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Highlights

Managers' Hesitancy towards Visualisation in Problem Analysis |

Technology Entrepreneurship in India |

Geopolitics in Global Economics |

Agri-entrepreneurship Opportunities for Farmers |



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Exploring Managers' Hesitancy towards Visualisation in Problem Analysis

Soumendra Narain Bagchi¹

Abstract

Visualisation of complex problems offers a richer understanding of the problem situation, including the identification of different dimensions of the problem and their potential interaction effects, and the recognition of multiple stakeholders with their power struggles. Visualisation of a problem is a challenge for those who are used to primarily a text-based approach or what is also known as a thematic approach. In this article, I explore managers' hesitance towards adopting a visual approach towards problem analysis. Despite repeated instructions, most managers in this study persisted with a traditional theme or text-based approach. Lack of confidence and a possible loss of face in front of their peers, concerns about the complexity of the approach and lack of regular involvement in decision-making in complex problems are identified as critical reasons for their persistence with the text-based approach.

Keywords: Decision Making, Visualisation, Problem Solving, Management Development.

1. Introduction

Real life presents problems for practitioners with multiple stakeholders expecting decisions and implementation plans and not situations where the managers will implant their theories and concepts learnt in the education system. Widely known as 'wicked problems' (Earle & Leyva-de la Hiz, 2021), these problems have interconnected challenges with multiple stakeholders often presenting a challenge of prioritisation to decision makers.

Problem analysis and understanding the different dimensions of a problem often represent the first step of problem solving. Such an analysis can either follow any established framework such as 3S (Bagchi, 2016), or follow a grounded approach using themes from the problem as extracted by the analyst. The use of visual representation to succinctly condense a large amount of information and bring out multiple stakeholders have a long history ranging from soft system methodology (Checkland, 1989), and process maps (Hunt, 1996) to strategy maps (Fenton, 2007). These visual tools have a distinct advantage over text-based analysis in the ability to incorporate pluralistic views

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(Bourne & Walker, 2005) while also providing the analyst with a better experience of the problem-solving process (Dahl *et al.*, 2001).

An essential part of problem analysis is to collate and understand multiple dimensions of the problem often presented as discrete information dispersed across multiple stakeholders. In contrast to a text-based analysis, a visual representation of the problem, i.e., visualisation, allows decision makers to better understand complex information by:

- Identifying relationships among seemingly unrelated data sets.
- Incorporating data from multiple stakeholders without prejudice to stakeholders' hierarchy (Pluchinotta *et al.*, 2022).
- Helping to identify crucial linkages and think of potential solutions, while filtering out irrelevant information.
- Facilitating communication of complex information and hence enabling effective collaboration (de Salas & Huxley, 2014).
- Inspiring creative thinking leading to possible novel solutions (Carden & Cline, 2015).

A widely understood example of visualisation is the use of sand models in armed forces all over the world, including law and order agencies. The physical representation of the problem is in the form of a sand-filled tray or box where different information is added

using small scale prototypes or labels. This simple model allows the continuous addition of information regarding different elements of the situation. In addition, the insights gained from the physical representation of problem situations allow the development of an action plan for addressing the problem and simulate how the action plan would be implemented.

2. Research Methodology

Executives from a national power generating company participated in a 14-day executive training program. The program was designed to represent a collage of topics, such as self-management, legal aspects of business, effective leadership, basics of finance and so on. The topics were mutually discussed and finalised by the HR team from the organization and the senior faculty coordinating the program.

2.1 Participant Profile

The batch comprised of 23 executives, out of which 5 were females. The minimum experience was 10 years, with the average experience was 16 years. The departmental breakdown of the batch is given in Table 1.

Table 1: Departmental Background of Participants

Sl. No.	Department	No of Participants
1.	Operations	13
2.	Chemical	4
3.	Maintenance	4
4.	Instrumentation	2

Source: Author's Computation

Out of total 40 classroom sessions, 6 sessions were allocated to problem analysis and resolution. These sessions focused on developing the participants' capabilities in managerial decision making. Six different management cases were allotted to the 6 sessions, with instructions to come with their analyses in the form of a PowerPoint file. The batch was divided into 4 groups. In this paper, I have taken a typical group's presentation of the case allotted for the 5th session (out of the 6 allotted).

The pedagogy followed in all the sessions was consistent. Cases were distributed in advance with instructions to participants to bring their analyses. In each session, the participants would present their analysis first which was followed by a Q&A session by the faculty. This was then being followed by faculty developing a visual representation of the case, and the problems therein, on the digital screen or blackboard, using inputs from the participants and re-doing the case analysis highlighting areas which had been missed out by the participants. Post this exercise in visualisation, participants would then be asked to identify critical issues and suggest suitable interventions.

The case, which is the basis of this paper, represented a case of an Indian manufacturing company located in Jamshedpur which had seen multiple conflicts on the shop floor, both among managers and between managers and union members (synopsis given in Annexure1). The case required the

participants to identify the root cause and make suitable recommendations to the leadership of the organization. The length of the case was 9 pages and was considered a moderate workload for a three-hour evening discussion.

3. Text based Analysis versus a Visualisation of the Case

The data for this paper consists of:

- The typical participants' analysis as given by the PowerPoint slide (Illustrations 1 & 2).
- Faculty's visualisation of the problem (Illustration 3).

Since all presentations had the same structure, only two are shown as the typical managers' submissions (Illustrations 1 & 2). The text-based analysis shows the following characteristics:

- A focus on lengthy sentences, because of which the slides were extremely high on text-density.
- A focus on making a numbered list of points or in the form of bullet points.
- A tendency to repeat case facts rather than to develop a visual picture or a pictorial representation.
- The focus on the case facts invariably led to the identification of the symptoms of the problem to be the problems to be resolved.
- The participants tended to report the problems as evident from the readings of

the case, leading to misperceiving symptoms as the root problems.

4.A Visual Approach

A text-based approach prevented the participants from zeroing down on the root causes of the problems, especially in understanding and appreciating how certain processes were overloaded or certain

departments were becoming a bottleneck in the performance of the organization.

A significant challenge for the participants was the inability to incorporate additional information during the discussion or Q&A session. A text based slide soon proved incapable of incorporating multiple views and inputs from different members of the audience.

Illustration 1 Typical text-based analysis

- Company: Heavy Movers Corporation
- What they do: leading manufacturer of heavy equipment for material handling as well as port and yard equipment.
- Characters involved: Chairman, Mr. Ramachandran, Plant Head; Mr. Kurian, Section Head 1; Mr. Raghuram , Section Head 2; Mr. Tripathi, Union Leader of the plant & Mr. Rabindra, Asst. Gen Secretary of the workers union.
- Issue Statement: Conflict between Supervisor & worker caused due to ineffective delegation.

Source: As Submitted by Participants in their Presentation Slide.

Illustration 2 Typical text-based analysis

What would you do to prevent a repeat of such kinds of problems? (Slide title as given by Participant)

- Relook at the performance management system, identify the issues with the current performance management system, and work on them.
- Proper planning of work schedules for departments, ensuring idle hours are under control. Give work assignments as a responsibility to the planning department, and not Mr. Ramachandran.
- Define clear roles to the individual section head and relook at the performance indicators of the workers.
- The individual, group and organizational goals should be in alignment.
- Conduct Time motion studies as per the latest standards.

Source: As Submitted by Participants in their Presentation Slide.

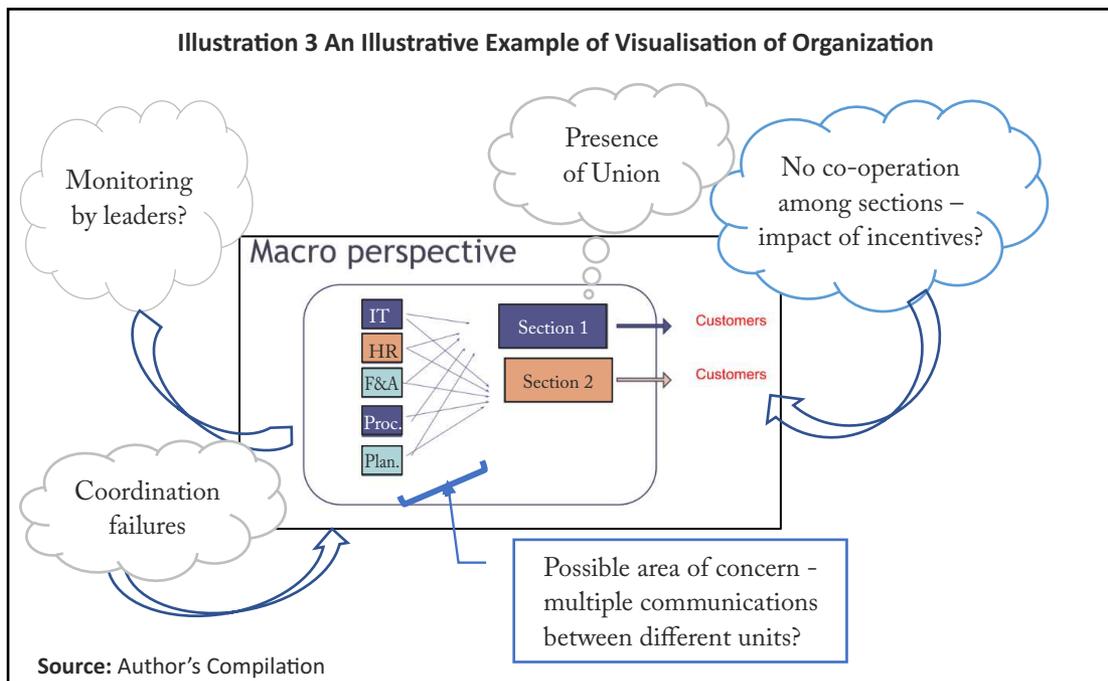
Understanding the current situation and contrasting it with the desired situation is significantly faster when the problem situation is represented visually. A typical example of visualisation of the case is shown in Illustration 3 with the caveat that there are multiple possible ways of visualisation.

In Illustration 3, the clouds or callouts or boxes show the addition of points as and when these are pointed out by the participants. Since the addition of these points is usually based on keywords, there was never an issue of space restriction.

5. Responses from the Executives

The hands-on case-based pedagogy using

visualisation to understand the case provided a fresh perspective to the participants. The participants appreciated the “big picture” approach which remains as an essential skill in decision-making and the faculty’s ability to incorporate multiple views while retaining the core analysis undisturbed. The participants indicated that they would be interested in learning the skill as the visualisation as done in the classroom offered evidence of superior decision-making skills. The issues of challenges faced by participants in developing visual representations of the problems were discussed in informal settings outside the classroom by the faculty. The analysis is presented in the following section.



5.1 Lack of Confidence and Fear of Loss of Face

Many participants shared their lack of confidence in developing the correct visualisation and hence fell back on the text-based approach. As shared by different participants: *“It is better to have a text-based slide than something which may be wrong.”*

“We did not learn this in school or in engineering college. Therefore, it is difficult to adopt thinking in such a visual manner.”

For many executives, a text based analysis offers a safety net – they are standing in front of their audience with something they are familiar with. Even though visualisation offers a better presentation, they would revert to what they were familiar with due to a lack of confidence in their capabilities.

5.2 Concerns about the Complexity of the Process

Visualisation of cases or problem situations often is easy to understand as an audience but difficult to implement. As discussed by participants: *“It looks easy when the faculty is explaining the case and developing the picture in parallel. However, for us, it [the picture] was not coming to us.”*

Participants were required to present their analysis in the sessions in front of their peers. This represented a significant challenge as many of them have never participated in presentations in their respective departments. The additional fear of talking in public increased the fear among the participants. Therefore, the feeling of safety as offered by

text based analysis ensured that the participants gravitated towards the traditional method rather than trying out any new approach.

5.3 Lack of Involvement in their Organizations in Decision Making

Most of the participants confided that in their organization, the usual practice of decision making was to revert to the department head (HOD). The decision taken by the HOD was usually not questioned. In cases of complex problems, the organization hired professional consultants who would conduct the analyses and propose recommendations. *“Since we have been in a particular role for the last so many years, we all have got used to a single thought process.”*

Most participants shared that they were not familiar with such tools. This was a bit of a challenge for them since many of them were in the middle management cadre and were expected to follow the established pattern of decision-making in their respective roles. As discussed by participants:

“We follow based on what is followed in our departments. Our department heads and managers follow a certain process in decision making which, may not be best, but has a history. Everyone is comfortable in following that set path.”

6. Conclusions and Discussion

In this paper, I have illustrated visualisation as an approach towards a comprehensive analysis of complex problems. Compared to a text

based analysis, the picture-based approach offers significantly richer information context while being flexible enough to incorporate additional information.

Lack of problem solving skills often leads to reversion to the traditional text based approach which may be irrelevant in certain cases or outright hazardous in other scenarios as the environment keeps on evolving dynamically. A significant drawback of the text based approach is ignorance of spill over effects and interactions between different dimensions of the problem. Ignorance of these two not only leads to sub-optimal decisions with potential injury to one's career but also to the organization and other stakeholders involved.

The most significant benefit of visualisation of a problem is in presenting decision makers with an information user interface which is more tangible and relatable as compared to a text-based description of a complex problem, with the ability to update the schema as additional information is obtained. The discussion of a management problem or case with participants coming from different functional backgrounds allowed multiple perspectives to emerge leading to a lesser possibility of ignoring critical stakeholders (Maarleveld *et al.*, 2006). Traditional text based problem analysis with its focus on delivery of a certain quantum of inputs leads to the domination of certain themes or dimensions of the problem to the detriment of the organization.

7. Implications for Organizations

Today's managers are leaders of tomorrow. The development of leaders who understand the big picture and the multiple conflicting data points or information along with the divergences or conflicts among different stakeholders require a learning journey that develops such a mindset. To develop such leaders, organizational leaders need to:

- Understand the benefits of visualisation in problem analysis, such as its ability to provide a clear and concise overview of complex data, facilitate communication and collaboration and inspire creative thinking.
- Use real-world examples of problems in their training: incorporation of real-world complex problems would allow the participants to appreciate the need to develop and practice such a skill rather than fall back on text based analyses.
- Constantly provide training, support and feedback to decision makers in the use of visualisation tools and techniques, to ensure they are comfortable and confident in using them to analyse problems.

While it is evident that, the picture-based approach allows easy incorporation of multiple perspectives. It is also easily facilitated via modern touch screen technologies or digital boards, apart from traditional blackboards or whiteboards, implying not a significant investment in infrastructure or technology.

Changing an analytical approach involves a change in the culture of the organization, specifically focusing on how problems are understood and how decisions are changed to a more collaborative and multi-stakeholder decision making is more a function of the leader's personality rather than the presence or absence of a tool. The importance of such thought processes signals to employees, the leader's focus on a holistic understanding of any problem as compared to understanding a problem from a singular perspective.

8. Limitations and Future Scope

This study has been carried out on a limited sample. A larger and more broad based sample would facilitate a more detailed understanding of the thought processes of decision makers when they process complicated managerial challenges, and how they convert the data into a mental schema. The visual representations, as reflections of the mental schema, varies from individual based on the individual's experience with the tools, the mentorship received and their applications. Future researchers would have to explore the connections between organizational culture and leadership support to nurture different analytical and decision making styles. A significant but unexplored area is the role of peer groups in the adoption of analytical tools and techniques. What interventions are successful in overcoming the fear of loss of face among peers is another area to be explored.

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Annexure 1:

Synopsis of the case assigned to Participants:

A customised made-to-order company focuses on manufacturing heavy engineering equipment. Almost all order was obtained via a competitive tender process. The company's plant had multiple departments: The shop floor was divided into two sections, each acting as a self-contained manufacturing unit capable of processing orders on its own. Each section was headed by a Section -In-Charge reporting to Plant Manager.

Departments like Information Technology (IT), Human Resource Management (HR), Finance & Administration (F&A), Planning & Procurement and Maintenance were additional departments, each contributing to the successful operations of the organization.

The workers were represented by a single union and the union leader had significant political power outside the plant. However, the plant had witnessed cordial union-management relationships over the years and did not witness any major issues like strikes or lockdowns.

The incentives of the workers driven formula as per the union management negotiations with the formula focusing on the efficiency with which the allotted work was carried out.

Each section was evaluated individually. The officers were evaluated using a different system based on the success of the order along with additional marks for managerial potential.

The incident which was the crux of the case: due to non-supply of a critical component, a critical order in section 1 got stuck since that component was available in section 2, the plant leadership, along with the section-in-charge decided that the component would be loaned to section 1 and the order completed, to avoid delays and consequent penalties from the client. When the section-in-charge of section 1 entered section 2 and demanded the component, the workers refused and the situation escalated into a physical conflict between the workers and the officer.

There was a voluntary retirement scheme initiated by the management about 10 years ago, which was thwarted by the union. In the case of supervisors and officers, those whose name was on the list often got their names removed via the influence of the union leader. While the list was supposed to be confidential, the names of the officers were often discussed leading to peer pressure on the supervisors.

Technology Entrepreneurship in India: A Review and Assessment

Rituparna Basu¹

“The success of the young entrepreneur will be the key to India's transformation in the new millennium”

- Dhirubhai Ambani, Founder, Reliance Industries.

Abstract

Technology entrepreneurship holds a distinct space with attributes that intricately foster regional economic development across developed as well as emerging markets. A host of heterogeneous assets along with scientific advancements and specialized individuals are important for such value creation. To assess the prevalent conditions around the context of technology entrepreneurship in the emerging Indian market, the present paper is set out to critically review the initiatives and outcomes of the various technology entrepreneurship drive in India over the last decade. Further, the study attempts to map such initiatives against their actual effects with a qualitative appraisal by a select focus group of business school students in urban India. The paper contributes with its novel methodology to explore and assess the current status of technology entrepreneurship in India to present a suggestive ecosystem for the overall purpose of growth and development of technology entrepreneurship in emerging economies like India.

Keywords: Technology Entrepreneurship, India, Entrepreneurial Intent, Entrepreneurial Ecosystem.

1. Introduction

Entrepreneurship as a legitimate tool for economic growth and progression of an emerging nation needs no clarification (Basu, 2014; Arthur *et al.*, 2012). Technology

entrepreneurship in particular comes with inherent virtues that spur economic development in the most sustainable and inclusive ways. Innovation, science, technology and entrepreneurship that are pursued with the objective of solving problems to upgrade our social well-being have been the key to the biggest transformative changes across the modern

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world (Bubou *et al.*, 2014). However, considering emerging economies like India, the dearth of technology and innovation based entrepreneurial initiatives happens to be the reality (Basu, 2015).

The nascent status of technology entrepreneurship in India looks quite stark against figures that reflect the maximum contribution to India's GDP which still comes from 'agriculture' and 'services'. The reasons cited are many that range from fallacies in attitude to the ecosystem, where the majority of the middle class educated population still view entrepreneurship as a risky and time taking proposition over holding a nine-to-five job. Also, within the ambit of technology entrepreneurship, the prominent skew towards e-commerce and IT related ventures are also explained by lower risk, lower capital base and low resource requirement advantages that attract the younger generation away from the heavy and harder technology entrepreneurship alternatives. For instance, it is perceived that a less risky e-commerce website idea is more workable than a steel plant that may take years to set up and that often with uncertain returns.

The scenario leads the policy makers to rethink on rebuilding the ecosystem with favourable tax policies, easier and cheaper financing, digital infrastructure, etc., that would reverse the prevalent condition for more sustainable growth (Basu, 2015;

Dimitratos *et al.*, 2010). Policies to shift the focus from frugal tech start up initiatives become imperative to take the economy to the next level of development. Robust business models with irreplaceable technology and innovation over overhyped analytics, e-commerce, Artificial Intelligence (AI), and hyper-local initiatives become the need of the hour to overcome and resist a much anticipated tech bubble (India Start-up Outlook Report 2017²).

It is understood that the bridge between technology entrepreneurship and economic growth rests on the effectiveness of the policy measures and their applicability, especially in the context of emerging economies. Despite the lack of research evidences, it is taken that policy instruments become pertinent to foster the interest of entrepreneurs to invest their time and effort to initiatives that are often riskier and more capital intensive than non-technological ventures in services or micro enterprises. In this light, the present paper attempts to sequentially present a review on the facets of technology entrepreneurship and the policies around it in India. It further elaborates with a focus group mapping of the awareness and intent of potential young urban entrepreneurs to uncover an introspection for the policy makers. Finally, the paper concludes with a suggestive initial framework to make technology entrepreneurship progress in India with the hopes for a shining future.

²<http://www.innovencapital.com/sites/> (Accessed on June 25, 2022)

2. Understanding Technology Entrepreneurship: Attributes and Linkages

In simple terms, technological innovations are commercialized by way of technological entrepreneurship. Most often the purpose is dual and is well balanced between the objectives of maximising economic returns and that of creating a greater impact on our social well-being. From the perspective of pure definition, technology entrepreneurship is the pursuit of opportunity, created or enabled by technology, beyond the resources that one currently controls. In the words of Bailetti (2012), technology entrepreneurship is an investment in a project that assembles and deploys specialized individuals and heterogeneous assets that are intricately related to advances in scientific and technological knowledge for the purpose of creating and capturing value for a firm.

While on a popular count, many would believe that the likes of Silicon Valley start-ups are synonymous with technology entrepreneurship (Zhang *et al.*, 2008), in reality, it should ideally cover much more than just computers, communication, and information technology. Construction technology, manufacturing technology, transportation technology, energy and power technology, and biological and chemical technology (healthcare, medical) are its various facets. Where the softer forms of computer, communication, information and e-commerce technology are ruling the modern world and the minds of the younger

generation, the traditional harder variants of the technology work as the real game changer in creating ventures with high levels of functionality, scalability and performance that fuel aggregate economic growth. The harder technology ventures are more tangible forms of technology entrepreneurship that tend to be capital intensive and are generally high on their innovation quotient giving it a better competitive edge. Better external linkages, employment generation, higher collaboration opportunities and greater supplier side opportunities are resulted. However, the need for a larger pool of skillsets, and higher innovation led research orientation resulting in a longer gestation phase for technology entrepreneurship ventures often acts as a deterrent.

3. Government Policies for Technology Entrepreneurship in India

Realizing the importance of building a nation of job creators over job seekers the Indian Government floated a host of incentive schemes and programmes around entrepreneurship to encourage the country's youth. Historically, the five year plans of the government encouraged the growth of the private sector and slowly emphasized on the setting up of heavy industries in key sectors for overall growth. The rise of Information Technology (IT), Information Technology Enabled Services (ITES) and Business Process Outsourcing (BPO) sectors somewhat changed the focus of the growth from the early 90s onwards. The landscape of

technology and innovation led entrepreneurship changed and added a new dimension to the growth story of India. The education and skill orientation especially in the urban markets followed the trends and lend a solid support to an unprecedented estimate. On a parallel scale, a host of schemes like the Prime Minister's Rozgar Yojana³, TDMF scheme⁴ and NEF⁵ under SIDBI, Credit linked capital subsidy for upgradation of technology were introduced by the government to encourage generic entrepreneurship across sectors in the rural

and urban markets.

The last decade, especially in the last few years a gamut of initiatives and programmes like Start-up India⁶, Digital India⁷, Skill India⁸, Make in India⁹ by government as well as rise of non-profit associations like National Association of Software and Service Companies (NASSCOM) and those of private technology entrepreneurship incubators like IAN, ICREATE, Indavest, Science and Technology Parks (STEPS) by NSTEDB¹⁰ in national institutes of repute have all been adding to the building of a strong

³Scheme launched by the Govt. of India in 1993 to provide self-employment opportunities to the unemployed youth and women. Loans upto Rs. 1.00 lac for business and Rs. 2.00 lac for Industrial & Agricultural activities are advanced by the Banks to those unemployed Youth and Women who are 18 to 35 and 18 to 45 years of age respectively with 8th pass educational qualifications.

⁴Technology Development & Modernisation Fund (TDMF) scheme set up by SIDBI (Small Industries Development Bank of India) in 1996 for direct assistance of small sale industries to encourage existing industrial units in the sector, to modernise their production facilities and adopt improved and updated technology so as to strengthen their export capabilities

⁵National Equity Fund (NEF) under Small Industries Development Bank of India (SIDBI) provides equity type assistance to SSI units

⁶Start-up India campaign was launched in Jan 2016 by the Department of Industrial Policy and Promotion aimed at promoting bank financing for start-up ventures to boost entrepreneurship and encourage start-ups with jobs creation

⁷Digital India campaign was launched on July 2015 to ensure that Government services are made available to citizens electronically by state-of-the-art online infrastructure and digital connectivity empowered by technology

⁸Skill India campaign was launched on July 2015 with the purpose of training 400 million Indians in different skills by 2022. It included initiatives like the "National Skill Development Mission", "National Policy for Skill Development and Entrepreneurship, 2015",

⁹Make in India initiative was launched in 2014 by the Government of India to encourage national, as well as multi-national companies to manufacture their products in India

¹⁰National Science & Technology Entrepreneurship Development Board (NSTEDB) under the Department of Science and Technology was established in 1982 by the Government of India as an institutional mechanism to help promote knowledge driven and technology intensive enterprises. It currently runs several training programmes and institutional mechanisms like STEP, STED project (Science and Technology Entrepreneurship Development), TBI (Technology Business Incubator), IEDC (Innovation and Entrepreneurship Development Centre) to promote technology entrepreneurship in the country

ecosystem for entrepreneurship. India's third rank in the global start-up ecosystems with more than 4,200 new-age companies has been the result (The Economic Times, 2015). On the other hand, reincarnated versions of the Prime Minister's employment generation programme to promote start-up and enterprise creation that was implemented at the national, state and district level (The Economic Times, 2017) giving credit linked subsidy for micro enterprises¹¹ or Micro and Small Enterprise Cluster Development Programmes for holistic development of selected MSEs clusters through the value chain and supply chain management on cooperative basis were also expected to add momentum to venture creations. Assistance to Training Institution Promoting Entrepreneurship and Skill Development among Youths, MUDRA (Micro Unit Development and Refinance Agency) supported by the Industrial Development Bank of India (IDBI), Non-Banking Financial Company (NBFCs) and scheduled banks, ASPIRE (A Scheme for Promotion of Innovation and Rural Entrepreneurship), Market Promotion and Development Assistance (MPDA) are all in place to cater to the different needs of an entrepreneur.

4. Mapping the Policy Environment

4.1 Methodology

In order to gain a deeper understanding of the

prevalent culture of entrepreneurship among urban youth and assess their familiarity with the government initiatives and policies, a focus group study was planned. The focus group considered seven second year students of two year postgraduate diploma in business management who had opted for the course titled 'entrepreneurship' as their elective. The gender composition of the focus group had a notable skew towards male representation with 6 male participants and only 1 female participant. Such representation has been quite symbolic of the representation in reality. The idea of taking business management students with entrepreneurship electives was largely guided by the purpose of studying the key stakeholders in the entrepreneurial ecosystem. Such students fairly represented a cross section of urban Indian young adults with some initial interest in entrepreneurship. Two participants had engineering degrees, three had degrees in commerce and two had a bachelor of business administration as their preceding degree.

The focus group was conducted with the following probing questions as a cue for an open ended discussion among participants:

- What guided their choice of entrepreneurship as an elective subject?
- What could be the reason for low representation in entrepreneurship electives offered by premier business schools?

¹¹Upto INR 10 lakh in service sector and INR 25 lakh in manufacturing sector where the rate of subsidy ranges from 15% to 25% in rural and urban sectors respectively in general category to be applied by VIII pass candidates

- How serious are they about taking up entrepreneurship as their profession?
- What kind of entrepreneurial venture are they planning?
- Are they familiar with the different government and private schemes that support entrepreneurs? What do they feel about them? Are they suitable for technology entrepreneurship?

4.2 Discussion and Qualitative Situation Assessment

The total number of participants was 7 out of a batch of 120 when considered as a proxy of the real picture in terms of entrepreneurial intent among business management students of premier business schools in the country, showed a clear inclination among students for getting a campus job over starting their business venture. The number here was lower than the average of 15 percent of the batch (Basu, 2014), as we understand that the representation is highly fluctuating over the years and does not follow a necessary pattern as such. The choice of a more secure career seemed to rule the minds of the majority of the urban youth in India.

Insights from the opening discussion around the low representation in entrepreneurship courses were equally fascinating as they were mostly guided by prejudices rather than logic. The participants unanimously agreed on the importance of entrepreneurship for the development of the nation and fuelling the economic growth in the long run. They agreed

that the growing movement of offering entrepreneurship as an elective in business schools to encourage the practice of entrepreneurship among students of business does raise the entrepreneurial awareness and intent among potential groups. Yet, despite the growing interest, where the youth of the country are deeply motivated by the success stories of young entrepreneurs, the low representation in such courses is often explained by assumptions that the choice of entrepreneurship as an elective may decrease their employability chances. The common idea is, candidates having entrepreneurship as an elective subject are often perceived by the employer as less serious applicants who might not be sticking to the job for long. Such choices also invite uncomfortable questions at the interview table, where a candidate is expected to defend that he will still be a serious employee despite his inclination to start his own venture at a future date. This acts as a strong deterrent for students to opt for such courses. Typically, the students opting for such courses are usually the ones who come from business families or have a very strong agenda like a business plan that they have already started working on.

During the course of the discussion while all the participants had strongly expressed their interest in entrepreneurship but only a single male participant had put forth his agenda to start something of his own within a year after completing his business degree. In his words, "...I am sure to start something of my own within

the next one year, even if that means that I will have to give up my campus job offer. My family is into manufacturing plastic cable wires. I want to have my own pet bottle factory. I know the demand is huge and I have already got some people in the loop". For the lady participant, the reason was quite in contrary. In her words "...I have opted out of the placements because I cannot leave the city for family restrictions. I love fashion and I am into blogging. I want to start my own high fashion e-commerce portal, and I know I can do it all from the comfort of my home. Of course, I need to convince my family for that". Interestingly, the rest of the participants did not have any concrete plan for their venture or even for their careers as an entrepreneur. It was noted, that most of the participants were highly motivated by the success stories of a young and new generation of entrepreneurs especially those in the digital, social media or e-commerce fields. Popularly they believe that such ventures require fewer resources, and capital investments and are quite unique in their approach. It is more relatable due to their familiarity with the new media and softer technology. More tangible technology meant more sweat, more risks, and longer gestation that they wanted to avert.

With respect to government initiatives, schemes and programmes to support entrepreneurs in the country, the participants specifically felt that the recent years have been quite positive in terms of initiatives by the government that were largely promoted through various media engagements and

promotion. The focus group participants particularly spoke on the concepts of 'Make in India', 'Digital India', and 'Skill India' to have indirect positive effects on the entrepreneurial environment. Large scale 'Make in India' activation will open up new opportunities for new venture enthusiasts; 'Digital India' will help with more ease of doing business and 'Skill India' would improve efficiency that would have long run benefits for entrepreneurs not just in the urban environment but also in the rural sectors.

Most felt that initiatives will go a long way when their e-biz portals would be launched for real time 24X7 support. However, awareness around the financing support schemes, tax exemptions and others were found to be low. The majority of the participants were looking at working for the next four to five years to gain the requisite experience and financial stability so that it becomes easier for them to approach the banks. It was largely perceived that government financing or any other support schemes may be hard to get because of a number of deterrents like long cumbersome processes, red-tapes, corruption etc. that still exist. The role of incubators was also given due importance, where the participants were found to be aware of non-profit organizations like the National Association of Software and Service Companies (NASSCOM). However, it was pointed out by a couple of participants that the incubators worked best for softer technology start-ups as most of them gave

limited space and resource support. Incubators for heavy technology support in manufacturing, and construction were hardly known to them.

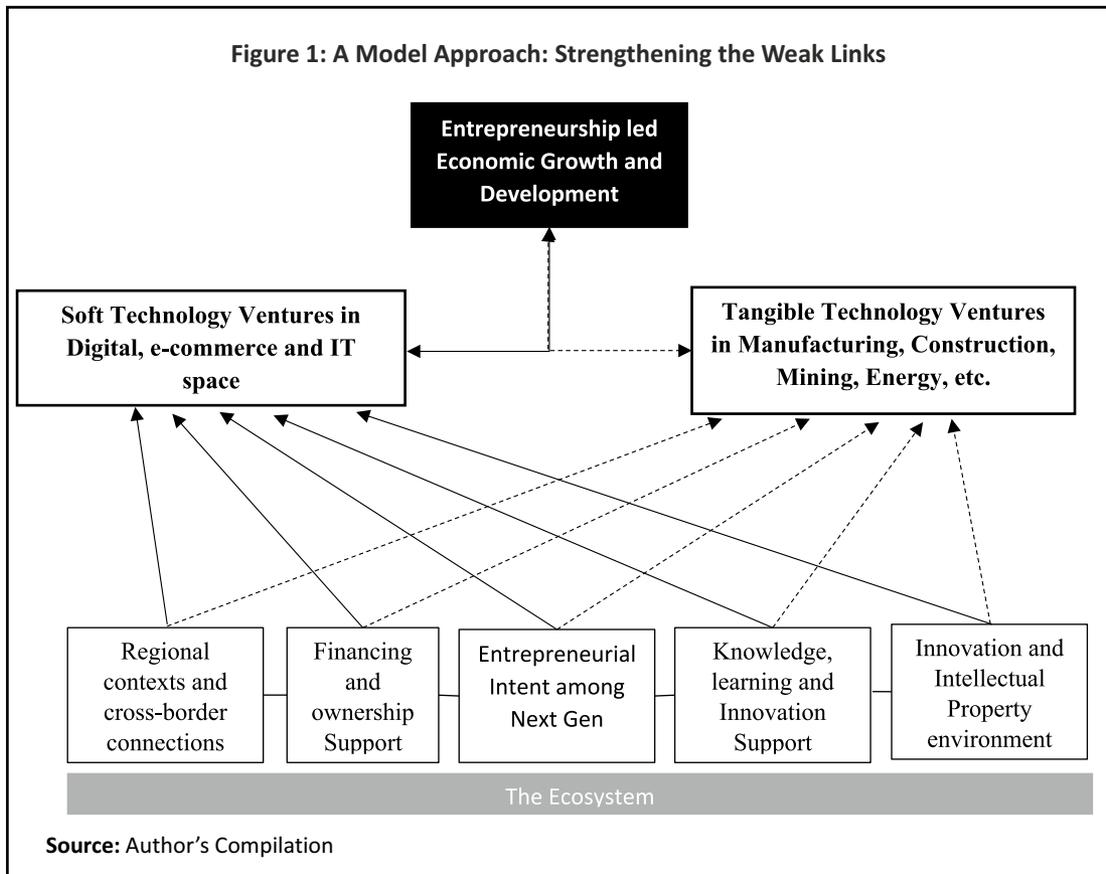
5. Towards a Model Approach

Based on the information obtained and a reflection on the focus group observation, a model approach was built. The purpose of presenting an initial suggestive framework for getting to the next level of development through technology entrepreneurship in India was considered in the right earnest. It is well understood that for the right kind of entrepreneurial climate, a host of factors are at interplay. A multitude of factors is inherently connected that serve as the crucial foundation to promote and propagate an inclination to pursue technology entrepreneurship among its key stakeholders. While the factors are many as found in literature they may be clubbed under heads like regional connection and cross border supports, financing support, knowledge-learning-innovation environment, intellectual property support, etc. When such factors are mapped against their applicability in different contexts of technology entrepreneurship particularly across the continuum of softer technology venture to heavier tangible technology venture in the present scenario in India, the weak links become evident. For instance, the qualitative mapping discloses the uneven support system. While for softer ventures in IT or e-commerce the factors seem to be working fine

in the existing ecosystem, for heavier ventures in manufacturing, construction or heavy engineering venture the teething problem around financial support, advisory supports, and intellectual property or even in terms of the youth intent looms large as a deterrent. The present ecosystem (Figure 1) certainly needs to balance itself around both ends of the spectrum that would have long term sustainable benefits with positive spirals in the economy at large.

Overall economic growth cannot be pursued with uneven networks and an unbalanced ecosystem. The heavier tangible technology focus needs to revamp with policies that will even out opportunities and ease of doing business across the spectrum of technology entrepreneurship. As seen in Figure 1 the model approach should work on strengthening the weak links represented by the dashed arrows in the ecosystem with appropriate and timely policies and interventions. With reference to the focus group discussion around the concerns to have a more balanced ecosystem across technology ventures, a suggestive list of deliverables from the policy making perspective is listed as follows:

- Commensurate Government programmes and initiatives to support the range of technology initiatives with little more preferential policies to encourage riskier technology ventures in sectors like manufacturing, industrial engineering, etc.



- Transparency in differential government policies and adequate support from the government for technology entrepreneurship across the continuum needs a fresh perspective.
- More innovation oriented education system that would help condition students to think more creatively and condition them to pursue technology entrepreneurship without inhibitions.
- Build a network of specialists, engineers, scientists and assets to support and collaborate with new technology entrepreneurs.
- Provide differential incentives for technology entrepreneurs in different priority sectors that should be accessible at any given point in time.
- Regular events, popular media promotions and awareness programmes around

schemes and policies.

- Provide better incubation support for heavier technology ventures.

6. Conclusion

In an attempt to evaluate the present structure and system of technology entrepreneurship in India, the paper contributes with a working model approach to aid policymakers in taking timely measures to strengthen the technology entrepreneurship environment in India. It is noted that entrepreneurship is fundamentally iterative and for the inherently disruptive technology entrepreneurship the iterative phenomenon holds even stronger. A linear ecosystem will obviously not work for us. Hence, the model approach built with inputs from the focus group mapping of the publicly available information certainly needs refinement and further validation. For generalising this proposed model, research studies considering cross-linking parameters like those on the influence of family or other exogenous variables and across various forms of entrepreneurship like those in social entrepreneurship (Chattopadhyay, 2016) will be beneficial. Also, limitations in the choice of the focus group as a methodology, with a select group of business school students as participants may not justify the purpose totally. Yet, such preliminary findings would go a long way in facilitating future research in the area of the technology entrepreneurship ecosystem, especially in the context of emerging economies.

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Does Geopolitics Play a Key Role in Global Economics?

Soukhin Sarkar¹

Abstract

Amidst the recent geopolitical tension, we find an evolving world economic order with changing roles of the erstwhile superpowers. With the change in the geopolitical equation, the country and its private companies are reorienting their supply chain, which has created supply chain disruptions globally. The global economy is feeling the burn in terms of the volatile movement of different economic parameters, especially the countries in the global south with lower GDP per capita.

Keywords: Conflict, Supply Chain Disruption, Inflation, Geopolitics, Energy.

1. Introduction

Geopolitical tension is a never-ending cycle where each country tries to get the best deal out of the conflict. In the 21st century, it is not only the battlefield where the battles are being fought but it is also the fight among their economy where each power tries to use its best economic ammunition which can be sanctions, energies or financial systems. The spillover effects are always felt in the poorer countries in the conflict among the big powers. Currently, the biggest geopolitical tension going on is “Russia’s invasion of Ukraine” and the spillover effect is being felt across the globe. The objective is to correlate geopolitics with the global economy.

We will analyse mainly three parameters of

the major continents along with India. To quantify the effects, we will consider the following factors: Supply Chain Disruption, Inflation, GDP (Gross domestic product) growth YoY (Year-over-Year) and QoQ (Quarter-on-Quarter).

1.1 Background of the Geopolitical Event (Russia-Ukraine Conflict)

In the decades after the fall of the Union of Soviet Socialist Republics (USSR) in 1991, the former USSR state Ukraine moved towards Europe economically, more particularly over defence ties and spending. The expansion of NATO (North Atlantic Treaty Organization) did not stop after the fall of the Soviet Union. Russian President Vladimir Putin saw the expansion of NATO (a military alliance of Western countries) as a national security threat to Russia.

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have formally condemned Russia and imposed heavy sanctions on its economy.

Starting from the USA (United States of America) and the EU (European Union), this bloc includes all Western-leaning governments, such as the UK (United Kingdom), Japan, South Korea, Australia, Canada, Switzerland, Sweden, Finland and Israel.

3. Importance of Russia and Ukraine in the Global Market

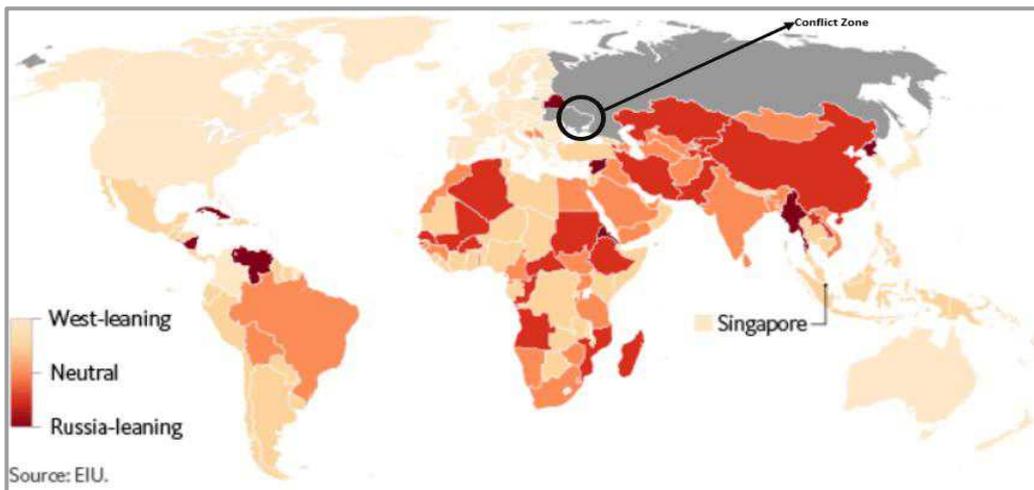
Russia is the 11th largest economy and Ukraine ranks 22nd among the European Economies contributing immensely to the global trade and supply chain. Russia is the biggest

supplier of natural gas in the world, the 2nd largest exporter of crude oil, and the 3rd largest coal supplier. Until the conflict, three quarters of its gas and nearly half of its crude oil had been exported to European countries.

In the year 2020, Russian oil, gas and coal accounted for a quarter of the European Union's energy needs. Before March 2022, the Russian Federation and Ukraine were among the top three global suppliers of rapeseed, wheat, maize, sunflower seeds and sunflower oil.

Russia is a key producer and supplier of palladium. It accounted for 40 per cent of the world's production and about 10 per cent of

Figure 2: Geopolitical Equation on Russia Ukraine Conflict



Source: Economist Intelligence Unit, 2022³

³<https://country.eiu.com/article.aspx?articleid=1101994693> (Accessed on November 07, 2022)

platinum trade. Ukraine and Russia produce about 15 per cent of the global export of titanium. Russia is also the world's top exporter of nitrogen fertilizers, the second largest supplier of potassium fertilisers and the third biggest supplier of phosphorous fertilisers. Russia accounts for about 13 per cent of global fertiliser trade. Many countries that are highly dependent on imported foodstuffs and fertilizers, including numerous that fall into the Least Developed Country (LDC) and Low Income Food Deficit Country (LIFDC) groups mainly in Africa and Asia, rely on Ukrainian and Russian food supplies to meet their consumption needs.

Many countries, already before the conflict, had been struggling with the negative effects of an increase in international fertiliser and food costs. As the conflict escalates, concerns also increase about whether crops will be harvested and products can be exported. The conflict has already led to the closure of ports. All of these could impact the country's exports of grains and vegetable oils.

4. The Economic War

To reduce the economic fuel for the conflict the Western countries led by the United States of America imposed multiple sanctions on Russia. In reply, Russia used tools at its disposal i.e. energy and other commodity supplies to cause pain to the European countries. Below are some of the key economic tools that both parties use on each other.

4.1 Sanction War

The EU (European Union) and G7 countries along with some of the first-world countries have imposed heavy sanctions (Illustration 1) in the hope that it will affect the Russian economy, which might force Russia to stop the war.

In retaliation, Russia used its financial and trading tool to cause pain to the Western economy. Below are a few key steps taken by both Western Countries and Russia.

5. Effect on the Global Economy

Beyond the suffering and humanitarian crisis from Russia's invasion of Ukraine, the entire global economy felt the effects of sluggish growth and inflation picking up. Due to massive disruption in the global supply chain, higher prices for commodities like food and energy pushed up core inflation, eroding the value of incomes.

Ukraine and Russia are one of the key commodities producers and exporters, and the sudden disruptions of supply have impacted the global prices to increase, especially for commodities like natural gas and oil. Food prices have increased, in the case of wheat, for which Ukraine and Russia make up 30 per cent of global exports, has reached new highs. Economies which are closely linked with the Russian and Ukrainian Economies faced major challenges like energy shortages in European countries and food shortages in African countries.

Illustration 1 List of Major Sanctions

➤ Sanctions on Russia:

- The European Union has stopped buying coal from Russia.
- Germany has stopped their plans for the Nordstream 2 gas pipeline from Russia which could have provided Germany with cheap gas.
- The Western countries stopped buying gold from Russia.
- A ban on the export of luxury goods to Russia.
- The UK (United Kingdom) imposed a 35 per cent tax on some imports.
- The US banned imports of oil, gas and coal from Russia.
- The Canadian Government stopped buying crude oil from Russia.
- The G7 countries agree on a price cap for Russian crude oil in order to reduce Russia's ability to finance its war with Ukraine.
- The EU banned some of the Russian banks from the SWIFT (Society for Worldwide Interbank Financial Telecommunications), the global messaging network for international payments.
- International Big Brands like Nike, Shell, Starbucks etc. closed their operation after the start of the conflict.

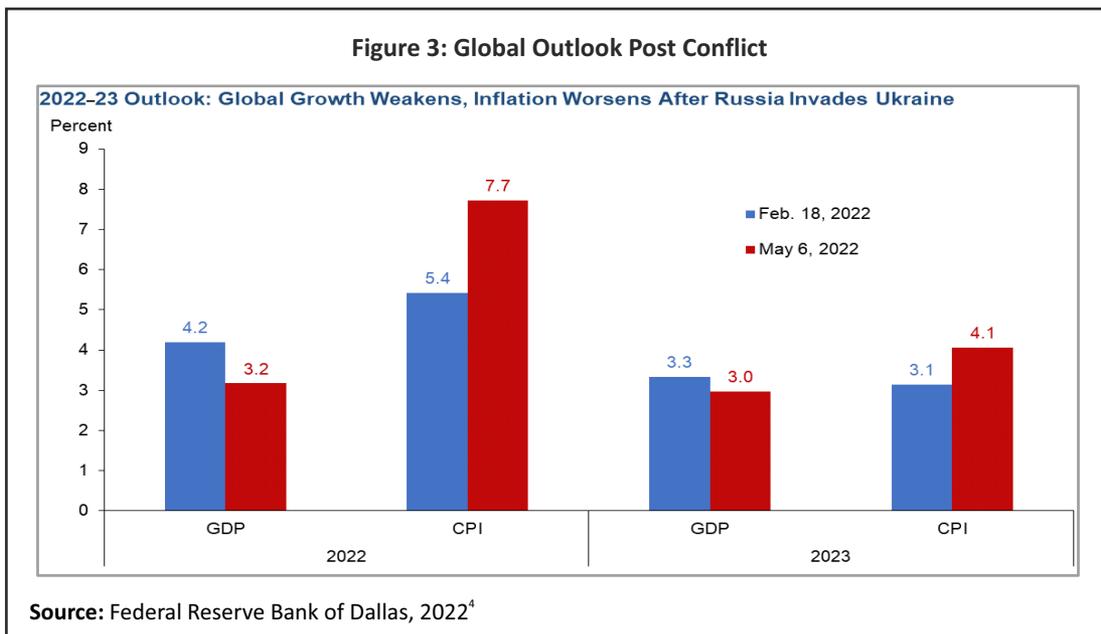
➤ Counter Sanctions by Russia:

- Russia has banned exports of more than 200 goods, including telecoms, medical, vehicle, agricultural, electrical equipment and timber products.
- Buyers of Russian natural gas based in 'unfriendly states' are obliged to pay for gas in Russian roubles.
- Russia reduced its oil import to the 'unfriendly states'.

Source: Author's Compilation

When we compare pre-war and post-war global outlook forecasts (Figure 3) we can see that the GDP projection has reduced for both

FY2022 and FY2023 and the CPI (Consumer Price Index) inflation has increased because of the increase in energy prices.



6. Supply Chain Disruptions and its Economic Effects on Major World Regions

6.1 Africa

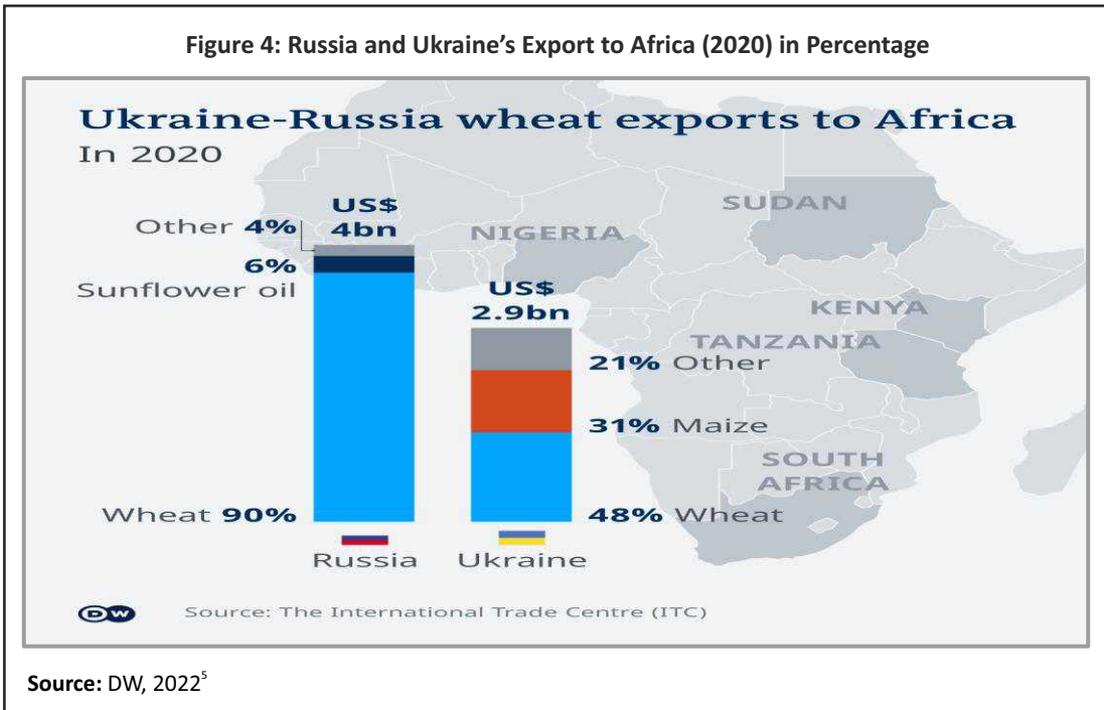
Africa is one of the lowest income continents in terms of GDP per capita and is heavily reliant on food imports from both Ukraine and Russia, and the continent is experiencing food price shocks because of the disruptions in the supply chain. Ukraine and Russia, both known as the world's breadbasket, are key exporters of wheat and sunflower oil to Africa. In Figure 4, we can see Africa's historical reliance on Russian and Ukrainian Wheat in terms of percentage. North Africa (Libya, Algeria, Morocco, Egypt and Tunisia),

Ethiopia and Sudan in East Africa, Nigeria in West Africa and South Africa account for 80 per cent of wheat imports (Sacko & Mayaki, 2022). Countries like Uganda, Sudan and Tanzania import almost half of their wheat which is needed from these two countries. The sanctions imposed on Russia by Western countries and the closure of vital port operations in the Black Sea have reduced the food and energy supply to Africa.

Globally Russia is one of the biggest suppliers of fertilisers. Regions like the Sahel region and the Horn of Africa are at greater risk of food insecurity due to export restrictions, climate change and stockpiling, especially increasing

⁴<https://www.dallasfed.org/research/economics/2022/0517> (Accessed on November 09, 2022)

Figure 4: Russia and Ukraine’s Export to Africa (2020) in Percentage



fertiliser costs and other energy related costs that will negatively impact the next agricultural season as a result of the ongoing conflict. African states with weak political stability, lack of security and fragile economic structures are taking great blows from this conflict.

6.2 Latin America

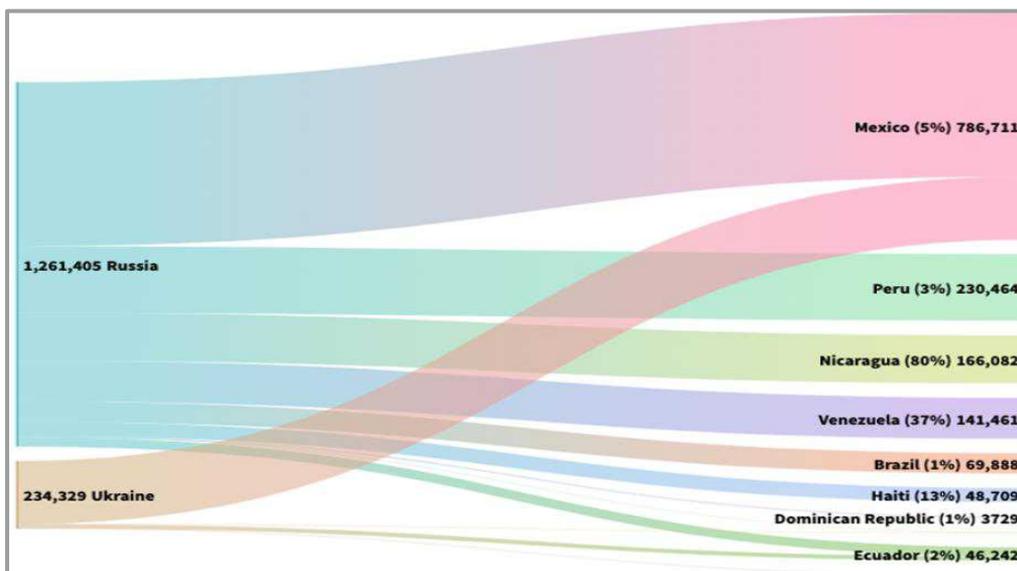
The conflict in Ukraine has also impacted Caribbean countries and Latin America. Many countries in this region heavily rely on the wheat from Ukraine and Russia, which

together account for 25 per cent of global wheat supplies.

Countries like Nicaragua imports 80 per cent (Figure 5) of their wheat from Russia and Ukraine. The conflict has disrupted the supply of fertilisers, unleashing potential medium and long-term worldwide consequences. Ukraine and Russia are major suppliers of fertilisers such as phosphates, urea, anhydrous ammonia, potassium and nitrogenated fertilisers (Rondinone *et al.*, 2022). Big Economy like Brazil is less dependent on wheat import from Russia and Ukraine but

⁵<https://www.dw.com/en/five-facts-on-grain> (Accessed on November 11, 2022)

Figure 5: Russian and Ukrainian Wheat Exports to Selected Latin American and Caribbean Countries, 2013–2019 (Thousands of U.S. dollars)



Source: Inter-American Development Bank calculations based on COMTRADE data, 2022⁶

the CPI and rise in energy price with slow down their economic growth. Latin American countries are massively dependent on Russian fertiliser imports, indirectly affecting food prices.

Latin American imports 15 per cent of its fertiliser requirement from Russia, although some countries such as Ecuador, Peru and Suriname import more than 30 per cent. Sanction on Russia and its partial suspension from the international banking and payment system, Society for Worldwide Interbank Financial Telecommunications (SWIFT)

affected access to fertilisers by some countries that might face difficulties making payments to purchase these commodities.

The impact of high food prices and increasing poverty, with direct negative consequences for food access in terms of quality and quantity. This is true in Caribbean countries and Latin America, where poverty affects over 200 million people (32 per cent of the population). The families which will get majorly hit are the low-income families as they allocate a major proportion of their income to food consumption.

⁶<https://blogs.iadb.org/sostenibilidad/en/how-the-conflict> (Accessed on November 12, 2022)

6.3 Asia

The conflict between Russia and Ukraine will have a major economic impact on Asian economies. For Southeast Asian region, especially the Association of South East Asian Nations (ASEAN) nations. ASEAN economies have fewer economic links with Russia, however, because of the increase in commodity prices, commodities like oil, which has become expensive, thereby augmenting the producer and consumer price inflation in the region (Kakoti & Singh, 2022). All 8 economies of South Asia are net Crude oil importers mainly from the Middle East and the USA, which makes them sensitive to oil price shocks by raising the cost of import and increasing the cost of commodities for consumers. Because the majority of Asian countries are primarily consumption-based economies, with food and energy accounting for nearly half of the total consumption expenditure, increasing oil prices will have a greater impact on emerging Asian markets than any other region of the world.

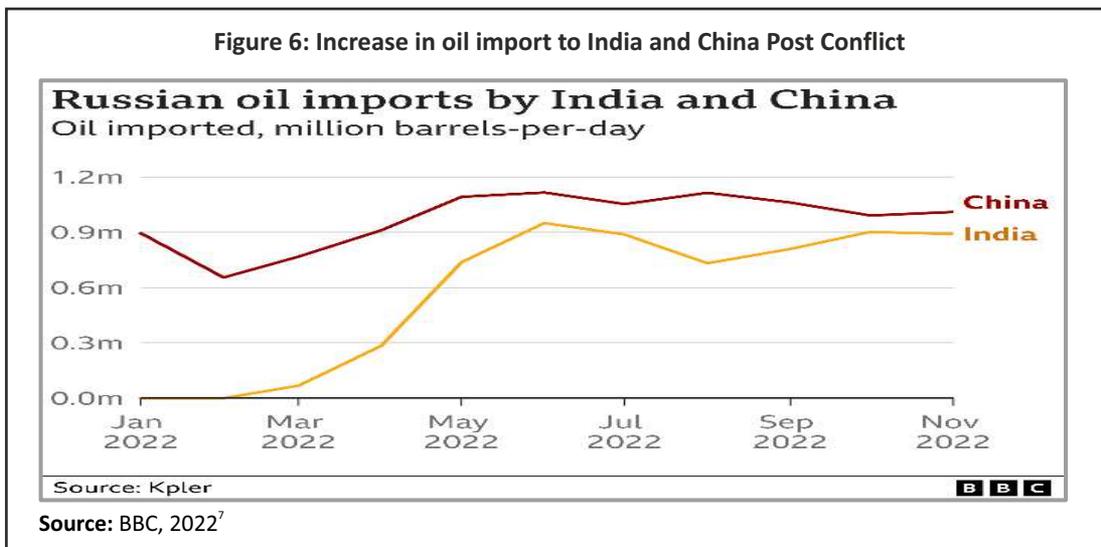
The impact of rising oil prices is visible in transportation, housing, electricity, gas, and other sectors in Vietnam, Malaysia, and Indonesia. However, not all the Southeast Asian economies are directly affected, such as Indonesia, Philippines. These economies will be able to reduce the impact of rising oil prices on inflation because of their low energy usage. In Singapore and Thailand, which have

relatively high petrol and energy consumption, an increase in oil prices is translated into an increase in domestic prices. India, a net importer of oil, has a severe impact as oil imports are expected to rise significantly, further increasing the country's trade deficit with Russia; it will also have an impact on its foreign exchange (Forex) reserves. India has increased its import (Figure 6) of discounted Russian Crude oil as the price of oil increased post-war. Further, it will make the Indian rupee depreciate. Due to sanctions on Russia, Asian countries have started to trade in their local currency.

Although the majority of China's LNG still originates from other nations, there has been a noteworthy rise in LNG and crude oil imports from Russia this year. With three shipments, Sri Lanka, which is dealing with a severe economic crisis, is taking advantage of discounted Russian oil.

In contrast, Japan a G7 country has made it very clear that it will stop buying Russian oil, and South Korea has also reduced its import of Russian crude. Japan's inflation will inevitably rise as a result of the ongoing rise in oil costs. The export sector in South Korea is predicted to suffer greatly as a result of high oil prices. Its export business is supported by the manufacturing sector, which is heavily reliant on energy imports. Higher prices are trickling down and causing a rise in consumer product prices, impeding the country's economic growth.

Figure 6: Increase in oil import to India and China Post Conflict



Middle Eastern economies like Saudi Arabia, Qatar, Iraq etc. are doing much better as these countries are net exporters of oil, which has benefited their economies.

6.4 Europe

As a result of the Russian invasion, approximately seven million Ukrainians were forced to evacuate their homeland. Inflation has reached levels not seen in decades as a result of the conflict and related sanctions that have affected regional shipments of goods like metals, food, oil, and gas. The slowdown in growth is especially noticeable in countries close to the conflict zone, such as Poland and Hungary, which are also hosting a large number of Ukrainian refugees. Italy and Germany, which rely heavily on Russian oil

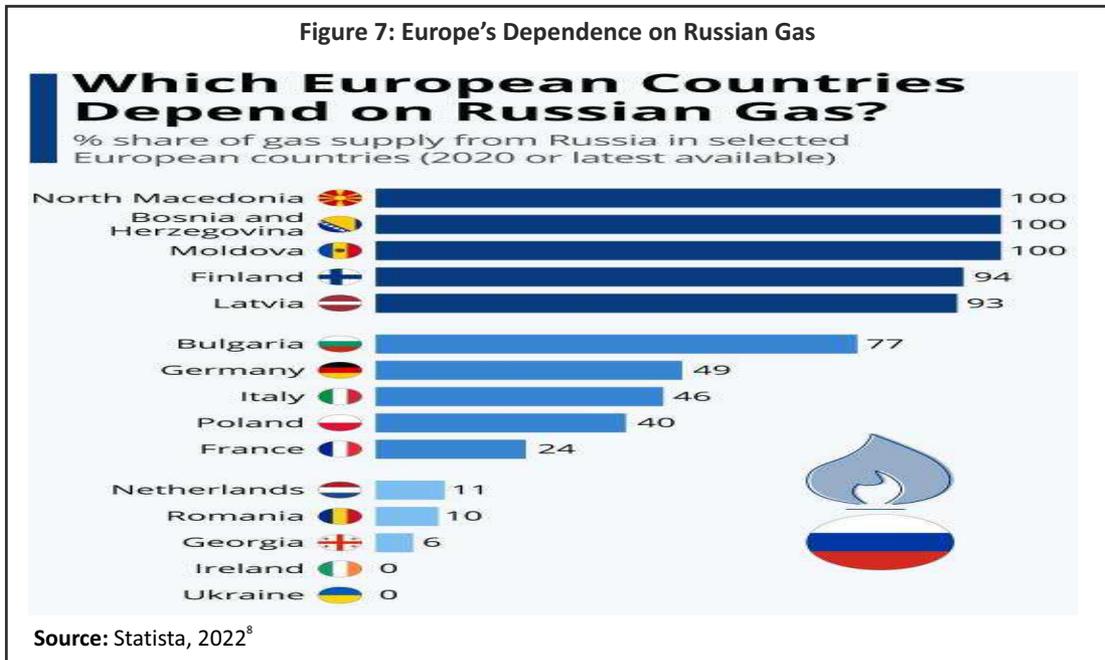
and gas, are also feeling the pinch.

Russia, the largest supplier of crude oil and natural gas to Europe, has faced massive disruption because of the economic war. Countries like North Macedonia, Bosnia and Herzegovina, Moldova, Finland, Latvia, and Bulgaria and large economies like Germany, Italy, and France are massively dependent on Russian Gas (Figure 7). Concerning crude oil, Europe imports are a quarter of the oil requirement from Russia.

Russia and Ukraine are significant producers and suppliers of agricultural and energy goods. The cost of many essential goods will increase when production facilities are damaged by war, especially those that are hard to substitute, like wheat, fertiliser, and gas.

⁷<https://www.bbc.com/news/world-asia-india-60783874> (Accessed on November 15, 2022)

Figure 7: Europe's Dependence on Russian Gas



6.5 Effects on the USA Economy

The US has boosted fossil fuel production and cemented its standing as a major energy exporter, particularly of liquefied natural gas (LNG), to help to fill demand in Europe. US trade with Russia and Ukraine is minimal, but the conflict has affected high inflation (Figure 8) and slow growth in consumer spending. After the sanctions and counter sanctions, Europe has turned towards the United States of America for energy to replace Russia's energy. Also, the USA is providing billions of dollars of weapons to Ukraine. The war-induced rise in global commodities prices

comes at a time when US inflation is already at a 40-year high. The US central bank has aggressively increased the Repo rate to control inflation.

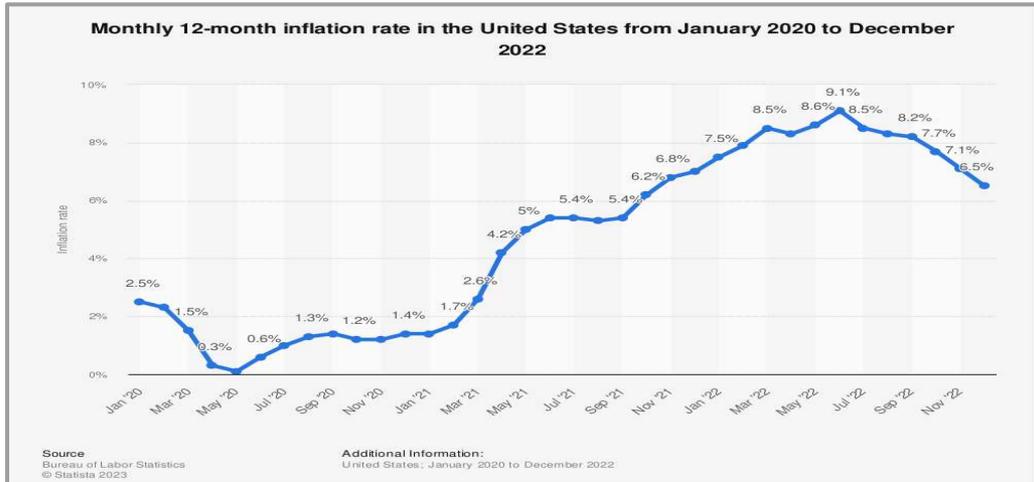
6.6 India- Crisis or Opportunity?

In this globalized world, the spillover effect of the conflict was also felt in India. In the line of Global cues, inflation soared more than 6 per cent (Figure 9) due to high energy prices as India imports 85 per cent energy needs.

The crisis has also pushed up the price of imported fertilizers to India, particularly Urea and Potash from Russia. This threatens to

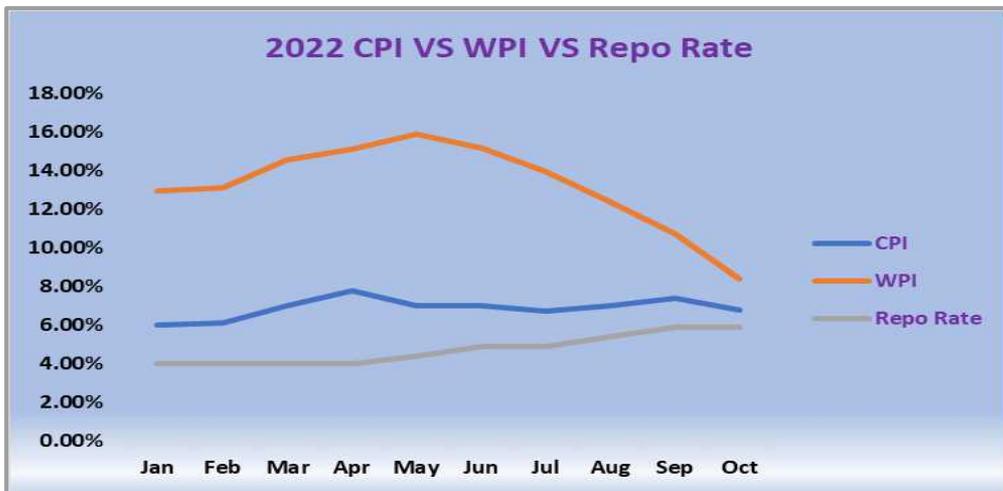
⁸<https://www.statista.com/chart/26768> (Accessed on November 17, 2022)

Figure 8: Inflation in US Economy



Source: Statista, 2022⁹

Figure 9: Monthly Inflation and RBI's Change in Repo Rate



Source: Author's Computation using RBI data¹⁰

⁹<https://www.statista.com/statistics/273418> (Accessed on November 18, 2022)

¹⁰<https://www.rbi.org.in/> (Accessed on November 18, 2022)

increase the agriculture fertiliser subsidy bill. To control inflation the RBI intervened and increased the repo rate multiple times.

Surprisingly the impact in India is less compared to the rest of the world. One key reason is the control of food inflation during the ongoing conflict as India is a food surplus country and due to its relatively dominant geo-political position of India with wider diplomatic ties, it had access to all the major markets in terms of trading.

As we know every crisis brings opportunity, the world has been searching for Indian wheat to fill the enormous gap in the supply chains coming from Russia and Ukraine. Increased potential for Indian exporters of nuts, confections, fruits, and pulses result from a prohibition on cargo from Russia.

India benefited from importing cheap discounted Russian oil. Russia became from 10th to one of the top crude oil suppliers to India during the conflict. The record level of bilateral trade between India and Russia is mainly due to a sudden jump in imports of Oil and fertiliser from Moscow, which began to surge earlier this year.

There was an over 500 per cent increase in three months – 561.1 per cent in June, 577.63 per cent in July and 642.68 per cent in August as compared to the same months of the previous year.

From accounting for just 0.2 per cent of all the oil imported by India in the year ending in

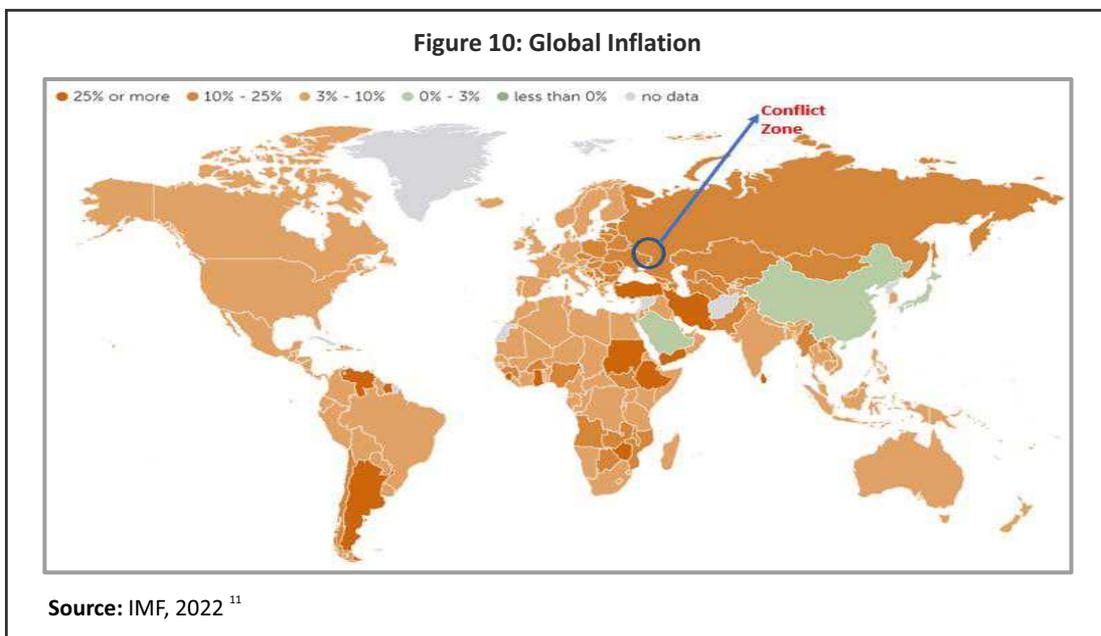
March 2022, Russia emerged as the top supplier in October. India had to face a lot of diplomatic pressure for cheap buying of Russian oil but India maintained its independent relation with both the West and Russia.

If we look closely at the data, the bilateral trade between Russia and India has almost increased multi-fold post-war as India got access to cheap energy, fertiliser and other commodity market and Russia, due to the Western sanction is desperately looking for new markets to do business and India is one of the major partner in it. Russia and India Western avoid western sanctions and reduce their dependence on the US dollar and both the countries are pushing for Rupee-Ruble transactions (Mishra, 2022). In its latest update, the IMF has projected a slowdown of India's economic growth to 6.6 per cent from 7.2 per cent in 2022, mainly due to change in oil prices and the global economic slowdown.

7. Impact on Global Inflation

The rise in energy, and food prices and disruption in the supply chain have pushed inflation to almost double for many countries than projected.

Inflation for countries directly involved in conflict i.e. Russia and Ukraine are 13.8 per cent and 20.6 per cent respectively (Figure 10). Nearby countries like Belarus is having an inflation of 16.5 per cent. Most of the European and Asian countries in close



proximity to the conflict have double-digit inflation.

Millions of refugees flying from Ukraine have been impacted by the rise in inflation for neighbouring countries like Poland, Romania and Moldova. Inflation is more than 10 per cent in most European countries and the USA it is 8.2 per cent which is the highest in the last 40 years. The Core inflation (Energy and food) is the key driver of high inflation all around the world. Inflation is low compared to the rest of the world in the countries like Taiwan, Japan, China, Saudi Arabia etc. which are far away from the conflict zone.

The net energy importing countries are also

facing huge challenges to control inflation as energy is a key commodity for any economy. Central Banks are aggressively increasing the interest rate to control inflation by limiting the money supply in the market. It is quite evident from the above chart that the spillover effect of geopolitical conflict on the nearby economies is much more compared with the rest of the world.

7.1 Price of Key Commodities

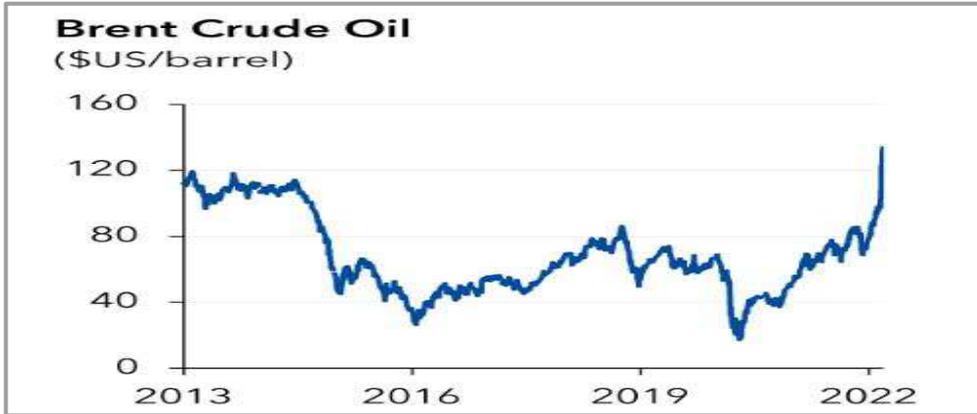
When the world just started to recover from the Covid-19 pandemic, the Russia-Ukraine conflict was a big blow to the global economy. The commodity price increased massively. The price of essential commodities like oil and

¹¹<https://www.imf.org/external/datamapper> (Accessed on November 02, 2022)

gas (Figure 11) got almost doubled when we compare the pre-war to the peak of the war levels.

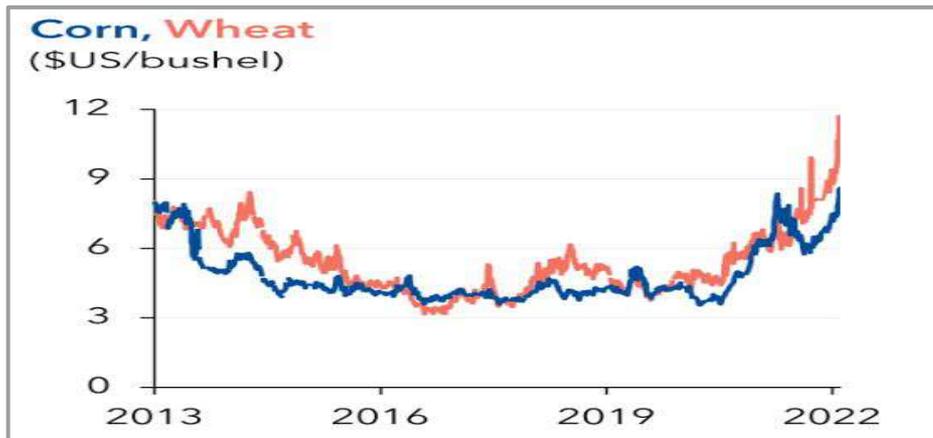
The price of food commodities like wheat and corn (Figure 12) increased which created the risk of food shortage for the food-importing

Figure 11: Brent Crude Oil Price



Source: IMF, 2022¹²

Figure 12: Increase in Corn and Wheat Prices

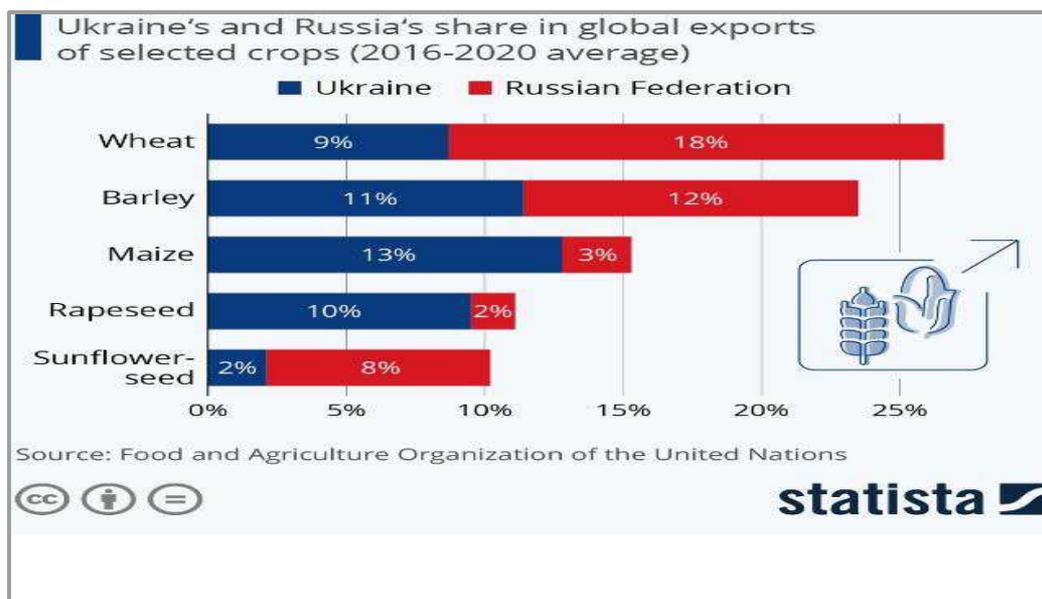


Source: IMF, 2022¹³

¹²<https://www.imf.org/en/Blogs/Articles/2022/03/15/> (Accessed on December 21, 2022)

¹³<https://www.imf.org/en/Blogs/Articles/2022/03/15/> (Accessed on October 07, 2022)

Figure 13: Ukraine and Russia's Share of Food export



Source: Statista, 2022¹⁴

countries. Russia and Ukraine are major exporters of different crops around the world, the conflict in the Black Sea has created a shortage of food in the global market which in turn has increased the price of crops.

8. GDP Growth Projection of 2022

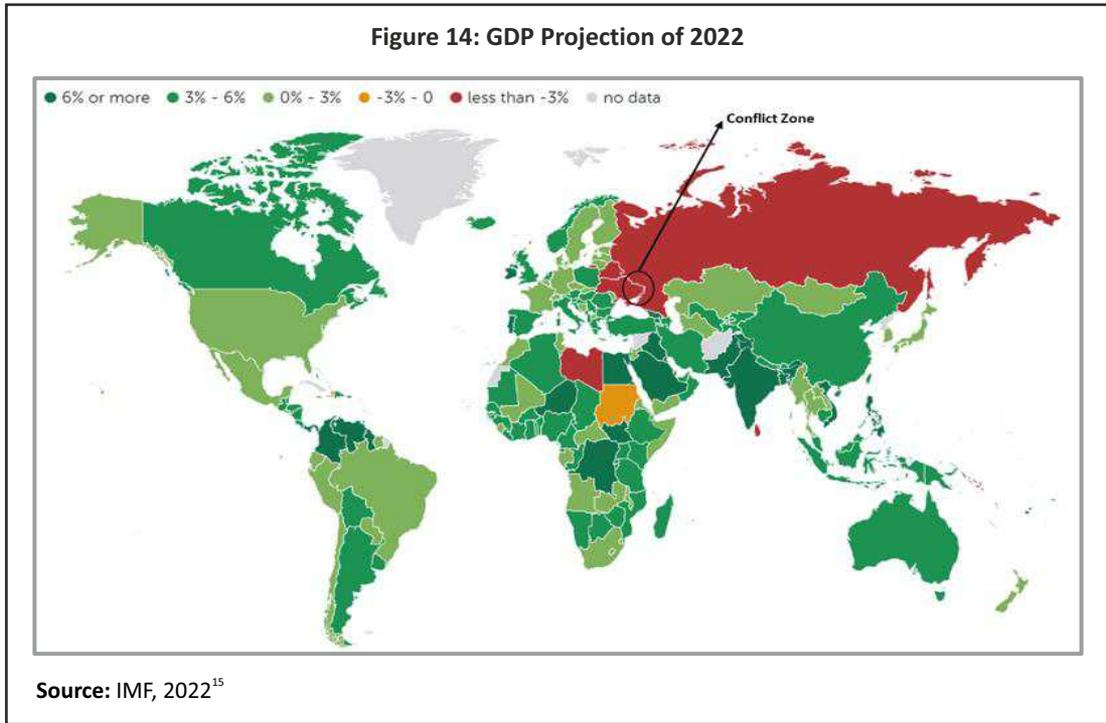
Supply chain shock, High energy prices, Food security concerns and High inflation have reduced the Projected GDP growth of countries across the world. GDP growth of countries directly involved in the conflict i.e.

Russia and Ukraine are projected to be negative (Figure14).

GDP growth of countries close to the conflict zone like the European countries and Asian countries sharing a border with Russia is between 0-3 per cent. The United States of America, who indirectly involved in the conflict against Russia is also having a GDP growth of 3-6 per cent.

The fastest developing countries are far away from the conflict zone like Canada, India,

¹⁴<https://www.statista.com/chart/27225/russian> (Accessed on November 07, 2022)



Saudi Arabia, Australia and some African and Latin American countries. Oil and Gas exporting countries have benefited from the price increase in the global market.

8.1 GDP Quarterly Growth

The GDP growth of OECD (Organization for Economic Cooperation and Development) and EU economies in Q1 i.e. April to June on YOY has increased compared to the previous year because 2021 was a recovery year from the covid-19 pandemic.

Stronger growth can be seen in European

countries along with Brazil, Turkey and China (Figure 15).

The GDP growth of OECD economies and EU economies in Q2 i.e. from July to September on YoY, we can see the impact of the conflict has affected economies where we can see the countries near the conflict Zone are massively hit, especially Russia and Ukraine along with nearby countries.

The GDP growth of 2022 Q2 YoY is less compared to 2022 Q1 YoY. The countries were also impacted because of Supply chain disruption, food shortage and high inflation.

¹⁵<https://www.imf.org/external/datamapper/> (Accessed on December 17, 2022)

Countries like Saudi Arabia, Iraq and other middle eastern countries (Figure 16) benefited from the increase in oil prices which is clear in their GDP growth percentage.

Other Major economic like India benefited to some extent from having a good geo-political tie with most countries, where India imported cheap oil and fertiliser and also filled the wheat shortage created because of the conflict by importing wheat to many Middle Eastern and African countries.

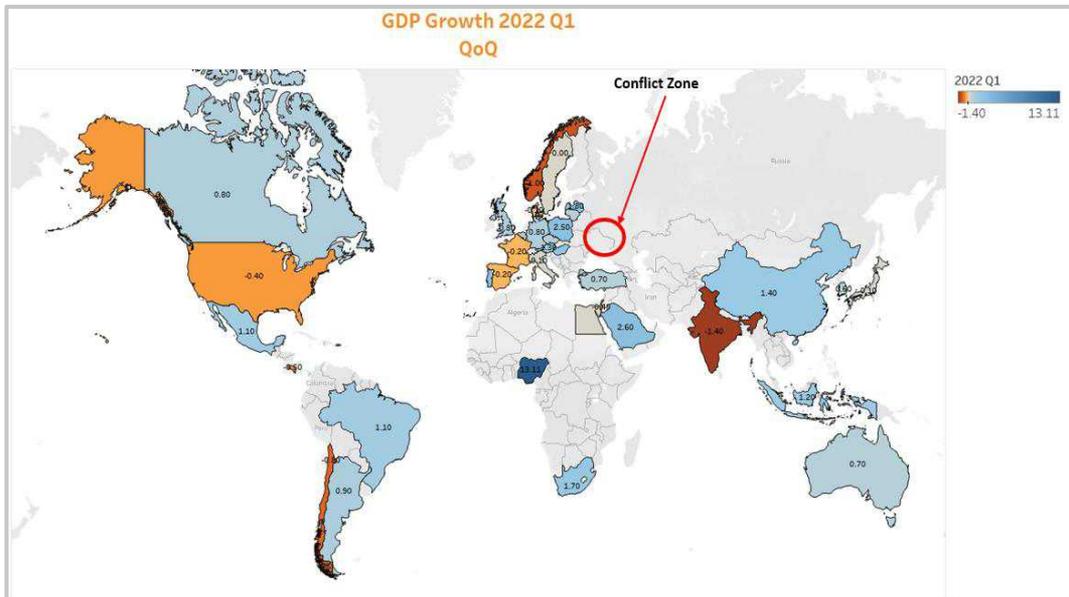
Quarterly GDP growth for Q1 2022 by QoQ gives a more comparative study which shows a global slowdown and its effect on the GDP

growth of most of the world economy.

The key reasons are the Russia-Ukraine conflict and its spillover effects. Countries like China, Australia, Brazil, Canada, and Saudi Arabia (Figure 17) have positive GDP growth as they are not involved in the conflict.

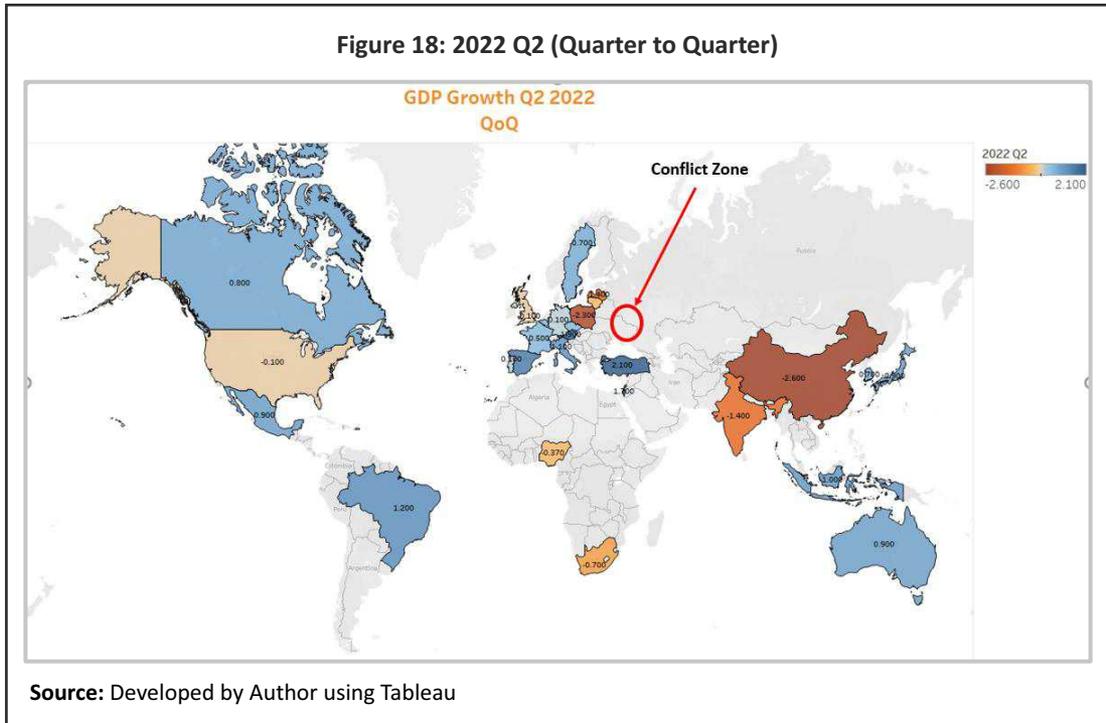
As the conflict escalated, the GDP growth for Q2 QoQ slowed down further compared to Q1, the major reason being high core inflation and supply chain interruption and it is difficult to find an alternate supplier in a short period. The countries which are heavily dependent on energy imports are majorly affected and the net exporter of energy is better off (Figure 18).

Figure 17: 2022 Q1 (Quarter to Quarter)



Source: Developed by Author using Tableau

Figure 18: 2022 Q2 (Quarter to Quarter)



9. Conclusion

In today's globalized world, the world perceived that going into any military conflict is not an option to resolve any differences because of expanding mutual economic dependence. However, the theory needs suitable empirical testing in the context of the recent Russia-Ukraine conflict. National interest and geopolitics play a key role in how an economy functions. When the world was recovering from the Covid-19 pandemic with a key learning that countries should not be completely dependent on a few countries or on one country for its supplies, the world faced

another challenge i.e.- the "Russia-Ukraine Conflict".

Choosing a side in a conflict can affect a country's economy as it might weaken part of its supply chain. If we see the geo-political position of all the countries, we can see that countries that got majorly affected are either countries in close proximity to the conflict zone or are strictly choosing a side in the conflict.

On the other hand, countries which are not in close proximity to the war or have abstained from the UNGA vote, like India, Saudi Arabia, UAE, Canada, countries of Africa etc.

have been much better off with regard to their vulnerability over supply chain disruption, inflation or GDP growth. The supply chain disruption due to sanctions and counter-sanctions are, is a short-term effect and its key effects are inflation and a drag on their GDP growth projection. Since it will take some time for each economy to establish and explore alternate suppliers' sources of supplies based on the emerging suitable geopolitical linkages.

Another key factor is investor sentiment. Investors will always look for a safe environment to earn their return, so they will always look for a safe and geopolitical sweet spot. So, it is quite natural that foreign investors will move their investment from a conflict zone too far away to a much safer place, which will have a direct implication on the economy.

So, from the above information and data and its analysis, we can say that geopolitics has direct or indirect consequences on a country's economy and countries with better geopolitical equations and diplomatic ties across the globe can navigate the geo-political challenges which in turn can benefit their respective economies.

So, if we take a close look at the geopolitical effects on the economy, the key disruption that has happened is in the re-orientation of the supply chain like the increase in the demand of the US and the Middle Eastern energy to Europe and Russian energy to China and India. Also, countries are looking for multiple

supply chains rather than putting all eggs in one basket. As a silver lining, domestic production got a boost in many countries due to this disruption.

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Today's Farmer - Tomorrow's Agri-Entrepreneur

Radha R Ashrit¹

Abstract

Presently, India is entering the age of Amrit Kaal. In this era, the youth, women, farmers, Other Backward Classes, and Scheduled Castes and Tribes are particularly important as we strive towards a flourishing and inclusive India. The agricultural industry accounts for a disproportionate share of our labour force. With fewer people finding work in traditional sectors, improving people's standard of living will require fresh approaches and risk-taking. Farmers in our country are currently preoccupied with maximizing output, despite farming being extremely susceptible to the elements such as vagaries of nature and input and output price fluctuations. So, a change is required to meet the needs of farmers who must evolve from passive to active participants in the agribusiness sector. The various agricultural initiatives promoted and encouraged using existing technologies to improve farm output. New ways of adding value and selling products for higher prices can be found with the help of improved infrastructure, like assured irrigation, farm mechanization, and the formation of Farmers' Producer Organizations (FPOs). The practice of agri-entrepreneurship is highly encouraged and facilitated by the Indian government for long term sustainable growth through FPOs.

Keywords: Farmer, Agri-entrepreneur, Technology.

1. Introduction

Since ancient times, agricultural pursuits and associated industries have been given significant cultural, social and economic prominence in India (Varma, 2007; Taylor, 2011). Over time, the agricultural sector's dynamics have changed. About 43 per cent of the labour force is employed in this industry, and its output was responsible for 19 per cent

of the country's GDP in 2021-22 (GoI, 2023). Conversely, agriculture remains the principal livelihood source for approximately 55 percent of India's population, with small and marginal farmers accounting for 87 percent of the total (Chand *et al.*, 2011). Income generation through agriculture not only reduces poverty but also improves the living conditions of the Farmers. Millions of our farmers, scientists, and planners worked tirelessly to change India from a food deficit to a food surplus and net food exporter country.

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Food grain production grew sixfold from 51 million tonnes (Mt) in 1950-51 to more than 314 Mt in 2022. The country has also become the largest producer of milk, pulses and jute and the second largest producer of rice, wheat, cotton, fruits and vegetables worldwide. Today, India is confronted with a dual dilemma of increasing profitability in the farm industry while maintaining farmers in the agriculture sector (Vyas & Singh, 2006; Chand *et al.*, 2011; GoI, 2014, 2017). To overcome this situation, the government's approach to increasing farmers' income is a proactive response to the crisis that the Indian agricultural system is currently experiencing (GoI, 2017).

According to 2019-20 land use statistics, out of the total land area of 328.7 million hectares, 139.9 million hectares is recorded as net sown area and 194.4 million hectares is the gross cropped area with a cropping intensity of 138.9 per cent. The irrigated area accounts for 66.1 million hectares (GoI, 2022). As 87 per cent of the farmers are small and marginal, they need special consideration for their needs (GoI, 2014).

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(GoI, 2014).

With a large proportion of the population working in agriculture, India is predominantly an agricultural nation. Despite India being one of the world's top producers of agriculture, it is frequently characterized by low productivity, dispersed land ownership and low levels of technological adoption. This might be due to various reasons such as poor infrastructure, poor access to technology, unawareness about government benefits, lack of support services, lack of trained staff, and sociopolitical instability. By encouraging innovation, efficiency and sustainability in agriculture, agri-entrepreneurship has the potential to address these issues. It entails locating lucrative business possibilities in the agricultural industry and developing creative business models to capitalize on them. Agri-entrepreneurship helps small-scale farmers achieve productivity profit and ensures quality food to the rural and urban poor with decreased food costs.

The agricultural sector has long struggled with low and stagnating income which led to farmers' suicide in the past. Farmers' revenue can boost, thanks to advances in agricultural technology (Tan *et al.*, 2022). Farmers' incomes are expected to rise due to the extensive use of technology in agriculture, allowing for greater productivity and better yields over the long term. Investments in agricultural endeavours need careful planning. With the expanding agri-tech ecosystem, the government's efforts are proving to be a boon

to the farming sector, influencing change across the entire value chain, from farmers to consumers (Hu *et al.*, 2022). Both demand and supply side considerations play a role in determining whether or not advanced agricultural technology is widely adopted and disseminated. Farmers' awareness and adoption of newer technology, availability of credit and use of appropriate inputs drive the demand side. Policy backing, funding for agricultural research and education and infrastructural availability are all examples of supply side factors (Kumar *et al.*, 2018; Ashrit, 2021). If supply and demand are in harmony, better technologies can spread faster, leading to the desired results more quickly.

2. The Current Status of Indian Agriculture Reforms

The role of the government in assisting farmers and enhancing the agricultural infrastructure thus becomes crucial. The Indian government is committed to facilitating the farm sector's transition toward greater sustainability and profitability. To realize agriculture's full potential, the government concentrates on improving the sector's infrastructure, logistics, capacity building, governance and administrative changes which were the barriers in this sector.

Over the years, the government has implemented several programmes and regulations to maximize agriculture's potential with all allied industries. The Department of Agriculture, Cooperation and

Farmers' Welfare (DAC&FW) coordinate the rollout of agricultural focused programmes. The Indian government's Ministry of Agriculture and Farmers' Welfare has launched a centralized investment platform called "Agri Invest" to facilitate foreign direct investment in the country's agricultural industry. Its ultimate goal is to encourage more financial investment and simplify business in the farming industry. Additionally, it assists businesses and investors through the programmes, laws and incentives offered by the federal and state governments (GoI, 2022).

Recognizing the importance of infrastructure to agricultural growth, the government has committed to allocate adequate funds to improve farmers' access to markets through farm-gate infrastructure. This scheme would provide funding for farm-gate and aggregation point agriculture infrastructure projects at a total cost of ₹1,000,000 crores (Primary Agricultural Cooperative Societies, Farmers' Producer Organizations, Agriculture entrepreneurs, Start-ups, etc.). With a total budget of ₹200 crores, the government of India launched another Central Sector Scheme for the "Promotion of National Agriculture Market (NAM) through Agri-Tech Infrastructure Fund (ATIF)" in 2015, intending to deploy a standardized electronic trading platform across 585 regulated wholesale agriculture markets (Gosh, 2018; GoI, 2022).

Previously known as the Sub Mission on Agricultural Extension (SMAE), Krishonnati Yojana is the overarching programme that recently absorbed SMAE. With this programme's help, state governments can continue their extension efforts. New institutional arrangements for technology distribution in the form of a district-level Agricultural Technology Management Agency (ATMA) are being implemented to make the extension system farmer-driven. This programme aims to provide financial assistance to state governments to improve their extension systems and disseminate cutting edge agricultural innovations and best practices across agriculture and related industries. Examples of extension activities include farmers' training, demonstrations, farmers' exposure visits, Kisan Melas, group mobilization efforts, farm school organizations, etc. There are currently 684 districts participating in the ATMA programme (GoI, 2022).

Another initiative, namely the Agricultural Marketing Infrastructure (AMI) programme, focuses on aiding farmers, grower groups, agri-entrepreneurs, FPOs, cooperatives, state agencies and others in rural areas of the United States in building or renovating storage facilities for their crops. In addition, the government's Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) aims to improve water use efficiency ("Per Drop More Crop") and expand irrigation coverage ("Har Khet Ko Pani") in a targeted way by providing an end-

to-end solution for water supply creation, distribution, management, field application and extension. The socio economic and cultural environment of farming needs more profound research to improve entrepreneurial abilities.

However, studies have revealed a greater need to increase the availability of capital support and financial inputs by inviting the banking sector; improving facilities for promotional events and awards for entrepreneurial achievements; establishing several agrotourism zones; increasing the availability of knowledge on business possibilities and marketing for businesses (Refiswal & Julianti, 2021). Agricultural entrepreneurs may also be encouraged to buy, sell, and transport various farm products, particularly organic ones. Further, this field needs an enabling innovation, research, and development ecosystem.

3. Conclusions

Known as the "lifeline of the Indian economy", the government is dedicated to revitalizing and nurturing the agricultural sector to its fullest. Agriculture can increase its contribution to the Gross Domestic Product (GDP) and create more efficient employment opportunities for more people in a wide range of ancillary industries through which the overall economy will strengthen. It also has the potential to help other sectors develop and expand. Even though the pandemic harmed most industries, agriculture was one of the few

that saw an uptick. Farmers' demonstration exemplified mass mobilization's power in advocating for their causes.

Further, the Indian government has started several programmes recently to encourage agri-entrepreneurship. They include the Pradhan Mantri Fasal Bima Yojana, the e-NAM (National Agricultural Market) initiative and the Start-up India programme. With these efforts, agri-entrepreneurs and farmers are intended to receive financial help, technical aid and market linkages. In the long run, this will lead to technology enabled sustainable growth in Pan India.

A better future for India's economy can be achieved by guiding the sector toward Agri research, development, education, and technology while also considering the farmers' aspirations and expectations.

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