? Mainstream economists today realize the uselessness in continuing to use economic modelling based on a *priori* assumption that does not help to understand or predict even simple economic actions or choices. Happiness can be interpreted as the confluence of quality of life research on the dark side of the economic progress. Myrdal, Galbraith and Hirshman who worked outside the mainstream of pure economic theory, find operational solutions capable of effectively quantifying the concept of quality of life. Sen encompassed new indicators such as democracy, social capital, health, rights, freedom, working conditions and fundamental capabilities in the category of quality of life.

While economic growth is essential, ethics, equity and building capabilities of the excluded and vulnerable, the performance and governance conditions are vital to attain gross national happiness. Increasing the national product is significant for employment and consumption *per se*, but its impact on distribution, resource exhaustion, social cost and negative spill-overs throw concerns on inter-generation equity across the growth trajectories of economies. Happiness is a function of consumption goods as well as other relational goods. There is a positive relation with rising income and consumption goods. Government and social interventions are needed to enhance the relational goods to the masses. India is among the world's saddest nations as it ranks 122nd in World Happiness Report of 2017 behind Pakistan, China and Nepal.

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Energy Efficient Homes- A Step Towards Reduction of Global Warming

The world's population uses about 15 TW of power today. We probably need to generate 30 Tw power in the World by 2050. If we do not dramatically reduce our carbon emission, the global warming is going to increase day by day! By using renewable energy sources, global warming can be reduced by 50 percent.

One of the easiest ways is to make your home energy efficient is by installing solar panels on the roof-top of your house. The sun produces 1Kw energy per square meter. With 15 percent of efficient cells, one single family's typical home needs 20-meter square cells. Modules can be connected to an inverter to get AC power from DC power. People are allowed to run their meters backward. The net energy metering option allows consumers to give energy back to the grid when it is not needed. Even a single phase of household consumer is allowed to avail net metering without the hassles of procedures and approvals! Competitiveness of solar with conventional grid electricity depends on size of installation, annual amount of sunlight available, change in climate condition and local cost of conventional grid. If home energy system produces power more than your usage, you can earn bill credit. The earned credit can be utilized during peak hours of consumption!

The net energy metering option allows consumers to give energy back to the grid when it is not needed.

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LPG Leakage: Early Detection

Liquefied Petroleum Gas (LPG) fuels the majority of Indian kitchens and industries. It is a mixture of butane and propane. The mixture is compressed at low temperature, liquefied and distributed in cylinders. When connected to the regulator, it sometimes leaks. Since the gas is self-ignitable, leakage leads to explosions. So there is a need for early detection of gas leakage. Usually, devices for early detection of LPG leakage use a polymer - polypyrrole - mixed with other nanocomposite metallic oxides such as Titanium and zinc oxides. Such devices need significant amounts of LPG before they respond.

An affordable, cost-effective device that detects LPG leakages can reduce accidents

Recently, Choudhary from the Suresh Deshmukh College of Engineering and Waghuley from the Sant Gadge Baba Amravati University, Maharashtra have reported a method to detect LPG leakage in the early stage. They mixed different nano-composites of zirconium dioxide, titanium oxide and silver oxides with porous polypyrrole. They found that polypyrrole with silver oxide has less response and recovery time than the mixtures of the other two oxides. Moreover, silver oxide mixture showed more sensitivity and selectivity towards LPG than available technologies even at a lower temperature. Entrepreneurs can now come forward to develop and commercialize this technology. An affordable, cost-effective device that detects LPG leakages can reduce accidents.

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The author wishes to clarify that this article is a review of an earlier work (Mater. Lett. 205: 36-39(2017)) and not his research.

Exploring the Potential of Edible Oyster Mushroom *Pleurotostreatus*

Pleurotostreatus is a widely cultivated edible mushroom which is commonly called ‘oyster mushroom’ due to its oyster-like shape. Culinary preparation of this mushroom is an integral part of various Asian cuisines. The ease of cultivation on substrate like paddy straw and its mild flavour have made it quite popular among the consumers. Interestingly, consumption of oyster mushrooms has been reported to lower blood cholesterol level, thereby reducing the risk of cardiovascular diseases. Laccases are abundantly produced by many mushrooms which cause decomposition of litter by degradation of lignin, a highly complex natural polymer. In our study, the ability of crude laccase from *P. ostreatus* to decolourize a synthetic diazo

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dye Congo red was investigated. Addition of crude laccase to the dye solution resulted in 36.84% decolourization after 20 h of incubation at $35 \pm 2^\circ\text{C}$. The result indicated that this fungal laccase can moderately decolourize azo dye without the assistance of any costly mediator. Fungal contamination and subsequent spoilage of agricultural products is not uncommon.

We often find bread loaves turning moldy and peanuts, spices and corn kernels appearing powdery. These are primarily produced of molds like *Aspergillus flavus* and *A. parasiticus*. Aflatoxin B1 (AFB1) is reported to have hepatotoxic, carcinogenic and mutagenic effects on humans and animals. Consumption of aflatoxin-contaminated rice straw may result in aflatoxicosis in dairy cattle. Moreover, transmission of these toxins from aflatoxin-contaminated feed into the milk of dairy animals has serious consequences on human health. However, there is concern that some storage conditions may favour fungal growth and mycotoxin contamination of the feeds. Fungus like *P. ostreatus* is able to transform AFB1 into less toxic metabolites. Our research findings suggested that incorporation of metal salts and surfactants in contaminated rice straw can improve the enzymatic degradation of AFB1 by *P. ostreatus* strains. Co-cultivation of *P. ostreatus* strains on AFB1-contaminated rice straw revealed their ability to rapidly colonize the substrate resulting in 89.41% degradation of AFB1. Also, natural isolate of *P. ostreatus* demonstrated higher AFB1-degradation capability than the standard strain. Our exploration into the fascinating world of mushrooms helps us to make interesting revelations of their immense potential.

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Breakthroughs of my Ph.D Journey

I always had an ambition of doing Ph.D as I was fortunate to be surrounded by family and friends who were scholars and motivators. My journey started with little knowledge of research. When I enrolled for PhD at Jain University, I had the opportunity to meet researchers from various disciplines, interact with them and share ideas during the coursework, literature review, and skill development programs. These interactions enhanced my knowledge for setting the objectives of my research. At times, the goals were extremely challenging which surrounded me with doubt, fear and self-criticism. The literature review phase was extremely challenging since nowadays the availability of literature is quite vast, and there are various sources to access them. It was my guide who explained how to go about the process and supported me at every step of the work, until I was success in finishing it. The colloquium presentation gave me the complete insight of my research work. I believe that procurement of a Doctoral degree is not about how smart we are, it’s about our determination, preparedness, discipline, and the ability to continue on the course even when things are not working as expected. Sometimes it is stressful but we need to learn how to connect our ideas clearly. One thing which really helped me during the course of my study was physical exercises and a scheduled playtime with my kids.

Interactions enhanced my knowledge for setting the objectives of my research

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My Research Journey

I would like to share my research journey in this article, to motivate all my fellow researchers who are in this path and who are planning to begin their journey towards this. I started this journey in 2012, and I still remember the amount of apprehension and anxiety that took over when I got selected in the interview as a PhD candidate. I had taken up this challenge after quite a long gap in my academic life, where my passion towards the subject and an innate desire to do 'something more' in this field gave me the courage to explore research areas. After my research proposal got approved, which was the next big achievement, I got into the phase of data collection without wasting much time. One thing I realized in this phase was that while framing our methodology, the more precise and clear we are on our research methods, the more we can manage the field work with clarity. Since we had meticulously worked on all the finer aspects in many ways, I was well prepared for them.

The more precise and clear we are on our research methods, the more we can manage the field work with clarity

It took me nearly eight months to complete the data collection, which came with lots of hurdles, obstacles and challenges, despite the preparations because this requires a lot of practical application of knowledge and to confront the unexpected. The results phase of my work came with a lot of surprises, shock, disappointment and excitement. What I had personally anticipated, as a researcher, to be the outcome of my analyses did not happen. This initially disappointed me, but when I got to discuss the same with my guide, the insight I got out of the result and the analysis had really brought a new perspective to this research area which delighted all of us!

Finally, the writing of my chapters and freezing each of them in consultation with my guide took another 7-8 months, and I finally had the whole draft ready. After successfully completing the phases of pre-submission colloquium, submitting my thesis, and finally completing the viva, the long-awaited moment of getting my doctorate became a reality! To put my whole research journey in a nutshell, I can say that this has been a very fulfilling journey for me with a lot of learning from mistakes and successes. Finally getting the degree has given me an extra edge in my occupational and social life by helping me get my much-awaited title "Dr".

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My Research Journey So Far

A big and positive step towards any nation's growth is by taking the students' view into consideration about the ongoing progress in the research at the university. The students are the mirrors of university, and the university gets reflected by the students. This process began with the interaction between us research scholars of all the disciplines. This was done in a very interesting way wherein people from each stream were asked to present the current research trends pertaining to their specific fields. This gave an idea of team spirit, how to present, communicate, maintain time, how to suppress stage fear, how to defend your group and trust the group and most importantly, being confident in doing all that.

The students are made to work hard on their topics and research guides polish them all the way through

While this exercise is a group activity, it proves beneficial for the audience as they get a gist of the research going on all the subjects as well as the research trends in that field. This overview or 'snapshot' can prove beneficial for individual research too. Just like how glass is heated before molding it and shaping it, the final product which comes out is worth all the effort; similarly, the students are made to work hard on their topics and research guides polish them all the way through, so that the end product can be something that not only the University, but also the students themselves are proud of.

गुरु को कीजै दण्डवत, कोटि कोटि परनाम। कीट ना जाने भूंग को, गुरु करिले आप समान॥

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Microbiome: The More of Us

The advertising media constantly impress upon us to adopt methods of sanitization, maintaining hygiene, using germicidal cleaning. This has portrayed the bacteria or germs as villain or something very harmful. The bacteria were the aboriginals on the earth and we evolved much later immensely helped by some of these bacteria. These tiny germs have played a major role in development of science and modern day medicine. The molecular biology knowledge we have today was initiated from the study of these germs and today they are source of many helpful industrial enzymes, therapeutics, antibiotics, vaccines, organic compounds and so on.

These microbes exert the beneficial effects themselves or support the survival of other helpful microbes in our body

The microbes reside on the surfaces and inside organs of our body and help in supportive functions to lead a healthy life too. Researchers have estimated that we have ten times more bacteria in and on our body than the number of our own cells we are made up of. The total numbers of gene carried by these microbes are 100 times more than the genes contained in our genome. Now, think how much of you are your own? Total content of microbes associated with human body is collectively called as Human Microbiome. The human microbiome is studied in respect of associated organs and the major microbiome studied are gut/intestinal microbiome, skin microbiome, oral microbiome, genital microbiome etc. The microbiome protects us from infection by harmful microbes, helps in digestion of food, synthesis of enzymes, hormones and vitamins, interact with our immune system to make it stronger against pathogens, send signals to brain and help in development of cognitive functions, and synthesizes antibiotics or microbe inhibitory substances. The participation of the microbiome in human body functions has earned itself the distinction of an organ in the body.

We are familiar with a few names of helpful microbes like Lactobacillus, Bifidobacteria, Saccharomyces yeast that are part of our food and prescription medicines for digestive discomfort. The fermented foods are traditionally part of our diet and known for health promoting effects. These microbes exert the beneficial effects themselves or support the survival of other helpful microbes in our body. The gut microbiome responds to eating habits and unhealthy foods do cause harm to the natural microbiome. Today, research has established links with the microbiome disturbances (dysbiosis) and predisposition to various disorders like irritable bowel syndrome, colorectal cancer, diabetes, vagonosis, preterm delivery, obesity, rheumatoid arthritis and certain neuroendocrine diseases. The Fecal microbiome transplant (FMT) from healthy donor has shown promising results in treatment of *Clostridium difficile* infection. The Microbiome supplementation therapy could be future treatment for many digestive and physiological disorders that are treated with harmful antibiotics.

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Do not wait; the time will never be ‘just right.’ Start where you stand, and work with whatever tools you may have at your command, and better tools will be found as you go along.

George Herbert

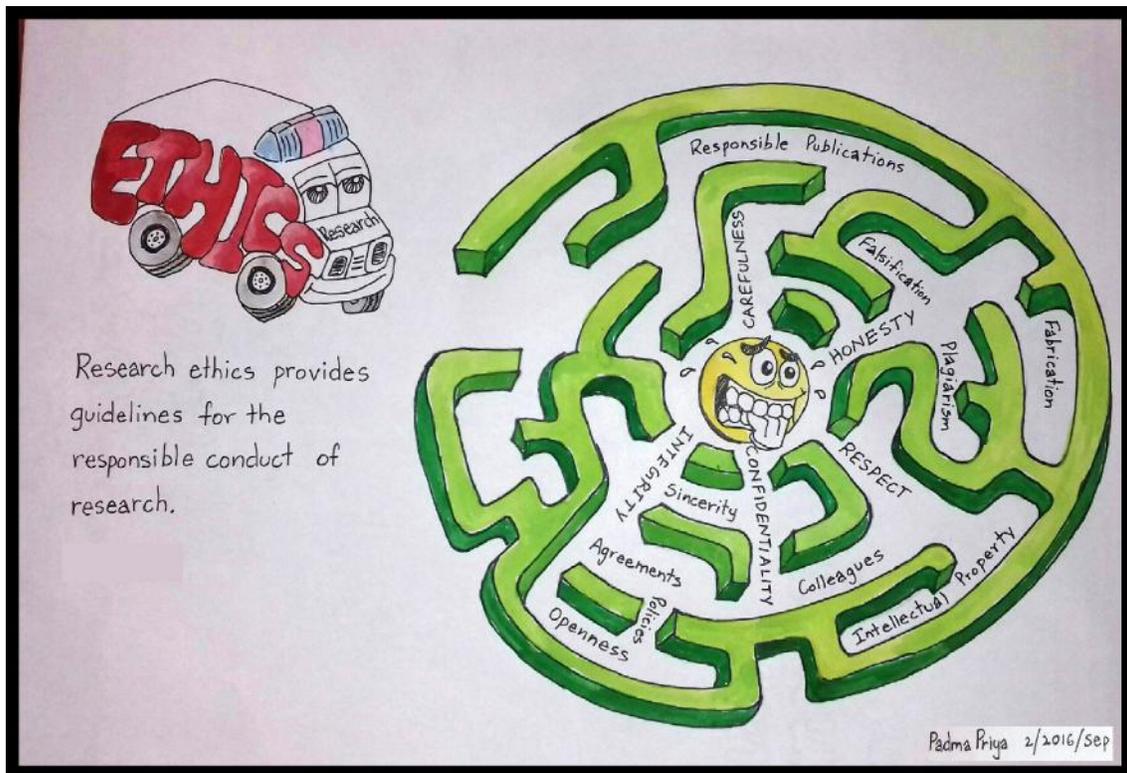
Response to Thinklet Issues

Balaji Rao D.G, Research Scholar in Management, Jain University

I was almost sure that this month's (October issue) Thinklet would be published after 1st October because we had four continuous days of public holidays and 1st was one of the dates that was sandwiched between these holidays. But, no, I was wrong (again). The issue hit my mailbox bang on 1st of this month as always.

Not a single issue since Thinklet was launched has been delayed by even a day. We might wonder what's the big deal, but how many of us give such importance or priority to a monthly magazine to be published on time, every time and what if the issue is sent on 2nd or 3rd or even 7th of a month. I don't think any of us, the readers, would ever bother. But the team led by Dr. Mythili and Dr. Reetika are very few of those diligent and passionate individuals for whom 1st is the date that the issue has to hit the mailboxes and it does.

This itself is a big lesson for all of us, the research scholars, to work on deadlines. No matter what happens we have to stick to expectations set by ourselves without procrastinating for whatsoever reasons. It is easy to put forth numerous excuses, just like the Thinklet team could have said there was four days of holidays hence the issue for October was delayed and none of us would have minded. The biggest mistake we all have done despite being aspiring scholars is not taking our deadlines seriously. I used to be amused earlier with the precision of the issue being sent on the same day month after month, now I doff my hat for the passion and diligence which has taught me a lesson on setting standards and abiding them. Thank you for the lesson Thinklet team, you continue to inspire me!



This month's comic has been submitted by Ms. Padma Priya who is a Research Scholar in Visual Arts at Jain University, batch of 2016

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ARTICLES FOR NEXT ISSUE SHOULD BE SENT BY
**November 20, 2017 WITH NOT MORE THAN
250 WORDS**
PLEASE INCLUDE YOUR NAME, E-MAIL ADDRESS AND THE KNOWLEDGE DOMAIN OF
YOUR INTEREST