Entrepreneurship and Development in South Asia: Longitudinal Narratives

Jay Mitra *Editor*

Indian Entrepreneurship

A Nation Evolving

Springer

Entrepreneurship and Development in South Asia: Longitudinal Narratives

Series Editor

Jay Mitra, Essex Business School, University of Essex, Colchester Campus, Essex, UK

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That was an innocent country
Warlock and dwarf, the hairy forest, dragons
Somewhere there, they said
Though never seen, sometimes heard:
Somewhere in the hills, the hermit's cavern
Where all was forgiven

From 'That Was' by Dom Moraes (1987). *Collected Poems 1957–1987*. New Delhi: Penguin Books

To my parents, Gill and Daniel.

Foreword: New Vistas for Entrepreneurship

Entrepreneurship is a much-talked-about phenomenon everywhere in the world and has ignited dreams across every sector of business and society. In the technology sector, the world is in awe of product entrepreneurship in Israel and Silicon Valley in the USA, with legendary entrepreneurs like Steve Jobs and Larry Ellison and the more contemporary success stories of Elon Musk, Jeff Bezos and Mark Zuckerberg catching the imagination of customers and investors and contributing significantly to the rise of stock markets in the last decade.

The Wikipedia definition of entrepreneurship throws up three interesting perspectives. The classic definition is the capacity and willingness to develop, organise and manage a business venture along with its risks to make a profit. In a broader sense, it is also the creation or extraction of value. And the economics definition refers to an entrepreneurial venture as an entity which recognises the commercial potential of an invention and organises capital, talent and other resources to turn that invention into a commercial, viable innovation. Jobs, Bezos and Musk stand out as true entrepreneurs who could scale their innovations into enormously commercially successful commercial enterprises Apple Computer, Amazon and Tesla, respectively.

What defines a truly great entrepreneur? Jobs has been famously quoted as saying "you can never trust the customer to know what she wants" which spurred him to create products that customers had never imagined to be possible and then wanted to own. Amazon and Tesla have been true category creators which allowed them to create enormous opportunities and then market share. And both their creators have not rested on their laurels with the first successful enterprise but have gone on to create new ones as well, Amazon Web Services in the case of Bezos and SpaceX by Musk. In the present era, the FANG quarter (Facebook, Amazon, Netflix and Google) have emerged as the biggest value creators with new ideas scaled to a level where the world is now trying to find ways to arrest their growth.

This new book by my long-time friend and academician par excellence, Prof. Jay Mitra, is timely because it covers a wide gamut of entrepreneurial innovation and specifically focuses on success stories as well as opportunities in India. In a masterfully researched and written first chapter, Jay brings to life the story of Indian entrepreneurship and details how historical occurrences first stifled innovation in India and then enabled it to flower post-independence. This is followed by up to date accounts on policy making affecting entrepreneurship development narrated by Vijaya Gupta, the case of particular social phenomenon, the social enterprise Banglanatak dot com led by Amitava Bhattacharya, and how it transforms rural people's daily lives through art and culture as a form of living. In this book Sarika Pruthi tells the story of an extraordinary transnational venture carving out a unique way of work in the global entrepreneurial landscape. How technology and innovation development obtain in public R&D laboratories is reviewed by Santanu Roy and Jay Mitra. This tapestry is enriched by ten new venture case studies written by Renji George, uniquely from the state of Goa whose tourism culture continues to attract millions from around the world. This is a rich fare with contributions from well-established academic researchers and practitioners.

Being a practitioner of both entrepreneurship and intrapreneurship in this country over three decades, I find that the analysis as well as synthesis of entrepreneurial capabilities in the country makes for compelling reading.

The story of India and Indian innovation is in itself a challenge because this country has not truly made a mark in any form of product or business model innovation apart from propagating a curious and quite derogatory form of innovation called "jugaad" where entrepreneurs find workaround solutions to problems and somehow find rough and ready solutions. Personally, I find the celebration of these short-cuts quite repulsive and in some ways insulting to the real capability of the Indian mind and the vistas of opportunity it could explore. If there is one standout example of successful innovation in this country, it is more in the form of process and services innovation in the India Information Technology Services and Business Process Management industry, led by pioneers like Tata Consultancy Services and Infosys, who pioneered a global sourcing model for technology and process outsourcing and built a 160 billion dollar industry with dominant global market share in three decades. A former Prime Minister had coined a slogan "IT is India's Tomorrow", and there is much more potential and promise to be converted to entrepreneurial performance in the years to come, not just in Information Technology but also myriad new areas.

If truth be told, it is in traditional areas that Indian entrepreneurs have made their mark over the centuries. From the Maurya empire to the Gupta era, the exposure of Indian businessmen and traders to transnational business would have opened their eyes to global markets and while the early experiences were more with trading, the middle ages saw paper and printing and many smaller innovations finding visibility in the local markets. The Mughal era and then the British empire were weak periods for entrepreneurship in the country with Europe the hotbed of industrial innovation finding India a ready market to send goods with a significant negative impact on the domestic industry, Early Indian entrepreneurs Virji Vora, Dwarkanath Tagore,

Nanabhai Davar are almost unknown to today's generations and the only recognised entrepreneurial names from Indian industry have been more recent ones like J. N. Tata, G. D. Birla, Laxmanrao Kirloskar, Pirojsha Godrej and the Modi, Goenka, Hirachand and other families who emerged from under the shadow of the British to set up diversified business groups. Their scions still play leadership roles in Indian industry.

It was only after India finally shrugged away the British influences that large-scale post-independence entrepreneurs started making their mark. The new generations of business families like the Tatas. Birlas, Goenkas, Mahindras and many others were all globally trained and imbued with professional concepts to build new-age enterprises with a more intrapreneurial culture for professionals to be hired as CEOs and thrive. Two significant entrepreneurs worth mentioning from those times are Varghese Kurien, whose significant dairy development plan Operation Flood started a White Revolution in India, and the company Amul still remains a major player in milk products and food. And Dhirubai Ambani, whose Reliance group set many benchmarks for market dominance and shareholder value creation. Industry doyens in the Finance sector, Deepak Parekh and Uday Kotak, are stellar examples of vision and values combined. And in the same vein, the technology entrepreneurs like Azim Premji, Shiv Nadar and Narayana Murthy showed the ability to combine cost leverage with the highest standards of global quality to finally put India on the global map of entrepreneurship.

In many ways, modern-day entrepreneurs like Parikh, Kotak, Premji and Murthy represent the aspiration of entrepreneurs in India—to build large national and global brands that can get the country back to the numero uno status in many sectors in the league of developed nations. Entrepreneurship is critical for the country where traditional job creation has run into many roadblocks with seven quarters of decline in the gross domestic product now further aggravated by the onset of COVID.

The entrepreneurial movement in the country was given a tremendous boost 3 years ago with Prime Minister Modi's "Start-Up India Stand Up India" call. In the first flush of success, it was the much-talked-about e-commerce unicorns, some with business models that were simply a "lift and shift" from US success stories that attracted funding and applause. The emergence of incubators all over the country, both within academic institutions and through entrepreneurial initiatives, helped to boost the visibility of the start-up eco-system. Cases in point have been the 10,000 start-ups initiative of NASSCOM, Kerala's start-up village with its ambition to create a thousand start-ups in ten years and the unique partnership between government, academia and industry that led to the creation of T-Hub in Hyderabad. Recent initiatives like the 1Crowd Fund and the continuing success of Indian Angel Network have also kept the appetite for start-up investing high in the country.

However, hundreds of start-ups have spluttered after the initial enthusiasm, and many funded entities of the first wave are in danger of running out of cash or entering a dreaded "down round" phase. The absence of significant success stories and defensible start-up value propositions beyond the oft-repeated Paytm, Flipkart and Byju's examples has sent tremors through the market, and questions are being raised about the sustainability of the entire start-up movement. But there is no need

for panic and post-COVID, with the support of the government through its Ministry of Skills and Entrepreneurship, a clinical assessment of the state of the start-up nation and the opportunities opened up by the new mission of "Atmanirbhar" or self-reliance can make entrepreneurs in manufacturing, financial services, technology and e-commerce blossom again.

What is also needed in India is for entrepreneurs who have established market connect and crossed the first hurdle of building a ten-million-dollar business entity to have the vision and success orientation to scale manifold in the coming years. 5F World, the group I founded in 2016 to invest in and mentor entrepreneurs applying digital technologies like block chain, AI and virtual reality to core national problems like supply chain, agriculture, manufacturing, skills and social sector, has identified over five hundred firms just in the technology and digital space in India and the USA which are stuck in a quicksand of weak growth after having weathered the initial anxieties and built a respectable company. For such firms, it may be time to assess the validity of their business model and the changes in business environment that may necessitate a strategy pivot and find a rich vein of new growth to tap into. For some, it may also be time to evaluate acquisition opportunities which can get them into adjacent opportunity areas faster than just trying the organic investment route. And for others who are reaching the decline of their original model, it may be worth considering selling their companies to larger players who can give them the wherewithal in terms of technology infusion or selling bandwidth to take the company forward.

One area which we at 5F World are most excited about is social entrepreneurship. Entities we have invested in—Live History India Digital in the history and culture space, Studio Coppre which provides world-class designs and marketing ideas to copper artisans in the state of Maharashtra, Ahammune which does research and product creation in the skin disorder area, Farm Guru which aggregates the needs of small farmers and enables them to increase their predictability of output quantity and quality, the Lighthouse mission which seeks to power sustainable livelihoods in key smart cities of the country and Skills Alpha, an AI-enabled digital platform for personalised career planning and skills acquisition—have demonstrated that with the right capital infusion and mentoring, entities with national social impact can truly be scaled without any government subsidy. One area that can help is the creation of multiple impact investment funds that will provide patient capital with lower return expectations to keep the myriad foundations and companies in the sector going and scaling with resultant high impact on employment and development across the country. I hope the series on South Asian entrepreneurship that Jay Mitra is editing (of which series this is one volume) will examine this exciting nexus of technology and social objectives in enterprise creation and development in India.

This book comes at a truly important point in India's evolution and will provide the conceptual underpinning and frameworks on which successful entrepreneurs of the future can build the vision for their companies, build teams, access capital and scale. It addresses policy issues, the role of information technology, culture and the arts, the rural landscape, transnational enterprise and the function of public

R&D—the essential components of India's entrepreneurial future. Peppered with rich thoughts from academicians, technology experts, social entrepreneurs and Jay himself, this is one book that can propel any aspiring entrepreneur on your journey to success while cultivating renewed, critical interest among researchers in India and those interested in India's unique offerings, worldwide.

Pune, India

Dr. Ganesh Natarajan
Chairman of 5F World and The Lighthouse
Foundation in India

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My debt to India and Indian entrepreneurship is visceral. As a transnational Indian (authentically observed), my knowledge and understanding of Indian entrepreneurship have evolved through my interactions with a significant number of players on a rich, global stage. They include policy-makers, practitioners and thinkers working in or with and always curious of so much that India offers and sometimes fails to deliver. As a scholar of entrepreneurship (empirically validated, I think), my learning and insights could not have been forged without the support of many outstanding 'others' in India and elsewhere. They belong to that club of wise and aspirational young researchers, educators, institutional leaders always seeking an understanding of mutating India.

There are far too many people to thank, and I know I will not do justice by not naming them all. For now, let me focus on recent times. I start with the contributors to this book, Vijaya Gupta, Amitava Bhattacharya, Sarika Pruthi, Renji George Allamboor, and Santanu Roy—an exceptional group of friends and colleagues—without whom this enterprise would have been difficult to achieve. Then, there is the solidity of those who have helped shape my thinking and actions over time—Amitava Bhattacharya's extraordinary troupe at Banglanatak dot com, in particular, Ananya Bhattacharya, Suman Mukhopadhay, and Moumita Kundu, the extraordinary medic and social entrepreneur, Madhav Sathe, and from the past, Y. K. Bhushan, Mathew Manimala, all lighting lamps of hope in India. I turn to the community of global professionals, Su-Hyun Berg, Sergio Arzeni, Zoltan Acs, Piero Formica, John Edmondson and many others who, through friendship, love and discourse, have engaged in many an inspirational moment of thought and action in, for and about India, particularly in the recent past. The publishing team in India, Nupoor Singh and Daniel Joseph Glarance whose forbearance and support were essential pillars for the construction of this book. Thanks too to Parimelazhagan Thirumani for much of the proof editing support. Sagarika Ghose, now the Executive Editor (Journals) at Springer, was the first person who believed in this series, and who stood firmly by me during a period of considerable uncertainty in the early days of development, has been a rock. India for me started with

my parents, and though they are gone, their love, music and joy are permanent anchors for every step that I take in India and every moment without. Finally, my wife Gillian and my son, Daniel, who nurture my being in and out of India, and in all that matters in life. To all who will read and ask questions about the content of this book, my special thanks.

Jay Mitra

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The Mosaic of Indian Entrepreneurship: An Eclectic Introduction

Jay Mitra

Mosaics defy easy pattern recognition. Their use or presence in murals, pavements, floor tiles, artworks, and a wide range of construction and industrial works, all indicate patterns or images that are made from many pieces of stone and glass. The objective is to achieve an aesthetically pleasing outcome. The mosaic of Indian life also holds out defiantly against easy interpretation, so does the richness of its culture, its people, its economics, and its prospects for opportunity development, or entrepreneurship. But mosaic tiles, murals and the rest, all reflect a sense of coherence, a coalescence of ideas, colours and images. The mosaic that is India has, perhaps, too many patterns and too many colours that defy construction and limit interpretation. In some situations, the Indian mosaic is a metaphor for fragmentation and division. Ramachandra Guha, in the very first line of his magisterial work, India after Gandhi, sums it up thus: 'Because they are so many, and so various, the people of India are also divided' (Guha 2007). This new book respects the tradition of complexity and creativity inherent in multiple pieces of economic and social activity that could be described as making the mosaic of Indian entrepreneurship.

The making of the mosaic of Indian entrepreneurship has a colourful history because of both endogenous and exogenous factors. What we may refer to as typically Indian about entrepreneurship has to be understood in terms of its socio-economic history. Since this chapter is simply an introduction to the book, we will limit any historical sweep to a simplified, temporally constrained overview with the only objective of identifying some patterns in the evolution of Indian entrepreneurship. Readers in Indian economic history are recommended to the excellent volumes on the Indian economy cited in the 'References' at the end of the chapter.

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1 Early Days

Early economic and trade history offers a few insights into the possibilities of entrepreneurial activity in the sub-continent. The opulent 'east', where living was reputedly, luxuriously easy, had opened Rome's eyes to its wealth, if Cicero's references to its harvests and rich variety of produce, animal herds, and exports were anything to go by (Cicero 1927). Egypt fell to the Romans when Cleopatra's tryst with Mark Anthony was no match for Octavius leading the Roman army, in 30 BC. Soon after, Roman boats sailed to India launching an explosion of commercial exchange as shown by archaeological records. As Roman lamps, mirrors, amphorae, and gold coins started circulating in India, tin, copper, lead, topaz, ivory, gemstones, and spices went the other way from India to the Roman Empire. The ports in the west and east of India served as a kind of emporia much before those that emerged in the sixth- or seventh-century Europe. These emporia were the original platforms, the grand bazaars where goods from all over eastern and south-eastern Asia were brought before they were shipped to western shores (Frankopan 2016).

The curiously tolerant Mongols, who invaded India in the early days, had a significant influence on social and economic life in India. Some of the ritual pastimes of the Mongols, such as formal and ornate processions, were adopted in India by the rulers, in the thirteenth century. Both China and India carried their Mongol influences, the former more directly because of the Mongol's conquest of the country. What lay beyond the military might of the Mongols was first their cultural and then the economic impact on Asia and later on Europe as well. Cultural and economic ingenuity, if not innovation, carried the tag of exotica. Frankopan (2016) recalls a Marco Polo story of animal flesh being thrown into ravines full of diamonds. The meat would attract the eagles which would swoop down to catch the meat that had diamonds impressed on them.

By the time of the fourteenth century, the establishment of trading posts on the Malabar coast of southern India facilitated trade in goods from Guangzhou which had become China's hub for maritime exports and imports in the early thirteenth century. The unique flat-bottomed Chinese boats ruled the seas in the Indian ocean, introducing an innovation in boat design, together with the elliptical fishing nets that can still be found in the southern Indian state of Kerala.

The historical vignettes of the early history of the Indian economy do not reveal much in terms of specific entrepreneurial activity. However, even in this very short account, there lies the possibility of inferring the contribution of prevailing conditions to entrepreneurial outcomes. The entrepreneurship literature that explains the value of environments that are conducive to entrepreneurial activity refer to factor conditions, the ease of doing trade and business, a propensity for exporting and a free flow of ideas, resources. If we do not know who the entrepreneurs were at that time or indeed the organisations they created, we do know how favourable conditions could have unleashed entrepreneurial bounty and wealth creation. The merchants and the traders were the entrepreneurs driving the global flow of knowledge, products, and wealth creation. Perhaps a significant part of that flow was directed towards assuaging

and satisfying dynastic indulgence, but could it have laid the ground for creating subsequent entrepreneurial environments?

The fourth and fifth century of the imperial power of the Guptas presided over one of the earliest renaissances in the world with its heady mix of artistic, cultural, and material prosperity. As we have seen in any such flowering (witness Florence of the Medicis in the fifteenth and sixteenth centuries), the creativity and ingenuity may have propelled entrepreneurial endeavour. However, the Gupta dynasty's stronghold in Northern India accounts for only one geographical segment of the country. Western India under the rule of the Vakatakas offered similar opportunities for creative expression. However, the centuries that followed were characterised by classic mediaeval feudalism with landholding being the primary source of economic development and power, and social fragmentation, including the rise of the caste system, and brahmanical nationalism disrupting the social fabric of the country. However, there were cities and states of courtly splendour, including the building of great temples, the purveying of Chinese silk, the transportation of food grains over long distances, and some amount of overseas trade which flourished despite the edicts of the Brahmins against foreign interactions (Digby 1984).

2 Mediaeval Times and Wealth Creation with the Mughals.

Historians such as Simon Digby and Irfan Habib have referred to the difficulty of reconstructing the dynastic history of India before the late twelfth century. Fragmentary source materials, such as local Sanskrit literature works, the tales of Buddhist pilgrims, and Arab sailors traverse literary, spiritual and pedestrian accounts, with additional evidence from archaeological and numismatic studies (Digby 1984). Mediaeval India was marked by economic decline due to at least three factors—the invasion of Asian tribes, the closure of the silk routes, and the rise of Islam, with the exception of Gujarat and the Coromandel coast which was part of the network of sea-borne trade.

In the thirteenth and fourteenth centuries, there were kings and there were peasants. While the former may have presided over an abundance of land, the peasant (or muzari) needed a set of resources (maya) before embarking upon a profession. They needed a pair of oxen and tools of implements, but possession of a key factor of economic production, land, fell outside the remit of the muzari. The conditions then did not even encourage agricultural production because forests covered large tracts of land, especially in the Gangetic plains. By way of contrast only around the end of the sixteenth century when agricultural cultivation took over those same tracts of land, the peasants cultivated the land and lived in small villages consisting of 200–300 men, with an overall population of around 800 people in each village. While the size of the land varied we do not know much about the tools used by the peasants, apart from a limited use of iron, thus making it rather difficult how innovative they may have been in cultivating their plots (Habib 1984).

If we do not know much about the tools, we do at least know that the ways in which land was irrigated, through the use of wells, dams on streams and canals. They were a feature of local effort, the influence of migration and exposure to ideas from afar, mainly central Asia. In fact, as Habib (1984) points out that it was the immigrant, Qarauna Sultan, Ghiyasuddin Tugluq (1220–25) who can be credited with digging the first canal in the country. The diffusion of this innovation by means of the largest network of canals was introduced by Firuz Tugluuq (1351–86). They were sultans, that is, rulers of the kingdoms that were established in the country. In India, immigrants ruled the country over centuries and, in some cases, were instrumental in unleashing change. Raising water was given a major uplift by incremental innovations including, for example, the ancient India 'noria', the arghatta (the Persian wheel used for irrigation), which carried a string of pots close to its rim, enhanced with pin-drum earing, making it possible to use animal power to work it. The wood and earthen pot, the forerunner of the modern metallic Persian wheel, may have contributed to irrigation in the rich Indus Valley.

Habib (1984) estimates that the breeding of the mulberry silkworm (sericulture) for producing real silk could have been introduced in the fourteenth and fifteenth centuries, even if typical Indian silk, such a tasar and muga, had their origins in ancient times. Here too, we find the example of knowledge exchange across borders since sericulture arrived in India from China over a long and tortuous period. It was the Chinese navigator, Ma Huan, who told the story of mulberry trees, silkworms, and cocoons in the eastern state of Bengal. Agricultural production extended to fruit and grain and many other products, and their cultivation was made possible by a complex and mutating, but exacting form of taxation and wealth creation for the rulers. Without a detailed consideration of the history, it is not appropriate to make a judgement, but it would appear that organisational innovation, involving a hierarchy of functional cohorts of people, appears to have occurred to accumulate wealth for the 'haves' rather than the 'have nots'.

There were metals too. The iron ore mined in the mountainous regions of India was of a very high grade, producing damascened steel and earning global reputation. The Mughals thought that the Indian swords were the best and the rarest, thus fetching high prices. Other types of swords were made from soft iron which were alloyed with copper and silver. The bronze and brass were also well known, not forgetting the coinage of the sultanate of the thirteenth century. In fact, metallurgy heralded local innovations and quickly found use in various parts of the world. Gold and silver had disappeared, so imports of both those metals were the order the day, and there is evidence of diamonds being mined in the Deccan in western and southern India.

Textiles was perhaps India's greatest industry. The spinning wheel, which improved cotton production, was perhaps introduced to the country from Iran by Muslims, as was the 'pinjana, the cotton-carder's bow, at around the fourteenth century. Europe too had benefited from the introduction of this instrument at around the same time. Both the wheel and the carding bow enhanced the spinner's efficiency and the cost of the spun yarn. The sculptures of the ancient Ajanta caves in western India and mediaeval India, together with the Mughal miniatures, suggest the growing availability of cloth and the improvement in clothing worn by ordinary folk

of those times. There was a wide range of cotton cloth, from coarser varieties for the poor to the muslin, 'bhairon' and 'devgiri' varieties for the nobility. What the textile industry became known for was the multiple forms of labour organisation. Spinning was done by women at home, and the home was also the unit of work for weavers with their looms. The cotton carder could have sold his services as a hawker. The 'karkhanas' or workshops produced the high-end, luxury clothes with thousands of workers weaving and embroidering material for exclusive use at the courts (Habib 1984).

We see this pattern of foreign influence in the building industry, which was responsible, to a great degree, for urban employment. The adoption of the Saracenic architecture spawned brick construction in towns and the Mughal rulers went on a spree of new builds employing thousands of stonecutters, masons, and other labour.

The other pattern of innovative change in the economic life of India was, as Habib (1984) reckons, numismatic. While the Muslims engineered the change and developed monetary policy, coinage and monetary assay was a skill of goldsmiths who were primarily Hindu. Plundering Hindu kingdoms, temples, and other religious sites yielded both gold and silver, but the Delhi sultanate fixed a firm ratio of 1:10 between gold and silver. If gold was more important than silver in the circulation of coins, then the monetary relation between the two became strained. It also led the disappearance of silver, the scarcer metal of the two. This was particularly evident when Muhammad bin Tughluq felt the need to innovate by issuing different types of gold coins of varied weight, sometimes even less than the silver coin.

The Mughal period was marked by the interaction of technology, the social system and the size and the character of the market. The affluent demanded many comfort goods, from household utensils to jewellery, perfumes, harness, and saddlery, requiring a wide-ranging group of manufacturers.

Although the manufacturing sector was vast and varied in terms of output, there were questions about any long-term changes arising from that development. Given the relatively basic character of the technology, an emphasis was on cheap, easy to use instruments, and a significantly low ratio of fixed to working capital. Consequently, individual units of production had a rather limited supply of labour and capital. Small units were the primary form of organisation with most of the production being organised for small-scale rural markets. The labour market included all producers of goods at, more or less, the same level, together with a sub-division of numerous occupations organised in terms of their relative ritual cleanliness and hereditary occupations. These family-based artisan backyards did not contribute to the either the manufacture of the large variety of boats or monuments (Raychaudhuri 1984).

Although the 'karkhanas' employed a wide variety of artisans, from embroiders to joiners, goldsmiths, and armourers, all on a regular wage, the objective of these manufacturing organisations was to serve the imperial court and the army. The market was not the target of manufacturing. Thus, although there was much by way of activity, the scale was limited enough to prevent any break from the past. Most of the capital which took the form of working capital came from the savings of the artisans while the tools of production were cheap and simple. Paradoxically, despite India's pre-eminence in exporting manufactured goods, the technology was remarkably backward, especially

when comparisons are made with China and Europe. No proper use was made of coal and neither was there any knowledge of deep mining techniques. The 'world-beating' textiles were produced without the use of multi-spindle wheels, which were known to China for at least two centuries even though there is more than documented proof of openness to both China and Europe. The watermills of China and Iran were hardly in use in India and neither did block printing replace the copyist. The ingenuity of the worker, much lauded by various Western accounts, was somehow protected against any overture to innovative change across the board. However, some degree of sophistication was achieved in the heavy industry of armaments, including muskets, gun, and canon manufacturing. The sixteenth century saw the production of the heaviest bronze cast canon of 12 feet and 4 inches in length—the Malik Maidan. Indian rockets made of bamboos and iron cylinders were the sources of inspiration for European rockets of the nineteenth century. Imitative innovation was apparent too in the manufacture of European type, but smaller pinnaces, a product of great interest to the British. Raychaudhuri (1984) refers to necessity not being the mother of invention in Mughal India. The centuries-old technology was enough to meet the needs of the domestic and the foreign market. Excessive specialisation in the labour market was a function of the social system and its abundance of occupational castes and sub-castes.

> The highly sophisticated culture of Mughal India had little curiosity about the laws of nature and neither the elite nor the mass of producers manifested any curiosity, utilitarian or otherwise about things mechanical. Unlike the Chinese artisans, the Indian craftsmen did not take apart the European clockwork to unravel its mystery nor did their noble masters, despite their fascination with such 'toys' ever express any curiosity as to how they worked. The movement of artisans from country to town, the growing tension between the merchant employer and his artisan employee, the freedom that went with city air and mine dust – familiar features of European life when the Mughals ruled over India – were conspicuous by their absence in the subcontinent's society and economy……(Yet) An expanding market, organisational changes and imitative innovation in technology did constitute a powerful combination of features which could have induced a break with the established traditions in manufacture…….Industrial involution is perhaps not an inappropriate label for the history of manufacture in our period. (Raychaudhuri 1984: p. 307)

Despite the limitations mentioned above, when the East India Company first decided to jettison the plunder of the Spice Islands in the far east to the militarily superior Dutch and focus on the putative rewards of trade in fine cotton textiles, chintzes and indigo, from India, they found a country at the zenith of contemporary economic power. At the beginning of the seventeenth century, India had a population of 150 million people, almost 20% of that of the world, producing approximately 25% of the world's manufacturing, a country described by Dalrymple (2019) as the industrial powerhouse of the world and a global leader in manufactured textile. A fine example of the real diffusion of Indian innovation can be found in the common English language usage of words connected with weaving, as in calico, shawl, pyjamas, khaki, dungarees, chintz, taffetas, and cummerbund (Dalrymple 2019). The polyglot English language absorbed these Indian words in recognition of their common usage among English immigrants in India, while the common usage itself was a tribute to the diffusion of innovation in textiles in Mughal India.

The trajectory of the Indian economy and prospective entrepreneurship and innovation continued to be paradoxically arrested in its evolution. In the sixteenth century, the Indian merchant, mainly of Gujarati Muslim stock, was probably the most important figure in the nation's overseas, maritime trade, but they were limited to the middle Indian Ocean. The structure within which they operated included the Arabs who dominated the carrying trade in the Arabian sea, the Chinese in the east, and later the Europeans who strengthened their position through, enterprise, guns, and germs. Around the east of Africa, Indian merchants traded freely with their Arab counterparts who in turn enjoyed peaceful access to India ports. Three types of Indian merchants sailed the seas—the 'substantial merchants' carrying valuable cargo, the agents of principles at home, and finally the smaller merchants who constituted most of the passengers of ships. The presence of the smaller merchants was almost ubiquitous even if the Indian ports were dominated by a few rich traders, and their low levels of investment and small margins meant that they were always around, gnawing away at the dominance of the richer lot and making monopolistic operations almost impossible. However, the weak, smaller merchant managed to retain their rights against entrepreneurs who were deprived of any assistance by way of legal and political pressure. The social structure prevented any such abuse, and if the weaver returned money advanced by the merchants before switching to a higher bidder, contracts were not binding on both parties. Social limits to competition meant that business was general organised round the family stretching to someone from the same social clan only on occasions. Nothing by way of impersonal collaboration was symptomatic of a way of life (Dasgupta 1984). The prevalence of strong social norms determining enterprise activity was an inevitable constraint to innovation and growth, even though the late seventeenth century could be regarded as the golden period of trade in textiles and maritime trade (Dasgupta 1984).

High levels of inequality between the wealthy and the rest of the community of Indians could have acted as a social brake on entrepreneurship development as we understand it. Trade was the primary economic activity supporting artisanal activity of high levels of dexterity while propping up the indulgent coffers of the nobility. Social structures reinforced the ambiguity of being open to foreign influences, trading across the seas while limiting the necessary organisational structures appropriate for the mobilisation of entrepreneurial resources.

The capital that had been accumulated by the merchants remained embedded in rigid caste-based systems that defined communities. The roots of industrial capital in the post-independent states of India can be found first in the bazaars of India's non-coastal interior. Here, the merchants were engaged in supporting, inter-alia, the movement of artisan products and peasant crops, the inland trade in commodities and the marketing of agricultural produce, using an inland bill of exchange referred to as the 'hundi' and a very local version of a commission agency known as the 'arhat'. The accumulated capital lubricated the long-distance links to the inland market which helped to build the foundations of industrial activity (Ray 1992).

Why is the bazaar, the typical Indian market, so important to understanding the evolution of Indian economies and entrepreneurship? If the Indianness of this evolution is to be given any premium, something we strive to do in this book, then the

conventional European or North American classification of sectors into agriculture (primary), industry(secondary) and services (tertiary) may not be an appropriate method of tracking or evaluating sectoral developments (Ray 1992). India's national income, until almost the achievement of political independence, was obtained more from handicrafts than industry. The modern industrial (secondary) sector is not characterised by either the traditional Indian merchants or by artisan craft making, and therefore, they cannot be properly included as part of the secondary sector. The industrial complex, largely an enclave of British enterprise and British hegemony, stood apart from the working and social lives of the peasants and artisans who made up the household economy. The organisation of this bazaar economy was different from Western models, it had its own dynamism, and it was the seedbed for nineteenth-century Indian industrial capitalists. The bazaar economy of merchants with its reliance on the 'hundi' negotiable instrument of credit was one of three forms of agglomerations alongside the subsistence economy of the peasants who had no access to the use of bills of exchange or bank credit, and the Western industry enclave of factories, banks, mines and plantations. It was clear that the British had started to capture the lofty heights of the industrial Indian economy thanks to British capital, but there was some trade-offs and adjustments with the merchants and bankers of the bazaars (Ray 1992).

3 The Organisation of Chicanery and Entrepreneurship of the British Empire

The bazaars and the merchants did not disappear with the British advance, but the merchant communities had to learn how to adapt with the consolidation of British rule, first in the state of Bengal. New merchant communities emerged, and they started dominating the flow of commerce between the market towns that lined the railway lines. It could be argued that the ability to adapt and the emergence of the Parsis, Bhatias, Khojas, Memons Banias, and Jains from Gujarat, Cutch and Kathiawad in western India, the Marwaris from Shekhawati, Bikaner, Marwar, and Jaisalmer, Aggarwals and Guptas in Northern India, and the Nattukottai Chettiars from Chettinad in the south, inaugurated a new period of entrepreneurship in India (Gadgil 1959). Many of them forged alliances with the British as the latter's agents to make forays abroad. The Parsees went to China, the Bhajjias, Khojas, and Memons travelled to the Middle East and East Africa, and the Nattukottai Chettiars sought out prospects in Burma and the Straits Settlements. This was the beginning of a new transnational enterprise as their well-established and closely linked communities formed new mercantile and banking networks. The British government had set a defined space for them within the framework of the new imperial, colonial economy. That strategy excluded the new Indian merchants from trade with Europe, access to coastal and overseas shipping arrangements in India, manufacturing products from the rest of the world and foreign exchange.

So began the unbridled spread of pure, unadulterated and destructive entrepreneurship. The EIC had secured political hegemony and governance of the state of Bihar after defeating the combined Indian armies of the Mughal emperor and the Nawab of Bengal at the Battle of Buxar in 1765. Categorising Indians as barbarians, the EIC adopted an imperial position of authority introducing the notion of private ownership of property, endorsed by no less a person than the British politician Edmund Burke as a way of civilising the barbaric natives. Instead of growing an Indian version of the English system of improving landlords, the EIC chose to innovate, creating one of the most 'rapacious rentier class whose aim was to extract as much revenue from their tenants as possible' (Collingham 2017, p. 147). This class was called the Zamindars. The peasants could pay their taxes from the money they raised growing cash crops such as indigo and cotton. Their subsistence was dependent on maize, the same maize that was used together with manioc to supply slave traders for the diets of the slaves during the Atlantic slave trade. This maize had replaced the finger millet which was the peasants' primary source of coarse grain. Of all the cash crops the one that was deemed to be of most value was opium (Collingham 2017).

Yet nothing the British tried could stop the Gujarati and the Marwari family-owned firms from developing extensive and influential networks connected with the two technological innovations of the British—the railways and the telegraph. The Gujaratis known, hitherto, for the flair for trade, built cotton mills in Bombay (now Mumbai) and Ahmedabad in the west of India. The Marwaris spawned a phalanx of operations from brokerage houses, banking establishment, commissioning agencies, and speculative enterprise (Timberg 2015).

The nineteenth century witnessed another new organisational innovation, namely in the form of managing agencies (Roy 2018), to undertake the first corporate business and industrial activities in India. Although created by the British, there was a degree of agency for trade for Indians as many of these agencies had substantial Indian partnerships at least in the early days of their evolution. These agencies carried out private European trade in Asian seas as dictated by the early, official monopoly of the English East India Company (EIC). The EIC's primary business remit was to export the silk and cotton manufactured by Indian weavers. But cotton and silk gave way to indigo, and a new line of export trade in raw cotton and opium with China developed when India became a net importer of Manchester textiles by the 1830s. In fact as the EIC's monopoly of trading activities with Europe came to an end by the middle of the nineteenth century, the exports of Bengal and Malwa opium to Canton in China, rose rapidly, channelled through the agency houses in Calcutta (now Kolkata) and Bombay (now Mumbai) (Ray 1992).

With their umbilical cord cut off from the EIC, the agencies did their own investments in indigo planters, silk filatures, and other inland industrial ventures. Their diverse portfolio included insurance companies, banking, and shipping, giving them the honour of starting the first private corporate businesses in the sub-continent. Linked to the agency houses were brokers, who were primarily Indian associates and whose job was to bring in and guarantee contracts for the supply of exportable products from the interior of the country. The scaffolding of the politics of British Empire in India was provided by willing or coerced Indians together with their prowess

in banking and shipping. Typically, these brokers were referred to as Banians in Calcutta, Dubashes in Madras (now Chennai), and guarantee brokers in Bombay. Many of these brokers were rich and important merchants in the value chain acting as a broker to several American and British traders and even financing the odd European principal or two. Some such as the shroffs (the 'native money lenders') were rich capitalists who were not dependent on the agency houses. The Marwari banking community had established their own base in the Barabazar district of Calcutta.

The growth of modern Indian industry can be dated back to 1854 when the first Indian cotton mill was floated. Unlike the railways and the tea and coffee plantations, coal mines, jute mills, various banks, and mercantile establishments, in which the British invested heavily, the industry of cotton textiles grew largely on the back of Indian capital. Cotton along with steel was developed by Indian entrepreneurs, the Parsees, being very active in cotton textile manufacturing and distribution. Ironically, as Sen (1992) notes, these were the two industries that formed the basis of British industrial revolution, and these were primarily in Indian hands.

British entrepreneurs found opportunities only in the industries that were used to extract wealth and produce for export to Britain. It is interesting to note that the innovations of colonial times that the British brought to bear on India were all associated with extraction and exportable conveyance for the markets and society of Britain. And the great Indian railways were built to ease the flow of goods from the interior to the coast and the ships that transported them to the 'mother' country. Industries such as coal were of course used for domestic consumption, and a possible unintended consequence of building the railways was that it enabled Indian industrialisation after independence. Care also needs to be taken that a primary factor promoting new enterprise development by the British relied on money raised in India by the managing agents and others. The evolution of the cotton industry is steeped in colonial politics especially when we see what happened after the mechanised cotton textile industry of Lancashire in England ushered in the first industrial revolution. The early nineteen century dominance of the pre-mechanised, hand-spinning and hand-weaving cotton industry of India went into sharp decline as cotton was now managed as an import by the colonial rulers. The paucity of investment in Indian cotton mills by British interests in India was a function of the threat Indian mills posed to the cotton mills of Lancashire. By way of interesting comparison was the growth of the indigenous Indian jute industry which attracted significant investment from Scottish investors despite the earlier presence of the Dundee jute industry in Scotland. Jute in Britain was an infant industry, and jute from the Indian mills to the USA and other parts of the world played an important part in the settlement of Britain dollar purchases (Sen 1992).

The development of the iron and steel industry in India followed a different trajectory. This local industry flourished despite the existence of an iron industry in Britain. However, the latter took over the supply of iron and steel for the new Indian railways from Indian enterprises. But Britain could not sustain its iron and steel industry when German and Belgian competition proved too strong. So even when the likes of Tata Steel failed to raise capital in Britain, there was implicit support for the company's growth in India if only to hurt the Germans and the Belgians.

However, Tata's £1,630,000 flotation had a special appeal because it invoked the idea of 'Swadeshi' or the development of Indian industries for the Indian market, which was being pushed by India's freedom movement (Sen 1992).

Colonial political supremacy of the British in India had two distinctive features. The first was to enhance British economic power in Britain by any means possible, including where necessary the temporary promotion of Indian enterprise followed swiftly by the its squashing as soon as British replacements were found. The second feature was the heinous practice of racial divide in the organisations of place, space, and people. Moral and physical demarcation of the rulers and the 'natives' was seen in the practice of apartheid, with the creation of 'black and white towns' in the cities of India. This was exacerbated by the unabated distribution of resources and licences, so that if private business was given responsibility for developing a new enterprise, then it was always the private British business that earned that privilege. When Indian engineering skills were found to be better than what the colonials could offer, the Indian entrepreneurs such as Rajendra Nath Mukherjee could only exploit their excellence by partnering with British firms. British exceptionalism was buttressed by colonial policy to ensure, for example, the stopping or limiting of Indians from availing of technical education, or from being admitted to chambers of the commerce, (with the exception of the Bombay Chamber of Commerce, which was all Parsee) (Bagchi 1992). This intermingling of the politics of power with economic and entrepreneurial endeavour has haunted Indian industry even beyond independence from the British.

Another interesting aspect of the spatial divide during British times can be found by observing the extant geographical distribution of business activity during British times. Eastern India with its headquarters in Calcutta was by all accounts a 'British enclave'. The three major industries of the region—jute, coal, and tea—were almost all controlled by the managing agencies of curious British innovation repute. In the western part of India, things were rather different. Here, it was the entrepreneurial capabilities of the Parsis, Gujaratis, Cutchi Memons, and the Sindhis which flowered in the late nineteenth centuries. They exercised economic power in the cities of Bombay and Ahmedabad. The northern and southern parts of the country also saw the prevalence of Indian industries.

The standard, but rather lazy, explanation suggests different entrepreneurial competencies of the British and the Indians and their link to special features of different industries. The British were an advanced race of entrepreneurs fuelled by some kind of Weberian, Protestant ethic, while the lot of eastern India, the Assamese, Bengalis, Biharis, Oriyas, were 'indigent, feckless, and devoid of entrepreneurial drive'—so goes the discourse (Goswami 1992, p. 230). Perhaps the British did encounter such a lot and found that these rather maladroit people resembled themselves if not their voracious appetite for chicanery! What is overlooked in such typical colonial and jaundiced views is, as Goswami (1992) explains, the British controlled eastern Indian industries for export, while the western states catered mainly to domestic markets which did not interest the British. A basic factual check shows that Indian entrepreneurship in eastern India flourished after the First World War, growing dramatically from the 1920s to the 1940s. As stated earlier, they included

domestic market-oriented industries as well as those in which the British had a direct interest, especially coal and jute. The Indian entrepreneurs consisted of the Marwaris who started their own businesses and bought shares in European firms. On the other side, the domestic market was infiltrated by British and American transnational firms, introducing new products and innovative marketing methods.

4 The Community of Indian Entrepreneurs Breaking the British Mould

The Marwaris who originate from Rajasthan, were bankers for a long period of time, often financing the great trade routes passing through their home state, and sometimes acting, in common with many rich banking houses, as financiers for Mughal and other local princes as well as their enemies, the British. The advent of the railways in India spreads the Marwaris across India, financing cash crop production of cotton and opium, with some becoming immensely successful after their relatively simple start as moneylenders and small-time shopkeepers. The diversity of their operations is seen in the history of the famous house of Birlas who, inter-alia, took deposits and lent money, plied their trade in speculative commodities, provided insurance cover, and cashed bills of exchange. A strong family support network coupled with a sense of community philanthropy, and a flair for ruthless competitiveness and risk taking, constitute the behavioural characteristics of the Marwaris (Timberg 2015; Das 2007). Their involvement in the jute industry covered raw jute procurement, trade, and export. Goswami (1992) states that the introduction of the 'fatka' or futures trading and hedge transactions by six Marawris, way back in 1905, propelled them to dizzy territories of wealth creation and business success. The fact that 'fatkas' were illegal at the time did not stop them from using the instruments; their relentless application forcing an eventual legitimisation of the instruments by 1911. So often do 'illegal' forms of business (consider 'Uber taxis today) acquire social legitimacy simply by virtue of their unstoppable use by consumers (Goswami 1992). The Marwaris and the Gujaratis also dominated the internal trade of coal with many of the collieries being managed by Bengali partnerships. Ownership of the jute mills and the collieries was one mode of entry by Marwaris as they graduated from trade to industry. They had a second armour up their sleeve and that was the slow and steady acquisition of shares in European managing agencies (Goswami 1992).

The Bengalis of Calcutta and Eastern India did not fall short of entrepreneurial achievements either. They were not outdone by the predominantly British managing agencies, having control of at least 20% of the pithead output of those years (Simmons 1976). Apart from other interests in cotton mills and tea, the most interesting arena of endeavour was in technology-based entrepreneurship. Two contradictory forces catapulted Bengali enterprise in the early twentieth century to cutting edge innovation territory. The first was scientific rationalism and the second was the idea of Swadeshi, and in this case, a technocratic 'Swadeshi'. The likes of Jagdish Bose and Prafulla

Ray were highly educated practising scientists, influenced on the one hand by their British education in Calcutta, Cambridge, and Edinburgh, and on the other by their scientific commitment to a nationalistic consciousness. Scientific history credits Bose with designing and building an apparatus to detect radio waves much smaller in wavelength than had been known hitherto, and the idea of an 'all being one' Boseian thesis uniting living and non-living matter. He had found that the behaviour of radio waves resembled the fatigue found in animal tissue such as muscles. Ray, on the other hand, discovered a method of producing mercurous nitrite in a stable crystalline form so that chemists could work with a compound and carry out other investigation of its properties (Dasgupta 2010) Both are pioneering examples of the academic entrepreneur. Apart from adding to the canon of knowledge in physics and chemistry respectively, they started technology-based ventures in Calcutta. The city witnessed the creation by these two science and technology entrepreneurs of Bengal Chemicals and Pharmaceuticals which specialised in pharmacy products, while another firm, Calcutta Chemicals, which produced consumer items such as soap, toothpaste, and herbal cosmetics, was started by two Bengali families, the Mitras and the Dasguptas, who introduced state-of-the-art manufacturing techniques from England, the USA, and Germany. Another star in the firmament was Bengal Lamps established by the Oxford educated, wealthy Zamindar, Kiran Shankar Roy. The Bengal Pottery Works, which was formed by a Maharajah, Manindra Chandra Nundy, was also another example of entrepreneurial drive and mission (Goswami 1992).

These new ventures were complemented by the ownership of collieries and teas gardens by Bengalis who also entered banking as evinced in the founding of the Comilla Bank in East Bengal (now Bangladesh), two newspaper groups, the Ananda Bazar Group and the Amrita Bazar-Jugantar-Basumati group by the Sarkar and Ghosh families, respectively. What they possessed in entrepreneurial drive and nationalistic pride did not evolve into managerial dexterity as their narrow equity base in privately owned companies failed to raise sufficient funding with which to innovate their technologically intensive product portfolio (Goswami 1992).

The twin forces of technology and nationalism represented another interesting duality in the creation of new enterprise and in the mindsets of the entrepreneurs. The duality was evident in the engagement with Western science and technology together with its uses on the one hand, and the Indian response to Western science characterised by a consciousness steeped in Indian philosophical beliefs and ideas, drawn from, for example, the Rig Veda, and the literature writings of Tagore (Dasgupta 2010) and others, on the other. The cross-cultural mind of this period known as the Bengal Renaissance fostered a holistic approach to the understanding of science, technology, enterprise, art, and poetry that permeates the best of Indian thought and action today.

Indian enterprise has always been variegated in terms of the representation of its many people. A significant community of Indian enterprise was the Parsis who played a critically significant role in the advances Indian industry made in the nineteenth century, not least because their contribution was disproportionate to the size of their community. Was it their foreignness or was it their. lack of caste that made them more entrepreneurial? Perhaps both. But as with all attempts at attributing enterprise

development to personal characteristics, we simply enter a cul-de-sac of false differentiation between different groups of people. The Paris came to Gujarat in the dying days of the seventh century fleeing persecution in Persia. There is this warm folk tale about the Parsis who on being granted refuge in arrival was asked by the local king, Jadi Rana, what the new immigrants would offer in return given that his land was full. An old Parsi priest asked for a bowl full of milk. He put a tiny amount of sugar in that bowl of milk and explained to the king that just as the sugar has mixed seamlessly with the milk and could not be noticed anymore, the Parsis would mix with the people of India, sweetening the local culture with their own without any disturbance. The sugar would sweeten the milk without coming up to the surface or spilling the milk over.[1]

Desai (1992) notes that nothing was heard about them for nearly 700 years since their arrival, which suggests that the Parsi Priest's story is both apocryphal and prescient. The Parsis had indeed assimilated in the local population of Hindus imbibing much by way of social mores and occupation such as farming. Shipbuilding became an important enterprise for the Parsis in the seventeenth and eighteenth centuries alongside cotton and silk textiles manufacturing and foreign trade, which made them particularly active in the Persian and Arabian gulfs. The key players in the Bombay textile industry were almost exclusively Parsis as theirs was the business of agglomeration through manufacturing, trade, shipping, and finance. The Parsis also started a paper factory and introduced steam navigation to India in 1841. Acting as agents for the British, they also became involved in supplying opium to China. The diversity of their successful entrepreneurial activities inevitably supported the accumulation of capital. Growing their capital base was supplemented by close networking with the British, and especially the EIC. When the EIC mutated from a trading company to a political power base, the Parsis came to share some of the latter. However, the early dominance of the cotton textiles industry by the Parsis (with the British) fell away with time. Cotton as a commodity was subject to price fluctuations which drew in merchants and traders from all over the country. The diffusion of ownership and trade led to an inevitable collapse in profits and investment opportunities. With trade opportunities shifting to the eastern shores of India, with the growing British interest in tea, indigo, manganese, and mica, the shipping monopoly that the Parsis enjoyed also fell apart (Desai 1992). It was later in the twentieth century, with iron and steel, that the Parsis led by the now ubiquitous name, Tatas, that the Parsis regained their entrepreneurial adroitness with a pronounced 'Swadeshi' touch to its development.

There was another community of Indians, down in South India, who became pioneers of fast-growing industry but who did not necessarily come from the stock of traditional business communities. The uniqueness of the Chettiars lay in their early move towards internationalisation with their adventures in Burma. With the

[1] There are numerous versions of this story which I have heard from many Parsi friends. This version is taken and partially adapted from 'The five Stories about the Fascinating History of the Parsis' by Debanjan Dhar in StoryPick, 21 March 2016, available on https://www.storypick.com/parsee-legends/, last accessed on 12 May 2020.

annexation of lower Burma by the British, there was a realisation that the Irrawaddy delta's economic value had gone unnoticed. As credit lubricated export-oriented paddy cultivation in the delta, it was the Chettiars who overtook the Burmese firms in supplying such credit to the peasant farmers. Years of apprenticeship, exposure to business ethics and techniques, including a special accounting system, were responsible for inculcating a strong capability for business organisation. This capability was propped up by internal group solidarity, lending between firms and the use of informal sanctions to control default in payments. In many ways, the Chettiars had acquired the kind of business acumen associated with the Marwaris. When the political crisis of the 1930s engulfed Burma, the Chettiars found new opportunities back in Tamil Nadu which saw the emergence of a new form of industrialisation spearheaded by small firms (Ray 1992).

5 The Accumulation of Variety

This patchwork narrative of Indian entrepreneurship during British colonisation of India suggests a curious mix of different modes of enterprise coupled with distinctive Indian approaches to business organisation. Indians found doing business with the British both necessary and rewarding, but this was made possible by the British reliance on Indian entrepreneurial ingenuity to create new industries, and finance business opportunities of direct interest to Britain. The merchants and traders who took part in this form of enterprise development had a rich tradition forged during Mughal times and before. The riches of the Mughal emperors may have only trickled down to ordinary Indians, but there was sufficiency of experience and capital accumulation, which, together with a business skills base in trading and finance, had equipped different communities, such as the Marwaris, the Khojas, the Bhatias, the Gujaratis, the Cutch Memoms, the Parsis, and the Chettiyars with distinctive entrepreneurial competencies. Add to that the knowledge and experience of the Bengali technocrats and it is not difficult to find a rich mosaic of entrepreneurial activity across the sub-continent.

A long tradition of openness to foreign trade, foreign know-how, and foreigners made it possible to carve out Indian niches even though the British systematically decimated Indian industry and looted the country of its riches. When the British arrived in India in the seventeenth century, India had a 27% share of the world economic pie. Before the British established themselves in India as a colonial power in the eighteenth century, India's share of the world economy was as much as the whole of Europe, despite a slight fall in the share of the global economic cake to 23% (Maddison 2013).

6 The Politics of Entrepreneurship

The establishment of a political base was a necessary means to utilise India as an outpost of the British Empire. The outpost's function was to destroy Indian manufacturing and local enterprise, first by exporting Indian raw materials to England and then substituting Indian textile products with British ones, which were made from the same Indian raw materials. Yet Indian handloom, including the fine muslin, produced by Indian weavers, and then manufactured in larger quantities in English factories in India, was popular in England and across Europe, Asia, and the Middle East. To make matters worse when English textiles were brought to India, they paid for them from the revenues earned in India, thus reducing the prices of the new English imports. But Indian textiles were rather cheap by comparison anyway, and the only way their sale could be stopped was to physically destroy the looms of the local weavers and to impose exorbitant tariffs of 70–80% on the remaining lot of Indian textiles. The dramatic shift from world leading manufacturing to exporting commodities such as jute, raw cotton, spices, rice, tea, and opium, led to a remarkable drop in India's manufacturing to 2% under British rule (Tharoor 2016).

Maddison's (2007) calculations show that between 1600 and 1947, the period covering British entry to India and Indian independence, Indian per-capita income rose by 12% while that of Britain increased sevenfold. India's population grew from just under 135 million to 414 million during the same period, while the population of the United Kingdom (UK) rose from around 6 million to just under 50 million. The more interesting statistic is that of gross domestic product for both countries. When India welcomed the East India trading company and its merry bunch of traders back in 1600, India's gross domestic product (GDP) stood at approximately 74 million compared to 6 million for the UK, or just 8% of India's GDP. By 1947, these figures had changed to just above 250 million for India and around 327 million for the UK, a change of 245% and over 5000%, respectively! A transfer of about a fifth of India's net savings which could have been used to import or make capital goods was lost. Furthermore, around 5% of the national income went to British personnel stationed in the sub-continent.

The Mughals conquerors made India their home even if the phenomenal amount of tax revenues they raised from Indian peasants, merchants, and others meant that 15% of the national income after tax went to 1% of the country's labour force represented by the Mughal emperor and his court and the retinue of mansabdars, jargridars, zamindars, and native princes. The merchant and labouring Indians constituting 17% of the economy received 37% of the share of the national income, while the village economy of 72% obtained a share of 45%. The overall wealth of the economy and the coffers remained part of India (Maddison 2007). As stated earlier, India's share of the global economy at the time of British entry, when the Mughals were still in power, was 27%. When the British left, it was just over 3%. Industry's share of GDP at the time of British departure was 7.5% (Tharoor 2016, 2010).

7 Independent, Entrepreneurial India

The departure of the British and their waste of India necessitated the launch of a free, Indian economy, requiring an early formulation of policy and direction with which to support entrepreneurship development. Jawaharlal Nehru, India's first Prime Minister, set about navigating the interests of the well-organised nationalist movement whose members were not averse to Western values and even some of the changes in the wider social system engineered by the British. His own penchant was for a kind of socialism with its focus on state led economic planning and state led industrial development which was supplemented by the strength of Gandhi's legacy of self-sufficiency. A good number of commentators argue that the Nehruvian approach was at best a holistic approach to economic recovery where the state had to take a leadership role accompanied by distrust for private enterprise. Critics suggest that this approach stymied Indian entrepreneurship and economic progress because of the controls exercised by a 'mixed economy' marked by the absence of freedom to access global technology, the pressure for import substitution, growing red-tape and the denial of the right to compete globally. This led to corruption, the rise of the 'Licence Raj, the imposition of even stricter controls by subsequent governments, the nationalisation of banks and the Monopolies and Restrictive Trade Practices Act (Das 2007). This quasi-command and control economy, at its height under the stewardship of Indira Gandhi, Nehru's daughter, in the 1970s, may well have stifled the breath out of Indian entrepreneurs (Ahluwalia 1985).

Yet some of the measures introduced by Nehru and some of his followers, which have stood the test of time, spawned some of the most exciting developments in India. The creation of the Indian Institutes of Technology and later the Indian Institutes of Management would herald a bold attempt to foster a technological and professional cadre of people, many of whom would go on to create and lead highly successful enterprises. It did not stop the likes of the Tatas and the Indian Iron and Steel Company, for example to introduce, innovations in the manufacture of steel. It did not stop Aditya Birla, the country's leading entrepreneur, to become a global entrepreneur in viscose staple fibre and palm oil, insulator and carbon black production, even though his success was dependent on him moving out of the country and building 70 factories in six countries with more than half of his profits being generated overseas. The likes of Dhirubhai Ambani could also make a fortune by building the world's largest maker of paraxylene and emerging among the top five producers of polyester, polypropylene, and polyethylene. But unlike Aditya Birla, Ambani rose into prominence by playing the Licence Raj in India while also being focused exclusively on petrochemicals (Das 2008). It was possible to live the entrepreneurial dream under the alleged socialist shroud of Nehru's government. This possibility raises many questions about how the enlightened state can drive entrepreneurship (witness China) as Mazzucato (2013) has analysed so clearly in her book, 'The Entrepreneurial State'. Facile commentaries that simply reject the role state can play do so without researching in any depth the role that governments can and do play in enabling entrepreneurship to thrive.

However, it was essentially a fascination with the large state, and a revulsion of greedy capitalism nurtured by ruthless rent-seekers, which influenced policy development. Any sensitive commentator would understand why Nehru and his government would have been cautious of private gain. The most egregious form of corporate capitalism had just finished its 200-year odd innings in India leaving the country in ruins. It was necessary to build a hard infrastructure of roads and bridges and a soft infrastructure of technology-based education to propel the country towards an entrepreneurial future. Sadly, although these attempts at creating a new and protective scaffolding by the state may have been well-meant, the turgid process of planning, the restrictive practices, not to mention the absence of progressive policies in elementary education, simply helped to unleash a state cronyism that helped to generate either unproductive or destructive entrepreneurship.

The Nehruvian period did not necessarily regard entrepreneurs as a priority. They had relative low levels of representation in the five-year plans, but it was interesting to note that, intentionally or accidentally, the plans allowed entrepreneurship to embrace the work of both large business owners and jobless engineers. The smaller enterprises were lumped together with cooperatives, and artisans, and regarded as 'small producers', suggesting a low level of interest despite their strong presence.

A rather patronising attitude towards these 'small producers' was evident in the references to them being profligate with regards to costs or as rent-seeking usurpers of community resources. In other words, while it was easy to identify entrepreneurship as a way of generating employment, it was not regarded as a conduit for growth and development. Larger, richer firms were better bets. This position changed during the 1980s with a shift from supply side actions to reduce poverty, following the failure of the populist 'garibi hatao' (get rid of poverty) agenda of the late 1970s. With the focus still on larger business to stimulate economic growth, the sixth and seventh five-year plans looked to widening the country's entrepreneurial base through several actions aimed at supporting small-scale industries in animal husbandry, beekeeping, manufacturing, and silk production. The purpose was to try and address market failures in wider capacity development through training. The two five-year plans provided for training opportunities in agricultural enterprise development through the 'Training Rural Youth for Self-Employment (TRYSEM) for one million low income youth (6th FYP), while the 7th FYP attempted to address the needs of underemployed science and technology graduates in new, small business formation through the Entrepreneurship Development Programme. Articulating a visceral openness to the international market-place, the Indian government looked overseas for stimulants. But this time, the target was Indians abroad, or the successful non-resident Indians (NRIs), and their technological expertise, particularly in the USA and in the UK. Their expertise and riches could boost necessary developments in, for example, the telecommunications industry and replace international agency (e.g. the International Monetary Fund, or IMF) loans as sources of operating capital (Irani 2019). This was the beginning of the Indian chapter of a new phenomenon, that of transnational entrepreneurship where Indians who had taken up citizenship abroad and started new business in their adopted countries, could also form new businesses in their country of origin. This was

a new instrument in the growth and development policy toolbox of India, embedding entrepreneurship, Indian style, in its policy formulations.

8 Liberalised, Emancipated but Confused India

The year 1991 was a turning point as far as Indian economic reforms are concerned. A significant number of licensing requirements and other restrictions were removed unleashing a wave of all kinds of enterprise development. These heady days saw several prospective entrepreneurs unprepared for the hard graft of creative, productive, technology-driven enterprise creation. Joint ventures with new foreign partners fell apart because of a lack of compatibility of expertise between the Indians and their overseas co-founders. A few, like the Bajaj family under the leadership of the maverick entrepreneur, Rahul Bajaj, overcame the initial paradox of being a local leader in the manufacture of scooters in a closed, high-cost economy, and its sudden opening up to foreign competition, to make dramatic changes to production processes, marketing strategies and quality management (Das 2007), to compete with the likes of Japanese Honda and Italian Lambretta scooters.

The post-economic industrial and capital liberalisation programmes ushered in by the government of Narashiman Rao and his acclaimed finance minister, Manmohan Singh, pursued the entrepreneurship development agenda as a necessary corollary of global capital investment. The lawyer (Rao) and economist (Singh) duo had the intellectual strength and the political guile to withstand initial domestic discomfort of Indian business houses. They did so by capitalising on the enthusiasm of the growing technology (software) sector which had already shown its mettle by working as outsourcing agents of major software firms abroad, and by accommodating the overtures of the Confederation of Indian Industries (CII) which represented the collective interests of the technology firms and the high-end element of Indian industry. The Indian was now the global Indian, even if the attention was reserved primarily for the rich technocrats in the West, rather than the large diaspora community of labourers across Asia, Africa, and the Middle East. The significant remittances back home of this larger diaspora outside the West were not leveraged to generate entrepreneurial growth. Rather the focus was on large investments and established managerial expertise. Together with the range of economic reforms which facilitated private–public partnerships, all in the name of a new 'fiscal discipline', the role of government was being re-shaped from a distributive and centralised agency to that of an enabler for the creation of a new 'entrepreneurial society'. Bear (2015) refers to this kind of society as a new compact between the public and private sector for the public infrastructure to be a vital source for new opportunity development.

The emergence of a technology entrepreneurship ecosystem, with substantial support from US-based NRIs, moved the spirit of enterprise from the domain of the family and the belief in entrepreneurs being born, to an awareness of the making of entrepreneurs from all backgrounds. But the origin of this new awareness stemmed from what Indians, cast adrift in the high seas of technocratic secularism in the West,

could achieve as new venture creators, venture capitalists, private equity players, and policy makers, irrespective of their caste, creed, or family heritage, with vigour in the Western style eco-system. A similar ecosystem has begun to take shape in India around the high-technology founders in the congested cities of Bengaluru, Hyderabad, Mumbai, Guragaon, Noida, and Delhi to Tier 3 cities, and including start-ups, mentors, growth stage investors, business angels, and venture capitalists. This process of importation and replication of ideas was instrumental in driving the new technology-based entrepreneurship movement forward.

So now, India generates entrepreneurs from all communities, whether the first-generation entrepreneurs from non-business communities or the next-generation members from traditional family businesses. Truly, a remarkable feat achieved in less than three decades! Just as the radically transformed attitude towards new venture creation of an IIT or IIM equipped tambram (Tamilian Brahmin) draws appreciation, so does the metamorphosis of a baniya youngster into an IIT and/or IIM equipped entrepreneur, elicit praise.

Today's 'new economy' entrepreneurs and their ventures differ from the 'old economy' entrepreneurs and their businesses in several respects.

If asset heavy manufacturing and conventional service businesses characterised by incremental improvements in technology defined the old economy, asset light, online-based new service ventures characterised by rapidly changing technology represent the new economy.

In place of family-based management teams, the co-founders of the new ventures are 'merit' based, bringing in specific complimentary skills. Often, the founding team can be traced to the college dorm where you can assess both competence and compatibility. The skill set required for such ventures is domain specific, and dependent on execution-under-pressure skills. For sometime now, India has acquired a status of being one of the countries known for its hi-tech start-ups in the global economy (Gai and Joffe 2013), focusing, particularly on software.

Cities have tended to be the focal points for the proliferation of hi-tech capability and success, and New Delhi, Mumbai, Hyderabad, and Pune have all earned their spurs for being fertile grounds for software, business process outsourcing and technology services. But the city that stands out as India's 'Silicon Valley', Bengaluru (known as Bangalore until 2014) probably has one of the best entrepreneurial ecosystems for start-ups in the world, one among nine international 'Start-up Hubs' outside the US (Pullen 2013). Vignette 1 below is a snapshot of the much-vaunted urban oasis of enterprise and technology in India.

Vignette 1: The Much-Vaunted Case of Bengaluru

Back in 2009, Reuters claimed that Bengaluru had come a long way since the birth of its IT industry. The move by the putative giants of the Indian software industry, Infosys and Wipro, in 1983, was followed by other technology firms, including foreign companies keen to cut costs by recruiting cheap labour, who grew their ventures around the would-be giants. The consequence of this

development and the rapid escalation of software prowess was a mix of high technology, particularly, digital technology capability, raising the living standards of the digital natives, with a reputation, globally for both skills and cheap labour.

Things have moved on in Bengaluru and indeed in other cities boasting a plethora of technology talent. In common with the buzz of global high-tech spots, the streets of Bengaluru and districts in the other cities are replete with full bars, coffee shops, restaurants and software technocrats and developers. Bengaluru gave way to Hyderabad the world's most dynamic city, according to the World Economic Forum, based on strategies for innovation and technology. So now, the likes of Walmart and Amazon have joined Microsoft, Google, Apple, GE, and almost every other big brand name in the stellar community of high-technology firms. When Walmart bought Flipkart, an Indian e-commerce platform based in Bengaluru, for £12 bn., it was characterised as watershed moment for the start-up scene in the city, raising, however, alarm bells among many small traders in Indian cities fearing a skewing of their business prospects because of their dependency on Flipkart.

Part of the shift from standard engineering employment activity in factories to a pro-active start-up agenda, occurred not because they were driven to it by necessity but by a mindset geared towards starting something exciting in the field of software technology. Has this development been organic? Perhaps, to some extent, but we cannot discount for the number of programmes and initiatives, such as the not-for-profit 10,000 start-ups, which connects start-ups with funders, accelerators and mentors, with a view to building 10,000 new businesses in the city by 2024. The incubator's move from quantity to the quality of start-ups explains why and how the trend there is towards work on 'deep tech', such as blockchain, AI, and machine learning.

Could there be something which speaks about the Indianness of the evolution in a city such as Bangalore? Take the Microsoft Centre in Bengaluru. You can find the same tech city props that you might find anywhere else in the world, with the usual assortment of beanbags and coffee served in steel tumblers. The centre is staffed with over 60 full-time researchers abroad with their PhDs from abroad working on state-of-the art R&D projects of Microsoft, including mobility and cryptography. On the one hand, such a scenario helps to change the stereotypical perception that India does not have the right environment of high-end research and development. Crucially, the development of, for example, a Bing tool which allows searches for locations with incomplete or even correct addresses could perhaps be only developed in India which the high number of undocumented and unregistered properties, a readymade test ground for a tool that could be used globally.

Not unlike some of its more established competitors, Bengaluru's tech scene struggles with gender equality. In 2017, just 2% of all equity funding that was raised went to start-ups with a female founder.

Source: adapted from Pullen (2013) and Bala Subrahmanya (2017)

If entrepreneurship was the clarion call for the new economics of India, then innovation, its handmaiden, could not be left behind. Innovation could resolve anomalies in and contradictions in trade policy, intellectual property development issues, and the growth of communications technologies. There was a massive push by the World Trade Organisation and the USA to ensure that Indian policies aligned with global standards, enabling the Indian government to set new agendas for protecting and prioritising access to monopoly rights especially in the food, pharmaceuticals and high-technology sectors (space and atomic energy), and encourage process patents. A positive externality of the support for process patenting was the possibility now of producing versions of drugs and technologies using an alternative process without paying royalties. A genuinely healthy outcome of this was that Indian produced generic drugs facilitated the significant lowering of their prices, making India into one of the largest producers of pharmaceutical drugs in the world (Irani 2019). In fact, India is the largest provider of generic drugs globally. The Indian pharmaceutical sector industry supplies over 50% of global demand for various vaccines, 40% of generic demand in the USA and 25% of all medicine in UK. Currently, over 80% of the antiretroviral drugs used globally to combat Acquired Immune Deficiency Syndrome (AIDS) are supplied by Indian pharmaceutical firms (IBEF 2020). The country also has a large community of engineers, scientists, and entrepreneurs who have the capability for raising the economic and social value of the industry.

The idea of the innovation advantage was not limited to the high-flying business elites. Alongside the technocrats and their government backers were also those who argued for the stronger legitimisation of grassroots innovation of the poor. Traditional knowledge and indigenous resources were granted the status of property and craftsmen and women in urban and, especially, rural areas became part of an inclusive entrepreneurship and innovation agenda championed globally by the World Bank and the Organisation for Economic Cooperation and Development (OECD). By 2003 and following a welter of measures that moved attention to product patenting, which could ostensibly protect and commodify materials of daily Indian life, such as basamati rice, turmeric and neem, and quantify the value of labour associated with their production, the government even called for a National Innovation System (NIS) as part of its Science and Technology Policy. NISs and Regional Innovation Systems (RISs) had become part and parcel of framing European and North American innovation policy. Joining the global club of capital of new technology development and innovation meant India did not have any other choice. The saffron heat of technology in India followed the white heat of technology mission of the UK, and the Silicon Valley dreams of technology entrepreneurs in the USA many of whom helped to fashion Indian policy. India, however, took the drive for entrepreneurship and innovation one step further. As Irani (2019) notes business school professors (with many educated in the USA), consultancies (with many funded by American capital or operating as India branches of the top five), corporate executives (with their new Corporate Social Responsibility agenda) joined hands with the dynamic informal economy to hoist their innovation mast high in the Indian skies. The Planning Commission broke their straitjackets to produce a report entitled ‘Creating a Vibrant Entrepreneurial

Ecosystem in India' in 2012, and soon Davos was beckoning Indian bureaucrats and corporate vendors to articulate and conflate two separate strands of Indian innovation. One was 'juggad' (a Punjabi word for informal solutions to problems) and its underpinning mindset of 'dhandha' (or living), both requiring hands-on exposure which was more useful than classroom based education. The other was high technology-based innovation which demanded exposure to higher education and global capital.

The willing conflation of the informal economy of the mainly poor and their micro-enterprises with the high-technology temples of the rich was a trope for extending a no-holds barred culture of entrepreneurship where every citizen could be seen to be doing something for their country. Prahalad (2005) had failed to recognise the entrepreneurial poor because his interest was in the market that the meagre income of the poor could offer multinational corporations. The entrepreneurial poor was a new category of entrepreneurial denizens whose informal economic pursuits were an alternative form of economic value creation. The arguments offered by Sanyal (2007) and Banerjee and Dufflo (2011) that the poor could hardly be made to accumulate capital and that entrepreneurship did not lift the poor out of poverty, could hardly disturb the anti-poverty discourse of the privileged but sensitive corporates, or their public sector champions!

The universalisation of the entrepreneurial spirit response was driven in part by the incorporation of entrepreneurship as a legitimate field of study in especially engineering and management schools. E-Cells in engineering colleges emerged as safe spaces for triggering awareness and action promising entrepreneurial action among students from both business and non-business communities. The National Entrepreneurship Network (NEN), set up by the US-based Wadhwani Foundation in partnership with the IIMs and the IITs together with other institutions, engaged in designing and delivered courses on New Venture Creation, organised Business Plan Competitions, instituted E-Cells and started Incubation Centres. Over a decade plus years, the seed sown by NEN has blossomed into a nursery of E-Cells engaged in promoting start-ups at the college level. Going beyond E-Cells, IIM Ahmedabad built a reputed Centre for Incubation and other institutions started conducting public programs on 'Start Your Business' projects for aspiring entrepreneurs and 'Grow Your Business' programmes for early growth stage entrepreneurs.

Besides E-Cells, the number of higher education institutions setting up Incubation Centres has been increasing, with established private firms following the global trend and chipping in by rolling out start-up accelerators. However, the paucity of experienced mentors and domain experts restricts the effectiveness of these institutions. Entrepreneurship is the youngest academic discipline in India, little more than a decade in existence, leading to a mismatch between the start-up entrepreneurs' needs and the availability of faculty and mentor expertise.

With the enthroning of the Modi government (now rethroned), a rash of new developments began to surface around the country. The Planning Commission was replaced by the National Institution for Transforming India, or NITI Aayog, in 2015, paying due homage to the magic of entrepreneurship and promising to create a knowledge, innovation, and entrepreneurial support system. State-led planning and

distribution gave way to national coordination of entrepreneurial governance of the states and the centre. If the state withdrew, the happy citizens could be set free to create their own wealth or disappear fast into the immiserating abyss of poverty. If the poor could be looked at as 'opportunities' by themselves and by the rich, then it was easier to relinquish any Gandhian notion of responsibility towards them.

Let us then examine briefly in this final part of the introduction how the Indian economy recasts its entrepreneurial promise. What is entrepreneurial about the new economy in India?

9 The New Indian Economy of Entrepreneurship

The Indian economy has made important strides in the second decade of the new century. Official figures suggest that 124 new firms were created in 2018 representing a jump of a little over 77% over a four year period (from the creation of 70,000 new firms in 2014). Approximately, 22.62 Cr (or 226,000,000) new jobs were created in urban and rural areas during the six years between 2011–12 and 2017–18. Before COVID-19 reared its pandemic head, GDP growth was expected to grow in the range of 6.0–6.5% in 2020–21 (Economic Survey 2019–20). Underpinning these impressive figures was the apparent newness of government initiatives such as digital India, Startup India, RuPay and UPI transactions, GeM, and improvements in the ease of doing business, all attracting record foreign investment. The World Bank ranked India at 63rd position among 190 nations in their 'Ease of Doing Business' index. The move upwards of 14 places from 77 in 2018 (100 in 2017 and 130 in 2016) was an acknowledgement of the multiple economic reforms by the current Indian government, a total of 59 regulatory reforms in 2018/19 which accounts for a fifth of all recorded reforms made worldwide (World Bank 2019; Economic Times 2020).

Unpicking such baseline data may appear to be a cynical exercise. However, if 'truth to power' has any meaning at all, then there is a need to shed some light on what we think we know. First, the latest World Bank ranking fell short of the Indian government's target of 50th place. Second, the report was an assessment of improvement in the ease of doing business environment in Delhi and Mumbai, just two out of nearly 300 cities. The overall improvements mask critical deficiencies in different and especially rural parts of the country. Third, India continues to have more problems in enforcing contracts than 162 other countries (rank of 163rd) and registering property (rank of 154), which are deemed essential metrics for securing a place among the capitalist elite of the OECD's high income countries. If it still takes 58 days and costs on average 7.8% of a property's value to register a new business, and 1,445 days to resolve a commercial dispute, its loose institutional arrangements adversely affect the prospects of many of its highly talented individuals to launch and grow their new ventures. Fourth, it should be noted that the World Bank's indicators are primarily regulatory, and therefore, they do not account for a range of other factors that would constitute an environment conductive to or framework conditions

for entrepreneurship, including people's attitudes, propensity and capacity for new venture formation, access to start-up finance.

The Economic Survey of 2019–20 has come up with a rather novel conceptualisation for explaining the state of the Indian economy. The Chief Economic Adviser to the Government of India, Krishnamurthy Subramanian, added a spicy touch to the survey by including a chapter on 'Thalinomics'. 'Thalinomics: the Economics of a Plate of Food in India' quantifies what a common person pays for a thali (a round platter for serving food in India and South-east Asia, and rather popular in Indian restaurants in the United Kingdom!) The idea was to use the metaphor of food which the government claimed was getting cheaper in the country, to explain an idiosyncratic approach to the travails and wonders of the economy. If there was ever an instance of public innovation at work, this was certainly an interesting example! The little bowls of vegetables, lentils, pickles with a dash of chilli and rotis (Indian bread) are an attractive proposition on the table, but they are, metaphorically, a platter of competing flavours and mismatched recipe for the Indian economy, as Mihir Sharma's op ed for Bloomberg, suggests. Add to that the grand invocations of philosophical writings from Adam Smith to Aristotle, Bhagavad Gita, Confucius, and the Rig Veda, together with some amount of data sourcing from Wikipedia, we might have a prospect of economic indigestion far too hard for entrepreneurs to bear (Sharma 2020).

Figure 1 shows the trajectory of GDP growth, decline and stagnation from 1961 to date and suggests that the four years between 2014–15 and 2017–18 were indeed heady days with growth averaging at approximately 8%. But, subsequently, GDP

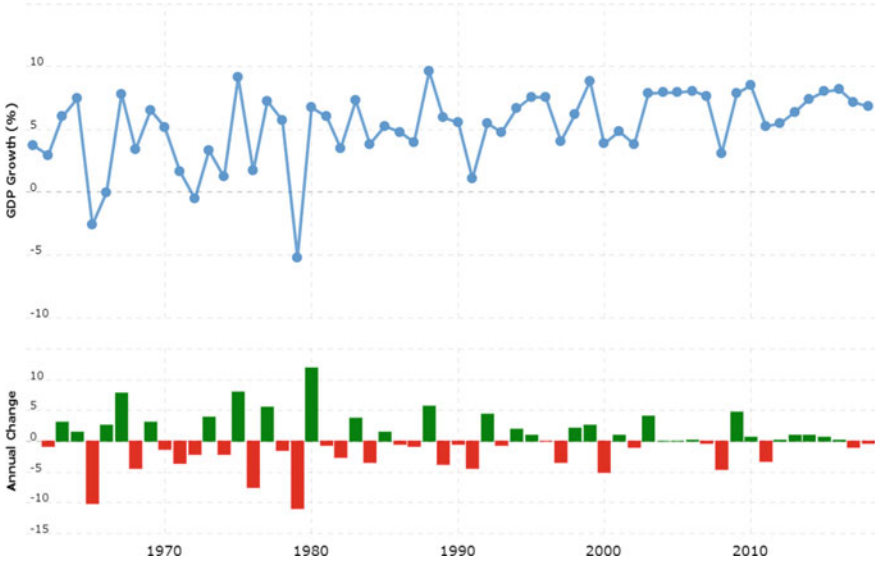


Fig. 1 GDP growth rates and annual change in India: 1961–2020. https://www.macrotrends.net/countries/IND/india/gdp-growth-rate, India GDP Growth Rate 1961–2020, World Bank

growth rates have either remained relatively low or have dropped. Do GDP growth rates have anything to do with entrepreneurship? Recessions can engender new innovations and entrepreneurial solutions in most countries. However, a healthy, growing economy is made possible by a mix of stolid performance by incumbents as well as new entrants often working in close contractual proximity to their larger, established counterparts. What does that mix produce and is it entirely reliant on the traditional neoclassical factors of land and capital contributing to growth?

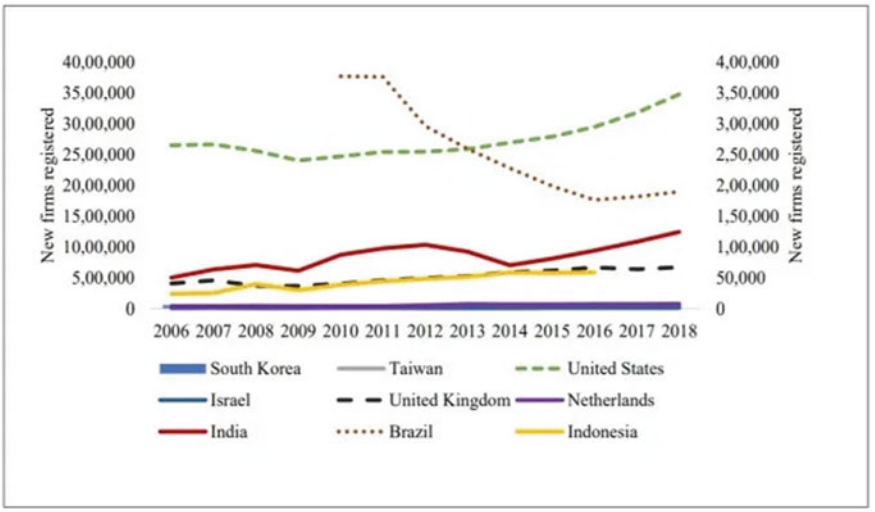
Using an aggregate production function, the Nobel Prize winning economist, Solow (1957) found that only around 13% of US growth in GDP could be attributable to increase in measured inputs, labour, and capital. The remainder was unexplained, and he proposed that the large residual, 87% of the change in growth, represented a rather elusive concept of technological change. Other writers introduced other variables such as human capital. Explaining growth purely in terms of factor inputs provides only a partial explanation; what matters is the way in which entrepreneurs are supported and incentivised by institutions. The idea that entrepreneurship and institutions are pivotal in explaining the variation in economic growth accounted for by the 'residual' was central to the ideas of Baumol (1990, 1993) who argued that even if all countries had similar supplies of entrepreneurs, the institutional structure would determine the allocation to productive, unproductive, and destructive entrepreneurship (Acs et al. 2018).

If we are to accept the findings of the studies referred to above (and many other that have corrobarted or nuanced these findings in terms of these relationships between strong and weak institutions, entrepreneurship and economic growth), then we could deduce that uneven growth marked by sudden peaks of high growth may be responsible for either spurts of entrepreneurial activity or indifferent institutional scaffolding of these activities. The fact that India's uneven growth patterns do not reflect the alacrity of individual entrepreneurial endeavour and their sustainable development, may be attributable to either ad hoc or chaotic institutional activity. While the Indian government has acknowleged recent declines in GDP growth and low levels of consumer spending, they have chosen to blame the global economic climate scenario. Indeed, a slippery and weak environment for global manufacturing, trade and demand has led to the slowing down of the Indian economy with GDP growth moderating to 4.18% in 2019–20, lower than 6.12% in 2018–19 and 7.04% in 2017–18 (all in 2011–12 prices. This has been complemented by a sharp decline in real fixed investment induced by a sluggish growth of real consumption which has weighed down GDP growth from second half of 2018–19 to first half of 2019–20 (Ministry of Statistics 2020).

The point about the importance of institutional support and incentivisation is seen quite clearly when India is compared with Bangladesh (one of the poorest economies in the world), Vietnam (a rising emereging economy), and China (which has moved beyond emergence to being a global leader), all having been able to move up the value chain by increasing their competitiveness in the international market. They have done so through the practice of organisational innovation and productive institutional arrangements including improved delivery time and domestic production capacity.

However patchy the function and performance of institutions in India, evidence of better education provision, ease of doing business, infrastructure improvements, particularly in metros and policies such as 'the Start-Up India initiative' has catapulted India to third position globally in terms of the number of new firms created. This growth has run parallel to growth in the wider economy since 2014, with the number of new firms in the formal sector growing at a cumulative annual growth rate of 12.2% from 2014–2018 (it was 3.8% from 2006–2014) according to the World Bank (Economic Survey 2019–2020). In absolute terms, the rates represent 124,000 new firms in 2018 (from 70,000 in 2014) or a growth of nearly 80% taking the comparative figures for those two years. Interestingly, the spatial distribution of entrepreneurial activity in manufacturing indicates that entrepreneurship has not been restricted to the traditional, moneyed heartlands of Delhi and Mumbai and their surrounds. The highest rates can be found in the western province of Gujarat, the North-eastern state of Meghalaya, in the South-east in Puducherry, and in the Northern states of Punjab and Rajastahan. But manufacturing entrepreneurship pales by comparison to the service industry. The survey's data showed that new firm creation in services sector (at around 85,000) was considerably higher than the c 15,000 new firms created in manufacturing. The lowest levels of new firm manufacturing were to be found in infrastructure and agriculture (approximately, 5000 new firms each). The data confirms the expectation that entrepreneurial opportunities are more likely to lie in those sectors which have created an ecosystem of talent, technology, financial and human resources, and a degree of institutional support, mainly in urban areas. In India's case, this expectation lies in stronger entrepreneurial activities and the consolidation in the services sector with software technology playing a key role. Figure 2 shows the comparative business formation of data of several countries indicating the growth of new firms in India climbing at a higher rate than many other nations, especially in Asia.

Much has been made about the wealth at the bottom of the pyramid ever since Prahalad (2005) and his glittering entourage of American scholars made the phrase a necessary device for corporate social responsibility. Interpreting the bottom of the pyramid in terms of the lowest level of administrative units in India, the 'district', the survey shows that these units have a profound impact on wealth creation at the grassroots level, with a 10% increase in registration of new firms at that level yielding a 1.8% increase in gross district domestic product (or GDDP). How do we analyse this phenomenon knowing that infrastructure and knowledge creation barriers, lack of access to resources and education, are major impediments to the functioning of entrepreneurship, let alone their success? The survey points to literacy and education in districts as being the key supply side factors foster local entrepreneurship. Citing the example of the eastern part of India which has the country's lowest literacy rate of about 59.6% according to the census of 2011, the survey identifies the region as having the lowest new firm formation rate. It goes on to make a statistical point about the impact of literacy on entrepreneurship being most pronounced when it is above 70%. As we shall note later, the correlation between patchy improved literacy and entrepreneurship may not hold. Inculcating a notion of entrepreneurship as a responsible civic duty especially in circumstances of economic scarcity and social



Source: World Bank's EODB Entrepreneurship Data, Business Formation Statistics of the U.S. Census Bureau and Survey Calculations
Note: Secondary axis for India, Brazil and, Indonesia

Fig. 2 New business formation in some entrepreneurially driven countries (excluding China) from 2006 to 2018

fragility can push people to the pursuit of activities which they may not necessarily consider to be entrepreneurial.

Since we are reflecting on statistical management of raw data, it is worth dwelling briefly on the implications of outputs per capita. Focusing primarily on the formal economy, the survey finds that on a per-capita basis, India had rather low rates of entrepreneurship. During the ten-year period of 2006–2016, the mean number of new firms registered per year per 1000 workers was 0.10. Comparisons with so-called developed economies are always conditional, but a simple contrast with the mean entrepreneurial intensity for the UK (12.22) and the USA (12.12) suggests that India may have a long climb ahead if it has ambitions to acquire high global status as an entrepreneurial economy, as measured by new firm density, let alone reaching the target of becoming a $5 trillion economy. The World Bank's annual data based on their 2019 report shows that new business density per 1,000 people stood at 0.14. The proximate countries on this measure were Madagascar (0.13), Pakistan (0.1), Iraq (0.1), Canada (0.16), Argentina (0.2), and Afghanistan (0.21).[2]

The exclusion of all other new firms (i.e. those that are not corporates) does reduce the overall impact value of new firm creation in that significant numbers of non-corporate and informal economy enterprises are left out of the count. This is indeed

[2] 'The new business entry density is defined as the number of newly registered corporations per 1000 working-age people (those ages 15–64). As in the World Bank's annual Doing Business report, the units of measurement are private, formal sector companies with limited liability' https://www.doingbusiness.org/en/data/exploretopics/entrepreneurship, last accessed- 25 May 2020.

a problem in that it ignores the actual incidence of entrepreneurial activity, recognising only that which are formally registered. In emerging economies where relatively under-resourced institutions and often unenforceable legislation are common deficiencies, the limited count simply provides figures that are evaluated by way of comparison to the state of play in developed economies.

At least, the recognition of the contribution that micro- and small- and medium-sized enterprises (MSMEs) can make to an economy shows an appreciation of drivers of growth through innovation and entrepreneurship. The outcome that inevitably catches the attention of government is employment creation and especially when new firms offer such opportunities at relatively lower capital cost. The Economic Survey shows lists a wide range of government initiatives that ensure better credit flow, technology up-gradation, ease of doing business and market access, including the sanctioning of 159,422 loans worth INR 49,330 Cr. (or approximately US$ 500 million), the interest subsidy of 2% for all Goods and Sales Tax (GST registered MSMEs on incremental credit up to INR 1 Cr, enabling compulsory purchase from MSME by Central Public Sector Undertakings (CPSUs) of at least 25% of their total purchases, with 3% of that being reserved for female entrepreneurs. Underpinning these positive measures are government schemes such as 'Make in India', which aims to create 4 Cr (40,000,000) well-paid jobs by 2025 and double that by 2030. According to the World Bank (2018), India needs to create more than eight million jobs every year to ensure that it keeps its employment rate constant. This is because the country's working-age population, which starts at a very low age level of 15 years, appears to be increasing by 1.3 million every month. The same study also shows that the declining rate of jobs in Indian in recent times is because of the unfortunate development of women leaving the job market marked by a falling female employment rate of 5% per year between the ten years of 2005–2015. The overall employment rate of 52% in 2015 is well below that of smaller and often poorer countries such as Nepal (81%), Maldives (66%), Bhutan (65%), and Bangladesh (60%) but above Pakistan (51%), Sri Lanka (49%), and Afghanistan (48%) (World Bank 2018; Deccan Herald 2020).

10 By Way of Some Concluding Observations

This eclectic account attempts only to find some patterns in the evolution of entrepreneurship in India, patterns that might capture some images, if not the complete mosaic art of the vast and varied history of the country's entrepreneurial endeavours. The absence of data for the early and pre-Mughal age makes this task difficult. What we do know, however, is the openness of an environment conducive to the development of new ideas, learning, cultural exchange, and trade which would have created numerous opportunities for the provision of new goods and services together with the mobilisation of resources. The organisational arrangements for availing of those opportunities may have at best been fluid, reflecting a functional response to the need for exchange in different markets. This openness to the world

allowed for two opposite strands of global exchange—the increase in local wealth creation and the appropriation of that wealth through conquest during Mughal times. Feudal times, anywhere in the world, probably reflect a stronger binary mode of wealth creation and distribution—Land generated wealth only because the poor tilled them, while military power and appointed agents of rulers appropriated the wealth for the latter. In between torrid times of great cruelty and productive assimilation, the Mughals came, saw, and settled down in the country. The enormity of the wealth that was produced at that time could not have been possible without the ingenuity of the innovators and entrepreneurs of those times. We find some of that evidence in the rise of the artisans and the merchant traders whose agency may have been circumscribed by the feudal order of that age. As we have seen, however, the mix of that limited agency and the cultivation of economic and cultural power by the Mughal overlords produced extraordinary wealth much of which was generated from the spread of significantly rich resources in the land.

The British exploited the lack of resilient organisational capability and imposed their own. The openness to trade, business, and entrepreneurship was a function of British supremacy that regarded India as an outpost for the improvement of Britain alone. If the wealth of a country is plundered by ruthless hordes, then the tendency is for that period of plunder to last for a short period of time. If that wealth was to be appropriated through the introduction of new technologies and above all careful, hegemonic organisation over time, then there are spillover effects which even the 'lumpen subordinate' could benefit from over time. The British left India bereft of economic wealth, but they had not been able to subjugate the culture, the art, and the spirit of collective efficacy that formed a new tryst with destiny.

The openness to the world has remained strong both out of necessity and opportunity ever since India became an independent country. However, the trials and tribulations of the nation as an enterprise and its effective governance have left both scars and prospects. If ever there was a case to be made for driving home the importance of the wider economic and social environment, the framework conditions and the institutions as the necessary set of building blocks of enterprise creation and development, then India provides the one of the richest canvases for experimental research on the subject of entrepreneurship and innovation.

That canvas of Indian enterprise has paradox written into its fabric. The rigidities of its institutions have thwarted enterprise development and continues to do so, yet the country is not short of policies for and instruments of enterprise. The plethora of initiatives that have crisscrossed the paths of both state benefaction and economic liberation have left a bewildering array of possibilities for Indian entrepreneurs. Some of them such as the recent policy on innovation and entrepreneurship by the Modi government is probably one the finest examples of strategic policy formulation supporting the creation and growth of innovative enterprise. Yet the absence of skills sets, the underpinning education, and institutional capability means that the policy is difficult to translate in terms of developing a critical mass of creative enterprise outside the pockets of information and communications technology, pharmaceuticals, and a few other sectors.

The continuing measures of centralised policy constrain easy access to programmes and funds, yet that does not stop smart, new technology start-ups and a technology ecosystem prevailing. The nation state and its machinery rally its citizens to think and be entrepreneurial, yet it dispenses its liberalised regime's largesse to the technocratic middle classes who act as agents of a new form of governance. The poorer sections of the community are expected to find solutions themselves through 'jugaad' and 'dhanda' or through micro-enterprise development with the assistance of non-governmental organisations. The cognoscenti heap justifiable praise on the entry of Indian entrepreneurs in the knowledge economy, with particular areas of excellence in IT-related services, pharmaceuticals (mainly generic), telecoms, petrochemicals and steel. The likes of Bharat Forge, Infosys, Wipro, Tata Consultancy Services, and Sundaram Fasteners have joined their global knowledge counterparts to have a significant presence in both the Indian and foreign markets.

The country produces approximately 300,000 computer science graduates a year, yet education institutions can boast of approximately 100 computer science Ph.D.s, a small fraction of the 1500–2000 that get awarded in the USA, or China, every year. Citation rates of academic researchers are way below those of Chinese researchers, impugning the knowledge base of its putative knowledge economy. There are well over 100, dollar billionaires (Forbes 2020), mostly living in cities, but there are nearly 300 million people living in poverty with 80% of them having their home in rural areas, living on less than $3.10 a day, the World Bank's median poverty line (World Bank 2016). And 21%, or more than 250 million people. survive on less than $2 a day. Moni Basu, writing for CNN, sums it up neatly when she notes that in India, the wealth of 16 people is equal to the wealth of 600 million people (CNN u.d.) The paradox that defines the state of India and her people is evident at all levels. Reflecting on the macro-economy, The Economist (2020) concludes:

> India has always been a paradox. Its economy is large but its people are poor. Its institutions are strong enough to warrant an investment-grade rating, but its policymaking is not. Its public debt is high, its foreign debt modest. To these long-standing paradoxes, some observers add another. India, they say, is like a Monet painting. Up close its's a big old mess. But from afar it still has the power to beguile. (The Economist 2020)

Contradictions abound everywhere. Detroit is not the same as California, London is not the same as Newcastle in the UK, and Gansu is not the same as Shanghai in China. Comparisons using the Rostowian (1960) and Porterian-Schwabian (2008) conceptualisation of different stages of the economy are at best limited, if not facile, because not all parts of a country grow together. Morover, human lives and development cannot be measured purely by economic metrics. More importantly, if the paradoxes have any meaning, they matter mainly to Indians and how they see their country accommodating the contradictions of being the third-largest economy in purchasing power terms while housing some of the world's poorest. Entrepreneurship and innovation in India obtain in the gleaming towers of India's metros, in the urbanisation of rural villages, and in the bottom-up approach of indigenous innovation flowing from the villages and traditional knowledge. The challenge lies not in the different explanations but how the exponents (policy makers and entrepreneurial agents) can

combine and recombine these different strands to extend the scope and value of entrepreneurship that has an effect on the lives of all Indians. This will be possible when India invests financial, social, and human capital together in policy making, in spurring innovation in all sectors through the agency of technology entrepreneurs who can work in tandem with other entrepreneurs in alternate enterprises and embed entrepreneurs' transnational potential.

11 In the Rest of This Volume

The mosaic of Indian entrepreneurship is perhaps too large and too various in its mix of colours, glasses, and stones to explain in one book. But the authors who have worked with me write eloquently about the current state of Indian entrepreneurship. Together we reflect on the underlying issues and wider implications of entrepreneurship in India. This book is not about the hyper mode construction of technology-based enterprises. It is about policy, people, communities, and organisation. It is about the economy and the society in which entrepreneurship emerges.

Vijaya Gupta continues the journey after this Introduction to chart the development of policy and how that is playing out in modern India. This is followed by Amitava Bhattacharya's narration of a personal story based on the phenomenal work of his social enterprise, Banglanatak dot com, examining the under representation of culture and the arts and the rich lives of poor artists and performers in Indian entrepreneurship and in the wider economy, and how that can be transformed by imagining art for life. Sarika Pruthi draws on a story of Indian entrepreneurship that is transnational in scope and value extending well beyond Indian contours. The last chapter of the book is an examination of technological innovation in public R&D laboratories in India by Santanu Roy and Jay Mitra, and their critical role for creating an entrepreneurial and innovative environment in India. The book is threaded through by a selection of a revealing set of mini case studies of Indian entrepreneurs from the unique state of Goa, prepared by Renji George Amballoor. The focus on Goa for these cases was based on the idea of taking any one state which did not necessarily feature high on the entrepreneurial map of India but whose entrepreneurial representatives capture well the breadth and depth of the dynamism of Indian entrepreneurs.

The plan was not to seek a linear pathway of discourse but rather to follow the currents of precept and practice across the many rivers of Indian entrepreneurship today. Do many rivers contribute to an idea of an ecosystem? Perhaps they allow for the flow of knowledge, resources and creativity, if the waters are not clogged up by either ideology or waste. Each chapter in this book is a metaphorical river flowing through and for an evolving ecosystem. The chapters address policy formulation affecting entrepreneurship development and supply side issues such as the infrastructure conditions for technology and innovation and the critical role of networked public sector research. The waters of the demand side flow across the creation of different types of firms, the experience of transnational venturing and the crucial, entrepreneurial resilience of art, culture and social enterprise to create new lives

and habitats from tradition. The rivers do not necessarily flow into a vast oceanic ecosystem, but they reveal the currents and the eddies that could create either fertile environments or obscure development. Few countries in the world possess the strength and weaknesses of paradox than India. We explore whether productive entrepreneurship and innovation in all its different forms can attempt to resolve the tensions or live creatively amidst the paradox.

Mosaics or rivers—you choose the metaphor! India is rich enough to offer both!

This book has several limitations. We have not examined the role of female or young entrepreneurs specifically. Neither have we looked at the prospective cutting edge of technology, nor have we explored the distinctive patterns of urban and rural entrepreneurship. This series has every intention to cover issues that matter. The volumes that follow should pick up where we leave with this book and address a range of issues pertinent to entrepreneurship development in the country.

I hope the reader will find in this book the possibilities for understanding some of the trajectory of developments in entrepreneurship and innovation and engage with us in generating new ideas for encouraging and making sense of creativity, opportunity identification, mobilising resources and creating cultural, personal, economic, and social value in India.

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Case 1: Sustainability as a Driver of Enterprise Creation

Renji George Amballoor

1 The Big-Thinking Enviropreneur

Ajay Gramopadhye
The Sustainable Green Company,
Ponda, Goa.

Thinking big can lead to the emergence of unconventional solutions for everyday problems.

1.1 Early Days

Ajay loves birds and plants. Crucially, he has pusued a strong academic interest in Orinthology and Botany. Acknowledging Ajay's domain knowledge on birds and plants, the Goa Office of *WWF-India* utilised his services for holding training programmes and summer camps for teachers of environment related topics, even during his student days. Ajay was also keen on starting a new venture. While pursuing his B.Sc. programme, his keen business interest led him to start screen printing of invitation cards from home in partnership with his father, optimizing the latter's artistic skills.

The association with *WWF-India* fetched Ajay a scholarship to pursue his post graduate course at the University of Strathclyde, Glasgow, Scotland, a course which enriched his domain knowledge in environment and related issues. He joined the *WWF-India Goa Office* as an Education officer and was commissioned to form and guide Nature Clubs in educational institutions, conduct camps, field visits, and other related activities. Brimming with enthusiasm and an aggressive marketing strategy, Ajay ensured that most of the nature clubs in the state picked up on his mission and

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become vibrant centres of a host of environmental activities. The local environmental issues became a talking point not only in schools and colleges but also in their villages and homes. During his long ten years as an educational officer, Ajay talked, discussed and debated much on environmental issues, sensing gradually that it was high time for him to stop chattering and to do something concrete for preventing the local environment from impending destruction and disaster.

1.2 Harnessing the Entrepreneurial Drive

Given his entrepreneurial instincts, Ajay tried to generate electricity from waste and manufacture brick from waste. But this eco-friendly attempt failed. At the same time, he tried his luck with computer training as a franchise of *Tata Infotech*, but on this occasion the business was not sustainable. During one of his visits to *Crompton Greaves* for securing printing orders, Ajay suggested that an ISO 14001 company needs to replace the thermocol packing with environmentally friendly material. His suggestions coincided with internal management discussions in the company about the need for a viable alternative to replace thermocol. That was sufficient grist for Ajay' new mill!

Ajay was persuaded by the officers of Crompton Greaves to come up with eco-friendly paper pulp packaging material. Without any loss of time, he developed the prototype design, submitted it to the company and received guaranteed purchase orders. His business philosophy was to secure his clients first and start production after gaining confidence in doing so. After receiving the order from Crompton, he set up the unit for manufacturing secondary packaging material under the trade name—*Sustainable Green Company* from a closed cashew factory.

1.3 The Emergence of the Sustainable Green Company and a Green, Entrepreneurial Pedigree

The limited capacity of the unit coupled with the non availability of raw materials was the main constraining factors, but this has not deterred his business passion. Initially, the raw material consisted of corrugated carton boxes purchased from scrap dealers. Removing the box sealing tapes and staple pins was time-consuming, adding to his production cost. As a novel idea, the unit started using waste generated from corrugated carton box manufacturing unit as their raw material.

The *Sustainable Green Company* was the fourth such unit in India and first in Goa. Being the only unit in Goa, the competition was totally absent. As of today, he has a venture manufacturing secondary packaging and has diversified into offset printing for industrial purposes. He proudly claims that his industry is a zero polluter,

the production process is compatible with the local environment and the end product is biodegradable and recyclable.

Ajay is the founder trustee and Treasurer of Goa Entrepreneurs Mentoring Services (GEMS) Trust, which is concerned with encouraging budding entrepreneurs and entrepreneurship among students and youth in Goa. He is also an active stakeholder in the 'Pen your Passion' project of GEMS for identifying and mentoring students in selected colleges for entrepreneurship. He is also associated with Business Network International (BNI) as its Director Consultant, an organization that works towards incorporating e a a sustainability agenda for f start-ups in Goa.

According to Ajay, his unit has succeeded because they provided a unique solution of moulded paper pulp packaging material to replace thermocol usage. The secondary packing using thermocol posed a particular problem for industries in terms of storage space, environmental issues, disposal, and management. The uniqueness of this solution has ensured that the competition and loss of market share are negligible. His unit registered a 75% growth in the first quarter of 2016 when compared to the performance in the same quarter of the previous financial year. Forming a new and successful venture meant that Ajay could generate employment for more than 20 families, a milestone which he harps upon in all his entrepreneurship awareness programmes. He is planning a major capacity expansion in the near future and is confident to provide more employment opportunities.

1.4 Encouraging the Entrepreneurial Stretch: Lessons for Youth

The youth of Goa are creative and can work wonders with entrepreneurship. They should break the barriers of narrow-mindedness and should enter the realm of thinking big on ideas. Thinking big can lead to the emergence of unconventional solutions for everyday problems. He urges the youth to read the biographies and success stories of great entrepreneurs around them. Everywhere the people are the same but some become great because of their alternative revolutionary thinking and action. His obsession for preserving the environment brought him to the doorstep of entrepreneurship. His is a tale of passion which can be fostered, in among the young in various situations as long as they can take precautions to stop good ideas from being nipped in the bud due to a lack of awareness of opportunities or discouragement from others in stretching beyond the usual mile.

Aiming for quality from the start should be the criteria for whatever assignment one takes up. As Ajay's case demonstrates, once a budding entrepreneur can put in rigorous benchmarks for quality standards, competitors will find it difficult to enter the venture into their territory unless they do the same. Customers prefer and queue up exclusively for services and products that showcase quality.

Contrary to popular notions of our times, cutting edge technology is not the key asset for successful venturing. Radical new products are also not necessarily the

goal to see in pursuit of innovation. Like thermocol, there are a lot of items which industry customers want to replace. Consequently, there are many changes to be incorporated in day to day used items for making the life of the household convenient and pleasurable. There can be opportunities in a wide array of day to day business, work-related and social activities if only there is application of knowledge, through networks and sometimes a bit of luck for those who are prepared for it! ...

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Economic Policy Making in India and the Scope of Entrepreneurship Led Development

Vijaya Gupta

1 Introduction

An entrepreneur is a catalyst for economic development, a change agent with vision and creativity. The development led by entrepreneurship attracts the possibility of new products, services and organizational forms, but it also enables a process of personal, economic, social and cultural value creation which fosters new approaches to economic development and its evaluation. Entrepreneurship plays a significant role in shaping the level of economic development, an urgent of developing countries like India. The world has witnessed developed countries' reliance on mass production of knowledge-driven goods and services in entrepreneurial economies with flexible institutional mechanisms. With more than six decades of planned development, India still faces challenges of developmental issues. The game-changing innovation and entrepreneurship along with the development of knowledge-driven markets and low-carbon industrialization along with other reforms may help achieve developmental agenda in the country. A well-planned mass transformation of the youth population into potential demographic dividend to achieve developmental goals in India is long awaited. Further, the entrepreneurial solutions may also be channelized to address global challenges like climate change; climate change led the migration, and terrorism (Naudé 2011). There are enormous unexplored possibilities and entrepreneurial opportunities, if supported and motivated socially and institutionally, can bring in dynamic changes in the sphere of development in India. Thus,

[1]Bharat Ganarajya and Republic of India are two official names of this country. The critiques of India's growth story use these two names: Bharat to represent rural India with slow growth and development while India to represent fast growing urban India.

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this Chapter explores those untapped possibilities for furthering the growth through development.

This chapter understands the relationship between entrepreneurship and happiness, economic growth and development. It discusses the landscape of entrepreneurship in India and the economic policy initiatives undertaken to promote and support entrepreneurship environment. It explores and discusses the possibilities of entrepreneurial initiatives and their role in creating employment opportunities, income, prosperity and the happiness of people in India. This chapter is arranged in seven sections. Section two discusses the relationship between entrepreneurship and economic growth and development. Section three analyses the entrepreneurship landscape in India. Section four discusses entrepreneurial perceptions and potential in India. Section five discusses economic policy regime in India. Section six explores the possibilities of development through entrepreneurship initiatives. The Chapter concludes in Section seven with general policy implications.

2 Entrepreneurship and Economic Growth and Development

Entrepreneurship may fuel economic growth and enhance the material welfare of society. The national income accounting emphasizes more on growth and unable to account for happiness. Naudé et al. (2011) find an inverted U-shape relationship between national happiness and entrepreneurship. They also find a bidirectional causality between entrepreneurship and happiness. Entrepreneurship may make nations happier by providing more economic opportunities, but as nations prosper and become happier, the need for entrepreneurship seems to decline. The reason is that the marginal utility derived from the increase in income which causes happiness fall with increasing level of incomes, and therefore, happiness cannot be increased indefinitely. Therefore, the role of entrepreneurs also becomes insignificant in increasing the stock of happiness further. More entrepreneurial activities might cause income and wealth inequalities due to market failure and result in a decline in happiness. Thus, if appropriately and sufficiently supported by institutions, entrepreneurship may spur economic development and also make an increase in happiness. The underserved rural regions in India are yet to see the developmental phase. Table 1 reflects the rural–urban divide in some of the significant socio-economic and demographic parameters.

In economic theory, an entrepreneur is the organizer of other factors of production such as land, labour and capital and understands markets dynamics and capable of taking risks. An entrepreneur creates demand, identifies missing ‘characteristics’ of Lancaster 1966 and creates a product or service for missing attributes. In this process, it creates jobs, incomes and prosperity. On the one hand, entrepreneurship may lead to economic growth and development, while on the other, it may also lead to monopolized control of resources which could cause market failure

Table 1 Rural–Urban divide in India

	Rural	Urban
Population (%)	69	31
Number of poor (million)	216.5	52.8
Poverty ratio (%)	25.7	13.7
Per capita income (INR in 2011–12)	40,772	1,01,313
Literacy rate (%)	70	86
Water use (%)	46.7 (community use)	46.8 (exclusive use)

NSS 68th Round, 2012

leading to inefficient allocation of resources. In the initial stages of development, even limited entrepreneurship is desired to boost the economic growth through the level of demand, employment, production, income, consumption, prosperity and to propel another cycle of economic growth. For sustained and widespread economic growth, entrepreneurial activities need to spread across different socio-economic groups and geographical regions. Preiger et al. (2016) found that in developed countries, entrepreneurship is reached close to its optimal level, whereas in developing countries, the population running small entrepreneurship has a positive effect on growth which suggests the sub-optimal rate of entrepreneurship in developing countries. The optimal level is the level at which all long-term possibilities are explored as per the objectives and beyond which no significant improvement is possible as the case of developed countries above.

On the other hand, in developing countries, since entrepreneurship in its nascent stage and therefore much room exists to positively affecting the growth by enhancing entrepreneurship capabilities. It is also suggested that entrepreneurship and R&D are substitutes, and therefore, a higher level of R&D capability decreases the growth penalty of having too few entrepreneurs (Preiger et al. 2016). The higher level of R&D capability enhances the sustainability of higher growth rate which may compensate for a few entrepreneurs in the economic system.

3 The Entrepreneurship Landscape in India

Government official documents and data talk about India's distinctive demographic dividend. It is believed that India is blessed with a demographic dividend of 62% of the total population in the working age group (15–59 years) and 54% population below 25 years as against 40 years in the USA, 46 years in Europe and 47 years in Japan (GoI 2015). As per UN projections, India's demographic cycle is about 10–30 years behind than other countries. The cause of this is the total fertility rate (TFR) which is declining but at a gradual pace as compared to other countries such

as China and Korea where TFR declined more rapidly than the replacement rate. Also, we need to consider the labour force which will be increasing by 32% in the next two decades. The increasing aspiring young population may be providing the demographic dividend only when the marginal productivity of an additional citizen is higher than the average productivity of all citizens in the nation. If India is to harness its sizeable potential work force, highly focused and concerted efforts in technology updates and up skilling and training of current and future workforce are needed immediately. These efforts should be based on the future envisioning of market opportunities, technological changes and required skill type. The growth so far achieved may not be due to the demographic dividend but rather due to institutional reforms. However, the high level of growth may only be sustained by the demographic dividend for a longer duration (GoI (b) 2017).

The potential of entrepreneurship in India is not yet fully realized, it gets reflected from the fact that the micro, small and medium enterprises (MSME) sector still contributes only 17 percent of GDP against 85 percent in Taiwan, 60 percent in China and 50 percent in Singapore. Entrepreneurship based on knowledge-based innovation has immense growth potential through large-scale employment generation in India.

Rostow (1960) followed by Schwab et al. (2002) identified three phases of the developmental process of an economy, viz., resource-driven, efficiency-driven and innovation-driven phases. At low levels of development, primary resources such as land and unskilled labour are the prime movers of factor-driven phase, and self-employment at subsistence level in the agricultural sector dominates the economy. An economy moves to middle level of income from low level, the second phase of the efficiency-driven economy is being harnessed by investments in global technologies, and productive efficiencies are achieved through economies of scale with decreasing rate of self-employment. And in the third phase of development, the economy transforms itself from technology importing and technology developing economy, knowledge becomes the key input and creates high value-added products. This is the stage when entrepreneurial activities are important.

The GEM Report (2016–17) indicates India is the top performing factor-driven economy with five top-ten rankings. There is a long way to go for India to be in the so-called efficiency or innovation-driven economy groups. The Report ranked 64 countries on various parameters of entrepreneurship. India is ranked 31 out of 64 countries in Total Early-stage Entrepreneurial Activity (TEA), 40 in case of entrepreneurial intentions, 50 in established business ownership rate, 51 in improvement-driven opportunity/necessity motive, 18 in female/male opportunity ratio, 43 in female/male TEA ratio, 25 out of 64 countries on innovation, etc. The numbers indicate that the potential of entrepreneurship and innovation is yet to be realized fully. Improved outcomes require enabling ecosystems and changes in the mind set and culture of people and institutions. Also, many of the innovations technological or non-technological in nature are happening on farmers' fields, workshops, delivering services, etc., which may not be captured by these indicators. The scope of these indicators needs to be enhanced to make them comprehensive and inclusive. Nonetheless, the publication of global ranking has positively influenced the performance of countries like India and China.

The Global Innovation Index ranked India 76 out of 143 countries in 2014 and 60 out of 127 countries in 2017 (GII 2017) and 57th most innovative nation out of 126 countries in 2018 against its counterpart China at 17th rank. In the index of quality of innovation inputs and outputs, India stood at the first position before Iran and Kazakhstan in the central and south Asia (GII 2018). The Global Innovation Index Report 2018 identifies India as constant overachiever since 2011 and has the potential to make a difference in global innovation horizon in the future. It is included in top science and technology clusters along with the USA, China, Germany and Brazil.

4 Entrepreneurial Perceptions and Potential in India

GEM (2018) identifies socio-economic, political and cultural factors which influence entrepreneurial acumen and innovation of an individual. Its conceptual models identify a general national framework (NFC) which influences entrepreneurial framework (EFC) condition in a country. The entrepreneurial ecosystem is composed of finance, education, training and R&D, government support and policies, commercial, legal and physical infrastructure, market openness and dynamics and cultural and social norms. GEM (2018) conducted National Expert Survey (NES) to take the expert opinion on the entrepreneurial ecosystem in India in the last four years since 2014. Experts placed India at tenth out of 54 countries regarding the availability of finance which is through equity and crowd funding and angel investment. In the case of government support, the policies are to be framed in such a way that the impact is realized on an equity basis, and upliftment of low-level, and rural areas takes place. However, the licence and tax systems pull down India to 33rd place, seek institutional attention to reduce unwarranted procedural delays and tax burden. NES indicated positive changes due to institutional interventions such as single-window facilities, the establishment of business incubators and science parks to launch innovative ventures, though the rank is to be improved further from 21st out of 54 countries. The education plays a pivotal role in generating and transforming human capital (Karim et al. 2010), particularly when the economy strives to become knowledge economy through digitalization, big data analytics, machine learning and artificial intelligence. Though India scored 13th rank, the primary and secondary education systems need to imbibe learning to generate creative and innovative ideas in young minds. Legal and commercial infrastructure which includes financial services including banking, foreign exchange transaction, consultants, suppliers, etc., has improved over previous years. The nascent firms find it difficult to afford expert services of consultants, and the ease of supporting mechanism to access the same is also low.

Efficiency and innovations stand out winners in an open economy which promotes competitions which result in reduced prices, a wider choice of products, and optimization of resource use. India's domestic market dynamics (ranked ninth) reflects the dichotomy of demographic characteristics. The dominance of rich, middle class and young keeps aggregate demand vibrant which has resulted in a rise in derived demand also. However, the openness of the internal market is to be improved further

particularly for new entrants without getting disrupted by the existing firms. The fierce competition of the market can allow entry only on the basis of newness, creativity and innovation. The physical infrastructure has improved continuously and so its ranking (15th). Affordable Internet along with the Digital India initiative has provided better connectivity and communications and making Indian economy digitalized and transparent. The factor-driven Indian economy needs aggressive institutional mechanisms such as subsidies including import tariff break particularly new firms in the market for commercialization and technology transfer. The behavioural traits, perception, fear of failure all have roots in the cultural heritage of society. As per NES GEM (2018), the Indian culture which promotes traits like independence, autonomy, initiatives towards creativity, etc., was found to be above average. New ideas should germinate and get motivated by society and further supported by society for successful incubation.

5 The Economic Policy Regime of India

A good policy framework should follow criteria viz., effectiveness in achieving goals, efficiency in terms of realization of policy objectives in a cost-effective manner, the responsiveness of it to the genuine needs of targeted people and political acceptability and administrative ease. More importantly, it should be equitable in its benefit impacts on minorities, trials and indigenous communities for social and economic development. It should be strategic through forward looking and imbibe dynamic changes on the basis of continuous evaluation of its instrument, implementation, compliance and impacts. The framework for measuring entrepreneurship may include determinants such as regulatory framework, R&D and technology, entrepreneurial capability, culture, access to finance and market (Nadeem and Anders 2007). The impact may be evaluated on the basis of employment generation, poverty alleviation and economic development and sustainable economic and green growth.

Potential entrepreneurship development requires to be supported by a business ecosystem that is conducive to its emergence, easy finance, expertize, infrastructure, skills and a high level of motivation for change. India initiated its efforts in this direction through the National Skills Development Policy, 2009, and later, the National Policy for Skill Development and Entrepreneurship in 2015. Through these policies, it identifies the institutional framework for strengthening the skilling and entrepreneurial capability of people to improve employability, employment opportunities and productivity for inclusive growth. The policy also encourages entrepreneurship among women, under-represented groups, and fosters social entrepreneurship, strengthens grass root innovations, and entrepreneurship education through industrial clusters and entrepreneurship hubs, creating the web and mobile based platforms for connecting the entire entrepreneurial ecosystem. Atal Innovation Mission (AIM) and Self Employment Talent Utilization (SETU) provide techno-financial, incubation facilities to support all aspects of start-up businesses and other self-employment activities, particularly in technology-driven areas. The Unique Enterprise Number (UEN)

helps to facilitate regulatory support and provide for a single-window system for necessary clearances. The National E-Hub will lead efforts to align entrepreneurship efforts with other national programmes like Make in India, Smart Cities, Skill India, Digital India, Green India and Swachh Bharat[1] Abhiyaan (Clean Indian Mission).[2] Make in India and Skill India are the two significant complementary programmes and aim to prepare highly skilled workforce as per the requirements of the industry and promote manufacturing in 25 sectors for job creation and promote growth through improved productivity.

5.1 Economic Issues

The Indian economy has been witnessing macroeconomic stability again. The economy has recently witnessed significant policy developments, firstly demonetization of the two highest denomination notes to combat the problem of back money and secondly, transformational Goods and Services Tax (GST) to create common Indian market, improve tax compliance and governance and boost investment and growth. The introduction of uniform GST across State boundaries in India features strongly on many agendas and has faced protests from small traders from across the country due to teething problems such as the absence of adequate knowledge and clarity on GST compliance and failure of GST portal and tax rates. It is rolled out to simplify the tax structure of businesses and give a boost to start-ups and small traders. India was recovering from the slowdown caused by GST implementation and demonetization and expected to grow at the rate of 7–8% during 2018–19. Demonetization certainly had short-term costs, mainly incurred by the daily wage earners, small business and poor people. Remonetization and tax reforms may allow growth to bounce back in the coming years to come.

Theses radical measures including digital transactions are expected to curb corruption, widening the tax base and conversion of informal business to formal ones. All

[2]The government of India launched many programmes for the overall development and growth of the country. These few programmes give a glimpse of its efforts. Make in India is a national movement launched by Government of India in 2014 to encourage firms to manufacture their products and increase investments in 25 sectors. As per policy, 100 percent Foreign Direct Investment (FDI) is permitted in these sectors. Smart City Mission is an urban renewal programme, and Government of India plans to develop 100 smart cities across the country making city citizen friendly and sustainable. It is a five-year programme between 2017 and 2022. Skill India is another mission which aims to train 400 million of the labour force to bridge the gap between demand and supply of skilled workforce. Digital India programme ensures to provide government services to citizens electronically. The initiatives also include the development of secure and stable digital infrastructure and universal digital literacy. Green India is one of the eight missions outlined under National Action Plan on Climate Change. The programme envisages a holistic view of protecting, restoring and enhancing the forest cover and multiple ecosystem services. Swachh Bharat Abhiyan or Clean India Mission is a massive movement to achieve open defecation free India by constructing 90 million toilets in rural India and clean up cities, towns and villages.

of these measures have surely pushed the Indian economy on the path of the cashless economy.

For the development goals to achieve, the societal ideational shifts in reform ideas and narratives are needed to be shifted. The developmental agenda should be targeting inefficient and inequitable distribution of resources resulted from market failure, and equitable distribution of resources may be tackled with the assignment of common property rights for natural resources and enacting institutional framework.

Despite the free movement of goods, services, labour and other resources, the spatial disparity in income has been rising in India unlike other countries of the world including China. This is a matter of concern as it reduces the opportunities for people to pursue entrepreneurial activities in some parts of the country. The forces which could have been useful for the convergence of income levels have been elusive (GoI (b) 2017). Pradhan Mantri Jan Dhan Yojna (PMJDY) scheme was launched in 2014 for the purpose of financial inclusion and State benefit transfers under which 600 million bank accounts were opened up to 2016 (GEM 2018). The discussion has also taken place on the controversial issue of providing universal basic income (UBI) to all. The provision of UBI emphasizes society's obligation to ensure a minimum level of living standard despite the uncertainty of employment. It prevents individuals from the exploitation of the labour market such as undesirable working conditions and wages. Individuals with assured UBI will be encouraged not to accept the unacceptable.

5.2 Involvement of the Private Sector

The entrepreneurs face potential constraints such as lack of confidence and low self-image, no exposure of business, lack of awareness on rules and procedures, lack of skills such as technical, business and banking, etc. The private sector participation in providing training via innovative funding models is also promoted widely. Initiatives such as the National Skills Development Agency (NSDA) and National Skills Qualification Framework (NSQF) have been developed to create a vocational training infrastructure in the entire country. Despite these institutional efforts, only 4.69 percent of the total workforce in India has undergone formal skills training as compared to 52 percent in the USA, 68 percent in the UK, 75 percent in Germany, 80 percent in Japan and 96 percent in South Korea (GoI (a) 2017).

5.3 Start-Up India

The Start-up India initiative, an ambitious plan of Government of India launched in 2016, promotes young entrepreneurship by mentoring, nurturing and facilitating start-ups throughout their life cycle. The initiative was long needed in India due

to its increasing young labour force aspiring to take up white colour jobs in non-agricultural sectors. The programme is envisioned on the basis of three broad pillars, viz., funding support and incentive, simplification of process and handling and incubation and industry–academia partnership. The Start-up initiatives include comprehensive online learning, research parks, incubators and start-up centres across the country by creating a strong network of academia and industry bodies, financial incentives and accessibility to funds, etc. It is an effort to build an ecosystem in which start-ups can innovate and excel without any barriers.

The emphasis on ease of doing business would enhance investment possibilities and tap development potential. The use of 12 digits biometric identifier Aadhar to improve governance and eliminate leakages and the use of government's e-Marketplace (GeM) for goods and services are initiated, while E-Nam (National Agricultural Market) should ensure efficiency, transparency and remunerative returns.

5.4 Research and Development

Research and development (R&D), motivation, efforts, incentives are the key drivers of innovation (Gaspar and De Mooji 2017). Risk averse investors shy away from R&D investment projects due to the uncertainty of duration and returns. Efficiently designed and effectively implemented fiscal policies may provide incentives for significantly raising private R&D investments and support productivity growth. R&D investments by firms bring in positive externalities and flow the benefits to other innovators. The markets see the emergence of new products and processes in the economy. Internationalization of R&D spillovers is critical for developing economies. Estimates of R&D activities undertaken in the G7 countries suggest that such activities have an impact on yield productivity in economies other than those of the G7 countries. It is estimated that about 25 percent rise in productivity takes place in other countries due to G7's productivity gain. Therefore, positive externality of global R&D should rise by 50 percent so that the global GDP could rise by about 8 percent in the long term (Gaspar and De Mooji 2017).

6 The Scope of Entrepreneurship Led Development

The population in India is 1.35 billion and is expected to be 1.53 billion surpassing China by 2030 with a growth rate of 1.19%. Around 66% of the Indian population still lives in rural areas, and 44% works in agriculture (World Bank 2019). Indian agriculture is impacted by the vagaries of monsoon and climate change. The agrarian distress is spread across intertemporally and interspatially in India due to successive drought, falling prices, marginalization of farm size, low productivity, disguised unemployment, lack of tech support and diversification, etc. The distress is forcing

farmers to look for alternate opportunities and even leading to farmers' suicides. The economic growth of India is majorly confined to urban cities and led to the development. India needs entrepreneurs to focus majorly on the vast workforce available in rural areas, transform them into demographic dividend and create employment opportunities for them.

6.1 Rural Entrepreneurship

India is home to one of the largest rural and indigenous population of the world. Economic growth caused by significant economic reforms and liberalization has led to urban expansion, caused related challenges and leaving rural regions behind. Around one fourth of the Indian labour force worked in 60.3 million unorganized non-farm majorly family-run enterprises in 2015–16. Though the employment generation has increased only by 3 percent, but the earning of existing workers has increased by 86 percent from Rs. 4000 to Rs. 7000 in the last five years. The hopes of employment generation are not fulfilled due to the availability of credit, deficits in technology development and the absence of a skilled workforce (NSSO 2016).

The promotion of entrepreneurship activities in rural India especially in the traditional arts has attracted attention. There is a need to establish a National Fund for prospective entrepreneurs to create opportunities for others for inclusive growth including the targeting of poverty, generating employment opportunities and reducing inequity in the society through socially oriented business innovations in new products and services for poor. Evidence suggests a weak targeting of social programs. The poorest districts suffer from misallocation or a shortfall of welfare funds in the social programs. The districts in India accounting for the poorest 40 percent of the population receive 29 percent of the total welfare funds (GoI (b) 2017).

The lack of a secured job and educational opportunities has been forcing the rural population to migrate to the cities for decades. Rural India is also loosing nature-dependent livelihood opportunities. The railway passenger traffic data reveal that about 9 million people are migrating annually to seek work, which is almost double the number a decade ago according to the 2011 Census estimates (GoI (b) 2017). This trend can be reversed by generating demand creatively for urban people for the use of local natural resources which might help to generate employment. The urban–rural linkage through demand–supply initiatives is essential for equitable development and the avoidance of urban–rural divide further. Organizational innovations such as the cooperative society of houseboat owners in backwaters of Alleppy, Kerala, have strengthened such linkages. The cooperative alliances provide mass customization to the urban tourists in line with the sustainability of the region (George 2007; Kokkranikal and Morrison 2002).

In the God's Own Country, Kerala state, Kettuvallam (boat tied with rope) dominates the rich cultural heritage since 3000 BC as it was the most popular means of transporting of passengers, spices and rice over the years particularly in backwaters connecting remote villages of Kerala. It is made of all natural products such as wood,

coir, bamboo, cashew nut and shells. The modern houseboats reflect the creativity of owners in providing spacious and beautiful interiors and an elevated ceiling. The houseboats are also offered to tourists to enjoy their overnight stay along with traditional cuisine and culture while their way through lakes, canals, lagoons, rivers and backwater in Kerala. Houseboats have become a major attraction for tourists and provide gainful employment to natives. The success of this endeavour can be gauged through the fact that now specially designed and customized luxury tour packages can now be booked online on Websites such as Kerala houseboat, Alleppy houseboat, makemytrip.com, booking.com, etc., giving fierce competition to the hotel industry.

Similarly, in Maharashtra, ZeroMiles is building multi-utility drinking water centres to bring people together for community development. It helps rural entrepreneurs in setting up drinking water centres in villages beside the provision of other services such as educating villagers, online recharge, ticket reservation and bill payments.

6.2 Social Entrepreneurship

Entrepreneurs who can provide innovative solutions to society's pressing issues bring widespread change which may sustain spatial and temporal variations in the economy. They are practical visionaries and provide practical and straightforward and ethical solutions. Historically, India has seen many social entrepreneurs uplifting the lives of the masses. Mahatma Gandhi emphasized the environmentally friendly use of local resources for the growth of villages alike, empowered and initiated cooperatives, and community-driven local cottage industry like khadi and community-based enterprises. The Panchayat Raj and women empowerment projects inspired social transformation and self-sustaining local communities.

Similarly, Dr. Verghese Kurien known as the father of milk revolution in India helped to convert a milk importing country to the largest producer of milk in the world, empowering thousands of village women with their economic independence. Under the guidance of Kurien, Anand Milk Union Limited (Amul), an Indian dairy cooperative has become the most significant brand in India with a presence in more than 20 countries. Similarly, Vinoba Bhave led a movement for redistribution of more than 2,832,800 ha of land to India's untouchables and landless households.

Laxmiben Ajitsinh Dabhi of Kheda district of Gujarat introduces herself as a community resource person and mini-rural entrepreneur of nimboli (neem fruit-Azadirachta indica). She aggregates nimboli from 100 landless women labourers (100–150 kg each per day) during the off peak agricultural season of farms and provides them with income opportunity. The produce is collected at the village-level collection centre (VLCC) and then supplied to Gujarat Narmada Valley Fertilizers and Chemicals ltd. (GNFC) to produce neem oil. The neem oil coating is required for urea production as per the mandate of 2015. With such entrepreneurial efforts, India has become self-sufficient in neem oil to coat on 32 million tons of urea demand. Neem-coated urea improves soil health and improves crop yields.

Crypto currency is the new-age disruptive technological currency, as a future medium of exchange and store of value. The development goals need substantial investments. This crypto currency may be used for social development through Social Development Coins (DevCoins) (Kapoor 2017). The government, NGOs, individuals and organizations globally who are looking for these opportunities and contributing to society may participate and contribute towards the funding of the developmental programmes by paying for success model. This model of generating large funds for social development is still to be rolled out. The initiative may be undertaken either by the Government, NGOs or individuals. Also, on the line of Social Investment Tax Relief (SITR) system of the UK to reduce tax liability, the system may be allowed to evolve. The citizen-centric DevCoins can effectively promote social entrepreneurship to drive social change and can be traded in Development Exchange.

6.3 Institutional Entrepreneurship and Energy and Environment

Rural Bharat and urban India are not only divided in terms of income per capita and the numbers of people below the poverty line but also regarding their access to energy, a significant development indicator. As per the Census 2001 and 2011, 84.7 and 80.7 million households, respectively, have lived without electricity. In 2011, out of 80.7 million, 75 million are rural households which comprise 44.7 per cent of the rural population. In 2018, 100% urban household and 80% rural households have been electrified. Still 35 million households do not have access to electricity. Indians per capita energy consumption of 630 kilograms of oil equivalent (kgoe) in 2014 is far less than 2400 kgoe per annum to achieve best and comparable Human Development Index reflecting health, education and income statuses (Kakodkar 2018). The data reflect an unsatisfactory improvement in access to energy, particularly to rural households. Khandkar et al. (2017) conducted a study in 2005 and found that 57 percent of the rural households are energy poor versus 22 percent that is income poor, while 28 percent urban household is energy poor against 20 percent as income poor. Energy poverty in India depends on the earning power of the household and the empowerment of women. Besides improving earning opportunities, it is also essential to involve women as the primary end user in testing and designing in energy technologies (Shrimali and Rohra 2012). Rural electrification, promotion of modern cooking fuels driven by biogas and solar power and encouraging the adoption of improved biomass stoves may reduce rural energy poverty.

The rural households mainly depend on biomass for cooking with poor efficiency in its use and serious environmental and health issues. This requires large-scale production of efficient smokeless cook stove along with subsidized cooking gas availability. This will require enormous distribution network reaching even in the remotest areas and also facilitation and improvements in the implementation of Direct Benefit Transfer (DBT) on an equity basis. The possibilities of including all stakeholders

and marginalized groups in the institutional entrepreneurship are enormous. Agency for Non-Conventional Energy and Rural Technology in Kerala (ANERT) made 350 villages smoke-free villages by installing 817,352 improved chulhas (smoke-free cook stove) in Kerala. Ministry of New and Renewable Energy recognized three time's national award winner ANERT and its chulha as an extended life model. Besides efforts towards clean energy, employment is generated through 140 training programs to users, masons, potters, master-craftsmen and NGOs, amongst others, etc. Similarly, wind power may also be developed by the collective efforts of institutional entrepreneurs. They may be provided with indigenous innovation infrastructure and techno-economic and socio-political networks (Jolly and Raven 2015; Jolly 2017). The Solar Urja Lamps (SoUL) innovated and developed by Indian Institute of Technology, Bombay, for an immediate solution for the right of light for children and others. The initiative not only facilitates learning of children but also provides employment opportunities to millions in rural areas. In a span of two years' time from 2014–16, one million solar lamps were distributed in more than 10,900 villages of Rajasthan, Odisha, Madhya Pradesh and Maharashtra states. It tried to reach most marginalized tribal communities and educationally backward areas (MNRE 2017).

6.4 Indigenous Entrepreneurship

India is home to 461 ethnic groups, referred to as 'Scheduled Tribes', 104 million tribal people (out of 370 million in the world) which are 8.6 percent of the total Indian population. Tribal communities are known as Adivasis or Atavika (indigenous), Vanvasi (forest dwellers) and Girjan (living on the hill) with most of them living in harmony with nature. Unfortunately, these communities are marginalized and vulnerable to the irreversible impacts of climate change. Their livelihoods are based on the diverse and increasingly fragile ecosystem. These communities depend on sustainable agriculture practices and use extreme weather and pest resistant seeds, adjusting the seasonal calendar, mixing crops, pursuing intercropping and crop rotation using organic fertilizer for soil conservation and practicing water conservation (Jha and Gupta 2016). They maintain biodiversity through varietal flora and fauna. For example, the Koli community of Mumbai changes their fish catch pattern and uses fish breeding techniques to enhance the availability of fish in the future (Sibanand and Gupta 2017). They maintain landscape heterogeneity and grow and protect medicinal plants.

The Intellectual Property Rights (IPR) policy of the Kerala Government in South India adopts the concepts such as 'commons licence' and 'knowledge commons' to promote traditional knowledge. The National Innovation Foundation facilitates systematic documentation, provides IPRs protection for innovations by farmers, artisans and women, sustains creativity and maintains ethics of experimentation, provides risk capital support, in situ and ex situ conservation of local biodiversity. Navdanya an NGO protects biological and cultural diversity through saving seeds. The seed is for commons who own right to save and share. Conserving seed means

conserving knowledge, culture and sustainability. Similarly, the M S Swaminathan Research Foundation (MSSRF) in Chennai is a women-centric traditional ecological knowledge (TEK) empowerment centre. This Foundation aims to emphasize the use of scientific methods for sustainable agriculture and rural–tribal development with the pro-nature approach.

The Traditional Knowledge Digital Library (TKDL) is a significant repository of 1200 formulations of various systems of Indian medicine, such as Ayurveda, Unani, Siddha and Yoga Asanas. TKDL is a powerful tool to protect, promote and commercialize traditional knowledge of medicines, which may be extended to agricultural and environmental systems.

Similarly, the Honey Bee Network with the help of Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI) and the Grassroots Innovation Augmentation Network (GIAN), both located at Ahmedabad, Gujarat, convert grassroots innovations into viable commercial products, protect intellectual property rights of inventors and document traditional knowledge practices. There exist possibilities of collaboration in research for horizontal and vertical learning, empowering indigenous communities through the decision making for prosperity and growth. The investment in the creation of protective technologies and knowledge that protects citizens' private property rights is essential. If the government is unable to protect citizens against predation, institutional entrepreneurs need to identify the mechanism of property protection (Leeson and Boettke 2009).

6.5 Agriculture Entrepreneurship

Achieving food security for all should be the primary, priority agenda for Indian institutions. Indian agriculture absorbs around 50 percent of the labour force and contributes only 12 percent in GDP. Policy initiatives such as subsidies, credit availability, farm extension services, market access and climate information are undertaken to boost agricultural productivity. The focus of policy could be shifted from production centric to farm centric to accommodate the farmer's internal potential as an entrepreneur which has never been integrated into policy making processes and structures. Using this capability of the farmer for the diversification of farm activities may not only provide food security, but it also provides employment opportunities to hidden agricultural labour.

There are many inspiring agro entrepreneurs who made their impression in changing the landscape of Indian agriculture. India needs many more such entrepreneurs. Rahul Gala, agro-entrepreneur of Jalbindu Agri Tech, returned to the native village from Australia with a degree in horticulture, exploiting untapped unlimited possibilities by transforming production method scientifically with computer aid and beside export of mangoes and dates, making fellow farmers accustomed to the computer-aided technology and making them e-producers. Similarly, Kumar Patel of Gujarat involved villagers in rose gardening by establishing hydroponics plant (first in India) instead of conventional farming of paddy and sugarcane. Now, the

farmers are earning 40% more profits than before. Makrand and Anjali Churi of Nisarg Nirman Agro Products initiated in growing and selling healthy vegetables and fruits such as asparagus, curled parsley, zucchini and fennel to five star hotels. They test farmers' soil to decide on best fit fruits and/or vegetable and procure 100% from the farmers. Around 300 farmers from different States are supplying 80 exotic varieties of vegetables. They plan to set up manufacturing of root drip irrigation system in collaboration with Easy Irrigation, an Israeli company (Talukdar 2008).

The farmer entrepreneurship could be supported by providing sufficient infrastructure and necessary institutional support. Darmadji (2016) found a positive effect of farmer entrepreneurship on rice production and in supporting agricultural development programs. India has collaborated with Israel in agriculture technology, water and health for precision agriculture, nutrition sensitive agriculture and organic farming. In spite of adverse agro climatic conditions, Israel proved itself a world leader in agrotechnology

6.6 Education and Entrepreneurship

The motivation for entrepreneurship amongst the youth is essential but not enough. Sound knowledge, understanding and hands-on experience of doing business along with the practice of innovation and cutting edge ideas can make entrepreneurs potentially more successful in a fiercely competitive world. Education dedicated to honing the entrepreneurial skills of youth is a particular requirement for both new business formation and job creation. In Tunisia, for example, entrepreneurship training increased self-employment and increased graduates aspirations towards the future (Premand et al. 2016).

The Government of India came up with the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) for 2016–20 to provide industry-relevant skills training to 10 million youth in order to make them 'industry-ready.' The Skill Loan Scheme (SLS), the Rural India Skill (RIS), the Skill Acquisition and Knowledge Awareness for Livelihood Promotion (SANKALP) schemes have also been launched across the country (GoI 2015). A big challenge faced by these schemes is an insufficiency of funds for the massive level of labour-intensive employment generation for 12.8 million workers entering the labour market every year. Otherwise skilling a whole army of people does not make sense. We need to skill people in the way that they can create effective demand for employment, and for this reason, the country needs 'edupreneurs' who can integrate vocational institutes, corporates and the government to provide employability skills to the citizen. What may miss from the various schemes is proper identification of entrepreneurial skills for starting new ventures and scaling them up through innovation.

6.7 Women Entrepreneurship

Low economic participation of women causes a dent not only regarding economic growth; it also affects the prosperity of the household. Indian women in the workforce are limited to only 24 percent. The Head of UN Women indicated that if women in India contribute their full potential in GDP, the economy will further grow by 4.2 percent. The political reservations for women have empowered women in India in many spheres. However, evidence of increased women's employment in manufacturing has not been observed (Ghani et al. 2014). The study identifies that women are more likely to start a business in the traditionally active unorganized sector. Similar findings are reported for the Indian rural setting (NSSO 2016). It is worth mentioning the success of a few successful women entrepreneurs here as it reflects enormous opportunities for employment generation and women empowerment. It is started by seven village women with Rs. 80 in 1959, the Shri Mahila Griha Udyog developed its business to scale up with an annual turnover of around Rs. 6.50 billion (over 100 million USD) in 2010. It is spread in urban and rural areas across India, and employed 43,000 women in 2015. It is one of the most remarkable female entrepreneurial initiatives infused with Gandhian simplicity for empowering women. Lijjat Papad, popularly known as Lijjat, is every household's name for the much loved savoury item, poppadum.

Similarly, the Self-Employed Women Association (SEWA-Lakhnow) was established with 31 women in 1984 to rejuvenate Chikankari work (delicate and artfully done embroidery work). It employs artisans directly. Annie George, the founder of BEDROC, helps build sustainable and disaster-resilient coastal communities through coastal vulnerability mapping, participatory water resource management and disaster management. Chetna Gala Sinha who established cooperative bank (Mann Deshi Bank) in 1994 'by women for women' with the help of illiterate women has grown into a $562,000 firm. The rural entrepreneurs face potential constraints such as lack of confidence and low self-image, no exposure of business, lack of awareness on rules and procedures, lack of skills such as technical, business and banking, etc. The Udyogini (women entrepreneur) Business School in 2007 was established to provide vocational and financial training to young women entreprenurs. Thinlas Chorol, a professional mountaineer, founded Ladakhi Women's Travel Company to train women mountaineering and motivate them to take this up as profession (Siliconindia 2019).

6.8 Healthcare Entrepreneurship

Despite low income levels as per international standards, India has performed well on the front of life expectancy and her fertility rate. Where it does need rapid improvement is in the area of infant mortality, the rate for which was 3.9 (all India), 4.3 in rural areas and 2.6 in urban areas in 2014 (GoI 2017). The most significant sectors

such as healthcare and education are apportioned low levels of expenditures in the budget of the Indian government. In India, the ratio of rural population to doctors is six times less, and the ratio of rural hospital beds to population is 15 times less than in urban areas. Furthermore, 31 percent of the rural population travel over 30 km to try and receive medical treatment. Unfortunately, the rural and semi-urban areas of India do not have facilities for pre-hospital care, and, therefore, almost 30 percent of emergency patients die in India before they are given emergency treatment in the hospital.

The increasing healthcare awareness in urban areas has demanded significant entrepreneurial responses in providing better medical technologies and healthcare services confined to the cities. However, in underprivileged areas, the entrepreneurial response gets delayed due to lack of capital for new healthcare ventures (Grazier and Metzler 2006). India needs healthcare innovations which can provide affordable solutions to poor people in rural areas by setting up hospitals with various medical services in small towns and villages. Entrepreneurs may tap these opportunities and fill the gap in the provision of medical facilities. Jaipur Foot, a prosthetic lag, was conceived by Ram Chandar Sharma under the guidance of Dr. P K Sethi in the 1960s as an inexpensive solution and game-changing innovation. The 'leg' is water resistant and quick to manufacture and fit. Spread across India with 23 branches, BMVSS is the world's largest organization for the production of artificial limbs and treated 1.55 million disabled people free of charge. The development and marketing of frugal innovations in the healthcare field aimed at providing low cost solutions to underprivileged communities are essential for the country and especially for her many impoverished millions. Improvement in healthcare should lead to enhancement of the productivity of individuals, higher levels of employment of people who can work productively and in ensuing income and prosperity.

6.9 Technology Start-Up

DIPP, 2018 (Department of Industrial Policy and Promotion) has recognized total 8765 start-ups since 2016, a third largest in the world, in which 15% are from IT services, 9% healthcare and life sciences, 7% education, 6% professional and commercial services, 4% agriculture amongst others. Of all directors of start-ups, 35% are women. Six thousand nine hundred and fifty-four start-ups have reported employment generation of 81,264. Approximately, 2440 tinkering labs in selected schools particularly in tier II and tier III cities along with eight research parks in Indian Institute of Technology (IITs) and Indian Institute of Science (IISc) are established. India has a significant surge in technology start-ups. It added 1200 new technology start-ups in 2018. This has happened despite low seed funding (Veriyar 2018). The total number of patents filed in India is 45,000, but only 20% of it filed by Indians. Hopefully, international collaborations for Indian start-ups with countries like Sweden, the USA, Israel, Portugal, Finland and Japan, etc., will improve and develop the ecosystem for knowledge and technology creation. The social impact

start-ups are also growing at the phenomenal 20% of annual rate with 400 start-ups currently running in the country (IANS 2018). The survival of the business to continue in the long run is as important as the growth rate is. It is observed that B2B Start-ups survive better than B2C Start-ups.

India needs to create 10 million jobs every year for demographic advantage. It targets the creation of 1.8 million jobs by 2020 under the Start-up India action plan. A recent survey of 45 start-ups in India provides insights on the strategic decisions of these start-ups on talent acquisition and their development. The study finds that these start-ups hire 80% of the talent from their counterparts on 20% higher increment and 30% variable pay to drive performance. Most of it is on the basis of referrals, portals, LinkedIn, agencies and campus placements. 55% of organizations train their staff. As start-ups are able to generate more funds, they are able to improve gender diversity. The attrition rate faced is 14% within six months of hire. It is observed that the percentage of employees increase in their sales and operations teams, while the number of technical employees declines fast on account of their growth (ToI 2019). This reflects the role of technology in the growth of an economy. The significance of technology in the early stages of product and process development is vital. Once both are established, the requirement for technical support diminishes and gives way for the expansion of business, hiring of operations and sales staff further gives impetus to the economy through more demand.

7 Concluding Remark

This Chapter explores the possibilities and scope for entrepreneurship led development through unexplored entrepreneurial opportunities, such as indigenous knowledge, rural and farmer entrepreneurship, in the sectors of education, health, energy and environment in India. The government has initiated many schemes to boost the business environment that is conducive for entrepreneurs and their start-up initiatives. Though many initiatives have been undertaken, institutional reforms have fallen behind leaving a yawning gap between good intentions and poor practice. There is a greater need for R&D funding, labour market reforms, the commercialization of traditional knowledge, integration of rural academic institutes, MSMEs and industry for innovation, infrastructure development in rural areas, simplifying the business procedure, etc.

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Case 2: Self-efficacy and Passion

Renji George Amballoor

1 The Chef's Entrepreneurial Recipe

Avinash Martins

***Cavatina*,**

***Benaulim*, *Goa*.**

There is no business without hurdles, and every hurdle also provides an opportunity for the new enterprise.

1.1 Home Is where the Enterprise Is!

Avinash Martins grew up in a family imbedded with strong culinary skills. His father was a catering officer with large public sector corporation, *Shipping Corporation of India*, while his mother and grandmother's deep-rooted interest in cooking underpinned their gastronomic expertize to make every meal at home very delicious. A natural attachment to cookery and cuisines was evinced even in Avinash's childhood, helping him to nurture both a family tradition, which in turn fostered his interest in entrepreneurship through the formation of restaurants.

After completing his higher secondary schooling, he joined the navy as a cadet influenced by the shipping background in the family. But from the very outset, he felt like a bird in the cage unable to flap his creative wings. Disappointed by the lack of thrill and monotonous repetitive jobs, he left his employment after only four months. What followed after that and over a period of six months was self-discovery and the realization that engagement with the art and enterprise of culinary activities was the only route to personal achievement and happiness.

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1.2 Entrepreneurial Life Changes

Avinash was discouraged by friends and relatives not to change his profession so quickly and dramatically. After all, a cadet's job suited their social status, and becoming a cook could demean his family. Fortunately, his parents had other ideas and with their blessings, started his new journey by joining the *Swiss School of Hotel Management*, in Ootacamund (*Udhagamandalam*), popularly known as Ooty, in South India. On completing his course there, Avinash was selected by the *Oberoi Centre for Learning and Development* (OCLD) for a postgraduate course with specialization in kitchen skills. He served in the world-renowned Oberoi chain as a Kitchen Executive at their different properties in New Delhi, Bangalore and Kolkata. This gave him better exposure and experience to a range of skills, kitchen management expertize and related capabilities, acquired at the highest level in the hospitality industry.

While brimming with the idea of setting up his own unique restaurant, he decided to take the concept forward only after saving enough resources and gaining expertize in international food preparations. As a strategy for fundraising, he went abroad and worked as *Michelin Star Chef* in the USA, Spain and France and for airlines and cruise ships for about five years.

1.3 Mixing Recipes for Change

In 2012, Avinash returned to India determined to start a standalone restaurant using different international cooking methodologies. He identified a huge potential in India for the food industry based on his familiarity and exposure with both Eastern and Western food. The culinary environment, even eight years ago, was rather basic. The customers were not ready to come out of their comfort zone and try new preparations despite India's growing economic strength which brought in layers of interest and exposure to different cuisines and a potential search for the hidden gems of Indian food. His idea was to tantalize Indian customers to drop their traditional food eating habits and experiment with new cuisines and preparations. In order to pioneer innovative food, he along with his wife Tiz, a trained professional in food and beverages, set up their first business venture '*Cavatina'* in Benaulim, South Goa.

The modern fine dining restaurant provides global flavours through fusion cooking to local clients. Avinash would himself cook for his clients to ensure a creative component in the menu. The ambience of the restaurant was personalized by adorning the walls with his own paintings, well-designed crockery and cutlery items, well-organized staff and his novel flavours from unknown regions. He was given impetus to move forward with the love, encouragement and support from his local clients.

Avinash found that many of the restaurants in Margao town in Goa were the slaves of conventional serving and thriving on the traditional fish curry and rice. His entrepreneurial passion stimulated him to go against the grain, to innovate and

start a new restaurant—'*Tizumi*' based on an Asian street food concept, in 2015. The establishment of his pan-Asian bistro was to rediscover and connect with his local clients the trail of western coastal ingredients to South East Asian countries. Since the concept was very radical, he did not expect any overnight sensations. But according to his sixth sense, the clients could be stirred to experiment with his new preparation on the way to many new culinary adventures.

Avinash does not expend on advertisement and marketing. The word of mouth campaign was very powerful to take his ventures forward. His philosophy is to talk less and to execute work systematically for ensuring quality. He is a champion for organic development; hence, his food, its preparation and service spoke for him and his culinary ventures. Contrary to his expectations, however, the *Tizumi* project was not sustainable, but this setback did not stop him from pursuing his mission. He did so with even more vigour and enthusiasm.

1.4 Creating a Future Tradition

His next voyage is to revive the traditional, mouth-watering cuisines of Goa which is on the verge of disappearance. He proposes to source out the ingredients for his new venture from local fields and rivers, study the secret behind local preparations in discussion with, in particular, grandmothers, and to trace back the history of Goan culinary roots. The restaurant aims to sketch the origin of Goa and its people through food. Revitalizing the conventional Goan cooking is his vision, and he has decided to shoulder this responsibility out of his dream to give back to society.

Avinash gave up a well-paying job and engaged with entrepreneurship only because of his passion. In a small state like Goa, the reaction to quality and service spreads like a wildfire; hence, the success of his business is built and sustained by goodwill. According to him, there is no substitute for hard work, determination and patience. All businesses encounter financial, marketing, human resources, wider economic and other hurdles; yet each hurdle provides an opportunity for a potential new enterprise. He believes that better infrastructural facilities and greater ease of doing business can attract more entrepreneurs. One major challenge is that of workers who remain with you even during the off season and then leave for better renumerated jobs or other opportunities at very short notice as soon as the season starts. A challenge which Avinash has effectively handled by cultivating a spirit of empowerment of all who work with him. He succeeded in developing entrepreneurial attitudes amongst the youth, to fight various bottlenecks and challenges.

When he started his first restaurant, *Cavatina*, people discouraged him by negative comments because his restaurant was located in the middle of nowhere, far away from Goa's famous beaches or the main roads. Avinash proved his critics wrong by attracting more guests even without any live music, karaoke songs and other entertainments popular with beach destinations. Avinash believes that this was possible only because he did not compromise with his sincerity, commitment and belief in

what he does. He seeks to create a similar climate and passion first and money later for young people. Success, for Avinash, is measured in terms of the 'happiness index' of the guests visiting him and repeating their visits, rather than the collections in the cash counter. Profits are significant for sustaining the business and the families of the employees. Unlike trends in the tourism industry, he does not shut his shop and declare layoffs, during the off season of high Indian summer. Avinash keeps the creativity of a chef alive by being less commercial, and he hopes that the youth of the country should try and audit their talents before taking their career decisions avoiding notions of heresy and gossip. We await new culinary journeys with entrepreneurial flavours with Avinash Martins.

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Art for Life: Intangible Cultural Heritage as a Tool for Entrepreneurial Development in India

Amitava Bhattacharya

1 Introduction

1.1 The Evolution of Culture as a Sustainable Development Goal

Today, we are in a critical phase in human development, when nations are reviewing their progress towards the erstwhile Millennium Development Goals (MDGs) and shaping a new post-2015 development agenda (United Nations 2015). There has been a paradigm shift in development strategies which are moving away from industrial/production intensive models to human-centred sustainable approaches. When the MDGs were adopted in 2000 by the United Nations General Assembly in its resolution 55/2, the importance of culture was not explicitly recognized. However, since then several instruments have been adopted by the international community to strengthen the linkage between culture and development. UNESCO approved the Universal Declaration on Cultural Diversity (2001), the Convention for Safeguarding Intangible Cultural Heritage (ICH) (2003) and the Convention on the Diversity of Cultural Expressions (2005). Reports have been prepared by UNDP and UNCTAD on culture and development and creative economy (UNCTAD).[1]

The Outcome Document of the 2010 MDG Summit recognized the contribution of culture in achieving the MDGs. The UN General Assembly Resolutions in 2010

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[1] https://unctad.org/en/Pages/statistics.aspx. Accessed June 1, 2019.

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(65/166) and 2011 (66/208) recommended mainstreaming of culture into development policies and strategies. The increasing trend of integration of culture in development agenda is manifested at the level of United Nations Development Assistance Framework (UNDAF) where we see culture is included in 70% of the work plans of UNDAF by early 2012 in comparison with 30% in the 1990s (UNESCO International Congress 2013). The outcome document of the United Nations Conference on Sustainable Development (Rio+20) and the 2013 ECOSOC Annual Ministerial Review acknowledged the importance of culture and cultural diversity for sustainable development. The International Congress 'Culture: Key to Sustainable Development' held in Hangzhou at China in May 2013, specifically focused on understanding the linkages between culture and sustainable development in view of the post-2015 development framework.[2] The World Culture Forum held at Bali had deliberations on the impact of culture on the three dimensions of sustainable development—environmental, economic and social. However, developing a shared understanding and recognition on integrating culture explicitly in global, regional and national policy frameworks still remains a challenge. Various international cultural agencies are now advocating for recognizing culture as a fourth pillar of sustainable development in future development frameworks.

In October 2013, four global cultural organizations—the International Federation of Arts Councils and Culture Agencies, Agenda 21 for Culture, Culture Action Europe and the International Federation of Coalitions for Cultural Diversity have published a plea for the integration of culture as a Millennium Development Goal in the United Nations' post-2015 agenda. Finally, The United Nations General Assembly adopted by consensus a resolution (68/223) on culture and sustainable development on 20 December 2013, that asks Member States and all UN organizations to 'give due consideration to the role of culture and sustainable development in the elaboration of the post-2015 development agenda'.

Culture is an enabler of development. Today, the role of culture as enabler and driver of sustainable development is well recognized. The 2030 Agenda for Sustainable Development Goals (SDG) adopted by the United Nations recognizes the importance of ICH and education as well as ICH and the sustainable development of human settlements (United Nations 2016).

The following are some of the SDG targets with explicit reference to cultural heritage:

- SDG 4 on inclusive education and lifelong learning opportunities defines the following target: 'By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development'.

[2] https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20(July%201).pdf. Accessed June 1, 2019.

- SDG 8 aiming at inclusive economic growth and decent work for all stipulates as a target the following: 'By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products'.
- SDG 11 on building inclusive and sustainable settlements has a target defined as 'strengthen efforts to protect and safeguard the world's cultural and natural heritage'.
- SDG 12 is about sustainable consumption and production patterns. One of the projected targets is to: 'Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products'.[3]

The SDGs provide a framework for the international community to work together to use ICH as a wellspring of rural revitalization.

1.2 The Role of NGOs in Promoting Culture as a Tool for Sustainable Development

NGOs play an important role in achieving the SDGs. The NGOs working in the realm of intangible cultural heritage across the globe, referred to as ICH NGOs have lead the way to address developmental challenges using culture-based approach. They have enabled the participation of traditional bearers and practitioners in safeguarding efforts. Their efforts have also led to a strong, sizable and valuable productive sector comprising of creative and cultural resources and activities across the world. They have also played a critical role in enabling marginalized communities participate fully in their cultural life, thus, strengthening pluralism and reducing conflict.

The international community now acknowledges culture as a 'driver and enabler of development' and its critical role in supporting socio-economic development and social inclusion. Sustainable development implies equitable environmental, economic and social well-being for today and tomorrow. Cultural heritage, the creative industries, sustainable cultural tourism and cultural infrastructure contribute to improved income and job opportunities, especially for women and youth who are the traditional bearers of ICH. As per UNCTAD data published in May, 2013, total World trade of creative goods and services amounted to US$624 billion.[4]

Culture plays an important role in development and it has been accepted worldwide even though the nature of its significance remains unclear and often incongruent with development. Culture as a source of income and employment generation has been stressed by many proponents of culture. On the other hand, culture is also seen as a set of knowledge and as a value system which needs to be safeguarded for development. Global South still needs to go a long way in incorporating culture

[3]UNDP: https://www.undp.org/content/undp/en/home/sustainable-development-goals.html. Accessed June 1, 2019.

[4]https://unctad.org/en/PublicationsLibrary/dom2014d1_en.pdf. Accessed May 30, 2019.

in national developmental frameworks and policies. Viewing culture as a romantic rhetoric or just as an aesthetic value than a tool for development with substantial results can be a possible reason as to why culture is yet to be fully utilized as means of livelihood in the Southern part of the World.

Revitalization of ICH leads to strengthened cultural identities, improved self-esteem and pride among the indigenous communities, which in turn enable social inclusion. The process empowers marginalized communities to participate fully in social and cultural life, with these communities obtaining a platform for acting as social and political agency. Increased social capital and active citizenship fosters inclusive development. As Irina Bokova said in a recent debate on Culture and Development, 'Culture can foster participation and craft a more balanced and meaningful development model for the people and by the people' (UNGA 2014). Multicultural exchange and interaction through festivals, collaborative art workshops and cultural tourism promote cultural pluralism, social cohesion and peace through multicultural dialogue leading to shared understanding and greater empathy for the 'other'. Global partnerships forged through the transnational flow of creativity, multi-cultural and multi-national dialogue and exchange, give people the right to access their own heritage as well as that of others.

Protection and preservation of cultural diversity, biodiversity and rejuvenation of traditional systems of resource management contribute to environmental sustainability. In Africa, for example, traditional leaders and doctors are vital in gaining confidence to strengthen the health care sector, to combat HIV and to enhance education (UNGA 2014). Culture-based livelihoods and enterprise also contribute to green economy as they are inherently based on intellectual resources and entail low resource consumption. Quality education enriched by culture transmits shared values, knowledge and skills and supports lifelong learning. ICH is all about people, so investment on ICH directly benefits communities, helps in strengthening identity as well as cultural diversity, skill development and empowerment, developing creative enterprise, and generating new resources. Thus, the investment on ICH is critical for achieving all three pillars of sustainable development and a natural corollary is the significant role of ICH NGOs in achieving the goals of sustainable development, which are:

- ICH → Skill → Enterprise → Resource generation → Sharing
- ICH → Identity → Owning development charters → Impact on MDGs
- ICH → Recognition → Social Inclusion →Pride → Aspiration → Safeguarding
- Investment on ICH → Development of ecosystem enabling Growth → Sustainable Development

1.3 The Indian Context

India is aware of its rich and myriad cultural asset, but culture has hardly been given any attention in the national charter for bringing about inclusive sustainable development. The government of India does not have concrete data on the number

of artists and tradition bearers and their significant role in the country's GDP and overall economy. There is no classification and categorization of artists based on their art forms by the National Census of India (2001). Economic activity associated with the art form has not been catalogued by India's National Industry Classification. Except a few successful artists, the vast majority of the artists' population remains unrecognized. India has time and again used culture as promotional tool for image making and identity (like the Incredible India campaign), but it is yet to fully utilize the potential of traditional art as a measure of or a means to a livelihood. The artistic skill of the rural people also needs to be recognized, and concerted effort is required to make culture a part of the national agenda for development. The rich and varied craft forms of rural India will cease to exist if immediate attention is not given to the rural traditional artists. Poverty has already compelled many to quit practicing art and take up other forms of wage labour as a basic means of sustenance. There is, therefore, an urgent need for coordinated action by institutional stakeholders.

Disparity and discrimination are a challenge in a creative economy. Though ideas and creativity are globally sourced, the global North has largely greater control over distribution. In India, in spite of several efforts and initiatives that were made since independence to promote culture, funding support was limited for folk arts or craft.

I shall take this situation as my staring point, and the chapter will focus on the idea of how proper attention to the artists of rural India cannot only make substantial improvement in national development but also enrich the ability of a huge part of the population. Paying heed to the traditional art forms will not only generate income and improve lives but it will also play an important role in safeguarding the art forms. This idea is realized through the story of the work of Banglanatak dot com, a social enterprise that I established in 2000, with the launch of its flagship initiative 'Art for Life' in 2004.[5]

2 The Background

Even though India is one of the rising economic powers, it still faces the major challenge of providing employment opportunities to the youth, particularly, in the rural areas. A report entitled 'Unemployment Rate in India' by the Centre for Monitoring of Indian Economy in 2018 showed that total employment declined from 407.9 million individuals in 2017 to 397 million in 2018 (Down to Earth 2018). The rural areas accounted for 84% of all the jobs lost. Most of those who lost their jobs were uneducated—wage labourers, agricultural labourers and small traders, generally below 40 years of age or above 59 years. When we say rural India, we usually associate it with under development, backwardness and poverty. This takes our eyes off the rich traditional art of the vibrant communities present in every corner of the country. The villages have their diverse dance, song, handicraft and painting traditions which used to be a part of their daily lifestyle. This wealth of rural artists provides a considerable

[5] https://www.youtube.com/watch?v=jWrhelUjzZM&feature=youtu.be. Accessed May 27, 2019.

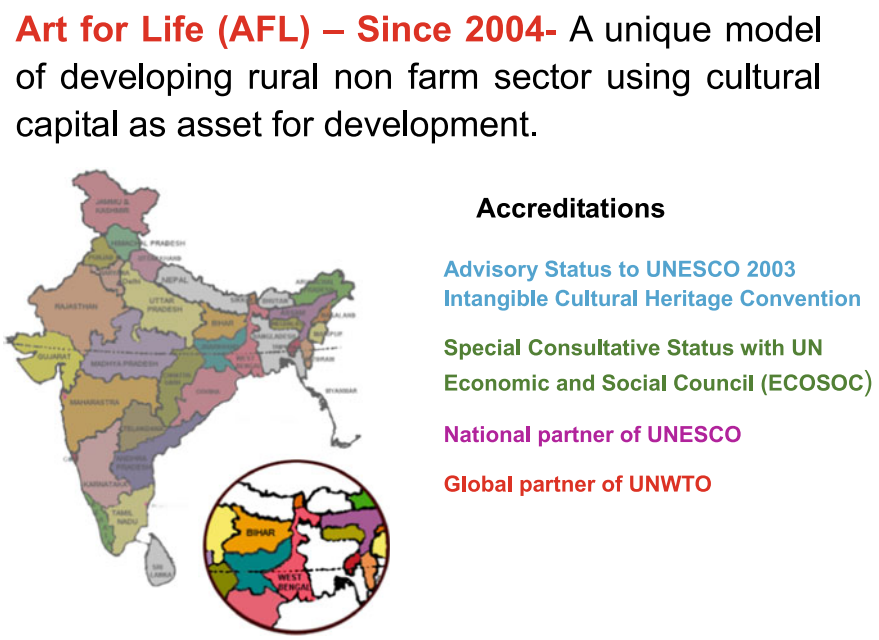

Fig. 1 Art for Life

prospect for the provision of an alternative approach to culture-based development for empowering people and improving rural livelihoods.

Keeping the potential of culture in livelihood generation in mind Banglanatak dot com was established in 2000. The organization is based on Kolkata with offices in the capital city of India Delhi and in the country's premier tourist destination of Goa. The organization's vision is to utilize the tremendous potential of the intangible cultural heritage as a concrete means for improving people's livelihoods and for the empowerment of local communities. The organization aspires to make entrepreneurs out of artists and to this end it has organized a range of creative enterprises engaged in traditional art forms. Banglanatak dot com's aim is to safeguard intangible cultural heritage as a way to endorse sustainable development. Its flagship initiative is 'Art for Life' which as Fig. 1 above indicates, is a unique model for utilizing cultural capital as an asset for economic and social development.

3 How Art for Life Started and How It Grew

Art for Life (AFL) started on an experimental basis and was carried out in six districts of West Bengal. Once we assessed the effect of its implementation, it spread to the other districts of West Bengal and the adjoining state of Bihar. The goal of the AFL initiative was to support the large pool of creative talent in rural pockets to

form creative enterprises of their distinct traditional art forms. The objective was to revive and revitalize folk traditions as means of sustainable livelihood and shared resource for community-led creative enterprise. Collectives of artists were formed and their individual micro and small enterprises were organized as clusters of creative industries supported by different government schemes. The artists benefited from creating and sharing new knowledge together with resource sharing. Market linkage became easier, and the increasing tendency of artists to act in an organized fashion led to the growth of a grassroot entrepreneurship ecosystem.

Rich and diverse oral traditions, art and crafts are present across rural India but owing to the change in people's lifestyles partly induced by rapid urbanization traditional art forms are losing its importance and viability. This loss is manifest in declining audiences and demand for their art forms and reduced income for the artists. Due to the drop in income generation from their traditional art form, many have left practicing it and have switched to working as daily wage labourers. Another fact of concern is that the younger generation has little interest in carrying forward their family's traditional art as there is no economic benefit or pride attached to its continuation. This indifference further exacerbates the problems emanating from the decline of traditional art forms. What is inevitably on offer is a slow death of these traditions accompanied by a vicious cycle of poverty and social exclusion. The lack of proper awareness regarding the art forms results in low interest and investment in protecting the traditional cultural heritage. It was these challenges that made Banglanatak dot com take up the task of synergizing cultural development with socio-economic development.

AFL was supported in the initial years (2005–2008) by the Eastern Zonal Cultural Centre, an autonomous institution under the Ministry of Culture of Government of India. The project targeted revival and revitalization of six performing art traditions and covered 3200 folk artists. The European Union further supported the initiative between 2009 and 2011. In 2013, with the support of the Department of Micro, Small and Medium Enterprises under the West Bengal State Government and UNESCO, the 'Art for Life' model was replicated in eleven clusters of traditional crafts for developing Rural Craft Hubs in 10 districts benefitting 3000 artists. Seeing the success of the Rural Craft Hubs (2016), the Art for Life model was further replicated to cover 12,000 practitioners of traditional art and craft in 15 districts of West Bengal for the formation of Rural Craft and Cultural Hubs (2019). West Bengal Khadi and Village Industries Board also came forward to support AFL by rolling out the programme to an additional 12,000 rural handicraft artists. Furthermore, the model was replicated in the state of Bihar, for improving the livelihood of approximately 1500 artists (2011–2013). Currently, the model is being replicated in Western Rajasthan across 4 districts covering 1500 artists.

The primary focus of AFL was to augment the socio-economic condition of the artists through culture-based livelihood generation together with the development of deprived villages, as centres of culture. The emergence of the villages as cultural centres was expected to mutate into sustainable tourism hubs to generate additional income opportunities for marginalized rural areas (Fig. 2).

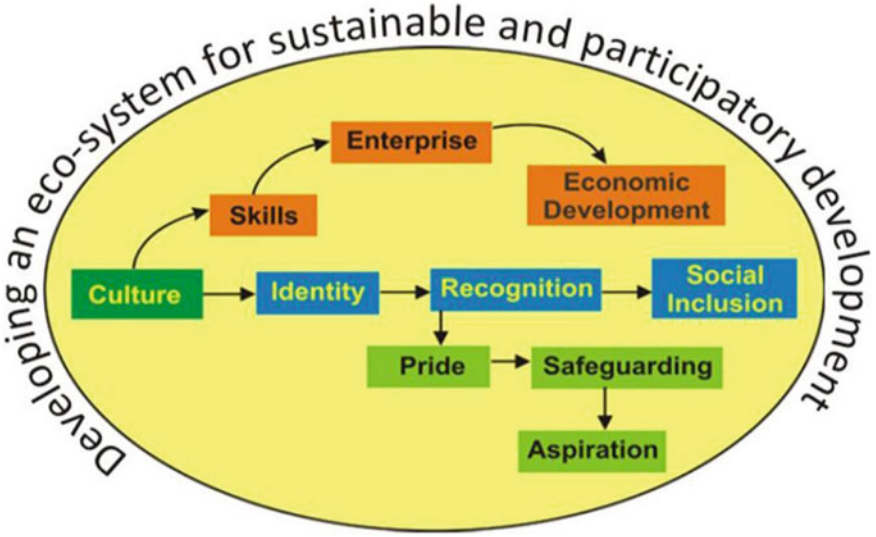

Fig. 2 Developing the ecosystem: method and practice

As an indication of the methodology we have devised, the structure of the AFL road map, as we call it, involves four main phases, each containing several activities, cultural mapping, building community-led cultural industries, capacity building, documenting art forms and developing new markets. These phases are discussed below.

3.1 Cultural Mapping

Developing an inventory of art forms and artists along with a sustainable blueprint for the way forward is essential to develop creative industries based on intangible cultural heritage. Dearth of proper data and information is a challenge in preparing a road map for reviving and revitalizing traditional art forms. Inadequate statistics on the geographical dispersion of traditional artists, their strength in each region, and level of skill makes it difficult to work with the communities. To try and combat the problems, specific objectives were set for an investigative study and cultural mapping, including the need to:

- Map artist communities,
- Identify the leaders, change makers and process owners among the artists,
- Evolve a pragmatic and realistic work plan in consultation with the artist community,
- Identify benchmarks for monitoring the project outcomes.

Cultural mapping and inventorying need to be planned with the approval and participation of the artist communities. Mapping does not merely rely on recording history; the process strengthens skills, revitalizes lost knowledge, techniques and knowhow and creates tools for promotion of those skills. The direct participation of tradition bearers results in developing feasible plans for revitalization of traditional art forms.

3.2 Building Community-Led Creative Industries

Reviving heritage as skill set to earn a livelihood enables change in the thought processes and attitudes of the folk artists as they learn to see themselves as 'cultural service providers'. It needs to be acknowledged that to build and operate cultural enterprises at the grassroots level it is important to develop community-based structures. The artists need to be collectivized to form the building blocks for microenterprise formation. Artists are encouraged to form clusters for self-reliant and professionally managed community enterprises, and the cluster building initiative brings people of a community together encouraging the involvement of all the members.

3.3 Capacity Building

Skill transmission requires comprehensive capacity building. Capacity building is not only required for ones who are in the initial stage of learning the art form but also artists who have been practicing the art form for years in order to introduce innovation in their work. Capacity building is done through training and workshops under the tutelage of senior artists. This way the age-old tradition is passed on to the new generation through the *Guru–shishya parampara* (master–apprentice model). The artists are taught the minutiae of the art forms along with techniques for innovating and diversifying their products. The performing artists go through workshops to improve their stage presence, in order to make the art form reach a larger audience. Apart from learning the nuances of the art, capacity building work needs to be done in terms of English language and basic computer training, to help them come to terms with the vagaries of the market and to help appreciate the demands of the wider market place, especially accessing and using online platforms. The artists need to be trained to understand, use and maintain a balance sheet and other accounting records for their sales, loan application for capital, savings and investment. Ensuring sustainability at the personal, organizational and environmental levels underpin the capacity building exercise.

3.4 Documenting Art Forms

Documentation of oral tradition is an important component of safeguarding intangible cultural heritage. Ageing senior artists are a living repository of knowledge and skills. With their demise, styles and techniques of art forms and the knowledge of the history and evolution of particular traditions are lost forever. Approaches for documenting art forms can be numerous and could include audio-visual recordings, books, brochures and catalogues. Documentation helps to provide information to the masses and can also be commoditized and become a means of income for the artists. Circulation and dissemination of the documents help to build awareness among potential consumers. Documentation by living masters provides tools for strengthening skill transmission and the revival of lost songs, dances and techniques.

3.5 Developing New Markets

Developing markets for traditional art forms are crucial for its survival and revival, as art without commercial value cannot be sustainable, particularly, in the local context of rural India. Folk festivals are organized at local, state, regional, national and international levels and that creates new markets and attracts new customers for traditional art. Few of the well-known village festivals that evolved in 2010 are Patachitra Festival (Pot Maya), Baul-Fakiri Festival, Bikna Dokra Fair, Natungram Wooden Doll Fair and Sundarban Folk Festival.

Such festivals also facilitate interaction with musicians, art lovers, art critics, researchers and academics, opening up new avenues. Village festivals planned in and around the villages of the artists encourage the development of the villages as tourism destinations. Culture becomes a capital-attracting investment. Heritage awareness and promotion are facilitated through participation in fairs, cultural events and festivals, heritage education programmes in schools and colleges, and through websites and the social media.

4 Art for Life in Practice

The key components of the heritage maintenance and sustainability process followed under AFL cover inventory keeping and documentation, revitalizing the skill transmission process, and capacity building for nurturing creative enterprise. They support new innovations, awareness generation and promotion, exchange and collaboration through events, programs alongside the use of the Internet and digital media, with interventions at the grassroots there are economic and social changes with respect to every traditional folk art form, each artist and every village.

4.1 Heritage Inventory Keeping

The interventions start with cultural mapping and inventory keeping involving the artist community. A knowledge, attitude and practice (KAP) study is undertaken to assess skill levels and practices for, identifying the masters and leaders in the artist communities and understanding training and capacity building needs. Participation of the traditional exponents in designing skill development programs address shortcomings of the overt commoditization of culture to cater to pure market demands.

4.2 Recognizing Culture as a Skill

The sustainability of intangible cultural heritage elements is ensured through skill transmission, documentation and awareness generation. The traditional skill transmission system (Guru–shishya or master–apprentice model) is revitalized and young people are mobilized to learn about their tradition and history from the tradition bearers. Documentation of the work by living masters provides tools for strengthening skill transmission and reviving lost songs, dances and techniques. These initiatives do not simply record history; they also strengthen skills and create tools for the promotion of those skills. AFL engages the bearers of tradition in learning about their own culture and heritage, which is critical to the development of viable interventions for the sustenance of heritage.

4.3 Skills for Reaching Out to Larger Audience, Cultural Exchange and Innovation

Capacity building also focuses on building of technical capabilities for performance in contemporary contexts (use of microphone, light, performance on stage, recording in studio) or improving the production processes. Equipping the practitioners with instruments, costumes, tools are also done to ensure improving their quality of presentation. Multicultural exchange, collaboration and exposure are facilitated to address the challenges of creating new ways and contexts for intangible cultural heritage to flourish. This also provides exposure and confidence to the artists. Art residencies and workshops show how art empowers to transcend barriers of language, and collaboration supports new innovations. Facilitation of creative interactions between the folk artists, craftspersons, contemporary musicians, theatre directors, choreographers and designers is done for developing an understanding of the dynamics of culture, place and society in different environments. The participating artists gain confidence and have increased ability to understand their own cultural context and to innovate. Further, greater recognition and opportunity to travel and interact with other

artists at national and international levels attract and engage the younger generation in looking after their heritage.

4.4 Promotion and Publicity

Direct market linkage is a key strategy for sustaining and augmenting viability of the art forms. The artists are empowered with skills and networks for reaching out to wider audience. Once a specific skills-set is acquired, the artists are categorized as per their competency level and the market is ascertained subsequently. The top-ranked artists are given the opportunity to perform at international stages, the next grade at national level, while the remaining ones play to local audiences. This way a pyramid structure for connecting to various markets is generated.

The international market caters for only 10% of the targeted beneficiaries but it opens up a new network and diaspora and all the wealth of resources associated with it. Not only are they linked to musicians but also to international event organizers, broadcasting corporations, radio and other international music networks. The national artists get the opportunity to perform at various festivals all across India, with their participation in events ranging from music festivals, art festivals, handicraft fairs, handloom fairs, khadi fairs, to food festivals, business and social conferences, theme wedding receptions and street performances. Each level and form of participation yields widespread publicity and promotion for these artists through websites, social media coupled with links to retail chains, individual boutiques and other event organizers. Their products are procured by various corporates as gift items.

Heritage awareness and promotion are also facilitated through participation in fairs, cultural events and festivals, education programs in schools and colleges and through websites and social media. Partnership of print and digital media is mobilized for generating widespread awareness. To support the development of community-based creative enterprises, artists' collectives are formed, and leading teams are trained in critical aspects of business, management, in particular, basic financial management. Training enables financial and digital literacy, linguistic, communication and life skills.

4.5 Holistic Model for Social and Economic Development

AFL's portfolio extends beyond the revitalization of various art forms and the empowerment of artists with skills and networks. It rebrands the artist villages as vibrant cultural hubs. Folk Art Centres are established in the artist villages as centres of practice and promotion. Community museums are developed in the villages celebrating the heritage of the place. Village festivals put the village firmly in the map of cultural tourism. Local youth get involved in hospitality services. We have seen from our experience that village festivals facilitate social inclusion, recognition and pride among

the artists while persuading the locals to start recognizing their heritage. District administration takes priority of the village as it becomes their identity and pride. The artist villages emerge as local growth poles and destinations for heritage education and cultural tourism. United Nations World Tourism Organisation (2012) has documented this model of developing community-based cultural tourism in artist villages as good practice for promoting responsible tourism. Tourism represents 9% of world gross domestic product (GDP), 30% of total exports and services and one out of eleven jobs. As World Bank data suggests, 25% of tourism revenue goes to people below the poverty line in some of the poorest countries and helps with the employment of young people at almost twice the rate than other industries (UNGA 2014).

5 Tracking the Outcomes

Between 2005 and 2018, Art for Life has worked with and supported more than 30,000 families of folk dancers, singers, theatre groups, visual artists, storytellers, mat weavers and craftspersons. The work has been supported by the Ministries of Culture, Rural Development and Enterprise Development at national and state levels and also by UNESCO, European Union and the US Department of State. The AFL model has been awarded as an example of good practice by the World Bank supported Bihar Innovation Forum-II.

The Department of Micro, Small, Medium Enterprises and Textiles, Government of West Bengal has adopted the model and has been working in collaboration with UNESCO for integrating culture in development planning and programming. Banglanatak dot com has a national partnership with the UNESCO Office at New Delhi to assist in the roll out of the model and advocacy for recognizing cultural skills as an asset for development in different states.

Protecting and sustaining the numerous forms of artistic and heritage activities have led to the revitalization of several art forms, and an increase in number of artists and craftspersons as the younger generation has come forward to pursue their traditions. The artists enjoy greater recognition, respect and demand in their own communities and neighbourhood resulting in greater opportunities for performance and sale. Income has increased 5–10 times for most of the communities. Since the majority (around 60%) of the artists are women, AFL's work has spurred on the empowerment of women with the latter enjoying a much higher level of voice in family and community matters, economic empowerment and mobility for women.

Strengthened networks have resulted in multicultural collaboration with academics, festival organizers and other artists. More than 300 artists from rural interiors have travelled to countries in Europe, Asia, Africa and North America with international cooperation and collaboration augmenting the process of empowerment for the whole community and demonstrating that the costs associated with these interactions, including travel, are not an expense but rather an investment. Recognition has led to social inclusion and greater interest in the development process resulting in

non-monetized outcomes such as the higher levels of investment in the education of children, health and sanitation and in improving their living environment and quality of life of the artists and their families.

The mini case studies that follow showcase some of the achievements of AFL's transformative cultural heritage agenda.

Case Study 1: The Swarnajayanti Gram Swarozgar Yojana (SGSY) Special Project

Supported by the Department of Panchayat and Rural Development, the SGSY project attends to six local art forms—Chau dance, Jhumur dance, Baul-Fakiri (Sufi music of Bengal) and the folk theatre forms of Gambhira, Domni and Patachitra (scroll painting and songs): These art forms representing local cultural heritage, which were the focus of our pilot projects, were identified as having the potential for revival and revitalization as means of livelihood. More than 4000 artists were introduced to the project's vision in meetings held in villages throughout the six regions, and eventually 3200 folk artists participated between 2005 and 2009. They were mobilized to form 233 self-help groups. Bank accounts were opened for each of these groups, and a training plan was then drawn up by local teachers (Gurus) and leading artists in each of the art forms. They interacted with contemporary artists to learn about market trends and demands.

Three to six months of training was organized at the village level under the local art exponents and Gurus involving the participation of all the 3200 beneficiaries to strengthen basic art skills. This was followed by creative interactions between the folk artists and contemporary musicians, theatre directors, choreographers and designers to innovate ways of improving the marketability of the traditional art forms. The various song, dance, music and visual art traditions were documented using video to promote awareness and create new audiences. City-based festivals were organized to help disseminate the folk traditions of Bengal, and ten such festivals were held under the banner of Sanskriti Parichay (Introducing Culture). Theme-based festivals were used as a tool for promotion and to develop new audiences, including children and youth in schools and colleges who were sensitized to their cultural heritage of traditional arts and crafts, while exchange and collaboration were taken up with Patachitra painters. The folk theatre artists acquired new knowledge on social communication, linking up with NGOs and district administration agencies for various awareness campaigns. National festivals were held at the important urban centres of Delhi, Goa, Bangalore and Chennai. The artists through the project gained the much needed confidence and exposure that a set of enhanced skills and capabilities can bring to their lives.

Case Study 2: Ethnomagic Going Global Supported by European Union

The SGSY project received a much needed boost when the European Union came forward to support the initiative adding to and formalizing the beneficial programmes of training and capacity building between 2009 and 2011. Researchers, tourists, academics and others started to travel to the villages to interact directly with the artists. With festivals at different cities, new local and international linkages started

to grow. The international festival Sufi Sutra started in Kolkata which linked the Baul (Sufi musicians of Bengal) to global Sufi musicians. The festival has been renamed and is currently referred to as Sur Jahan (Music of the World).

As part of the EU project folk art centres were developed in Gorbhanga (Fakiri village) and at Pingla (Patachitra village), together with the documentation of the art forms. Financial support from the European Union contributed towards the enhanced and holistic development of the artists through the provision of health insurance for the artists and their family members; the creation of folk art resource centres as seats of learning, practice and dissemination; the facilitation of intercultural dialogue; and action research on the development of cultural heritage tourism.

Case Study 3: JEEViKA Supported by the Bihar Rural Livelihood Promotion Society: 2011–2013

The Bihar Rural Livelihood Promotion Society under the Department of Rural Development, Government of Bihar, and supported by the World Bank, is implementing the Bihar Rural Livelihood Project—JEEViKA. The project is aimed at sustainable livelihood enhancement of the poorest. JEEViKA had engaged I-Land Informatics Ltd., the sister organization of Banglanatak dot com to identify and nurture culture-based livelihood opportunities through skill building and direct market linkage for 1200 beneficiaries covering 55 'Blocks'[6] across the districts of Gaya, Nalanda, Muzaffarpur, Madhubani, Khagaria, Purnea, Supaul, Saharsa and Madhepura.

The project used a two-pronged strategy of exploring and establishing newer markets for the art form as well as developing skills of the artists. The project identified the existing performing art forms in Bihar and the rural traditional folk practitioners across the nine districts referred to above. It also worked for creating market linkages for the artists through promotion and exposure, audio-visual documentation for archiving the folk heritage, establishing cultural enterprises and societies at the 'Block' level and also for capacity building activities of these societies.

The project addressed the core problems of poverty (poverty ratio in Bihar stands at—54.5% against the national average of 37.2% in 2004–2005), unmet livelihood needs and social exclusion. It was found during the baseline study that the non-farm sector is weak, and although many of the marginalized communities are rich in art and craft skills; there are no opportunities for linking these skills to the development agenda of public and private institutions. Forced or voluntary migration of people from these rural areas, resulting from for work, casteism and gender inequality, was the challenges that the baseline survey revealed. Therefore, the project focused on the empowerment of the marginalized women and youth, skilled in traditional arts and crafts, to participate in the development process by facilitating the formation of cultural enterprises at the grassroots level, thus, helping to generate economic resources and meaningful engagement with work. This exercise in new venture creation offered recognition of their skills while raising the larger community-wide aspirations for a better quality of life.

[6]Blocks are administrative divisions of a district of a particular region/province.

The interventions in Bihar covering 1200 traditional folk artists helped in improving the income of the rural artists. Around 200–300 artists are now earning on an average Rs 5000/- per month while another 300–400 of them earn about Rs 2000/- to Rs 3000/- on average. Between 30 and 40 artists are earning more than Rs 10,000/- per month. For around 30% of the beneficiaries, it is now either the primary form or an important secondary source of livelihood. There is increased dialogue and interaction between different castes. Strengthening the voice through social inclusion has resulted in better recognition of their needs by the regional administrative bodies, and investments are being made to improve the basic infrastructure, such as roads. The skills base has grown with the youth showing and actively taking an interest to learn. One of the major achievements has been inclusion of 300 more Madhubani painters[7] of Simri under the project. Opportunity to earn and exposure through participation in regional and national events have empowered women.

The artists were clubbed together to form Common Interest Groups (CIGs) comprising of 10–20 members. In total, 77 of these CIGs have been formed with 1200 beneficiaries. Basic training was provided to the artists for three months between February and April, 2012. Over a subsequent four month period, May to August 2012, the skills level of 604 artists was strengthened further with specialized training. These programmes were held on 'Lokgatha' in the districts of Nalanda, Muzzafarpur, Saharsa, Supaul and Madhepurafor tribal song and dance in Supaul, Purnia and Madhepura and in Madhubani painting at Madhubani. Additionally, 'LokGeet' training was provided to artists from the districts of Gaya, Muzaffarpur, Khagaria, Madhepura and Saharsa. The special training on 'Lokgatha' was aimed at sensitizing and building the capacity of the artists while introducing them to the theatrical aspect of the form for social communication purposes. With respect to the tribal song and dance form, the artists learnt choreography and composition involving new dance movements. The programme for 'Madhubani' painting focused on story-based painting, natural colour making, wall painting and diversified product making, and the 'LokGeet' artists were trained in presentation, musical synchronization, harmony, pitch and voice modulation. Various musical instruments were given to 72 CIGs and 16 CIGs were provided with costumes.

As part of marketing and promotion activity, brochures were developed and distributed among Government organizations, NGOs, private organizations, event managers and other festival organizers. Urban focused festivals were held at the cities of Kolkata, Goa, Patna and Bodhgaya, while village festivals at Dhamdaha, Purnea attracted large audiences. These events provided new fodder for connections with other groups of artists, musicians, organizations and markets.

The artists have acquired much needed confidence and earned a high level of exposure to perform on bigger stages. This exposure has helped the artists to think of different formats for presenting their art form. As a mark of improvement in gender equality, women tribal singers and dancers are now able to move out of their village to perform in alternative and mixed audiences. The consequent media attention and

[7]Madhubani painting is a form of traditional Indian painting that originated in the Mithila region of Bihar. It is essentially a ritualistic painting form which has diversified over the years.

support have facilitated the further promotion of the artists. Marginalized communities now perform as artists in numerous festival programmes across the state of Bihar and in various other parts of the country.

Case Study 4: Revival of Madhubani Painting Supported by Planning Commission and US Department of State: 2011–2012

The revival of the acclaimed art form, Madhubani painting, was another project implemented by AFL, in the Madhubani district of Bihar. The project was supported by the Planning Commission of India, and the art form selected was Madhubani painting. Madhubani is an age-old tradition of the Mithila region where the women paint on walls and floors of their house as part of various social and religious rituals. To help revive, this traditional art form a series of action components were taken to explore useful ways of developing creative skills together as well as with improved business skills. Eight senior Madhubani painters (Gurus) and their assistants were involved in conjunction with contemporary visual artists, new media and design specialists.

In total, 282 artists were trained in the four month period on basic skills building. Beginner and practising mid-level artists learned the techniques of line drawing, colouring, natural colour making combination, finishing, the creation of diversified products using painting on paper, textiles, wood, tin and bamboo, alongside lessons in the history and themes of Mithila painting. The Gurus took the trainees to Rajnagar heritage house to learn different motifs from the architecture of the building. The programme also covered trainings on social and environmental issues, and communications orientation activities helping the artists to use their art as a tool for social communication. Two hundred and forty-eight artists have been trained to make stationary, utility and decorative products with Madhubani painting and these products have been market tested through exhibitions at Goa, Patna, Delhi and Kolkata, places to which the artists travelled to exhibit their work.

An innovative approach to skills and learning incorporated the 'Theatre in Development' (TiD) methodology to facilitate experiential learning. Workshops using TiD targeted building self-esteem, communication, observation and leadership skills. Learning how to identify an opportunity for and managing the enterprise formation and development process were added to the overall developmental and training agenda. The artists were also exposed to the nuances of running a business, pricing products and approaching clients.

The project reached a climax in the three day long Madhubani festival held at Simri, Rajnagar. The project outcomes were assessed through participatory evaluation at the end of each action and also through an end line study. All the artists referred to their acquisition of new knowledge, ideas and skills. They mentioned learning about art history, mythological tales, painting on new themes addressing social issues and making natural colour. They now see a future career as professional artists with a complementary acumen in knowledge of making marketable products, an ability to price products and the openness to work as a team. Eighty-three percent of the artists indicated that they were now painting on new themes and that their styles have changed, thanks to the training and learning programme. Sixty percent

of them pointed to greater levels of social consciousness as they have learned how to draw and paint on social subjects. About 76% of this community confirmed that they were using natural colour to paint, while 51% had said they have gained from better awareness of the fundamentals of product development and business practice, such as pricing. The action research project has helped to evolve a standard methodology of training which can be suitably applied to artists at various skill levels, and overall the project has created. The action has resulted in a pool of skilled young men and women who are looking forward to earning from their painting skills.

Case Study 5: Rural Craft Hub Project Supported by UNESCO and Dept. of MSME&T, Govt. of West Bengal: 2013–2016

The Rural Craft Hub (RCH) project applied AFL through which 3000 artist families in 11 locations of West Bengal were identified, mobilized and capacitated for creating 10 Handicraft Hubs; for accessing the global/national market and for catering to market trends and demands.

AFL established and developed artists' information database and strengthened access to information on the artist communities with the help of information and communication technology. Input was provided to the State Government for developing policy for MSME&T through building of evidence and data on socio-economic situation of artists.

The project took a holistic and inclusive approach from the very inception. Detailed studies were carried out on the various craft traditions, while identifying the common high grounds. The uniqueness of each such tradition helped to, develop a bespoke, multi-pronged approach that would seek to establish the artist communities as the custodians of their traditions, empowering them to act as 'force multipliers' at the very grassroots level. Accordingly, various operational areas were identified where the traditional skills were professionalized without compromising the core artistic traditions. This was done with the express intention of aligning these age-old traditions with the needs of varied consumers of art, with due respect for the dynamism of the respective markets. The first task involved the revitalization of the dying traditions with the acknowledged masters passing on their skills to the next generation of artists. Products that were diversified to meet the demands of the emerging markets and production processes were streamlined taking into consideration both the general concerns around durability and more specific ones such as the use of eco-friendly inputs. Newer designs, in keeping with the trends of the times were combined with the traditional core design elements allowing for the honing of new and combinatory skills sets enriching the repertoire of artists while ensuring quality and increasing their productive outputs.

Eighty design skill building and production development workshops that included over four hundred days of training were rolled out under the tutelage of skilled artists and designers, followed by focused tutoring of others in product development processes. Over two thousand craftspersons were supported by these skills building programmes. Experts from Indian Institute of Craft and Design, National Institute of Fashion Technology, Kala Bhavan, Government Art College Kolkata, esteemed institutions of art, led the programme together with master crafts people.

One highlight of the RCH project was access to entitlement, which included:

- Awareness of entitlement under various Government and Bank schemes which are linked to schemes for craft and enterprise development. All the artists in the hubs have Artisan Cards and more than 200 artists have EM-II registration.[8]
- Working capital support and infrastructure improvement facilitated by. WBKVIB that supported establishing 'common facility' centres at the Ghughumari, Coochbehar (Sitalpati Hub), Kushmandi, Dakshin Dinajpur (Wooden Mask Hub), Natungram, Bardhaman(Wooden Doll Hub), Bikna, Bankura and Dariyapur, Bardhaman (Dokra Hub), Pingla, Paschim Medinipur (Patachitra Hub), Charida, Purulia (Chau Mask Hub), Panchmura, Bankura (Teracotta Hub), Nanoor, Birbhum (Kantha Hub).

With the basics in place, artists were encouraged to form collectives that could access institutional financial support and help achieve economies of scale. This shift—from the individual to the co-operative, collaborative mode was a tectonic shift in the history of the traditional art forms and the mode of work of artists. It was this sense of collective synergy in the production of art and in the use of art as a means of livelihood that enabled artists to make a huge leap forward, from the seemingly entrenched lives at the far edges of poverty, apathy and illiteracy. Formal organization brought about greater bargaining power, helped to prevent exploitation by third parties and opened up possibilities of collaborative production. It introduced specialization through the division of labour and made access to institutional credit easier as the group could provide necessary collaterals that individuals could not muster. The groups began to access various governmental schemes supporting market linkages and promotion, credit facilities and health insurance. The art forms of Sitalpati, Wooden Mask, Dokra, Patachitra and Wooden Doll have all been certified by Craftmark.[9] GI[10] has been received by Patachitra, Madur, Chau Mask, Dokra, Wooden Mask and Terracotta.

The creation of Folk Art Centres has provided the necessary infrastructure for the arts to flourish through the provision of spaces for work, training, storage and exhibition. They house the tools, and equipments aiding the creative processes. The centres act as information hubs showcasing the process of craft making and exemplary work of the artists, which are displayed in the community museum, engendering

[8]Entrepreneurs Memorandum, Part-II (EM-II) is a scheme under the Micro, Small Medium Enterprises Act, 2006 which facilitates the promotion and development and enhances the competitiveness of micro, small and medium enterprises in India.

[9]Established in 2006, the Craftmark is a market—led certification for genuine Indian hand-crafted products produced in a socially responsible manner. It develops sector-wide, process-specific standards and norms for labelling a product as hand-made and increases consumer awareness of distinct handicraft traditions. Under this initiative, AIACA licenses the Craftmark seal to artisan organisations, craft-based businesses, cooperatives and NGOs for use on their products.

[10]A geographical indication (GI) is a name or sign used on certain products which corresponds to a specific geographical location or origin (e.g., a town, region or country). This act is administered by Controller General of Patents, Designs and Trademarks of India.

collective pride in the communities and strengthening their identities as artists and creative entrepreneurs.

Heritage education and promotional activities have turned the arch lights on these unsung heroes who are stretching the horizons of development through their creativity. The artists and craftspeople have been taken to different parts of the country to create higher levels of awareness and forge links with new markets. Twenty six artists have travelled to the USA, UK, France, Taiwan and Bahrain, and six hundred and ninety seven artists have participated in craft expositions across India, in the cities of Kolkata, Delhi, Mumbai, Pune, Goa, Bangalore, Chennai, Bilaspur, Lucknow and Kanpur. Exposure has led to greater understanding of market needs leading to the orientation of product diversification and better realization of the value of the artists' work. National and international visits have, in particular, emboldened the female artists and producers. With the fostering of business contacts helping to improve the overall process of marketing, all the hubs now enjoy direct market linkage with premier boutiques and e-retail businesses like Novica, Jaypore and others. Linkages have also been established with large retailers like Fabindia, Sasha, Byloom, Biswa Bangla, Heart for Art and Manjusha.

Case Study 6: Rural Craft and Cultural Hub (RCCH) Initiative Supported by UNESCO and Dept. of MSME&T, Govt. of West Bengal: 2016–2019

Building on the success of the RCH project (Case Study 5), and its external evaluation, the RCCH project included 12,000 beneficiaries. Work also began with 8000 beneficiaries, supported by WBKVIB, on the use of natural fibres from the state of West Bengal. The RCCH project, which included both the performing arts and crafts, started with the objective of developing a vibrant creative sector in West Bengal by protecting, professionalizing and valorizing the traditional skills of rural handicraft artists for improved viability and cultural sustainability of their work and the products they made. Again, capacity building and market linkages were facilitated in order to create better awareness and encourage promotion of traditional handicrafts and performing arts of West Bengal. A Heritage Education Programme was organized across one hundred and seventeen schools in the districts of Coochbehar, Dakshin Dinajpur, Bardhaman, Bankura, Paschim Medinipur, Jhargram and South 24 Parganas. A total of 14,893 students attended the programme and around 30 village festivals (of 3 days duration for each of them) were organized in the artists' villages to celebrate the vibrant cultural traditions of their communities. The artists and the artists' collectives took active part in the arrangements for these festivals working on temporary stalls, on stage, arranging for guest accommodation, organizing demonstration workshops for visitors and holding cultural programmes. Three graphic novels on Chau, Raibenshe and Puppetry were written and published.

Chau, Baul-Fakiri, Raibenshe, Jhumur, Bhawaiya and Bhatiyali[11] artists performed in these festivals together with international teams from different nations.

[11]Purulia Chau is an acrobatic mask dance theatre based on mythological tales performed in the villages of Purulia. Baul-Fakiri is the Sufi genre of music from eastern part of India. Raibenshe is a traditional warrior dance combining acrobatic movements and balancing tricks performed in Murshidabad district. Jhumur is an oral music tradition of the tribal communities of Purulia

Among the latter group mention can be made of, for example, Duo Fatale from Switzerland who performed in the Sunderban Folk Festival and the Bhawaiya Festival, TitaNzebi from France who played at the Mukha Mela in Kushmandi and the Dokra Mela in Bikna, Madagan from Northern Ireland and Bololipsum a digital storyteller from France who were engaged in the Puppetry Festival, Albaluna from Portugal performing at the Darjeeling Folk Festival, Milli Janatkova from the Czech Republic participating at the Patachitra Festival, Pot Maya (2018) and Baul-Fakiri Mela and Itai Armon and team who performed in the Baul-Fakiri Mela.

Seventeen CDs documenting the ICH of the Hill communities of Darjeeling were released at the Darjeeling-Kalimpong Folk festival by the District Magistrate and community leaders. Six music albums with 46 songs by 16 folk singers have now been recorded and published, and all the CDs have been widely circulated among the artist communities as well as music lovers as promotional tools.

Digital technologies are being used to promote the creative enterprise. A music app titled Folks of Bengal has been launched with a repository of more than 1100 songs by Baul, Bhawaiya, Bhatiyali, Jhumur and urban folk musicians. Another app titled 'Unique Bengal' has been launched to kindle interest about the cultural heritage of West Bengal among students and youth. A website www.rcchbengal.com has been developed to promote the rural art and crafts of Bengal and a second website www.naturallybengal.com has also been launched to share the stories of empowerment.

The aforementioned website http://marketplace.rcchbengal.com/ connects the visitors directly to the artists and their creations. The handicraft products are categorized as décor, apparel, lifestyle, jewellery and stationery in the form of catalogues. One can also view the products of the hubs and find information about the artists. A comprehensive audio-visual documentation of the hubs has also been completed.

Opportunities for performance and showcasing in international fairs and festivals were provided to 31 handicraft and performing artists. A 4 member Baul team and one Patachitra artist attended the Copenhagen World Music Festival, a 3 member team comprising of Shola, Patachitra and Baul artists took part in the 'Transform Festival', at Trondheim in Norway, while a separate invitation saw folk artists and a 2 member Chau team performing during October, 2018. The Alliance Armour Dupleix Inde festival in France invited a 2 member Baul team to perform at their event, while a 3 member Baul team visited Hungary to take part in the Salfoldi Dalfold Festival during July, 2018. A further mixed group of 9 members comprising of 3 Baul artists, 1 Patachitra artist and 5 Chau artists went to participate in the India Summer Days Festival in Karlsruhe in Germany. The Urkult Festival in Sweden invited the Bauls of Bengal to perform in August, 2018 and one Patachitra artist and 2 Baul artists travelled to perform at the prestigious Smithsonian Folk Life Festival in the USA. A renowned Patachitra artist, Swarna Chitrakar, was invited to the UNESCO General Assembly during November 2017.

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and Bankura districts. Bhawaiya is a music genre of North Bengal and north-eastern Bangladesh traditionally sung by the Rajbanshi community. Bhatiyali is the music of the mystic river themed on the lives of the boatmen.

The artists expressed their gratitude for holding the workshops and articulated the need for more by way of such engagements on a regular basis and over longer periods to help them evolve as professional artists. The 'Gurus were particularly pleased with the outcome of the workshops and the overall quality of the participants. They emphasized the importance of continuity and creating a Bhawaiya learning framework. However, both the participants and the Gurus agreed that more work needs to take place to improve the knowledge of the participants about the lyrics and for them to develop techniques and style, for example, a better sense of rhythm. The Gurus also noted that there was neither any dearth of songs in their repertoire nor any lack of potential among the participants.

Exposure and interaction helped the folk artists to understand the dynamics of culture, place and society in different environments. They gained confidence and a better understanding of their own cultural context and how to innovate in their own spaces and in alternative ones outside their arenas of comfort. These productive outcomes were achieved through constant exchange and exposure to diverse cultural traditions. They were deemed to have become 'artistic' in the modern sense. The Chau dancers, for example, developed productions based on the works of Shakespeare and Tagore. The Patachitra painters painted scrolls about the 2004 tsunami disaster in India and other Asian countries, and about the aftermath of the 9/11 terrorist act. Folk instrument players collaborated with jazz musicians. They created a folk orchestra that appealed to urban youth who would not normally listen to traditional music. The involvement of the established Gurus among the folk artists at all stages ensured that such creative interventions did not jeopardize the integrity of the art forms. The result was the creation of an organic and growth-oriented process, where the art forms and the artistic communities, through strategic intervention and resources, are encouraged to evolve and flow, while retaining the traditional elements of their art and craft. The establishment of community resource centres and the organization of village festivals constituted a particularly important component of marketing, promotion and sales. The idea was to bring urban audiences to the villages, in addition to sending rural artists to attend urban markets. Thus, cultural tourism to the villages has slowly emerged as a major outcome of the AFL project.

Traditional 'cultural projects', focusing on academic research, documentation and the promotion of intangible heritage through subsidized events, have their own merit, but they are also responsible for making culture a rarefied commodity, unable to survive without government subsidy. This elitist approach to culture, which tends to treat the livelihood issues of artists only marginally, has failed to locate culture in the development agenda. Making traditional art a livelihood option is one way to demonstrate the value of culture in development and offer an alternative way for culture to survive through both the economic and the social market places.

6 The Living, Breathing Art Forms and Their Transformation

The six case studies above are an illustration of the varied projects, and the experiences of the artist beneficiaries and the range of stakeholders who were involved with them under the auspices of different sponsors. Crucially, they provide rich insights into the complex but high rewarding arrangements centred round the mix of different art forms, the blend of art and commerce, and the negotiation of personal, artistic, institutional and market spaces, enabled by the entrepreneurial project management capabilities of Banglanatak dot com. At the centre of Banglanatak dot com's work was the identification of creative opportunities, the generation of new ideas and cultural value, the mobilization of multiple resources, the networks of local and international stakeholders, and the design and implementation of particular plans of action to realize entrepreneurial outcomes.

For these AFL projects, the artists and the creative industries were not enough to achieve entrepreneurial capabilities alone. What mattered is the protection and rejuvenation of the cultural heritage in which they and their art forms are steeped. So the key question was about the evolution of the community of artists and their art forms, alongside their sustainability. In the section that follows I present vignettes of the success stories of the evolution of three of the art forms: Patachitra, Chau and Baul-Fakiri and the changing lives of the communities. In each case, the AFL interventions resulted in the socio-economic empowerment of the artists and revitalization of the art forms. After elucidating the summary of the project's impacts, I will consider some of the issues raised in the course of work with the communities.

6.1 Patachitra

Patachitra, a unique visual art form from the Medinipur region of West Bengal, constitutes painted stories on long scrolls of paper. The artists (known as patuas or chitrakars) sing the stories as they unfurl the scrolls. The Patuas are painters, lyricists, performers and singers all in one. In common with many other folk art traditions, Patachitra is passed on from generation to generation. There were 64 families of Patachitra artists in Pingla, all of whom were living in an impoverished state back in 2004. In 2018, their income has increased from 8–10 Euros per month in 2004 to an average of 100 Euros per month. Forty percent of these artists are earning about 200–250 Euros per month. Many have learned spoken English so that they are able to tell their stories to a wide range of audience. The Patuas now have sanitary facilities at home, and many now live in concrete houses.

The first-ever Patachitra fair was held in the artists' own village in November, 2010. It is now a regular event with visitors from across the world coming to see their scroll painting techniques and to learn how they produce the natural pigments used for painting. The Patachitra artists have now also exhibited their work in the

UK, France, Sweden, China, USA, Taiwan, Denmark, Germany, Lithuania, Norway and Japan. The village has been transformed with a three-storied Folk Art Centre that includes a community museum, which the artists maintain themselves. Both the Folk Art Centre and the village itself are now kept clean and well-maintained offering new opportunities for the development of cultural tour is attracting hundreds of visitors each year.

6.2 Chau

Purulia Chau is a subgenre of the wider Chau dance tradition, which is popular throughout the Chotanagpur Plateau region of Eastern India and was inscribed in UNESCO's Representative List of the Intangible Cultural Heritage of Humanity in 2010. It is a vigorous form of martial dance and drama involving rhythmic drumming, acrobatic movements and somersaults. In the Purulia Chau tradition, the dancers wear remarkable masks and brightly coloured ornamented costumes. While the spectacle of the dance made Chau an extremely popular art form, there were only a few regular groups in Purulia, when the AFL project started. Many of the groups were in a moribund state. No regular practice took place and artists assembled only when the group leader received invitations to perform. The Chau artists of Purulia were daily wage earners, sharecroppers or bidi[12] binders. Many lived in abject poverty or migrated to other districts and regions to find work. The common experience was the suffering caused by poor health which meant that many of the artists were too weak to perform the vigorous dance movements. The illiterate artists were also exploited by event organizers who doled out only small payments for their performances. In their day-to-day struggle for life, scores of them had stopped practicing their Chau dance. The knowledge of Chau dance, music and mask-making traditions are transmitted from one generation to the other and with the passing away of Gurus, particular dancing styles, music, and the nuances of mask making were almost lost. Before the AFL interventions took place, Purulia Chau productions lacked variety and were often considered to be monotonous, without the necessary appeal to contemporary audiences.

After nearly 15 years of participating in the AFL project, which involved training, organization and mobilization, the number of regular and formally organized Chau dance groups now exceeds 150. Previously, the groups were formed on an ad hoc basis receiving modest or poor remuneration for the performances. Over time, with sustained effort at reclaiming both the artistry and the capabilities for renewal, their average fee per show increased from 30 Euros in 2004 to 500 Euros in 2018. Acclaimed groups now earn between 800 and 1000 Euros per show when performing in a big city. While in 2005, there were, on average, ten to twelve shows per year, in 2018, leading groups were able to organize in excess of 150 shows. When the project

[12]Bidi is a thin cigarette or mini-cigar filled with tobacco flake and commonly wrapped in a Tendu leaf tied with a string or adhesive at one end.

started none of the dancers had electricity in their homes. Now approximately 90% of the Chau group members enjoy the benefits of electricity at home. People who hardly had any livelihood options for six to nine months of the year, especially during the dry summer seasons, and were forced to migrate to hustle for a bare minimum by way of a wage, are now earning their living as dancers. They are innovating in their new productions, practicing and reviving the old dance steps which were nearly lost by then, and reviving forms of musical support to help strengthen the dance form.

6.3 Baul-Fakir

Baul-Fakirs are minstrels who sing about love and devotion to people, the eternal life and being, earth and the life beyond the limitations of mortality. Their philosophy emerged in the seventeenth century. In a society stifled with superstitions, caste divisions, religious intolerance and malpractices, Bauls and Fakirs sang about humanism and brotherhood and celebrations of life and nature. While the art form has achieved popularity at an international level (it was inscribed in 2008 on the Representative List of the Intangible Cultural Heritage of Humanity; originally proclaimed in 2005), the large majority of practitioners went without recognition and had won little respect from the organizers of shows or even their audiences. A lack of opportunity for improving skills had marred quality, and amateurish attempts to rejuvenate the tradition, such as singing too loudly into microphones or using pre-recorded tracks produced on synthesizers, did little to improve its reputation.

Through participation in AFL projects, the Baul-Fakiri musicians from the Nadia district of West Bengal now enjoy recognition as genuine artists. Their income per show has increased from less than 10 Euros to 100–400 Euros, and the number of shows they perform each year has increased from 8–10 in 2005 to over 100 in the second decade of the twenty-first century. The artists have even participated in the 2010 feature film by the acclaimed film director, Goutam Ghosh, *Moner Manush*, a biopic on Lalan Shah, one of the exponents of the Baul-Fakiri tradition in Bengal. Television channels now regularly broadcast Baul-Fakiri music. Many of them have toured countries in Europe, USA and Asia multiple times.

Equally important is the enhanced social status of Baul-Fakiri performers. The singers have been traditionally the target of mistrust and harassment from mainstream orthodox society. Children of Baul-Fakirs were often not allowed to enter school by conservative villagers. As the popularity of their music has grown since the AFL project interventions, Baul-Fakiri musicians have now acquired a new identity. As income opportunities improved, the confidence of folk artists has increased with many of them earning widespread public respect. This encouraged the artists to integrate better in society and take a legitimate and meaningful part in the development process of their habitats.

Baul-Fakiri music of Bengal has many variants including Bangla Qawwali, a genre influenced by Sufism. This particular genre was nearly lost by the end of the twentieth century. With documentation initiatives starting in 2005, Bangla Qawwali

was revived with now a growing number of practitioners. Another outcome was the revival of the traditional Akhras (space for the Bauls and Fakirs to practise music) where Bauls and Fakirs came together to learn and play music while master artists taught and groomed young talents in classical Guru–shishya parampara (master–disciple) method of learning. This was a significant development because the Fakirs, in the past, were forced to abandon the Akhra system because of stiff opposition from the orthodox section of their society. Today, Baul-Fakiri music is enjoying considerable attention, especially among young people, and several artists perform regularly at international events. Not only do the young practitioners learn their music from their Gurus, they acquired a good grasp over the underlying meaning and philosophy behind the singing tradition of Baul-Fakiri music.

After observing the project for 6 years, Moe Chiba Head Culture Unit, UNESCO Delhi confirmed that using the traditional artistic and creative skills of people as a source of livelihood is a viable development model for rural India. She concluded that the success of the project was due to its holistic approach that combined knowledge, attitude and practices (KAP) baseline study, capacity building, and a sustained effort at creating direct market opportunities and connections for the artists. She went on to note that the methodology had the potential for replication in other parts of India. Crucially, it demonstrated that investing in culture could be an essential tool for rural development, income generation, improved living conditions and an enhanced attitude towards participation in the wider economic and social development process. Of equal importance is the enhanced social status of the folk artists.

7 Legacy and Learning Issues and Challenges Arising from the AFL Project

Despite the successful outcomes discussed above, Banglanatak dot com was confronted with a number of challenges in implementing the program. Some of the more significant issues are discussed below.

7.1 Mobilizing the Folk Artists to Practice Their Art as a Livelihood

Traditionally, artistic performance has not been considered as an appropriate source of income for rural communities. The AFL project, therefore, had to develop understanding among communities about the possibility of using their artistic skills as a means of income generation. This necessitated mobilizing changes in the mindsets and attitudes of the folk artists so that they could take up the envisaged role of ‘cultural service providers’ or ‘cultural entrepreneurs’. Skill transmission workshops

have supported mobilizing the participation and interest of artists towards imbibing a new set of values for their lives as functioning artists and citizens.

Rural artists are mostly uneducated; very few have completed school level education or been to college. This lack of education makes it difficult to make them understand the changing and complex scenario of art and heritage, especially in terms of a presence of a large market for their products and services out there.

Lack of awareness/capacity to effectively understand and leverage the digital shift and its impact on business models is a major challenge when working with rural communities. The artists require skill development for the professionalization of the culture sector which in turn necessitates training for administrative and financial management, business skills, and managing community-based institutions.

7.2 Dealing with Divisions Within the Community and Ensuring Benefits for All

The opportunities for income developed through AFL have led to a growing number of young people to pursue their art forms as livelihood options. The empowerment of women was another key outcome with the project offering opportunities to women artists to play an active role. Sixty percent of the 28,000 artist families with whom we have worked to date are women.

A major challenge was that of addressing the disparity of livelihood opportunities within the folk artist communities. Not all the groups are equally talented or commercially successful; some gain greater levels of market exposure. Income disparity between the artist communities and the non-artist population living in the same village needed to be resolved. Networking and promotional activities have resulted in sustained linkages to organizers of fairs and festivals at local, national and international levels. Effort is being made to promote the villages of folk artists as destinations for cultural and educational tourism and locations to experience folk cultures. This approach of bringing urban audiences to the villages has an advantage of giving market exposure to a larger group of artists in comparison with conventional marketing strategies, which usually consist of sending rural artists to urban markets, supporting only a limited number of beneficiaries. Generally, the development of village tourism or folk festivals centred on traditional community celebrations results in overall local economic improvement. Villagers, other than the artists are able to generate income by providing tourism services such as selling local crafts and other products. Widespread exposure through travel and extended reach to different communities has also resulted in improved awareness of the value of education and good hygiene.

Sur Jahan, our World Peace Music Festival, which carries the slogan, ‘Music for Peace, Music for All’, marked its tenth edition in Kolkata in February 2020. The event offers an urban space and a global platform for Bengal’s rural musicians, performers and handicraft artists. Here, they get to showcase their talent, watch

and work with artists from outside their state and country, and engage in building networks with creative communities from across the world. Singers and musicians from 32 countries and 12 states of India have participated in Sur Jahan till now. Hundreds of rural handicraft artists participate in every edition of the festival. Over 200 rural artists have travelled to cities in Europe, America and other parts of Asia to participate in festivals and workshops over the last few years.

7.3 Commoditization and Market

By making traditional art skills a source of income generation, questions have been raised from anthropologists and historians about the danger of 'commoditization' and the alteration of art forms for the sake of commercialization. While these are valid concerns, it can also be argued that these cultural traditions will not survive unless the practitioners can make a sustainable living by using their own skills. Culture, after all, is not a static concept but has always had to adapt to changing contexts. A key strategy of the project was to facilitate the exchange of ideas between traditional and contemporary artists (national as well as international). This exposure resulted in innovation by the folk artists themselves: Bauls and Fakirs are now sharing the platform with international musicians; Chau dance adapts their production duration according to the audience; and Patachitra artists are doing installation arts in contemporary world events using their visual narratives. Bengal Patachitra in Medinipur has been awarded with the geographical indication status along with 5 other art forms, and 8 more in process.

Experiencing and working with other cultures and art forms empower tradition bearers of local arts with new skills and networks. It creates new avenues for intangible cultural heritage to flourish. Art residencies and workshops show how art helps artists and others to transcend barriers of language. Collaboration supports new innovations. Facilitation of creative interactions between folk artists, craftspersons, contemporary musicians, theatre directors, choreographers and designers, provides opportunities for a better understanding of the dynamics of culture, place and society in different environments. The creative minds also become confident and gain from an increased ability to valorize their own cultural context and ways to innovate. Further, greater recognition and opportunity to travel and interact with other artists at national and international level attracts and engages younger generations in safeguarding their heritage.

Direct market linkage is a key strategy for sustaining and augmenting viability of the art forms. The Art for Life model works at three levels—artist, art and village. Over time, villages, where folk artists, craftsmen and weavers reside, have emerged as vibrant cultural hubs. Folk Art Centres and community museums at these places are now centres of practice and promotion of the art forms. Village festivals are being used to create new contexts for performance and groom new audiences. Artist villages have emerged as local growth poles and destinations for Heritage Education and

Cultural Tourism. UNWTO has documented this model of developing community-based cultural tourism in artist villages as 'Good Practice for promoting Responsible Tourism'. There are now nearly 20 village festivals in West Bengal and the number of tourists visiting the villages of Patachitra scroll painters and Dokra metal, for example, has increased from zero in 2004 to more than 1000 per month—a matter of both envy and inspiration for similar rural artists' clusters.

8 In Conclusion: Mainstreaming Art and Culture into Governmental Development Agendas

In India, art, culture and heritage are often overlooked in the government's development policies. There is a general perception that art and culture is the sole domain of the Ministry of Culture, thus dissociating them from other areas of governance. Indeed, official cultural policy in India remains largely elitist, and culture is mainly left to be studied by academics and admired by the cognoscenti and aspirational socialites. The compartmentalized way in which government departments operate is not conducive to mainstreaming culture in the development sector. In the country's National Skill Development Policy, for instance, traditional artistic skills are usually not considered as employable skills and are, therefore, excluded from national skills development initiatives. The national census does not have a category to recognize people with specific artistic skills. Much advocacy is required to sensitize government departments to the possibilities of using the artistic and cultural skills of people as means to attain development objectives. There is lack of awareness on UNESCO Conventions 2003 or 2005 and role of culture in sustainable development among Government functionaries, related stake holders, among the mass and even policy makers. This leads to problems of cultural governance and the lack of an appropriate policy framework for supporting creative entrepreneurship and cultural industries, governance for distribution of digital content and transfer of value to artists. Lack of research and collaboration between the academic community, statistical organizations and the creative sector, leading to a shortage of evidence and data, is a major threat to the protection or promotion of traditional art. The absence of institutional insight support and expertise in the field of cultural developments, the relatively poor standard of cultural education and the dearth of legal and institutional frameworks for the valuation of professionals employed in creative industries are all good reasons for the establishment of pronounced public policies for the promotion of creative industries as a basis for sustainable development.

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Case 3: Looking Back in History for a Culture of the Future

Renji George Amballoor

1 The Ethnographic Entrepreneur

Victor Hugo Gomes
***Goa Chitra Museum*, *Benaulim*, *Goa*.**

Along with your growth, create opportunities also for others to grow because growing together is fun.

1.1 The Making of the Artist as Entrepreneur

Victor is the 'museum man' behind the establishment of *Goa Chitra*, *Goa Chakra* and *Goa Cruti*—three museums dedicated to the arts and history of Goa. Victor spent his early childhood mostly with his grandmother because his mother was the busy matron of Hospicio hospital in Goa. Even though his grandmother was blind, she regaled little Victor with bedtime stories about the state, its people, history, culture, tradition and livelihood. The grandmother's personal account of the historical and cultural wonders of Goa kindled in him the need for restoration and conservation of age-old wisdom, a concept which, by all accounts, local society had branded as crazy during the earlier days.

During his school holidays, Victor used to visit the houses of relatives, when the entire family was enjoying their afternoon siesta, donning thick glass spectacles, Victor would visit storerooms and climb the loft of the house and collect old bottles, speakers, amplifier valves, empty powder tins and anything else he could pick from the treasure trove of discarded items. After his grandmother's death, her room became a gallery for his collections.

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By the time, he passed out from *Goa College of Art*, he was disappointed at the speed with which destruction of the old processes, systems and structures were taking place in Goa. As a mark of protest, he decided to leave the state for Delhi with a vow not to come back. At that time, he was awarded the prestigious national award for painting and was posted with a scholarship at the *Lucknow College of Arts and Crafts* as a visiting faculty. Despite the upsetting levels of crime and violence in the city, Victor used the opportunity to learn the techniques of restoration and conservation of art from the Indian National Trust for Art and Cultural Heritage (INTACH) Centre.

The sale of wonderful antiquities from the Nawabi families of Lucknow on Tuesday and Friday markets in the city shocked him. But he took the opportunity to purchase small items depending on his budget. Once, on a market day, he fell in love with a wooden cart displayed for sale, the price tag for which was Rs 75,000. He had only Rs 3000/- in his valet. Besotted with his love for local antiques and determined to preserve history, Victor decided to buy the wooden cart, by paying a token amount of Rs 3000/- and guaranteeing to pay the balance amount once he returned to Goa. Faith, belief and trust prevailed and it took him 20 long years to settle the transaction. Although he received the cart in 400 broken pieces he restored it using his memory of the principal asset.

1.2 Waking Up from a Dream

In one of his dreams, he came across a child who questioned him about what was going on in Goa. It was a time when the local society and economy were undergoing rapid changes as reflected, among other things, in the pattern of land use, the neglect of ancestral homes, and the widespread disposal of family relics at throw away prices. The impact of the dream on Victor was very powerful and he decided to return to Goa.

He was shocked to see his childhood collection missing from his grandmother's room. His parents had thrown away the discarded items that he had collected so painstakingly, while cleaning the room. Instead of moping over this loss, he steadfastly made up his mind once again to start the drive for collecting artefacts.

On returning to Goa in 1991, he was appointed as the curator of the *Museum of Christian Art* set up at the Rachol Seminary which allowed him to have a first-hand exposure to Goan objet d'art. Due to compatibility issues, he resigned in 1994 and continued with the old hobby of collecting traditional pots, equipment, carriages, musical instruments, furniture, agricultural implements, etc. many times, even by selling parts of the family property. The collection grew thick and fast because when he was taking up restoration work, it was easy to buy the abandoned traditional articles from ancestral homes.

1.3 The Art of Collecting

In order to collect materials for his museum, he researched and documented the local fishing and the farming communities and the different traditional occupations of Goa. He could identify and showcase four different ploughs and thirteen different types of soil in Goa. He sold all his vehicles and purchased a pick-up truck and started roaming in it throughout Goa to collect the discarded, neglected and dilapidated relics and antiquities with which he could recreate and celebrate Goan history and culture. The local villagers and his friends, however, did not savour his predilection, his hobby, and his philosophy. But Victor was not swayed by what people thought or commented on. Cultivating an indifference he was neither dejected nor depressed with their attitude. Instead, he becomes a voracious collector. Dr. Aldina, a faculty in Psychology and his life partner understood that Victor was a multi-talented personality and firmly stood by him in all his ups and downs on this journey of collection and eventual curation.

Victor tried his hand, in event management and advertising in order to raise capital for his collection. He played a vital role in organizing the *Arlem* and S*ea Food Festivals*. He patronized the *Goa Revival Music* concerts for revenue generation. Today, a major part of his funding is raised through *Goa Chitra Music Club* membership and concerts.

1.4 Curating the Museums

The *Goa Chitra Museum,* which boasts a large collection of over 4000 artefacts—focusing on Goa's traditional agrarian technology and lifestyle was opened to the public in 2009. Visitors started flocking to see the collection only through word of mouth. Maintaining an independently owned museum without any government funding during the early days proved to be a herculean task, but help came from different and unexpected quarters. Most of the family wealth was diverted for creating, collecting, expanding and sustaining the museum, a decision for which he has no regrets, while Victor was remained very cautious and selective about accepting sponsorships.

According to Victor, a museum should display vintage items which will echo the cultural vibrations of the local community and region, rather than keep fancy aesthetic artefacts from alien provinces, which does not arouse any nostalgic feeling. His revolutionary thinking helped *Goa Chitra* to empower the new generation to appreciate the rich culture, science and practices of Golden Goa.

In spite of all the financial bottlenecks, Victor diversified into *Goa Chakra* in 2015, a museum of more than seventy conventional wheeled carts and carriages to depict the history of humankind through developments in the transport sector. Following that, in 2016, he added *Goa Cruti*—a museum which sketches the colonial history of

Goa through antiquities of crockery, household furniture and cutlery, religious and related objects, as a tribute to local craftsmanship.

The three museums depict 1500 years of history of humanity in a very lucid and simple way to every of his four lakh visitors. His greatest achievement has been to assign a cultural value to items of daily use, for a society, which is ignorant about many of his displays. The story illustrated by his museum is highly impressive and more enlightening than hundreds of books of history, art and antiques put together. The long queue of visitors from the early part of the day, paying the entry fee of INR 300/- is a testimony to the value for money provided by the museum. Today, this museum may be the only one which is completely owned and financed by an individual.

1.5 The Cultural Entrepreneurial Objective

Achieving the goal through determination has been his modus operandi for success. The local quidnuncs continued to disparage his endeavour, but Victor was not bogged down by the flow of comments and counter comments. As a cultural entrepreneur, he developed a high degree of forbearance to wait for long years to make the museum a reality. According to him, finance should not constraint any entrepreneurial activities. Once a society is convinced about the sincerity and genuineness of the project, funds will not be an issue. The small state of Goa is replete with entrepreneurial opportunities and Victor believes that in order to take advantage of emerging situations, the youth needs to think differently and work consistently towards accomplishing it. Looking back at history and carving out new pathways to discover, treasure, curate and showcase living art based on everyday objects us as much a growth story of an entrepreneur, as is the search for new technologies, new products and new services for the future. This, as Victor suggests, requires clarity of thought and stamina over time, and much of what people could achieve can be done through with others, their history and culture.

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From a One-Man Consultancy to a Global Business Empire Connecting Back Home: The Case of Purico Limited

Sarika Pruthi

1 Introduction

There is an extensive literature on immigrant entrepreneurs in developed host countries (Ram and Jones 2008; Kloosterman and Rath 2003). Recent immigrant entrepreneurship research has also explored the entry of immigrant entrepreneurs into their home country (Chung and Tung 2013; Mustafa and Chen 2010). However, the international growth and expansion of ethnic minority businesses (EMBs) outside of their host country is relatively little researched. The aim of this chapter is to chart the process of founding and growing EMBs outside their host country, including the link with the entrepreneurs' home country.

Ethnic business research in the UK has emphasized the importance of, and motivations for, business start-up (Metcalf et al. 1996; Ram and Jones 1998). However, there is an ongoing debate about whether an ethnic group's cultural predilections or nature of external environment play a primary role in the initial move to self-employment (Ram 1994). Whereas on the one hand, cultural factors including family provide the inspiration to start-up, on the other hand, founders' human and social capital derived from their social ties, as well as the nature of the external institutional context in which they are embedded, are influential. Foreign market entry of small firms with an established history of growth and survival has been explored in the internationalization literature; however, the stages model is criticized for not fully capturing the complexities of internationalization, especially for resource-constrained small firms (Coviello and Munro 1997). Unlike in large, established firms, founders' strategic motivations and network resources play a key role in foreign market entry. Also of importance in the international growth trajectory of immigrant entrepreneurs is

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entry into their home country (Chung and Tung 2013). Diaspora entrepreneurs are important sources of capital and innovation for many developing countries (Riddle and Brinkerhoff 2011). They emerge as agents for institutional development and reform in their countries of origin, especially in a situation of relatively thin institutional support for entrepreneurial activity. Yet, their entry into the home country or the nature of engagement in their home country, in the context of their overall international growth, is less understood.

There are more than quarter million EMBs in the UK, which contribute at least 15 b pounds to the UK economy per year (Ram and Jones 2008). In England alone, EMBs made up 5.8% of small- and medium-sized enterprises (SMEs). There is growing evidence that migrant-owned entrepreneurial firms are contributing to a 'globalization from below' in the UK (McEwan et al. 2005). Those entering the founders' home countries are credited for the development of indigenous entrepreneurship through the introduction of new markets, and marketing and distribution skills at home (Filtatotchev et al. 2007; Wright et al. 2008). Yet, although the number of initiatives directed at EMBs is growing, their effectiveness in promoting 'upward mobility' is open to question. An understanding of the founding and international growth of EMBs, and the nature of their link with the founders' home country, may be important to understanding the potential contribution of EMBs, especially in view of policy initiatives advocating the need for them to encounter racism and move 'up market' (Ram 1994; Ram and Jones 2008). Therefore, I explore the following issues in this chapter: *What are the motivations for the founding of EMBs? How and why do immigrant founders grow and expand their businesses outside of their host country? What is the nature of immigrant founders' engagement with their home country and why?*

These issues are explored through the case of one of the biggest private family enterprises, founded by an Indian immigrant entrepreneur, in the UK. Among the five largest ethnic minority groups, Indians have established a remarkable number of independent businesses in the UK since the 1970s (Bachkaniwala et al. 2001; Basu 1998; Ram and Jones 2008). Studies have also highlighted the potential contribution of Indian migrant entrepreneurs to the development of entrepreneurship in India (Khanna and Palepu 1997; Lorenzen and Mudambi 2013). The involvement of UK-based Indian owner-founders in India may manifest itself in the form of establishment of local subsidiaries or investment in indigenous enterprises in India (Saxenian 2002, 2005). Yet, UK research on EMBs has been heavily preoccupied with explaining the extraordinary business presence of ethnic communities originating in India (Ram and Jones 2008). The international growth and expansion of Indian EMBs remains unexplored. In a scenario where the British government is actively supporting the entry of UK-based EMBs in India (Mc Ewan et al. 2005), an understanding of their international growth trajectory, especially in relation to their home country, may help re-direct policy attention for the development of entrepreneurship in India (Goldfarb and Henrekson 2003; Saxenian 2005).

This chapter makes two contributions. First, it contributes to the EMB literature. Much of the immigrant entrepreneurship literature is based on owner-founders that integrate with their host country (Bagwell 2007). More recent studies explore the

return of migrant entrepreneurs to their home country as returnees (Pruthi 2014; Wadhwa et al. 2011) or transnationals that simultaneously create a venture in their host and home countries (Pruthi and Wright 2017). In exploring the international growth and expansion of an EMB outside of its host country, this chapter extends this literature. Second, in focusing on a UK-based EMB's links with India, this chapter also extends the international entrepreneurship (IE) literature. An understanding of entrepreneurship in emerging economies is limited despite their growing prominence in the global economy (Kiss et al. 2012). India is one of the most important emerging players in the world economic arena, yet, studies on India in the IE literature are few, mainly comparative in nature and on topics such as start-up feasibility, innovation policy or venture capital.

The structure of the chapter is as follows. Section 2 reviews the literature on Asian EMBs in the UK, followed by theoretical explanations for ethnic enterprise in Sect. 3, and a review of the foreign market entry literature in Sect. 4. The methodology is outlined in Sect. 5, followed by key findings in Sects. 6, 7 and 8, and a discussion of these findings in Sect. 9. Finally, Sect. 10 concludes.

2 Asian EMBs in the UK

Compared with the average for the British population, a relatively high percentage of Asians in the UK are self-employed with employees of their own. Although there was a small Asian community in the UK prior to the Second World War, large-scale migration from the Indian subcontinent, and later from East Africa, did not occur until the 1970s, with many migrants arriving as refugees (Janjuha-Jivraj and Woods 2002). On entering Britain, the working environment and wider discriminatory attitudes meant that highly skilled jobs matching their qualifications and experience were not open to Asian migrants (Metcalf et al. 1996). By the end of the 1980s, Asians owned nearly two-thirds of Britain's independent retail outlets (Basu 1998).

South Asian participation in EMBs has significant implications for the creation of employment and wealth in the British economy. The 2011 UK Census recorded the South Asian population (Indian, Pakistani and Bangladeshi ethnicities) as 3,078,374 or 4.9% of the country's total population, excluding other Asian groups and people of mixed ethnicity. South Asians are said to contribute between 6 and 10% to the British GDP. The average ratio of employers (self-employed with employees) to the economically active population for South Asians is 7.21% compared with 3.89% for the British population (Ram and Jones 2008). This comparison suggests a South Asian business owner is nearly twice as likely to be an employer than their average British counterpart. Even at the time of rapid self-employment, South Asians stood far above the national average (Curran and Burrows 1988).

The pattern of EMBs in the UK is heavily skewed toward labor-intensive activities, and there are little more than a comparatively small minority of firms in the high value-added sectors (Ram and Jones 2008). The rationale for the better-rewarded sectors of activity depends on the substitution of capital for labor, and capital is

heavily rationed for minorities. There is growing evidence, however, that EMBs in the UK are beginning to move into higher value-added sectors such as computer manufacture and software design, IT consultancy, private healthcare, financial services and fashion design (Deakins et al. 2007; Ram et al. 2002). Here, instead of working long, entrepreneurs are working smart. Yet, evidence about the prevalence of Asian EMBs relative to other minority groups in non-local sectors is mixed. According to some studies (e.g., Ram et al. 2002), Africans and African Caribbeans are better represented in innovative sectors compared to South Asians. Data from the Labor Force Surveys for 1988–90 show that 62% of self-employed Indians in the UK are in the traditional sectors like grocery stores and newsagent, compared with only 53% of white population (Ram and Jones 2008). Other evidence (e.g., Smallbone et al. 2007) finds that Asian firms show a higher propensity to generate sales from non-local markets such as manufacturing and professional services. Smallbone et al. (2007) identify the distinct contribution of Asians in the cultural industries. Impressively high levels of human capital in the form of educational qualifications are also being felt among Indians on the enterprise front (Ram and Jones 2008).

3 EMBs and the Business Entry Decision

Three explanations for the emergence of ethnic enterprise are advanced in the immigrant entrepreneurship literature. The cultural perspective suggests that some ethnic groups have a cultural propensity toward entrepreneurship (Basu 1998). Distinctive cultural values and attributes such as thrift, close family and religious ties, and trust, explain the relative representation, and success of some, especially Asian, ethnic groups in business. The cultural perspective originates in Bonacich's (1973) concept of middleman minorities, which suggests that migrant entrepreneurs regard themselves as sojourners or temporary migrants and remain outsiders in relation to the host society by residing in self-segregated neighborhoods, relying on their own ethnic community for mutual support and resources.

Several researchers, including Waldinger et al. (1990) have emphasized the importance of internal, family resources in the establishment, development and competitive advantage of EMBs. Typically, EMBs are partnerships of husbands and wives, fathers and sons or cousins that dominate key positions. Compared to the general business population where family members' involvement varies with the stage of business (Greve and Salaff 2003), close family and community ties are a source of self-reliance and industriousness for EMBs (Ram 1994). Family is an important factor in the motivation to start-up, with owner-founders often following their fathers into business. Additionally, strong family structures in many ethnic groups facilitate access to resources such as capital, cheap labor, and free information and advice, especially in families with professionally trained members.

At the same time, however, the family network itself is not an unqualified resource for EMBs. Strong ties based on family are unable to offer useful information as weak ties. Dependence on family restricts the network from which entrepreneurs

seek a wide range of complementary resources, and limits access to information and advice, which can inhibit innovation (Bagwell 2007). The strength of family networks may also prevent founders from bringing in new, and possibly more innovative, ideas and management practices, or entering other, more profitable areas. Often, recommendations to appoint outsider professional managers are ignored to avoid displacements of incumbent family members; recruitment is confined to operations and administration. Further, there may be a conflict in core values and aspirations between different generations (Bachkaniwala et al. 2001). Whereas the first founding generation may be more concerned with economic mobility and ethnic heritage of the home country than with social status, the second generation may be assimilated into the host country's culture.

Family can also not be totally separated from an unfavorable opportunity structure in the wider labor market. In contrast with the cultural perspective, the reaction model contends that ethnic minorities are pushed into self-employment. The decision to establish small businesses is a reaction to discrimination in the labor market or a 'damage limitation' exercise to avoid unemployment. In the 1970s, for instance, Asian migrants were left with a choice of being either unemployed or self-employed due to contracting job markets in the UK (Basu 1998). They were able to rebuild their lives and regain the social status they had previously experienced in their home country, through self-employment. They were also able to distance themselves from a racist environment by creating their own working environments (Ram et al. 2002).

A third explanation for ethnic enterprise is that many of the values and behavior that are presented as products of a South Asian business culture are better seen as products of a small business class culture (Ram and Jones 2008). The greater the opportunities and resources available to EEs, the more likely they are to venture into a business. Ethnicity offers unique business opportunities such as demand for ethnic goods and labor-intensive services, or existence of unattractive or neglected markets in industries facing unstable market conditions (Waldinger et al. 1990). EEs' knowledge of the needs of their ethnic community puts them in a position of competitive advantage and provides them with a starting niche (Ram 1994). Compared to the mainstream population, dense social networks in Asian communities are sources of tangible and intangible resources including finance, customers and information that enable exploitation of these opportunities (Janjuha-Jivraj 2003). Only a small proportion of EMBs rely on conventional or formal marketing techniques such as cold calling, advertising and exhibitions. EEs often get into their particular market by taking advantage of informal contacts and word of mouth, building on contacts initially developed by the family or being approached by agents (Ram 1994).

At the same time, however, although important for explaining the trajectory of EMBs, social networks of EEs must be set against the broader institutional context in which they operate (Kloosterman and Rath 2003; Ram 1994). Migrant entrepreneurs' use of ethnic ties depends on the opportunities (or challenges) they face, their ethnic group characteristics and historical circumstances (Waldinger et al. 1990). Ethnic ties lower transaction costs arising from difficulties in securing finance or market information from mainstream sources, thus influencing business strategies. Often, social networks represent a means of negotiating racism rather than a positive strategic

choice on the part of small firm owners. Human capital can also substitute for the lack of social capital (Davidson and Honig 2003). Entrepreneurs with demonstrable business and managerial skills have minimal reliance on social capital in establishing their firms. Push factors are much less important for Indians, for example, that are more highly educated than other Asian communities in the UK, and tend to invest their own capital at start-up (Basu 1998). Education provides entrepreneurs with a wide range of resources, and more likely access to outside consultants and professional advisors for the business (Light 1984), especially in skilled services. Education also enhances entrepreneurs' analytical capabilities, which has a radical impact on business expansion. Likewise, previous experience, and a perception of the business being relatively easy to enter and operate gained from family and community in the same line of business, influences the type of business chosen.

4 EMBs and Foreign Market Entry

According to the stages model, firms' entry into foreign markets follows a staged development sequence (Johansson and Vahlne 1990). Firms start internationalization with markets that are most easily understood and where perceived uncertainty is low, venturing only at a later stage into new markets with successively greater psychic distance. The commitment of resources to a chosen foreign market is also incremental, based on successively greater foreign market knowledge and learning. However, a key criticism of the stages model is that it does not take into account the role of network relationships or strategic decision-making (Andersson 1993) of owner-founders. According to social network theory (Filatotchev et al. 2007), foreign market entry is a function of ongoing interactions between key decision-makers and their social networks (Reuber and Fisher 1997). Existing (Ellis 2000) or new connections (Loane and Bell 2006) at home (Harris and Wheeler 2005) or abroad (Crick and Spence 2005) enable new ventures to rapidly internationalize and display a variety of entry modes (Oviatt and McDougall 2005). Social networks also provide resources (Coviello and Cox 2006) such as foreign market information and experiential knowledge, business contacts and local sales and distribution channels (Tang 2011). Decision-makers' personal contacts can initiate passive or reactive entry where they follow their informal relationships to foreign markets. Alternatively, they seek opportunities or develop new networks for entry into foreign markets (Loane and Bell 2006; Oviatt and McDougall 2005).

Strategic reasons also influence the decision to enter psychically distant markets (Ojala 2009). In many cases, knowledge-intensive firms enter psychically distant markets to reach markets for their niche products or needs of clients rather than because of their networks (Bell 1995; Coviello and Munro 1995, 2006). Often, mediated relationships with government-based non-profit consulting organizations are critical for FME, especially for firms that do not have any existing formal or informal relationships. Thereafter, they start to develop new relationships or utilize

existing relationships to achieve market entry. Product strategy and requirements of customer support impact entry mode selection in high-technology industries.

A recent stream of literature (e.g., Chung and Tung 2013; Rauch and Trindade 2002; Zaheer et al. 2009) investigates ethnic entrepreneurs' (EEs') entry into their home country. EEs' motivation to enter the home country is often complex and may involve pecuniary and non-pecuniary investment reasons, including feelings of duty and obligation to contribute to their country of origin. They may set up manufacturing facilities or service operations in their country of origin, producing goods for local, and/or export sale, or establish subsidiaries for businesses based in other countries (Riddle and Brinkerhoff 2011). Although they possess unique market and operational knowledge of the home country, EEs may face a steep learning curve, especially if they have lived outside the country of origin for a long time and visit only occasionally because of stark differences in institutional contexts across developed and developing markets (Khanna and Palepu 1997; Kiss et al. 2012). Formed on the basis of shared ethnicity, ethnic ties enable EEs to engage in high resource commitments at home in such a situation (Saxenian 2002, 2005). Ethnic ties are particularly useful for conducting business in home countries with volatile political and legal environments where social ties can substitute for the lack of institutionalized law (Rauch and Trindade 2002). Whereas on the one hand, EEs may leverage strong ties of family and friends to motivate entry into the home country (Chung and Tung 2013); on the other hand, they may need to build and exploit dramatically different types of ties outside of their immediate network for access to a more diverse range of resources (Greve and Salaff 2003). Although studies have examined the entry of immigrant firms into the decision-makers' home country, founders' motivations or international growth process of their firms are less understood.

5 Methodology

A case study approach was adopted to yield in-depth insights about the motivations, founding and growth of EMBs (Eisenhardt 1989; Yin 1994). The case of Purico Limited (henceforth referred to as Purico), a diversified, paper and plastics, multi-national enterprise headquartered in Nottingham (UK), and founded by Nathu (Nat) Puri, an entrepreneur of Indian origin, was selected. Nat migrated to the UK in 1975 after obtaining a degree in engineering in India. Starting from humble beginnings, Nat has grown his business to span three continents, USA, UK and Asia, in multiple industries including automotive, construction, health & leisure, investments, paper and real estate (Purico Group). Purico is one of the biggest family enterprises in the UK. At the time of research, Purico had a presence in the USA, Germany, Russia, Hungary, China, Indonesia, Hong Kong and Mexico.

Influenced by the example of his late father, Munna Lal Puri, a banker who helped the poor in his home country, India, Nat is exemplary because of his philanthropic activities both in the UK and India: "…quite early on I found that just working for money would make me mad, so I had to have some other reason" [Nat Puri, Founder,

Purico Group]. In 1988, Nat set up the Puri Foundation, a charitable trust in the UK, with an initial donation of £1 million. He also strongly supports the cause of education. He donated £1 million to London South Bank University to launch the Institute for Engineering and Enterprise in the UK. More recently, the Puri Foundation created an Engineering Centre at Top Valley School in Nottingham, in partnership with Toyota, to provide training and education to young apprentices in the county. Nat has made generous donations to the University of Nottingham, where he set up a scholarship fund to commemorate the role of his alumni institution in his own professional development in the UK. He is recipient of the title of Special Professor at Nottingham University Business School, University of Nottingham (UK). Back in India, he has won several prestigious awards including the 'Pravasi Bharatiya Samman' (in honor of exemplary non-resident Indians) from the President of India (Table 1).

The case of Purico was also selected because of job opportunities created for family within the enterprise. Nat has employed family members to manage many of his acquisitions. The founder, Nat, and his close relative, Anil, the other active family member in the business almost since inception, were interviewed. The involvement of two generations was ideal to examining the role and influence of family, and their attitudes toward the business (Janjuha-Jivraj and Woods 2002). Nat was identified through BIBF (British India Business Forum), a networking organization for Indian entrepreneurs in the UK. As a privileged member of BIBF, Nat granted an interview upon the exclusive request of a gatekeeper at this organization. He introduced his nephew, Anil, on the day of the interview meeting, and both individuals reflected on

Table 1 Nat Puri's Awards

Year	Award	Information Source
2015	Pravasi Bharatiya Samman by the President of India	History. (n.d.). Retrieved March 21, 2017 from https://www.purico.co.uk/history
2015	The ACU Symons Award 2015 for contributions to higher education	Retrieved March 21, 2017 from https://www.acu.ac.uk/news/view?id=124
2015	Commander of the Most Excellent Order of the British Empire (CBE)	Retrieved March 21, 2017 from https://www.newasianpost.com/indian-gymkhana-club-lauds-professor-nathu-ram-puri-cbe/
2004	Hindu Forum of Britain's Award for Excellence in Community Service	Retrieved March 21, 2017 from Purico Group: https://www.gicn.in/person/nathu-ram-puri/
No Date	Special Professor, Nottingham Business School, University	Retrieved March 21, 2017 from Purico Group:
Found	of Nottingham	https://www.gicn.in/person/nathu-ram-puri/

their respective roles in the business. Semi-structured, in-depth face-to-face interviews (Yin 1994) were conducted with both Nat and Anil at the Purico headquarters in Nottingham in February 2013. Both meetings were held on the same day. First, Nat was interviewed, followed by Anil. The interviews lasted approximately 90 and 60 min, respectively. A brief interview guide was developed and self-administered to the two individuals during the interviews in order for them to provide background information about themselves and guide the overall direction of the interviews. Both Nat and Anil were probed about the founding and growth of the business, and their respective roles in the business. They were also asked about their link with India. Nat and Anil allowed the interviews to be audio recorded. The interviews yielded 40 running pages of transcripts.

Stand-alone cases for each individual were developed based on the transcription of the interviews. These transcripts were then read to triangulate the information obtained from the two primary sources. Insights from Anil's interview were also used to elaborate on the information provided by Nat. Additionally, information from various secondary sources, such as company reports and Web sites (including the Purico Group website), and press releases where available, was used to complement the insights obtained from the interviews and corroborate the primary data to ensure internal validity of the findings. Nat and Anil were 75 and 44 years old, respectively, at the time of interview. Both lived in the UK and traveled to India and other parts of the world. Key insights from the case are presented in Sects. 6, 7 and 8.

6 Humble Beginnings: Migration from India and the Foray into Entrepreneurship

Nat was born in Punjab, India, where he earned a degree in engineering. While at University, he worked as a truck driver in his hometown, Chandigarh, to help repay one of his father's loans. Nat migrated to the UK to study engineering at age 27 and earned a one-year diploma from the College of Heating, Ventilating, Refrigeration and Fan Engineering at the London South Bank University (previously called the National College of London) (London South Bank University). Upon completing the diploma, he moved to Nottingham to acquire professional experience. He obtained a job as intermediate engineer at what was called F G Skerritt Ltd. at the time of this research. At first, the job was a 'struggle' due to his lack of background in contracting. However, in due time, his weakness became a strength as his business acumen started to uncover. Nat returned to India briefly in January of 1969, only to be recalled to the UK at a higher salary because of his successful contribution to the company.

Nat's entrepreneurial journey began in 1975 after a 'disagreement' with the owners of Skerritt. Co-workers at Skerritt were also resentful of Nat's rapid climb to a managerial position. He left the company with a month's salary, starting his own 'one-man consultancy' on August 1, 1975. He had been married for a year at that

time. His wife, who was in India, joined him in the UK. When he first began, Nat's main clients were in the public sector. As a consultant, he helped build schools and hospitals, and develop public works in the UK. He found his first client when the Royal National Orthopedic Hospital in London called upon him regarding a 'difficult' job of installing air-conditioning units in operating theaters on one of their top floors in the unusually hot summer of 1975. In a situation where none of the big consulting firms wanted to take up the assignment for fear of losing their reputation, Nat took up the challenge and successfully completed the assignment in a short span of time:

> And suddenly one day I got a call that in London they're, Royal National Orthopedic hospital they wanted me to come and meet with them, and…I wasn't a consultant at that time but they asked me if I would like to be consultant…In 75 that was a very hot summer, they wanted, they weren't able to use operating theatres which were on the top floor and they needed air conditioning. Now to do air conditioning you've got to get all kinds of things, in there, and build a plant room on top of the existing building and, get it done before the summer when you're, being asked in February, its impossible. And two days later I told him yes, they said yes you have got the job can you get it done. So I become a consultant. And from there the job, because it was, turned down by, big consultancy firms in London. [Nat]

Nat recalled how the task seemed 'impossible' at first given his circumstances and resource constraints as a new, sole business owner with no employees. He even found it difficult to charge customers or pay his employees due to inexperience. Eventually, he was able to 'get things done' due to 'contacts' established through a prior job in contracting.

> You know I was paying, and the first job I didn't know how to charge because I was totally new, I made a loss. But my reputation was very high…but because I was in contracting before, I was able to use my contacts to get things done. [Nat]

Also important were his business acumen and 'jugaad' ('an innovative adjustment'; used to describe a smart alternative for a problematic situation, as for example, limited resources). For example, he frequently provided solutions to the Royal Air Force (RAF) in Britain without disrupting their functions during the period of service repair and maintenance. This method of accomplishment brought more customers to his door and, as it was unprecedented at that time, soon became popular as his unique selling point. Nat rapidly serviced a total of 30 RAF stations, an unmatched number at that time.

> …I was very good at what I did. I worked on lots of RAF stations doing difficult jobs and err, doing them in a way that it didn't disrupt the working of the RAF stations. That made me very popular with the people. Because I was able to do things which nobody had done before. It's erring, Indian, way because you've got to find a way because you don't have all the things. Here people had all the things so they did normal things. I was used to, get, find a solution. And I would find solutions. [Nat]

Slowly, Nat earned a solid reputation for his work, and gained customers based on word of mouth. As a result, he worked on seven of 12 postgraduate teaching hospitals at the time:

> Yeah they're knocking on my door, I never contacted anybody. They came to know from other people, word of mouth…..we have got this done, somebody say how? Then I worked on

> Royal National Throat Nose and Ear hospital, Royal Marsden, Royal, and Moseley hospital, both of them… the other Royal National Orthopedic hospital, one or two others. I worked on seven of the 12 postgraduate teaching hospitals. [Nat]

In 1984, Nat engaged two of his nephews (brother's sons) in the business in USA and India, respectively. He invited a third nephew, Anil, to join him in the UK. Anil's younger brother, who was already in the UK, had passed away after meeting with an accident. Anil studied business at college in India and, armed with this knowledge, started a small factory in his hometown. Unfortunately, his business venture did not work out, forcing him to take up full-time employment with an Indian company. Although successful in his career, he moved to the UK when Nat provided an opportunity for him to join the business:

> He's my, Uncle. 'Chacha' [father's younger brother]. We are four brothers, one's passed away three years ago. They [other three brothers] are not involved in this business here, one is in US one is in India looking after our charity projects in India. The one in the US has his own business in US and some group affairs. [Anil]

According to Nat, he invited Anil to join the business 'like everyone else'. However, in Anil's view, Nat presented him with an opportunity based on his potential contribution to the business. At first, it was difficult for Anil to contribute to the business because of differences in culture and work ethics between the UK and India:

> Yes he [Anil]'s my nephew. And I brought him here and he's been good….motivation was that I'll get him here just as a family member like everybody does. And you know he came, his younger brother was, youngest brother was already here as a student. And my sister's son was here as a student, he came afterwards…I'd already done in to manufacturing and he came in late 84 I think. [Nat]
>
> …I suspect the founder of the business who brought me here must have also felt there's some material that that would benefit the business as well, so it's a combined effect of those two. But then I came here, to the UK in 1984 and then there's been a journey of many different industries. Well early days, you come from a country, you can't make much of a contribution because you're learning first of all. It's a different culture, different style of working even, the work ethics, the time keeping and all of that is completely different so that's a big learning curve. But my first job was one of the stores that we had, they were loss making and turned them around and managed to do that. And we sold them off because that was not our business really. [Anil]

7 Growth and Diversification: Strategies and Challenges

At the time of research, Purico had a presence in Hungary, UK, Mexico, Germany, China and Russia. The firm had previously entered Malaysia and Poland. Nat explained his strategy of acquiring low-performing businesses and turning them into profitable entities. He had followed this strategy since inception. Eight years into his entrepreneurial venture in 1983, he believed a 'reasonable way to expand the business would be to buy Skerritt, his former employer. He targeted Skerritt as he could not afford to buy profit-making businesses, and bought the company after convincing his bank to loan him money:

> But I don't think I bought any business, which was making any animated profits. I couldn't afford to buy profit-making businesses because that would cost lot. And so my principle was if I can't improve it I shouldn't buy it. Because if it is not, can't be improved then I'm sitting at the top of a, I pay top price for a business which is not going to get better. I have no exit. It's not that I want to sell it, I've got to get my money back and it doesn't come cheap. [Nat]

Skerritt functioned under Melton Medes Ltd., Nat's holding company, which later went on to become Purico. This takeover marked the beginning of what was to become a global business empire (The Davidson Interview, Nat Puri). Nat searched for attractive businesses through newspapers and narrowed down potential prospects based on in-depth research:

> No, you would look initially you start looking in the papers if there is anything for sale. There is always lots of businesses for sale, you will which looks interesting….I looked at lots of companies if you like, a partner, 100 companies details, get, 90 of them you say they're no good, after 10 you spend a bit more time, and 5 go out in this second phase and then after 5 you negotiate and you buy 2, or 3. So that's the sort of thing you have got to go through loads of paper work. [Nat]

In 1984, Nat acquired a total of four businesses. After the first acquisition, he began buying businesses in industries that were different from his own. The purchase of the first manufacturing business, a small automotive-parts business with one and a half million turnover in Bolton (UK), was an accident. Nat had little knowledge of manufacturing when he decided to proceed with the purchase following a chance visit to the broker. As an experienced consultant, he was able to take an outsider's perspective and view the need for change for what he perceived was a potentially profitable business. He turned the business around very quickly, and, in the process, purchased another business to obtain equipment and fulfill purchase orders for the new acquisition. A year later, he built a new factory next to the small business.

> And then by accident I agreed to buy the first manufacturing business in October, I hadn't gone there to buy it. In November. In Bolton. And err, it wasn't something which I knew much about manufacturing but having looked around and it was [a] very small business but, one and a half million turn over, breaking even, employing 200 people at that time. And I thought if it can break even with this mess I'm sure I can do better with it, that's it. So I had just gone to visit and broker said he hasn't been able to get anybody interested even to visit the company. So could you go. [Nat]

The first international entry in 1985 happened when Nat chanced upon an automotive company, Bolta Bundle GmbH, in Germany. He acquired the business and optimized resources such as energy and space, and more efficiently run the production line through automation. As a result, he was able to grow the business from 402 to 1000 employees, creating a new market in substituting plastic for metal in auto parts, and the business that was previously suffering losses started experiencing profitable operations within twelve months of acquisition. Bolta Bundle GmbH eventually joined Purico in 1991.

> I bought it yeah…and they had owned it from 1970 to 1985 and they sold it to me they never made a profit and we've been about 12 months we started making profits. So as you do with these things you find, small things you learn on the job you know. Oh this works that doesn't

> work you know and make it more efficient like I did in Bolton. Change a little bit. And I understood then, find ways of saving energy, then you learn that, a first step was it is more efficient if there was more space. Then you say, you've got to have a, correct way to run the product, you know like production line. And that helped and so you, as you go along you may, learning on the job but err, new things are becoming more important. Initially it was just energy then it was production line, you know, how it is produced. Then automation. [Nat]

The opportunity in Germany led to another opportunity in plastics and construction in Hungary around 1989, and paper mills in other parts of the world. In Anil's words, Purico was an 'opportunistic house' that aggressively searched for opportunities in different industries in various parts of the world:

> We acquired our first business in Germany in about 86-87 maybe about 88 something in that nature. We bought a business in the US, that company, happened to have another business in Germany they wanted to sell. We wanted to acquire that. Its just one of our bigger businesses. And then from one of the German businesses, and that was a reasonable experience for us, it was fairly small but we managed to turn them around, they were profitable. From there we got an opportunity from one of the German businesses to invest in Hungary, and we started Hungary in about 89-90. And that was quite a successful experience and a positive experience for us…..We're an opportunistic house, that's what we call ourselves, we're opportunistic business house and we will look at opportunities anywhere. [Anil]

Both Nat and Anil believed they were continuing to grow internationally due to customer demand for their products. They sought to both manufacture and sell in the countries they entered, taking a long-term view to developing the business and serving their target markets. Their future plans included setting up three new factories in the USA, China and India, respectively. Both concurred on their customer-driven motivations to enter USA and establish a manufacturing presence to service customer needs:

> Customers ask us, Mexico is a good example of it, customer said we need a facility in Mexico the first one in Hungary was a different staff altogether. Mexico was driven by another customer - we like your facility, we like your quality, we like your service, we like your product, we really want you to supply us in Mexico. So we set up a plant there, which we did, err, China was a similar story. Whereby we were supplying nearly 50% of our products in to China. And the Chinese government said please help us to set up this industry within China which we did. I believe we were the second by day to sign up first to, really apply and produce the goods within China of that standard and international quality. And the fact is today that China is one of the biggest producers of those products in the globe today. [Nat]

> Our decisions are not cost structured, because that will not solve the problem alone. Once again we are different, in the sense that if you take China as an example, it is a normal thought that China is a cost, driven exercise, in order for that to work it is also export based. So you manufacture in China, to export out of China, where as our business model was to manufacture within China for consumption in China. We believed that we were better served by targeting our sales and our growth through that channel, within growth within China. And that was the right decision to take. If you take the example of Mexico it is the same that it is for consumption for domestic needs within Mexico. It was never meant to be a replacement capacity for our German business, it was meant to be additional capacity and for the Mexican market to our standards out of Germany. [Anil]

According to Nat, being an entrepreneur was tedious. Other than personal duties, it was compulsory to watch over, and take responsibility of, employees. Competing

against already established businesses in several different industries, and setting up operations in foreign countries, was also daunting. The high resource commitment in different countries also made it difficult to relocate quickly. Nat had adopted a 'devolved' organization structure to manage his international operations. Each business was a limited company with its own board of directors. Nat explained that he delegated responsibility right from the time he bought his first company. He hired a manager to oversee his first acquisition in Bolton while he himself lived in Nottingham. He had continued to follow this approach in the growth of his business over the years. He did not involve himself in day-to-day operations each time he bought a business. Instead, he delegated responsibility to free himself up for 'other things,' mainly searching for other businesses. He also avoided traveling to his international subsidiaries unless it was absolutely necessary:

> I was starting up, luckily after I bought a business I didn't get involved myself in to the business, because the company was already running. I didn't think it was a very good idea I should go there. So I brought in somebody else to look after the business, and that was it. And so it left me free to do other things. And doing other things meant looking at maybe I can buy some other business. So I brought in somebody who is managing director of a public company, he joined me. So it gave me the opportunity to be making policy, making deals and then handing, making decisions whether it would work for us or not and then saying okay this is the way to go forward and it will work, itself. Being able to delegate has been my strength. I've been to Germany a couple of times because err, one meeting he couldn't go, and I had said to him as we are authorizing a very large investment he should go. [Nat]

Purico is also atypical for a business house because of its organizational culture. Both Nat and Anil encouraged openness and responsibility through a flat organization structure, and gave their managers 'a lot of autonomy.' Anil emphasized that their management style was different from the centralized approach of a typical Indian business house. They recruited personnel with an understanding of various business functions, which allowed them to understand more than one line of business and more effectively perform their role:

> Our style is different, we are not a typical Indian business house. We do give our managers a lot of autonomy to work and operate, and that is the key motivator and driver for our people, and they're treated almost as if it is their business. The biggest thing they find with us is that is the openness, the responsibility that goes with it, the ability to take the decision. We don't have zillions of layers, it's a very flat organization. So connect to the top very quickly, decision-making is fast. We are different to Indian business house, where the top people sit there looking at every two-penny worth of the invoice, we don't do that, that is not our style. It is more decentralized, responsibility to the people, giving them headroom to perform. We believe that our top tiers of managers, or our general managers, managing directors of our businesses are not just industry specific. They're more rounded. So give you an example, we might have a person with an engineering background running a business, being the MD of a business, however, he would have a fairly comprehensive understanding of matters financial. And that is the big differentiator, that is what also gives them the satisfaction that we talk about. [Anil]

8 The India Connection

Nat was exceptionally committed to his home country, India. He made enormous financial contributions in India during times of need. In 2001, he donated £1 million pounds to victims of the Gujarat Earthquake (Nottingham Post). Following the calamity, he embarked on a project to bring education and medical care to the victims. He set up the Puri Foundation for Education, a registered charitable trust, responsible for educational initiatives, and the Indian Institute of Advanced Research (IIAR) in Gandhinagar, Gujarat. The Puri Foundation built houses and schools in Punjab, including Mullanpur, Nat's hometown (Charities. n.d.). The Foundation received around £250,000 a year from the Puri Foundation to run IIAR in India. In 2004, Nat set up the Three R's Education Trust to provide basic education and health care in deprived areas of India and Nepal (Charities. n.d.). At the time of research, he was developing a higher education institution in northern India to carry out research in biotechnology and genetics (Nat Puri: A Perfect Role Model. n.d.). He traveled to India, but only to visit his schools in his village in Punjab, and pursue his charitable activities:

> Social ventures, I've no business there [in India]. Non-profit, that is also my strength… "Punjab, yes. Chandigarh. And then we even built quite a few other, helped with building of other schools in the area. Erma, we have got a university now in Gujarat. So I've got some investments in India, which I did in, 80s, 87, and 87. But there is err, mainly it is more to this social side its err, once in a while I'll go and I know quite a lot of people in Delhi. [Nat]
>
> The charity that we run it is called Indian Institute of Advanced Research (IIAR) it has been going since 04. It is focused on biotech. We've got about four different faculties of bio informatics. All of these are disciplines that are not currently or at that time when we started, available within the country a total charitable project, we are not expecting any return to us, as people, as family, as businesses, it is pure charity. I spent about what is it 3 million sterling up to now. My youngest brother looks after to make sure the funds are spent correctly and then the rest is all external. [Anil]

Nat explained his previously unsuccessful attempts to do business in India. He first ventured into India in the early 90s after buying a business owned by a British company that made compressors. He injected about £700,000 into the business, followed by another £3–400,000. However, he faced a challenge when trying to set up the business in Calcutta, India. He delegated work to a member of his extended family, and his relative failed to deliver as he took his responsibility 'extremely lightly.' The company faced 'plenty of issues' in terms of 'management,' forcing him to abandon the project. In 1999, he attempted to re-enter India when he established a back office for his US-based packaging and printing manufacturing plant. The plant employed about 3–4000 people in the USA, and another 4–500 employees in their back offices in Bombay and Chennai. The decision to locate a back office in India was based on cost considerations. Establishing a local, paper and printing manufacturing plant was also seen as an import substitution opportunity for India. As Purico manufactured a grade of paper that was imported in India, the foreign investment was expected to develop the core competency of employee teams in India. He aimed to build an engineering base in India in order to develop capabilities to manufacture more

technically demanding products at a later stage. However, he decided to sell the Indian printing subsidiary to a public company in the USA.

At the time of research, Nat and Anil were considering re-entering India to set up a manufacturing plant. Mercedes Benz, BMW and Audi, two of Purico's key automobile customers that were assembling in India, were keen for Purico to set up a local manufacturing facility. According to Nat, there was a gap in the automotive sector in India that he could exploit for low-cost manufacturing for his global customers such as Benz, BMW and Audi. India was an attractive option compared to other low-cost manufacturing locations such as China where Nat was fearful of the risk of appropriation of technology because of lack of IP protection. India was a 'lot better' because 'the government did not encourage private businesses to steal.' Often, foreign firms in China were forced to find local partners, including local governments, in order to compete with local firms; however, these partners played an active part in stealing technology, eventually setting up as competitors against the very firms they partnered with:

> I think they steal technology. You cannot, whatever you do, you can't have, hide everything, there is no IP protection in China. Yes it [India] is a lot better in the sense that people who work there, in China, government encourages you to steal…lots of government companies are your competitors. You can become partner with one and that partner, when you're not there because you can't be there day and night, they'll bring them at night and they'll do pictures, videos of everything you've got so that they can copy it. [Nat]

Although positive about prospective business entry into India, both Nat and Anil were wary of potential challenges. Over the years, Nat had realized the stark conflict in cultural values between the UK and India. Both Nat and Anil were critical of the way business was carried out in India. For example, they strongly opposed bribery, a common practice in India. Anil agreed that there was a 'different type of thinking,' 'different culture of giving gifts' and 'conflicting ideas about work ethics and bureaucracy' in India:

> ....a government minister in India asked me what are you thinking?…Are you a generous person? I said yes. But not for bribing. I am a very generous person for good causes but don't give bribes. [Nat]

> Its business ethics, we will not bribe our way to anywhere, its simple. We will do the job on the value of our enterprise on the merits of our people and enterprise. We are not going to bribe our way in to any discipline, any dimension and I suspect, I don't have anything else to comment on, in my experience, but I suspect that is a key contribution in India. Well we don't wish to involve, I'm sorry its not a question of overcome, we do not wish to be involved. As a group that is our ethos, we will not bribe. That's it. No discussions. No way. [Anil]

Management issues were another reason underlying the decision to pull out of India in the past. Nat described his inability to manage operations from a distance. He felt it was not worth pursuing operations in India, a small fraction of his £200 m pound turnover in the UK due to managerial problems. He believed it was important to send trusted people from the UK to keep direct oversight and adopt a hands-on approach in India in order to be successful; locals were not necessary to navigate the

local context. It was possible to standardize procedures and communicate them from the UK:

> …we did go in to India but in India you need, your own people, or you need to be there on top. The other problem in India is that the culture was bad, we did buy Indian company and I even put a person, my brother was looking after who was okay but we got somebody else…someone who could do better buying. And he was again looking at this is my chance to make money. [Nat]
>
> It was in Calcutta and plenty of issues. And if I had bought some other business where it meant I had err, it was a small business. It's a long way to go to do things a 5 million pound business in India. It was big number in Indian terms, but it was very big in my terms. By that time we were doing £200 million pounds turn over here. Why do I want to bother about 5 million pound turn over in India and have lots of headaches. [Nat]
>
> You know, somebody was living in a house which was a company house, its err, note in my house and nobody saw the papers that it was err, its, I just got err, I had enough. I'm better off, and err, I don't own, if in India I hadn't come here I would have been as bad as anybody else in bribe. But I don't bribe anybody here, I haven't bribed anybody anywhere. I'm happy to buy people lunch or dinner something, which is common upon I think. But err, I don't want to bribe and without bribery in India you've got a hell of a lot of problems. [Nat]

Although one of his brothers managed charity at the Indian Institute of Advanced Research in India, Nat was firm he would not employ a family member to manage business operations in India. The local culture was such that employing relatives and extended family in senior positions was an expectation, yet, their contribution to the business was dismal because of poor work ethics. Locals often had their own agendas for the business. Mostly, they were interested in recruiting their own relatives for the company. His friends in India were not engaged in the business. Nat was critical of the culture of favoritism, and expectations for the business to serve the family:

> I find they have got their own agenda. The first thing they want is, I've got this nephew, I've got this son, I've got a brother, you know can he have a job? Totally wrong. Because if, he's asking you for a job means he's not very good at it. Otherwise he will already have a job. Yes, there's always a personal job. And what he wants is professional relationship and that is very difficult. There are two things that happen in India, if you don't employ relations you're a bad person, if you employ relations it is a disaster. if you look at it err, he has got a headache, wife says its okay I'll ring him he's okay. If I was working for somebody in the family I'll say I haven't got a headache, it doesn't matter, I'm committed I'm going to go. [Nat]

The culture of Union dissent was also discomforting, and 'very different' from the more regulated approach in the UK:

> In the UK, we had a strike once half day. A big company, which I bought in 1984. ....they gave notice on it, before the bank holiday strike and worked out lunchtime and we gave them a notice that they have broken agreement and that's it. And after bank holidays everybody turned up. And I don't think we've had another strike in any of our operations in UK. [Nat]

Anil added that he faced challenges in expanding Purico to India despite his prior familiarity with India, and local connections based on prior work experience:

> I worked in India for a good five years, so I had knowledge, I had contacts but I still believe it was not right for us. And I still hold an Indian passport. And despite that I believe it's a challenge. [Anil]

According to him, the 'processes and paths' in India were completely different from those in other countries like China. Unlike in other countries, it took much longer to enter India, both 'legislatively and administratively.' It was extremely challenging to obtain requisite infrastructure and permits in India compared to other countries like Hungary or China. As Purico was focused on generating jobs and boosting the focal industry in the local economies, they closely worked with, and garnered the support of, local governments in the countries they entered. The Chinese government, for example, was one of their major shareholders in China. When they first entered China, roads around the area where they were setting up their factory were not good. The Chinese government promised to rectify the situation and swiftly acted to develop local infrastructure around the factory in as little as two weeks. Local mayors of Mexico and Hungary went 'out of their way' to ensure Purico's access to adequate local facilities at the time of setting up and investing in these locations. The Hungarian government, for instance, always checked up regarding public connections and water supply.

> …when we wanted to invest in Mexico, in Hungary, in China, the local mayors of the cities, they were enablers, they were constructive in making sure that our company, wishes to invest and set up a facility in that town or city. And the mayors, the bureaucrats will go out of their way to make sure that anything that was needed, within the rules of the city, were err, a) shared and b) helped to achieve. And it was done in a very small time. So I'll give you an example, our business in Hungary, was set up and running in under sixteen months, if not about twelve months, eight to twelve months. Now in India I could not even get the, acquire the land in that period. Forget acquiring the land, constructing the buildings, investing 12 million dollars in the production line, training 200 people to do the job they're supposed to do. All of that was achieved within a time line of about twelve to fourteen months. Now in India I can't even get my head around to acquire the land for it. [Anil]

> We did we did, we looked at it in India, I personally went to India maybe 11 times talked to different potential opportunities in 2007-08. But the hurdles were too great. In the same period we were able to set up a new plant in China, whilst we have not even ended dialogue within India. So that is the difference of scale. [Anil]

Nat was wary of frequent political outbursts and civil unrest in India, problems he did not encounter in Germany. He struggled to deal with the inability of the Indian government to deal with growing corruption. The Indian government's aversion to privatization, the 'only way to increase efficiency in India,' did not bode well for the Indian economy in his view. Nat did not believe in taking 'favors' from anyone. Even though he 'knew several people' in India, he 'did not want their help' as he believed in his own merit and ability to succeed. Taking favors also came with the burden of having to return them in future:

> I don't want their help, no because that's the wrong way to look at it. They will help me, but business must stand on merit. If I succeed, I must succeed because I'm good. Not because I got a levy – then it comes to the same bribery. Its not money bribery its influence bribery. When you take favors you're expected to return favors sometime. [Nat]

Even though both Nat and Anil were positive about entering India, they aimed to first set up a plant in the USA, followed by Mexico and then India. Nat aspired to be market leader in the automotive industry, however, he did not perceive enough volume in India:

> I think we are not in to the back office side because in India, we will do some manufacturing there, but err, our aim now is to go to US and maybe from US to go to Mexico and then to go to India. In that particular business because err we want to be the number one in the world in a particular area. [Nat]
>
> We are number one for quality in the world at the moment, but not in size. It's an American company, which is biggest in the world. And we used to be number three now we are number two. Which was number two is trying to expand, so they might, reach now number three they might expand before us so they'll become number two, so it's a race going on. And we need to look at it, where we expand and where we attack and err, its err, we're being asked to go to China and we're not going to China, as a policy because err, I think err, we must, expand everywhere else before we do enter China. [Nat]

Anil agreed that India was No. 3 on their list due to lower volume requirements compared to China:

> We're always talking to people, but India would be number third on the list, US would be first, Mexico could be second, or China could be second. Because they are more volume requirements, they have a greater requirement than India. [Anil]
>
> The moment you go to India it will become India centric and everybody in India will start thinking, ask the question where you started from? Ah you're making in India, it must be cheaper than in German products, it can't be, and we don't do that. We don't do that for two reasons. If our product is to stand up to our own standards and scrutiny, it will be made in a very similar fashion. After what we do in the best of its class in the world. If you're going to follow the best practices the costs are going to be a lot lot higher. Next with that comes the other factor, which is, that in order to be best in what you do, there's going to be a lot of R&D as well. That is also cost of the business, whereas people say hey, basic labor cost there's a greater aspects to our style of thinking than what people do. [Anil]

Nat was also wary of making mistakes in his international growth trajectory. In his view, an expansion in India would have to happen from Germany to ensure quality control. Entering Germany in the past had given Purico the capability to expand into other countries such as Mexico. Their expansion into Germany had taken a long time, and it was important to avoid making those mistakes to be able to enter India:

> We'll have to send people from Germany to make sure it works, we will have some, normal people but all the technical people who understand the business, initially will have to go from Germany, we'll employ some, if you want an engineer, a mechanical engineer you'd employ one in India, if you want an electrical engineer you'd employ in India. The person who will guide them through the work he will have to be person who understands that work. Yeah and when we set up a quality control we'll have to some, train somebody so that err, nothing, which is not approved goes out of the factory. Because if you're upsetting our clients and saying if based in India, is upset the immediate, and Germany and it goes to USA and says we've got to be careful next time with these people. [Nat]
>
> We are at the thinking stage, it is an idea in the mind at the moment, that is before Mexico came, we are, being Indians we wanted to look at India. That okay starting to take off, and err, our expanse in Germany had taken longer time to commission and because when we're buying equipment with all kinds of technologies, some of it which hasn't been used before, then you've got to say, nothing, each part works on its own. It has got to work in the whole, you know, you can have a good legs, if the brain doesn't coordinate legs with your movement and thinking, nothing happens. [Nat]
>
> You don't want to go to the next one until you are finished, because, when you're having these problems you are also learning, the mistakes not to repeat. So if you're starting now,

> we might be repeating the same mistakes which we, in Germany. So we need to be careful about those things. [Nat]

Although in agreement about prospective entry into India for business, Nat and Anil differed in their views regarding their entry mode strategy in India. Nat planned to set up a Greenfield operation in order to train people and gain knowledge of local regulatory issues. However, according to Anil, there was not enough volume in India for direct investment. India ranked third in their preferences, after USA and Mexico that had higher volume requirements. Anil wanted to search for a joint venture partner, possibly an international partner, also willing to enter India. Purico already followed this model in Mexico where Nat had partnered with one of their local customers. That way they could share some risks right and then tie up with a new local partner altogether.

> Yes we are very, very advanced stage for, American plant [in India]. We already make currently in Germany and in Mexico and the next step would be same business setting up another manufacturing plant in US, possibly second one in Mexico. There's also requirement in China and in India. [Anil]

> When you're making the sort of investment we make, we need before we start 15-20 million dollars' worth of turn over. And, in India context it will be possibly higher and you need that cold value there to be able to justify your decision. [Anil]

> ....we've been talking about a joint venture (JV) in India. We have Mercedes, BMW and Audio. They're all assembling in India now, and they are looking for facility over there so that is different from a partnership. We were talking to potential partners for a JV, but for a JV to work you're aims and objectives must marry up as well. Both sides must have the same desires, same objectives, and we talked about the cultural differences, style of doing business is differently. You have to bridge those first before you can think of how to make it work. [Anil]

9 Discussion

The EMB literature suggests that racism is a significant feature of the environment in which EMBs operate (Ram 1994). Racism is all-pervasive, even beyond the business entry decision, and influences the growth trajectory of EMBs. Insights from this case show that racism at the workplace provided the push for Nat's entry into entrepreneurship. At the same time, however, self-selected goals of financial gains and independence were a pull factor. The presence of an opportunity structure in Nat's area of expertise and low start-up costs also facilitated market entry. The founders' use of informal social networks and the social capital derived from these networks provided customers and credibility in the early stages. The presence of both external push and pull factors, and role of founders' social ties, endorses the mixed embeddedness approach, where EMB outcomes result from an interplay of ethnic resources and the surrounding external environment or opportunity structure (Kloosterman and Rath 2003). Although literature has emphasized the political and economic contexts of ethnic minority entrepreneurship, empirical research on the interaction of EEs'

social capital with the broader institutional context in which they are embedded is sparse.

The case also sheds light on both positive and negative role of family in the growth of EMBs (Bagwell 2007). Nat believed in a sense of obligation to the rest of his family, employing his nephews and other relatives to manage operations both inside and outside of the UK. He brought Anil to the UK and recruited another nephew to run the US leg of the business. A third nephew managed charity, and other members of the extended family managed local operations in India. These efforts to engage the family in business are testament to the importance of cultural factors in EMBs. At the same time, however, family interference with growth and economic rationality, as in India, for instance, necessitated closure of the India office in order to avoid the business serving the family.

Prior research suggests that while there remains a tendency for EMBs to fall back on traditional sectors in which family support is more readily available, exposure to a wider network of loose ties is encouraging EMBs' entry into other businesses. More innovative businesses have a more diverse range of family ties (Bagwell 2007) and mix of strong and weak ties (Davidson and Honig 2003). This case suggests that strong family ties can exist across a wider family grouping and transcend national boundaries. Moreover, human capital originating from within transnational family ties can aid growth and diversification in non-traditional industry sectors. While Nat's background and education, aspirations and industry sector influenced growth and development of his business, close involvement and additional expertise of Anil, a single non-founding, yet focal, family member, added to Nat's human capital, further contributing to long-term growth and expansion. Therefore, for ethnic entrepreneurs (EEs) from collectivist societies, and with family links overseas, it is necessary to look at social and human capital within the extended family rather than just those of the individual entrepreneur, even if originating from a culture completely different from the host country culture (Bagwell 2007). Further research is also needed to explore the link between social and human capital in EMBs, or between the nature and involvement of family ties, and performance, of EMBs.

The case also illuminates the role of social networks in foreign market entry. Customer followership, as in Mexico and China, were important drivers of international market entry for Purico. Additionally, formal and informal relationships with host country governments in these countries facilitated international market penetration and development. Internationalizing entrepreneurs' networks are key to influencing the speed and intensity of internationalization, and hence firm performance (Oviatt and McDougall 2005). The unique transnational knowledge and social networks of EEs are increasingly recognized as vital sources of, and means to exploit, new opportunities (Riddle and Brinkerhoff 2011). However, the structure of these networks has received little research attention (Chen and Tan 2009). This case shows that although social networks are important, international expansion is an incremental process that is gradually undertaken to gain experiential knowledge through learning by doing from initial market entry, and minimize perceived risk and uncertainty of FME, prior to further international commitment. These insights are consistent with the stages model of internationalization (Johansson and Vahlne 1990).

A step-wise approach was evident even for Purico's prospective expansion into Nat's home country, India. Although both Nat and Anil played a proactive role in identifying and exploiting international growth opportunities, they did not want to enter India until after first penetrating the physically proximate German market in order to control quality and minimize the chances of making mistakes. Anil's preference for a joint venture in India is also suggestive of the desire to exercise caution and share risks with an international partner. These insights propose the need to integrate network-based theories with the stages model in small firms' internationalization. Coviello and Munro (1995, 1997) present the internationalization process of small firms in terms of (a) stages of internationalization, (b) network relationships and (c) firm characteristics over time. Both stages and network perspectives to internationalization encompass cognitive processes, with learning focused on (a) markets entered, (b) modes of entry used and (c) relationships developed during the process of internationalization. An evolution based on cognitive and competency development in which firms expand their market scope and entry methods as decision-makers gain confidence and learn from personal experience is also consistent with the role of the founder in identifying and exploiting international growth opportunities in the stages model. As the Asian family business community in the UK is heterogeneous in terms of sectors, education and culture, further research on other ethnic groups within the Asian community is needed to further explore these issues. Given the heterogeneity of ethnic minority groups even within the same host country, it is also important to examine other minority groups, and undertake larger, survey-based studies to explore the motivations, growth strategies and performance of EMBs.

Another potential area of investigation is the contribution of EMBs to the founder's home country (Ram and Jones 2008). Evidence from this case reinforces the largely theoretical view that diaspora entrepreneurs engage with their home country for a combination of social and commercial motivations. Nat's philanthropic activities in India are testament to his strong emotional attachment with India. He was also willing to contribute to the economic development and build indigenous capability through foreign investment in India. However, the absence of formal institutional mechanisms was a deterrent to his willingness to realize commercial objectives. Prior studies find that positive effect about both the homeland and the migration experience is positively correlated with the willingness of diasporas to share knowledge with the homeland; however, an ongoing engagement by the diaspora cannot be assumed (Barnard and Pen dock 2013). Given the potential contribution of diaspora, especially for developing economies, further research might explore in more depth, individual-level variables and emotions, and their role in home country entry and development.

As members of two generations, both Nat and Anil shared a coherent view about long-term strategy and commitment to the business. Both believed in core cultural values of openness, decentralization and delegation of responsibility, and strictly opposed malpractices such as bribery and corruption. Although such shared values and attitudinal convergence between the two generations bodes well for long-term survival of Purico, positive growth prospects, and trade sale and buy-out opportunities may play a significant role in the succession process. Non-active family members may also have a considerable influence on succession, something that might be usefully

explored in future research. While EMB research has emphasized the importance of start-up and subsequent growth, succession remains a problematic and neglected issue (Bachkaniwala et al. 2001). Little is known about survival strategies of EMBs, especially those established by the Asian community in the UK (Janjuha-Jivraj and Woods 2002).

10 Conclusions

The purpose of this chapter was to trace the founding and growth of Purico, one of the biggest private family enterprises founded by an entrepreneur of Indian origin in the UK. The case sheds light on the founder's motivations and growth strategies, and challenges in the growth process, especially and in relation to entry into the founder's home country, India. Although immigrant entrepreneurship research has explored the motivations of EMBs in developed host economies, their international growth trajectory outside of their host country is much less understood. Studies on Indian immigrant entrepreneurs have examined their attributes, social capital and motivations. In exploring the international growth and expansion of a UK-based ethnic enterprise founded by an entrepreneur of Indian origin in the UK, this chapter extends this literature. In focusing on a UK-based EMB's links with India, this chapter also adds to the emerging IE literature on entrepreneurship in emerging economies. Indians are among the top five ethnic minorities in the UK, and India is one of the most important emerging players in the world economic arena, yet, studies on India in the IE literature are relatively few. Based on insights presented in this chapter, policymakers in the UK must understand the external influences from abroad affecting the growth of ethnic enterprises. A diverse network of local advisors and market introduction agencies to facilitate UK EMBs' entry into foreign markets is based on the premise that the most innovative businesses have a diverse range of network ties. This case shows that strong transnational ties, including extended family, can offer a much wider resource than is generally available to UK entrepreneurs. Therefore, such strong ties must be fully appraised and exploited to enable the growth of EMBs. Policymakers in developing countries like India stand to benefit from both commercial and social motivations of their diaspora. However, they must institute reforms to tap positive business interests, and build local capability, especially in strategically important economic sectors, in order to benefit from more than largely philanthropic contributions of their diaspora.

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Case 4: Adversity as Opportunity

Renji George Amballoor

1 Tasty, Mouth-Watering Cuisine

Carafina Pereira
Martin's Corner,
Betalbatim, Salcete, Goa.

Successful youth entrepreneur should be innovative and be ready for experimentation.

1.1 Make it in Your Village

The day-to-day family life of the Pereira household becomes difficult, particularly for Carafina Pereira, a village housewife and their three children when her husband, Mr. Pereira, an employee of Murmagao Port Trust (MPT) retired back in 1981. Not to be daunted by such difficulties, Carafina, started a small grocery shop with an investment of about Rs 60,000/- from her husband's retirement benefits.

In Goan villages, playing carrom, an Indian, recreational board game was popular among both the village elders and the youth. As a marketing strategy, to attract more customers, she purchased a carrom board and installed it in her already congested grocery shop. She was already one of the most sought after person to captain the community group cooking. Whenever there were family functions at their village neighborhood she was the sought after culinary expert. Even though did not have any formal training but she had learnt the art of cooking by observing how her mother made and served up food for the family.

The carrom board attracted the employees of Majorda Beach Resort, a star hotel located in the close vicinity of the shop. They would seldom miss an opportunity to

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visit the grocery store during their free time. As every round of the game became an exhilarating experience, the players were tempted to remain in the store for longer stretches of time. Local villagers came either to support the players or simply to observe the game. During this extended 'play time,' the players and the spectators started demanding snacks and food. Carafina started serving them but she had not reckoned to the increasing popularity of her dishes as larger numbers of villagers approached her for the food that she prepared.

1.2 Making Adversity Work for You

Life was and continued to be very tough during those early days, and Carafina had to put in 16–18 h work a day to keep up with the interest of her growing band of customers. The market signals were loud and clear. It motivated the enterprising lady to add a temporary extension to her shop and add two tables and few chairs. In the meantime, she added more Goan specialties to her menu. Soon she realized that customers were more interested in her cuisine than their grocery requirements. With the expansion of the customer base, the lack of availability of open space became a constraint. She dealt with this barrier by adding more tables and by erecting foldable umbrellas with makeshift sheds of thatched coconut leaves around her shop.

Adding more tables was the direct response to growing customer needs but Carafina reached a tipping point and when they recognized that further expansion was not feasible. She understood that her unique selling proposition was making and serving Goan food, and the entrepreneurial instinct in Carafina had tapped the opportunity by expanding her business. But now the option was to shift their restaurant to new premises with a seating capacity of 300 chairs, squeezing it up to 400 during the peak season. Carafina's reputation for producing tasty, authentic Goan cuisine spread far and wide especially, through word of mouth. The stand-alone restaurant soon became a star attraction both for domestic and foreign tourists. Their competitors were both mesmerized and envious with the growth in the customer base. The real boost came when the acclaimed Indian cricketer Sachin Tendulkar visited the restaurant and highlighted his pleasuarable experience at a subsequent press conference.

Carafina is supported by her three sons—Pobre, Jose and Bonney in the day-to-day management of the restaurant. In spite of her advancing age, she starts her day by 7.30 a.m. and winds up only at 11.30 p.m. The secret behind her cuisine is the ingredients and recipes she uses. They are specially handpicked, prepared, seasoned and blended under her supervision, with her knowledge drawn from the legacy of traditional wisdom. She had many lucrative offers to franchise the outlets of *Martin's Corner* in other cities and towns. Such offers were turned down because she felt that it would be difficult to ensure the benchmarked quality at all the outlets. According to her, franchising their outlet will no doubt bring in more revenue, but she is happier working and living with the warmth, happiness and love arising from her entire family living together.

1.3 Martin's Tourism Corner

Martin's Corner has been identified as a joint promoting family tourism enterprise. Carafina and her family have, therefore, become important stakeholders in promoting responsible tourism in Goa. In the restaurant, Carafina does not offer anything beyond the scrumptious, mouth-watering and lip smacking Goan feast to attract tourists. Notwithstanding her restaurant's popularity, Carafina is satisfied with the culinary and social privilege of cooking from *Martin's Corner*.

Martin's Corner has diversified into Goan, Indian, Tandoori Continental and Chinese seafood specialties. They have also constructed a holiday home, the *Martin's Comfort* in Indo-Portuguese architectural style, for tourists who wish to enjoy traditional Goan hospitality in a modern-day setting. Being an environmentally conscious entrepreneur, Carafina has installed a mechanism for the scientific disposal of waste from her restaurant.

She feels that even without any certifications, her stand-alone restaurant is doing wonderful business which has earned her many honors and awards for her style of cooking. She is, however, well aware that certification and ranking by state, national and international agencies can bring in more business to her and other units in the industry.

1.4 The Village as an Entrepreneurial Learning Resource

Carafina is strongly of the opinion that the youth of Goa, and across India, need to wake up what she describes as their deep slumber to identify entrepreneurial opportunities in their village catchment areas. Doing so, through observation and consultation would help to avoid wasting time searching for work in offices, industrial estates and overseas. Based on her own experience of converting adversity to opportunity and, ultimately, success, Carafina believes that there is no substitute for hard work which necessitates people to move out of their comfort areas to plan for change.

Carafina's unique Goan experience offers lessons for others to explore the food industry of Goa. The industry is racked by the lack of dedication and passion for discovering authenticity of Goan cuisines and the prospective market for traditional and original Goan gastronomy. In a tourism-driven state which also harbours a lot of cooking talent, there are many niche opportunities that can be harnessed through dedication and smart effort of the Carafina kind. For the 66-year-old Carafina, life is full of challenges but what is important is how you handle them and apply it for your personal growth narrative .

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Case 5: Waste Not What Entrepreneurial Endeavor Can Do

Renji George Amballoor

1 Induction of vRecycle

Clinton Vaz

vRecycle,

Benaulim, ***Goa***.

Setting up and sustaining one's own business is very demanding but life becomes interesting and fulfilling.

1.1 Returning to Waste!

The relocation of his family from Margao town to his native village has been the defining moment for Clinton Vaz who took the decision to devote his entire life to his enterprise *"Zero Waste Goa Mission.*" Moving to Benaulim, Vaz realized that the village did not have any garbage management system and that the waste was simply thrown randomly wherever people found it convenient to do so. He also noticed how the small river in Salcete, in Goa, called Sal, was being systematically transformed into a parallel sewerage line. As an immediate reaction, he took up photography and decided to capture images of local waste, pollution and environmental damage to influence public opinion. His photographs were posted on the Internet to solicit support and solutions for environmental issues. At the same time, his enterprising "green mind-set" signaled opportunities for the establishment of a business venture to manage and recycle waste, a path which only a few had navigated in the past.

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1.2 A Higher Sense of Awareness and Learning

Starting with his own home waste, his household had one bag of waste generated every day. Soon it became one bag per week, and today he has no waste bags to give out because he recycles or composts all the waste his family produces. His firsthand experience provided the entrepreneurial compost for his new venture.

With a Diploma in Mechanical Engineering, he got a job in Verna, an automobile company in Goa, India. Disappointed with the work he had and the slow prospects of promotion or career development, Vaz left the industry and joined his father's business to manage the accounts. After some time, he found it strenuous to keep going because of the lack of challenge and the repetitive nature of the job of keeping books of accounts.

He participated in a workshop organized by Goa Foundation on composting and at the age of 19 started to generate pocket money by recycling his own household waste. Attracting attention, Vaz was sought after by local people who looked for ideas and inputs on waste management.

1.3 From Sweden with Love

While he was working in industry, a group of students from Sweden visited his village to work on an environmental project. He volunteered his services as a translator in their data collection assignment. Impressed by his performance, the Swedes invited him to visit Sweden to study waste recycling processes. Vaz's Swedish experience empowered him with knowledge and competencies in recycling and compositing process. On his return, *Green Goa, a Yahoo platform* was started to share the knowledge and experience acquired during his Swedish visit. He also adopted the idea of a garbage sorting list and made a similar one in alliance with the local ragpickers—the *kabadiwallas.*

1.4 Accelerated Enterprise

A strong sense of purpose and business acumen made the understanding of the intricacies of waste generation and management a relatively easy task. With his newly acquired expertise, Vaz spoke about the need for an innovative plan on waste management through, inter alia, segregation, zoning, building public awareness and recycling. The echoes of his pronouncements on the subject reached audiences far and wide, and soon the city corporation of Panaji initially appointed him on a six-month contract as a consultant for creating a database on the waste generated in the city. They offered him the human resources for collecting data and the required infrastructure for processing such data. His team could put in place 150 composting

units for managing the waste generated by the city. Similarly, they could also bring ragpickers, an important stakeholder in the entire process into the mainstream of waste management and recycling of city waste.

He confesses that his assignment with the city corporation was a great learning experience which led him to discover new pathways for the growth of his ideas. He was excited about the tremendous business potential hidden in the garbage collected from the city. However, the issues of garbage collection did not correspond with the political actions of the city corporation, forcing Vaz to give up the assignment with City Corporation in 2009. Another reason for leaving the assignment with City Corporation was the emerging conflict of interest arising from his private consultancy.

1.5 Waste as Creative Enterprise

His assignment with City Corporation revealed a stark fact that less than 20 percent of the waste in the state is treated with the rest going landfills creating considerable ecological and health challenges for the city. Along with his wife Emma Vaz, he decided to start a new registered company—*vRecycle*. Since the company's business in composting and recycling of waste, an unknown business category, he encountered was lot of difficulties with registering the company. As a sunrise industry in India, the rules and regulations for registering composting and recycling were vague and subjected to different interpretations of the officers. The rules for the possible location of a recycling unit were particularly fuzzy, and the commercial tax department was too keen to collect 5 percent value-added tax on recyclables. All these hurdles and constraints did not, however, deter Vaz from pursuing his entrepreneurial journey. Eventually, he succeeded in having the company registered.

1.6 A Model that Matters Locally

The first effort of the company was to introduce the "eight-bin recycling model" with labels on each bin explaining the non-biodegradable items to be deposited. People wanted their garbage to be managed, and the *kabadiwallas* wanted garbage for recycling. In order to ensure compatibility in these objectives, eight-bin recycling system was introduced for making the manual sorting convenient and decent. Initially, he introduced the Swedish model of separation and recycling which was a failure because of the lack of maturity and discipline among our households. So, ironically, the eight-bin recycling model emerged out of the failed Swedish model.

vRecycle as an enterprise had a unique business model. Unlike other recyclers, the major share of the revenue emerged from various services offered by the company rather than the cash flows from recycling. The contribution of recycling was about

one-eighth of the total revenue which came from services such as composting, recycling, supply of consumables, awareness programs and consultancy, both at the individual and at the institutional levels. The consultancy project involves waste audits, putting the infrastructural system in place and linking the project with the local recycler. His composting units are safe, neat and clean, since he follows meticulously the accepted standards in the sector. He started the business with an initial investment of Rs 10,000/- from his personal savings, and he has not availed of any external financial assistance to date. The unit caters to about 10,000 households, mainly from South Goa.

Waste management and recycling experience huge labor shortages. Not many people in the local population are interested in working in this sector. The supply of labor is drawn mostly from states outside Goa, with most workers belonging to socially and economically deprived backgrounds. The unfortunate fallout of this arrangement is the ill-treatment and opproprobium faced by these workers from the local society. This in turn results in a high attrition rate of labor in this sector. In order to retain his labor and to give them a sense of dignity, wages are linked to their productivity based on the numbers of buildings managed by them. The unit employs about 17 workers directly, and their wages range from Rs 8000/- to Rs 18,000/- per month.

His recycling business model follows a hub and spoke format. Every day, large bags of unsorted dry waste reach the sorting stations at the local centers of Vasco, Khorlim and Margao. The fine sorting of the dry waste into 20–30 odd categories actually happens only after 2 to 3 days of waste entering the sorting unit. About 90 percent of the sorted waste is sent to recycling units, and about 8 percent of non-recyclable waste goes to cement industries as fuel. After the entire process, very little waste is available for landfills. The sorting is done in very hygienic conditions and the workers are given the necessary protective accessories.

Vaz's Canadian wife Emma has been a great inspiration for the further development of the waste recycling and composting business. She has helped him to put in place an elaborate management system and adequate procedures for the smooth functioning of the daily activities. Their business has employed only those who can contribute directly to the income flow of the company; hence, they have no separate positions for managers, accountants, supervisors or other designations normally associated with hierarchical organizations. They use the Internet technology extensively for coordinating their decentralized Business.

In the village of Corlim, under the corporate social responsibility (CSR) activities of a corporate body, Vaz has helped to set up a biogas unit which generates cooking gas and electricity for the local Industrial Training Institute (ITI) canteen. He also proposes to set up similar biogas units at Madkai and Cumbarjua villages in the near future.

Vaz identifies Mr. Emmanuel D'Silva, from Mumbai, as a friend and eco-adviser, as a constant source of inspiration for his work. Waste management expert, Patricia Pinto has acted as his mentor and friend and with whom he could confidentially discuss the byzantine issues of waste management and recycling in Goa.

Students are drawn to Vaz and vRecycle for short-term internship. As part of building wider awareness of waste management, recycling and ecological issues, he conducts various activities in schools and colleges, setting up ongoing successful projects in some of these institutions, etc.

1.7 Drawing the Future In

Vaz likes the idea of inspiring young people to forego salaried jobs, in order to set up their own business, which he believes offers higher levels of work satisfaction and fulfillment. One will have complete control over the income generated. Vaz is a believer in slow and steady, long-lasting growth, a far cry from the high energy, fast paced models of the technology industry. Part of his expansion plans involves encouraging and mentoring youth to take up the lucrative business of compositing and recycling. His passion for a clean environment in his own Goa was the driving force behind his success even when 70% of his classmates left the state to look for new pastures. He has now invested in a large network for sharing information, models and structures, which alongside his eagerness and ability to engage with public, students, youth, government departments and other stakeholders sets him up as a unique social role model for those who may follow him in the future.

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Technological Innovation in Public R&D Laboratories in India: Dissecting the Critical Dimensions

Santanu Roy and Jay Mitra

1 Introduction

The management of research and development (R&D) encompasses the innovations that result from it, helping us to identify key contributions to successful outcomes, including good communication, effective project management, understanding user needs and integration of basic research results (Brockhoff et al. 1997). Over time, scientific and technical knowledge production has become a less self-contained activity, with an increasing emphasis on prospects of value creation for, knowledge transfer to, and relevance and impact on the wider society (Connor 1984). The scientist is no longer an independent free individual concerned solely with what he/she can find. Scientists have to attend to what he/she ought to do with the research and the uses of research outputs. The optimization of the relationship between R&D and innovation allows organizations to reach competitive advantages through the process of rationalization of R&D activities internally and externally through the increasing rate of successful innovations (Chiaromonte 1997).

In the context of an emerging economy such as India, a critical concern is the low appropriability of R&D-expenditure in basic research. In addition and in common with many developed economy counterparts, their micro, small and medium firms that operate in niche markets cannot afford to maintain large R&D laboratories. Even risk averse and short-term-oriented large firms do not often make the large R&D investments necessary because of indivisibility and high uncertainty. This raises

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the question about the role played by public-funded R&D, the findings of which are expected to be subsequently exploited by private businesses for industrial innovations. This being the main justification for allocating public funds for research, assessing the innovative impact of such activities becomes critical. Beise and Stahl (1999), following a study on public research and innovation in Germany, point out that inefficiencies in the transfer of technology and lack of orientation towards the commercialization of scientific research results are predominantly responsible for ineffective public research and not the quality of research in terms of scientific performance.

Pearson (1990) identifies a few key issues impacting innovation such as the importance of communication, the value of experience, the matching of technological and market needs, and the value of understanding user needs. He draws up a framework with the issue of uncertainty at its core and divides it into two independently identifiable dimensions—uncertainty about ends or focus, and uncertainty about means or approaches. In retrospect, information about both of these dimensions can be obtained from case studies; in prospect, it has to be inferred by those most closely connected with the work. It is on their best judgement that decisions are made, resources allocated, and, as more information becomes available, changes are put forward to take into consideration any new knowledge that may be developed..

We examine a public-funded R&D laboratory system in an emerging economy context, India, to dissect the critical dimensions that impact technological innovation in these laboratories. The public-funded R&D laboratory system is the Council of Scientific and Industrial Research (CSIR), the primary umbrella of such laboratories in the country. Building on the previous work (Roy 2004, 2006, 2009; Roy and Banerjee 2007; Roy and Mohapatra 2002; Banerjee and Roy 1999), we update four specific technology transfer and innovation cases from as many different CSIR laboratories, together with three laboratory-specific cases studies. We probe whether the strategic imperatives are reflected in technology outreach performance of the laboratories. Evidence of such performance can be found in the IPR domain terms of the number of patents filed and accepted in India and internationally by looking at the patent output record of these seven CSIR laboratories over a period of eleven years (2003–04 to 2013–14). The results of this work hold important implications for management of technological innovation in R&D laboratories in emerging economies.

1.1 Council of Scientific and Industrial Research, India

In India, scientific and technological research is primarily concentrated in industrial and government funded institutions, such as the Council of Scientific and Industrial Research (CSIR) where the demand for profit, growth and accountability require that research activity is directed, at least in the long run but more often in the short run, towards the solution of practical problems. Furthermore, it is directed primarily towards the general objectives of social and economic development and national

security. These external tasks provide the stimuli, growth and justification of scientific work.

The CSIR is an autonomous society under the Societies' Registration Act, 1860 with the Prime Minister of India as its ex-officio president. Each laboratory of CSIR, headed by the director, has two councils: The research council that looks after its long-term and short-term R&D strategies and the management council that oversees its administrative functions.

What does CSIR stand for in terms of its vision and mission? CSIR's vision statement mentions: 'Pursue science which strives for global impact, technology that enables innovation-driven industry and nurture trans-disciplinary leadership thereby catalyzing inclusive economic development for the people of India', and its renewed mission states, '…the new CSIR that will fulfil the aspirations of modern India…' (http://www.csir.res.in/about-us/vision-and-mission). Thus, CSIR's mission is simply to build an organization for a new India, an emerging economy with aspirations for playing an increasingly important role in the global economy. By identifying innovation as central to its science-based agenda, CSIR promises to engage with the transformation process of both its organization and the country's capability in delivering virtuous, scientifically based economic gain. In doing so, CSIR aims at pivotal change for its organization, leading the charge on innovation with practical, and potentially commercial outcomes involving numerous stakeholders. Its ability to achieve its aim and objectives is partly dependent on its organization structure (with the need for any changes that may be required) and also on its interest in pursuing innovative activities in the technological domain.

The organization structure of CSIR, as displayed in Fig. 1, depicts the hierarchy

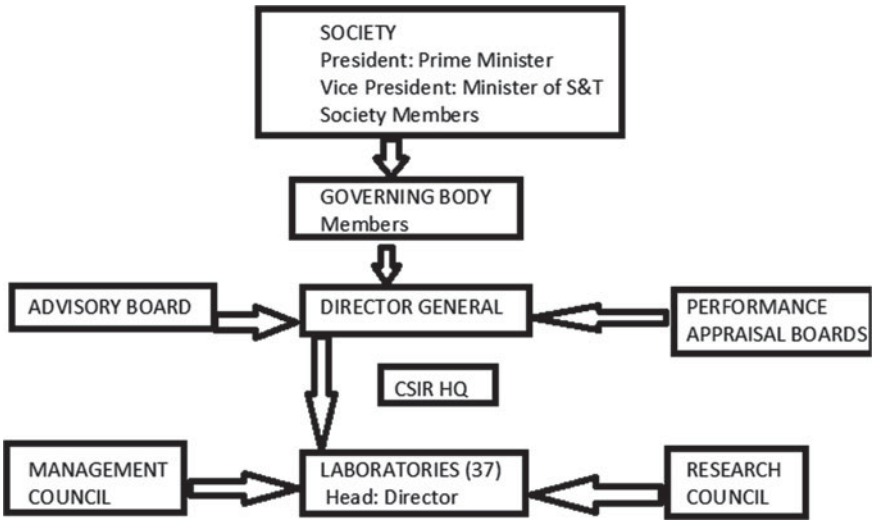

Fig. 1 Organization structure of CSIR. *Source* http://www.csir.res.in/about-us/organisational-structure

through which CSIR functions.

There are, in all, 44 entities comprising laboratories, subsidiary laboratories and units (that includes 37 laboratories) constituting the entire CSIR conglomerate, as presented in Table 1.

For India, the CSIR organizational complex is substantial and varied requiring the adoption of strategic perspectives for the pursuit of technological change.

2 Strategic Perspectives of Technological Innovation

Many organizations are confronted with dynamic and uncertain environments due to the accelerated rate of technological change coupled with increasing competitiveness in the global marketplace. Effective performance, therefore, depends on the success of the innovative activities of the organization and, particularly, on the way these are managed (Saleh and Wang 1993). Among the strategic factors, R&D activity is considered one of the most important parts of maintaining a competitive edge, especially in high-tech industries (Lee and Shim 1995). Information about the importance of R&D and innovation has significantly impacted management practice (Chiesa 1996; Chiesa and Manzini 1997; Giget 1997; Bowonder and Miyake 1997; Stainer and Nixon 1997; Pearson et al. 1998; Nakano et al. 1997). Levinston and Moran (1987) present a strategic approach to enhancing R&D management focusing on five coupling patterns constituting connections across which information moves: (a) connections of elements within the stages of the R&D cycle; (b) linkages of specific stages of the R&D cycle; (c) coupling across organizational levels; (d) Linkages with organizations in a laboratory's environment; (e) working arrangements between R&D performers and mentors. R&D managers need to achieve the appropriate balance of loose and tight coupling in order to best manage the transfer and use of information to buttress their managerial actions.

2.1 Technology Transfer as a Series of Networked Events

The transfer of technology is not an isolated event that can be identified simply in terms of a movement of technology from the public-funded R&D laboratory to industry. It encompasses the entire gamut of the technological innovation management process including user involvement in the initial stages of technology development that often makes a significant difference to the ultimate outcome of the innovation process. The various types of inter-firm alliances take on many forms, ranging from R&D partnerships to equity joint ventures to collaborative manufacturing to complex co-marketing arrangements. The most common rationale offered for this upsurge in collaboration involves some combination of risk sharing, obtaining access to new markets and technologies, speeding products to market and pooling complementary skills (Kleinknecht and Reijnen 1992; Hagedoorn 1993, 1995; Karlsson

Table 1 List of CSIR laboratories/units

S. No.	Name of the laboratory
1	Advanced Materials and Processes Research Institute (AMPRI), Bhopal
2.	Central Building Research Institute (CBRI), Roorkee
3	Centre for Cellular & Molecular Biology (CCMB), Hyderabad
4	Central Drug Research Institute (CDRI), Lucknow
5	Central Electrochemical Research Institute (CECRI), Karaikudi
6	Central Electronics Engineering Research Institute (CEERI), Pilani
7	Central Food Technological Research Institute (CFTRI), Mysore
8	Central Glass and Ceramic Research Institute (CGCRI), Kolkata
9	Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow
10	Central Institute of Mining and Fuel Research (CIMFR), Dhanbad
11	Central Leather Research Institute (CLRI), Chennai
12	Central Mechanical Engineering Research Institute (CMERI), Durgapur
13	Central Road Research Institute (CRRI), New Delhi
14	Central Scientific Instruments Organization (CSIO), Chandigarh
15	Central Salt and Marine Chemicals Research Institute (CSMCRI), Bhavnagar
16	CSIR Fourth Paradigm Institute, Bengaluru
17	Institute of Genomics and Integrative Biology (IGIB), Delhi
18	Institute of Himalayan Bioresource Technology (IHBT), Palampur
19	Indian Institute of Chemical Biology (IICB), Kolkata
20	Indian Institute of Chemical Technology (IICT), Hyderabad
21	Indian Institute of Integrative Medicine (IIIM), Jammu
22	Indian Institute of Petroleum (IIP), Dehradun
23	Indian Institute of Toxicology Research (IITR), Lucknow
24	Institute of Minerals and Materials Technology (IMMT), Bhubaneswar
25	Institute of Microbial Technology (IMT), Chandigarh
26	National Aerospace Laboratories, Bengaluru
27	National Botanical Research Institute (NBRI), Lucknow
28	National Chemical Laboratory (NCL), Pune
29	National Environmental Engineering Research Institute (NEERI), Nagpur
30	North East Institute of Science and Technology (NEIST), Jorhat
31	National Geophysical Research Institute (NGRI), Hyderabad
32	National Institute for Interdisciplinary Science and Technology (NIIST), Thiruvananthapuram
33	National Institute of Oceanography (NIO), Goa
34	National Institute of Science Communication and Information Resources (NISCAIR), New Delhi

(continued)

Table 1 (continued)

S. No.	Name of the laboratory
35	National Institute of Science, Technology and Development Studies (NISTADS), New Delhi
36	National Metallurgical Laboratory (NML), Jamshedpur
37	National Physical Laboratory (NPL), New Delhi
38	Structural Engineering Research Centre, Chennai
39	Unit: Open Source Drug Discovery (OSDD), New Delhi
40	Unit: Traditional Knowledge Digital Library (TKDL), New Delhi
41	Unit: Translational Research and Innovative Science through Ayurveda—TRISUTRA
42	Unit: Human Resource Development Centre (HRDC), Ghaziabad
43	Unit: Unit for Research and Development of Information Products (URDIP), Pune
44	CSIR Madras Complex (CMC), Chennai

1997). Based on their study of dedicated biotechnology firms, Powell et al. (1996) argue that when the knowledge base of an industry is both complex and expanding, and the sources of expertise are widely dispersed, the locus of innovation will be found in networks of learning, rather than in individual firms. In one of the earlier studies on management of R&D in CSIR laboratories, Bhojwani and Gupta (1998) carried out a survey of CSIR directors, marketing/business development managers and senior scientists and observe that successful laboratories assign greater importance to industry interaction than not-so-successful laboratories; successful laboratories also achieve greater industry interaction than not-so-successful laboratories. They also observe that regardless of their success rate, laboratories that assign greater importance to industry interaction also tend to achieve actual greater and productive forms of interaction.

2.2 The Spatial and Regional Dimensions of Innovation

Researchers have also identified a location-specific aspect to technological innovation (Roy and Mohapatra 2002; Roy and Banerjee 2007), highlighting both the spatial and regional dimensions of innovation. Recognizing this dimension of networking as a strategy for fostering technological innovation could go a long way in making these efforts successful Marshall's (1962) initial conceptualization of the industrial district and the model of 'Third Italy' consisting of Emilia Romagna, Toscana and Vento (Becattini 1990; Pyke et al. 1990; Sforzi 1990) remains the cornerstone while starting any discussion on industrial districts or clusters. Porter (1990) uses the term 'clusters' at a macro-level of analysis in order to describe the clustering effect of competitiveness of firms where successful firms are linked through vertical or horizontal relationships (p. 149). After analyzing Marshall's construct, Cooke (1999)

opines that these are primarily composed of clusters of subcontractors with ready availability of skilled labour, and rapid formal and informal communication due to a common base of knowledge across firms. According to Liyanage (1995), four interesting factors facilitate the formation of clusters: natural propensity; resource complementarities; formation of groups in the innovation system; and actor-network interactions. Stressing the institutional dimension, Becattini (1990, p. 39) defines the industrial district as 'a socio-graphical entity which is characterized by the active presence of both a community of people and a population of firms in one naturally ad historically bounded area'.

2.3 Cluster Contexts

Country-specific studies have been conducted on clusters,[1] with different studies articulating the factors determining their emergence. For instance, Schmitz (1999) observes that in the Sinos Valley shoe cluster in Brazil, the local firms were forced to cooperate mutually, faced with the Chinese competition in the global market in the 1990s. Consequently, the vertical cooperation between shoemakers on the one hand and their input suppliers and sub-contractors on the other increased strongly. Some of the Indian clusters studied include the cotton knitwear-manufacturing cluster of Tiruppur, Tamil Nadu (Cawthorne 1995; Bhattacharya 1999; Swaminathan and Jeyaranjan 1999); the leatherwear complex in Agra, Uttar Pradesh (Knorringa 1994, 1996) and in Kolkata (Banerjee and Nihila 1999); the Ludhiana woolen knitwear cluster in Punjab (Tewari 1999); the Morbi flooring tile cluster in Gujarat (Das 1996a); the garments cluster at Ahmedabad (Das 1996b); the Durgapur small-scale industrial cluster, West Bengal (Ray Chaudhury 1999); and the Coimbatore (Tamil Nadu) pump manufacturing cluster (Pillai 2000). Researchers point out that Indian industrial clusters face a pervasive problem of quality dilution (Das 1996a, b; Swaminathan and Jeyaranjan 1999). It has been pointed out that the low quality of produce could also be due to low entry barriers for firms producing such goods, and the cost of investment in equipment and also in maintaining quality standards (Bagchi 1999). Among the other factors contributing to this deficit are easily expansible markets for low quality goods because of high rate of population growth and the unwillingness of investors to build long-term networks of trust (Bagchi 1984).

Porter (1990, 1998, 2000) specifically tied the advantage of being placed in a particular location to organization-level know-how or capabilities developed in the local competitive context. He and other researchers like Almeida and Kogut (1999) suggest that organizations with a common geographical background share certain knowledge resources that provide competitive advantage to them as a

[1] Some examples include Denmark (Hanna and Walsh 2002), Canada (Holbrook and Wolfe 2002), Mexico and Italy (Rabelotti 1995), China (Chi-Han and Hung-Che 2016; Martha et al. 2013; Conle and Taube 2010; Li et al. 2014), Brazil (Schmitz 1995, 1999; Chu and Andreassi 2011), Italy (Iacono et al. 2013), Sweden (Dahlstrand 2007), France (Luciana 2015), and Portugal (Ferreira et al. 2012).

group. According to Roy and Mohapatra's (2002), there are certain location-specific attributes that need consideration while taking up specific technological innovation projects emanating from R&D laboratories include the following:

- Natural endowments of the region include the availability of ores, minerals, forests, flora and fauna, water, etc.
- Specific human skills are available in abundance in the region.
- Industry locations can be found around the place, enabling ease of testing pilot-scale products in such industries, and even the establishment of pilot plants in collaboration with these industries, specific industrial clusters in the region, etc.

The location of the region in terms of its political importance and its, socio-economic aspects, is deemed to be of special significance. Thus, the establishment of strong linkages between technology users and producers, perhaps promoted through government policy interventions, could prove crucial in stimulating technology innovations, focusing on systems of knowledge accumulation rather than just the production system (Bell and Albu 1999).

2.4 Cluster Contexts: CSIR

Many CSIR laboratories, spread across different parts of the country, routinely offer technology development services (almost always interactive in nature) to firms located in a particular localized space (Banerjee and Roy 1999): that may include the following

- Routine services of testing and analyzing.
- Routine services of standards and standard setting.
- Routine design services.
- Routine services on maintenance, trouble-shooting, etc.
- Provision of technical services.
- Provision of training.
- Technical information, product and technology appraisal.
- Scaling-up demonstration, etc. on new and often novel products/processes.

The laboratories that focus primarily on the local dimension of R&D/innovation offer these services specific to the requirements of the industries located in particular regions, in addition to general routine services. For instance, the Central Salt and Marine Chemicals Research Institute that is located in the Saurashtra region, in the state of Gujarat in the west of India, where salt firms dominate, provides critical support to the local industries engaged in the extraction of salt and marine chemicals. In another instance, the Central Leather Research Institute that is located in Chennai in the south of the country focuses mainly on the technological and design issues faced by the leather cluster in Chennai and the state of Tamil Nadu. The case studies presented later illustrate these aspects further.

2.5 The Consortium Strategy

The utilization of the results of public-funded research by industry in India and their benefits have been subjects of debate for a long period of time (Alam and Langrish 1984; Chandra 1994). The strategy initiative of a consortium mode of operation assumes criticality in this context especially in view of the weak links that have traditionally characterized the business-laboratory nexus in India. It is often argued that on the one hand, the government funds research, while on the other, it fails to set an incentive for scientists to support commercialization, because the latter are evaluated solely in terms of their scientific performance. A good reference point is the research work carried out by Kim et al. (1999) who compared three pairs of government-sponsored research institutes and private R&D organizations in Korea in terms of their strategic goals, the roles of top managers, organizational characteristics and the attitudes of individual researchers. The result, based on responses from 570 R&D managers and professionals, indicates that the government-sponsored research institutes have: (a) Relatively less clear strategic goals and R&D objectives; (b) their R&D activities are very broad and not well focused; (c) their top management plays a biased external role in order to gain institutional legitimacy; (d) their organizational structure tends to be more decentralized but less flexible; (e) their R&D work climates exhibit higher autonomy, cohesiveness, work pressure and risk-taking propensity, but display lower customer orientation and less fairness in a reward system; and (f) the researchers are dissatisfied with their jobs and organizational incentive systems, and also less committed to the organization.

2.6 Stakeholder Collaboration

According to Peters et al. (1998), the formation of dense collaborative contacts between government R&D institutions and industrial organizations improves innovative capacity and fosters economic growth. A central argument for government facilitating the development of these networks is that such networks make the public-funded laboratories aware of the demands of the market and stimulate them to direct knowledge development towards underpinning technological innovation. Laranja (2004), after a review of literature on aspects of innovation as a collaborative process, concludes that innovation is a rather complex process involving learning and the application of technical knowledge. In most cases, innovation is a collective endeavour involving formal collaboration and informal interactions among various kinds of organizations. He emphasizes that these interactions are needed to stimulate the development, exchange and sharing of knowledge that is scattered by different agents. What are the motivating factors that induce firms to adopt such a strategy of technological collaboration and how do these cooperative relations get established? According to Jones and Jordan (1998), changes in the competitive environment have rendered traditional notions of industry obsolete. Firms are increasingly engaged

in alliances and network relationships and industry boundaries have blurred. This has shifted attention away from industry-based competition to individual firm or capability-based competition and to the source of the firm's distinctive capabilities. In their paper, Narula and Hagedoorn (1999) comment that strategic alliances are becoming popular in order to undertake technological development activities. In addition, there has been a growing use of non-equity agreements, which seem to be a superior means to undertake technological development in high technology and fast evolving sectors, thus shifting the focus to those areas of technology development that firms are willing to support in conjunction with public research institutes (Liyanage 1995). Leading research centres as well as the big multinational firms are increasingly gaining their competitive edge from close undistorted linkages among research, advanced manufacturing and lead marketing. These trends are giving rise to very decisive changes in the management within corporations as well as among independent organizations (Gerybadze and Reger 1999). It is not difficult to observe that facilitative and productive consortiums can gain from physical proximity obtained in clusters, referred to above, but such collaborations are not, of course limited to geographically contained boundaries. In a globalized environment, knowledge spills over and is often exchanged across spatial borders. However, as Glaeser et al. (1992, p. 1126) note, geographic proximity matters in transmitting knowledge, because as 'intellectual breakthroughs must cross hallways and streets more easily than oceans and continents'.

In the following sections, two sets of case studies are presented to bring to life aspects of R&D/innovation strategies reviewed above. The first set of case studies illustrate how the location-specific strategy has shaped and moulded the thrust, discourse and trajectory of three different CSIR laboratories located in diverse locations in the country—Chennai in the south, Durgapur in the east and Jammu in the north. The second set of four specific technology development case studies from as many CSIR laboratories (different from the set of first three laboratories) illustrate how the adoption of a consortium strategy proved critical in achieving success in these endeavours including overcoming hurdles at the crucial stage of technology transfer. Next, we discuss the methodology adopted to carry out these case studies.

3 Methods

What is an appropriate methodology to be adopted for carrying out innovation research has itself been a subject of debate (Jungmann et al. 2015; Brostrom 2008). The case study method has been adopted for the work reported in the present chapter. The appropriateness of such a methodology for technology innovation has received acknowledgement in the literature (Rhoades et al. 1978; Bowonder and Miyake 1997; Han and Park 2017; Chu and Andreassi 2011; Ozaki et al. 2012; Binsardi et al. 2013; Figueroa and Conceicao 2000; Negro 2007; Shibeika and Harty 2015). Case studies offer insights and in-depth understanding particularly in situations where new changes are taking place without the benefit of appropriate local antecedents,

with insights being drawn from the organizational context and the respondents in that context (Yin 2014). In-depth and inductive approaches allow for the development of rich ideas with which to observe and explore multiple facets of change. Over some time now, case study methodology has undergone major changes and developments. This change and evolution has yielded pragmatic, flexible research approaches which can offer comprehensive in-depth understanding of a diverse range of issues within and outside organizations, depending on the individual researcher's preferences, perspectives and interpretations (Harrison et al. 2017).

4 The Case Studies

Data was collected over several years stretching back to 2000. The incremental accululation of data allowed for multiple layers of information and interpretation. The basis for the case studies was to enable effective communication with the scientists in these laboratories, laboratory-published documents and case files. It is also appropriate, in some instances, to update earlier published cases (Roy and Mohapatra 2002; Roy 2004, 2006; Roy and Banerjee 2007), and probing the way these public R&D/innovation projects and networks have survived and progressed over time. The cases have been interpreted and presented in this study in accordance with the underpinning strategic themes discussed in the literature review.

4.1 Laboratory-Specific Cases

4.1.1 Case 1: CLRI and the Leatherwear Cluster in Chennai

Introduction

The Central Leather Research Institute (CLRI) is located in the capital of the southern Indian state of Tamil Nadu, Chennai (formerly, Madras). Chennai traditionally boasts of the presence of a large leather cluster. CLRI has been working on various aspects of leather since the beginning. The strategic outreach of CLRI is evidenced through its consultancies, technical services, trainings, routine technological improvements and solving technical problems faced by entrepreneurs in this field through a number of functional arrangements with industry associations on training, quality control and product design, such as microprocessor control in tannery wet operations at industry level, helping the industry achieve quality, consistency and international equivalence.

CLRI had earlier initiated the process of joint management of some assets created at the laboratory. For example, entities such as the Shoe-Fashion Studio or the Shoe-Designers Club were being jointly run or managed with industry associations with an aim towards network funding or network managing of research assets with the concomitant advantages of domestic market sharing arrangement. This enabled the

local companies to enhance the quality of their produce and reduce the cost of production and sharing the cost of R&D. Thus, the companies were better prepared to face competition in the international market. As a result of the long-standing nature of these relationships, fidelity and partnership confidence had increased.

Recent Initiatives

Continuing with the strategy of establishing linkages with small and medium enterprises (SMEs), CLRI has embarked upon a project on cluster twinning with Italian leather clusters. The larger project was initiated as part of 'Consolidated Project for SME Development in India—Twinning and Related Components', initiated in 2006 and funded by the Italian Development Corporation. A component of this larger project focused on 'cluster twinning', an optimal process of linking two clusters across different countries at different levels of development. The component builds upon some of the work already undertaken within the framework of the UNIDO-Italy Programme for SME Development in India and is linked to recent initiatives taken by the Ministry of Micro, Small and Medium Enterprises (MSME), Government of India (UNIDO 2013). The process of twinning proposes linking existing solutions to existing issues, by facilitating knowledge flow. Such knowledge flow can also happen from within a cluster, too. Thus, the twinning process may also map such possible knowledge flow packets also from within the cluster and promote the same.

The Leather Cluster

The leather cluster of Chennai has around 650 units (including three large ones, the rest being MSMEs). The selection of the Chennai leather cluster as a part of this project was finalized in the year 2007, with the Indian Finished Leather Manufacturers & Exporters Association (IFLMEA) identified as the corresponding Indian association and CLRI as the corresponding technical consultant. One of the recommendations was to establish a 'Fashion Task Force' to be established by IFLMEA/CLRI to channel the latest novelties to the tanneries. This recommendation was made because Santa Croce Tanneries (the Italian counterpart), having been in competition with the Chennai leather cluster, would probably not be willing to pass on such information. Many other initiatives were undertaken under this project. In one such instance, IFLMEA selected 20 units to include a range of tanneries which are: (a) deficient in equipment and technical skills; (b) poor in planning to modernize, (c) cover a range of raw materials used and (d) produce a range of finished articles. The on-site training was given to the technical heads of the tanneries who passed on their learning to junior technicians, supervisors and machine operators of their respective units. An Italian expert and an expert from CLRI and the Executive Secretary of IFLEMA visited the units, studied their operation systems and following these visits, gave their suggestions and recommendations to the technical heads of the units. Twenty tanneries were given on-site training on wet-end leather processing for around 40 days, 1 to 3 days in each unit. Another 31 tanneries were trained in leather finishing techniques for around 30 days.

The Footwear Cluster

The Chennai footwear cluster (that has around 400 units, including three large ones with the rest being MSMEs). The selection of the Chennai footwear cluster as a part of this project was also finalized in the year 2007, with the Indian Shoe Federation (ISF) identified as the corresponding Indian association and both the Central Footwear Training Institute (CFTI)—and CLRI—mostly for manufacturing and designing technology—as the corresponding technical consultants for manufacturing, and manufacturing and design technology respectively, in collaboration with an institute, Politecnico Internazionale Per Lo Sviluppo Industriale Ed Economico (PISIE) of Italy. In general, the following training areas were identified: design and development; manufacturing—upper sole making, full shoe making; quality and compliance; management—production, marketing, costing and human resource development; and equipment—machine maintenance. Training by the Italian experts and then retraining by the trained experts of Indian institutions was one of the most successful aspects of the cluster twinning project. Technology transfer to these institutions was immediately incorporated in the regular curriculum of CLRI and CFTI, with availability of expertise to replicate the training services. CLRI assisted ISF in developing a curriculum for design training; CLRI started a new shoe design course based on the syllabus followed in the UNIDO supported design training programme in Italy. CLRI has purchased and installed the software and hardware required for 3D designing and is also in the process of developing a mechanism for formal engagement of ISF with CLRI for implementing the retraining agenda for a greater coverage of cluster units and, additionally, to provide 3D design services in the cluster.

4.1.2 Case 2: CMERI and the Durgapur-Asansol Industrial Belt and Other Small-Scale Industrial Clusters

Introduction

The Central Mechanical Engineering Research Institute (CMERI) is located in Durgapur, in the eastern Indian state of West Bengal. The Durgapur-Asansol industrial belt is an important landmark in the industrial map of India with the presence of a large number of small- and medium-scale industries.

Small-Scale Industrial Clusters

CMERI, in partnership with different agencies such as the Directorate of Cottage and Small-Scale Industries (Ancillary Cell), the Government of West Bengal, and its subsidiary, the District Industries Centre (DIC), Durgapur; the Asansol-Durgapur Development Authority (ADDA); the Durgapur branch of Small-Scale Industries Service Institute (SISI); and the West Bengal Financial Corporation (WBFC); have long been providing crucial assistance to the small-scale units in the cluster including, inter-alia, the development of plots, provision of raw materials, technical support, laboratory testing and finance (Ray Chaudhury 1999). Specifically, the CMERI had been helping the MSME sector enterprises in the clusters by equipping these firms with practical technological guidance, offering special training to their personnel

in particular fields, assisting in the development of components or spare parts, and serving as a link between large and small enterprises.

In order to provide effective support in providing technological solutions to micro, small and medium enterprises located in diverse industrial clusters spread across the country, CMERI established several Mechanical Engineering Research and Development Organization (MERADO) centres during 1965–1976 in the second-tier towns located in diverse parts of India such as Pune (west), Ludhiana (north), Durgapur (east), and Cochin (south), and Chennai, also in the south (first-tier metro). Instances of such a support include the designing of a special-purpose machine for the automatic reaming of the bores of internal combustion (IC) engine valve guides to the desired surface finish of one micron for M/s. Friends Auto Industries, Phillaur, Punjab, and a 10-tonne equibalanced warm-blast cupola for M/s. Jassal Mechanical Works, Ludhiana, where the introduction of the warm blast had substantially improved the efficiency of production of the firm, by the MERADO Ludhiana unit. To facilitate this process further, assistance from the United Nations was sought and the Special Fund Sector of the UN Development Programme (UNDP) provided US$ 689,300 towards the provision of foreign technical expertise and fellowships for the various MERADO centres. At the same time, it supplied equipment and other machinery to these clusters to the value of US$ 211, 000 (Banerjee and Roy 1999).

Recent Initiatives

MERADO has since been renamed as the CMERI Centre of Excellence in Farm Machinery (CoEFM) with a dedicated strategy for developing farm technologies. The strategy includes a focus on research in two broad areas—agricultural machinery, and engineering design and analysis. Some of the recent projects carried out by CoEFM include the following:

- Design, development and commissioning of a 25 m^3/day capacity (minimum) biogas plant based on kitchen waste.
- Design and development of an offset rotavator for intercropping & intercultural operations in orchards under Indian conditions.
- Design and development of 1.5 m^3/day capacity roof top biogas plant based on solid state fermentation using kitchen waste.
- Optimization of production parameters, quality analysis of biogas and economic evaluation.
- Design and development of a semi-continuous type biodiesel plant suitable for rural sector, testing of biodiesel plant and testing of biodiesel produced from the plant.
- Development of tractor operated inter-row rotary cultivator for weeding in wider row crops.
- Development of a generic algorithm for image processing of cotton ball in order to develop a computerized vision-based picking system.

CoEFM has also taken up projects specifically addressed to the MSME sector. Two such projects are worth mentioning here. The first combines the design of an indigenous fuel injection pump with imparting training on rapid prototyping at the

cluster, and also the development of training facility for young engineers (creation of engine test facility) for the MSME auto cluster, Faridabad in the state of Haryana in north India. The second project covers the development of a modified design of less expensive machineries for various sub-activities of bamboo stick production, to enhance the productivity, minimize the wastage of raw materials, ensure improved ergonomics of working processes and tools, and better working conditions, for the MSME bamboo cluster, in Agartala, Tripura, in north-east India.[2]

4.1.3 Case 3: Indian Institute of Integrative Medicine (Formerly, Regional Research Laboratory), Jammu and Localized Industrial Clusters

Introduction

The state government of Jammu & Kashmir (J&K) had established a production unit for medicinal plants that also had an R&D centre. The R&D centre that engaged primarily in research on medicinal plants was taken over by CSIR after being in existence for about 17 years. This centre was formally constituted as the Regional Research Laboratory, Jammu & Kashmir in December 1957.

The research work in this R&D laboratory was focused on medicinal plants as Kashmir is the largest source of medicinal plants in the country. The organization of research centred round the basic disciplines of pharmacology, botany and organic chemistry. With the advent of synthetic drugs into the market and the gradual eclipse of the natural alternative from the market, there was mounting pressure for the o reorientation of research priorities and the diversion of research efforts into other areas. New projects were planned of immediate economic importance, such as destructive distillation of wood, preparation of active carbon, utilization of locally available mineral resources, processing and preservation of food and fruit products and the utilization of animal by-products from the slaughter houses. A major survey was conducted during 1968–69 regarding the natural resources of J&K state and the possibilities of their commercial exploitation. This information formed the basis of the identification of the problems and the formulation of projects of the laboratory that were likely to have an impact on the industry and the economy of the state.

With the objectives of gearing up the activities of the laboratory to meet the demands of the industry, new disciplines were created to make them more purposeful. The division of mycology and plant pathology was created to deal not only with the selection, maintenance and production of ergot culture but also to take up new projects such as the production of gibberellic acid and of biomass with high protein content. Other divisions were added and these included leather, fur and wool technology, cellulose pulp and paper technology and surface coatings.

The focus of the R&D laboratory being rooted in the province where it was located, the successive state governments have always played a significant role in opening

[2] http://www.cmeri.res.in/department/cmeri-centre-excellence-farm-machinery.

up new areas of research catering to the needs and aspirations of the region or in strengthening of the existing areas related to their interest. A case in point is the opening of the division of sericulture in the year 1983. Another similar example is the launch of the fishery technology project in the year 1974–75 for the region.

The laboratory was later renamed as Indian Institute of Integrative Medicine (IIIM).

Recent Initiatives

With the objective of equipping small- and medium-scale manufacturers in the fields of medicines, pharmaceuticals, pesticides and industrial chemicals with know-how necessary for the sale of their produce in the world market (where following standard manufacturing and laboratory practices are now mandatory), IIIM has created a state-of-the-art national facility for small- and medium-scale manufacturers. Concentrating on the north Indian states and the state of Jammu and Kashmir, IIIM enables the manufacture of products under Good Manufacturing Practices/Good Laboratory Practices (GMP/GLP) conditions alongside their use for research. According to the World Health Organization (WHO), a GMP is a system for ensuring that products are consistently produced and controlled according to quality standards. It is designed to minimize the risks involved in any pharmaceutical production that cannot be eliminated through testing the final product. The main risks are: unexpected contamination of products, causing damage to health or even death; incorrect labels on containers, which could mean that patients receive the wrong medicine or insufficient or excessive use of active ingredients resulting in ineffective treatment or adverse effects. GMP covers all aspects of production; from the starting materials, premises and equipment to the training and personal hygiene of staff. Detailed written procedures are essential for each process that could affect the quality of the finished product. There must be systems to provide documented proof that correct procedures are consistently followed at each step in the manufacturing process—every time a product is made.[3]

Further, the OECD Principles of Good Laboratory Practices (GLP) ensure the generation of high quality and reliable test data related to the safety of industrial chemical substances and preparations. The principles have been created in the context of harmonizing testing procedures for the Mutual Acceptance of Data (MAD).[4]

It may be noted that testing of chemicals is a labour-intensive and expensive process. Often the same chemicals are being tested and assessed in several countries. The OECD Council therefore adopted a Council Decision in the year 1981—on Mutual Acceptance of Data (MAD)—stating that test data generated in any member country in accordance with OECD Test Guidelines and Principles of Good Laboratory Practice (GLP) shall be accepted in other member countries for assessment purposes and other uses relating to the protection of human health and the environment, thus bypassing the need to duplicate tests in each country before approving or

[3] http://www.who.int/medicines/areas/quality_safety/quality_assurance/gmp/en/.

[4] http://www.oecd.org/chemicalsafety/testing/good-laboratory-practiceglp.htm.

banning a substance.[5] This step, therefore, allows governments and industry to save a substantial amount of money each year from MAD for pesticides and industrial chemicals alone. On 6 April 2011, India became the third key emerging economy to sign up to MAD, after Singapore and South Africa.

The objectives of the project were:

- Process development and scale-up of new botanical leads through GMP mode for preclinical development and IND filing;
- Generate authentic, accurate and clinically acceptable data on the GMP material, which can potentially lead to new IPR's;
- Develop new rational formulations of traditional drugs;
- Generate sufficient data for effective regularization and control of herbal/traditional medicines as well as nutraceutricals to move into international market.

The cGMP aspects of the facility being created were:

- Plant design as per WHO GMP norms
- Unidirectional man and material flow.
- Separate dedicated area for each activity provided with a separate AHU to avoid cross contamination.
- In-house dedicated and modern testing facility.

It may be noted that cGMP compliance is becoming a mandatory norm for drug manufacturers planning to operate in the global market place. The Food and Drug Administration (FDA) ensures the quality of drug products by carefully monitoring drug manufacturers' compliance with its Current Good Manufacturing Practice (CGMP) regulations. The regulations make sure that a product is safe for use, and that it has the ingredients and strength it claims to have.

This new project was framed under National Facility Project of the Drugs and Pharmaceuticals Research Programme (DPRP) of Department of Science and Technology (DST), Government of India, entitled, '**cGMP Pilot Plant for Extraction, Formulation and Packaging of Traditional (ISM) Herbal Medicinal Formulations**', with DST, Ministry of AYUSH, Government of India, and CSIR/IIIM as the funding agencies. The project assumed criticality so as to generate sufficient data for effective regulation and control of herbal and traditional medicines moving into international commerce with standardized authentic materials. The cGMP facility currently has the **capacity to produce 30,000 tablets and capsules per hour, and 500 litres of liquid per batch** on pilot-scale basis.[6]

[5] http://www.oecd.org/env/ehs/mutualacceptanceofdatamad.htm.

[6] http://www.iiimcgmp.com/about-cgmp.htm.

4.2 Technology-Specific Cases

4.2.1 Case 1: Sponge Iron Production (National Metallurgical Laboratory (NML), Jamshedpur)

Introduction

The National Metallurgical Laboratory (NML) is located at Jamshedpur in the eastern Indian state of Bihar. Jamshedpur is an industrial township that boasts of the presence of one of India's largest steel plants.

The objective of this project was to produce sponge iron—almost completely metallized lumps—by direct reduction (DR) of iron ores involving in situ reduction of iron oxide without involving fusion. NML had developed two processes for the production of sponge iron using non-coking coal as fuel and reductant—the rotary kiln process and the vertical retort direct reduction furnace process. These two projects had followed innovation trajectories—the consortium mode being absent in the earlier case but was conspicuous by its presence in the latter case.

The earlier rotary kiln technology had not been tested adequately in the pilot plant scale before the same was transferred to the Andhra Cement Company, Vijayawada, in the state of Andhra Pradesh in south India. The company got their plant designed by the scientists of NML. No external support was available to them in terms of expertise. Moreover, a forty-year old cement kiln was reconverted to function as the plant. The particular plant could run for only about six months, and even during this period, there were many breakdowns. The first attempt, therefore, resulted in a failure.

The vertical retort furnace technology, on the other hand, was a distinct improvement offering better volume utilization and other advantages. But more than that, a pilot plant was designed and built in the laboratory itself (initially a 350 kg per day capacity plant where metallization went up to 90–95%). For the first time, process utilization of the furnace gas was achieved in this pilot plant that boosted investor confidence in no small measure. NML subsequently went for a collaborative effort with Mechanical Engineering Consultants (MECON), Ranchi, for the commercial scale engineering design and for drawing up the engineering specifications. A modular plant with four retorts (capacity 12,000–15,000 kg per day) was established, jointly funded by CSIR and MECON for this purpose. The Sponge Iron Vertical Retort Direct Reduction Technology has been successfully transferred to Bastar Ispat Udyog Pvt. Ltd., Jabalpur.

Recent Initiatives

NML has maintained a long tradition of a close cooperation with small- and medium-scale enterprises (SMEs), offering these industries technologies that are relevant for them and which they require. Some recent cases of successful technology transfers from NML to the SME sector are shown in Table 2.[7]

[7] http://www.nmlindia.org/technologyytansfered.html.

Table 2 Successful technology transfer projects by the National Metallurgical Laboratory to SMEs

Technologies	SME	Location
Production of Nickel-Free Valve Steel	• Star Wire (India) Ltd.	• Ballabhgarh
Clay-Bonded Improved Graphite Crucible	• Metapalli Systems & Sons • Maheshwari Udyog Pvt. Ltd.; • Silicard Crucibles Pvt. Ltd. • Patna State Graphite and Mining • JD Jones & Co. Ltd. • Circar Graphite Products	• Samalkot • Vizayawada • Vapi • Titlagarh • Jamshedpur • Rajahmundhry
Sacrificial Anodes based on Aluminium Alloys	• Welcome Alloys Pvt. Ltd. • Dum Dum Valves and Bearings Pvt. Ltd. • Aluminium Manufacturing Co. Ltd.	• Chennai • Kolkata • Kolkata
Dental Amalgam Alloy	• Sakti Industries • Bharat Dental Aid • Dentfill India	• Varanasi • Jamshedpur • Jamshedpur
Picking Inhibitor for Descaling of Steel in Hydrochloride Acid	• Peddington Chemical Industries • Chem-Tech Enterprises • Navdeep Chemicals	• Mumbai • Jamshedpur • Mumbai
Electrolytic Manganese Metal	• Indian Manganese Metal • Devidayal Sales Pvt. Ltd.	• Rourkela • Mumbai
NML-Hodgaflux	• Ambika Industries • Hind Chemicals	• Kolkata • Hyderabad
Electrical Resistance Alloy for Heating Elements:	• GK Enterprises • Neatwell (India) Pvt. Ltd. • Met Industries • Cable Works (India) Ltd. • SK Mitra • Burjwal Electricals • Rishi Alloys Pvt. Ltd. • Fort Gloster Industries Ltd. • Jyothi Refinery	• Adityapur • Kolkata • Kolkata • Faridabad • Kolkata • Bhadoi • Muzaffarnagar • Kolkata • Mumbai
Column Floatation Technology for the Beneficiation of Ores and Minerals	• Indian Rare Earths Ltd. • Calpro Minerals and Chemicals Pvt. Ltd.	• Chatrapur • Salem

Taking this technology innovation initiative ahead consciously, NML has since established a Technology Incubation Centre with a view to nurture entrepreneurship and help spin-off of companies based on technologies developed in the laboratory as well as incubation of technologies in the domain of minerals, metals and materials. This Technology Incubation Centre promotes SMEs by channelling different government schemes and its own activities, including the following[8]:

[8] http://www.nmlindia.org/download/TICNML%20Brochure.pdf.

- Promoting entrepreneurship by way of mentoring, translating innovative knowledge and training.
- Providing suggestion/advice on IPR and for marketing of products/processes.
- Guiding the entrepreneurs in filing of copyrights, patents whenever required.
- Providing support towards quality assurance of products/processes and marketing.
- Providing common facilities such as infrastructure and instrumental facilities to the incubatees.
- Arranging awareness programmes for orientation of entrepreneurs towards Technology basics/management approach.

4.2.2 Case 2: Chlorosilanes (National Chemical Laboratory (NCL), Pune

Introduction

National Chemical Laboratory (NCL) is located in Pune, in the western Indian state of Maharashtra, and is one of the top-performing laboratories functioning under CSIR (Roy and Mitra 2018). The Catalysis and Inorganic Chemistry Division of NCL took up the project on chlorosilanes as these are the important basic intermediates in the manufacture of silicone oils and emulsions that find applications in homes and a variety of industries. This division had a roadmap to provide unique opportunities for industries, companies and other interested research institutions to collaborate and carry out research and development in the area of catalysis (NCL 2017). Silicones have multifarious applications such as in grease, paints, rubbers, resins, adhesives, emulsions, etc., possessing a unique combination of metallic and non-metallic properties. NCL developed a novel and innovative process using a new catalyst to synthesize methylchlorosilane. Chlorosilanes are prepared by the so-called Rochow reaction between methyl chloride and silicon metal in the presence of a copper catalyst (Doraiswamy 2011). The project had a vision to develop the process essentially as an import-substitution technology as chlorosilanes were a 100% imported item in India at the point the project was initiated.

Recent Initiatives

The process development group had initially worked both at a bench level and at a small pilot plant level (capacity at 2 kg per hour of mixed chlorosilanes), and the process was subsequently demonstrated to two firms manufacturing methyl chloride, M/s. Mettur Chemicals, and Industrial Development Corporation Ltd. As these firms delayed taking a final decision regarding the commercial exploitation of the process, NCL initiated a dialogue with HICO Products Ltd., Mumbai, a company that used chlorosilanes for the manufacture and sale of a number of silicone products (Doraiswamy 2011). HICO was already formulating silicone products with imported dimethylydichlorosilanes (DMDCS). With a view to upscale the technology, a small pilot plant of about 60 tonnes per annum (TPA) capacity was set up within the HICO factory in Thane Belapur, outside Mumbai. Success in operations at this level encouraged HICO to set up a larger pilot plant of one tonne per day (TPD) capacity.

A project engineering consultancy firm, Humphreys & Glasgow Ltd., was roped in as a part of the consortium. This firm carried out the techno-economic feasibility study and costing of the project and had sorted out the design engineering problems. Further, Humphreys & Glasgow Ltd., working in collaboration with NCL and the user company, was instrumental in designing the commercial scale plant that was part of an integrated complex at Kharsundi, Raigad district, in the state of Maharashtra, consisting of a methyl chloride plant of 1200 TPA, a chlorosilanes plant of 1000 TPA, and a silicones plant of 300 TPA.

There are three important measures of success of a plant of this type: composition of the product mix from the reactor; purity of the principal components of the product mix; and consumption of raw materials and utilities (Doraiswamy 2011). The HICO plant was superior to any of its international competitors (Bhojwani and Lal 1991). The NCL as well as HICO received the Indian Chemical Manufacturers Association (ICMA) 1982 Award for 'Forward Technology Development' for their efforts in successfully developing sophisticated technology and its use entirely through indigenous efforts (Doraiswamy 2011). At present, HICO has a 2000 TPA capacity plant (NCL 2017).

Another instance of the consortium mode in operation was the involvement of the National Research Development Corporation (NRDC), a Government of India enterprise established in the year 1951 specifically to promote the transfer of locally developed technologies to industry as a non-profit making public enterprise. NRDC took over the technology from HICO after having it assessed by Engineers India Limited (EIL, another Government of India enterprise) to help initiate the process of horizontal transfer of the technology. This was a fine example of a contemporary, state-of-the-art technology developed by NCL-HICO. However, with the advent of the new Import–Export Policy (IEP) of the Government of India, for the period April, 1985 to March, 1988, that placed methyl cholosilanes as well as silicone compounds/fluids/oils/resins under Open General License (OGL) (Bhojwani and Lal 1991), the challenge to maintain superiority, or at least, equivalence of HICO DMDCS quality standards viz. the international competition increased manifold. The Technology Evaluation Committee (TEC) of the Directorate General of Technology Development (DGTD), Government of India, made a request to NCL to collect samples of DMDCS from the HICO plant together with imported DMDCS in order to conduct an analysis to verify if the purity level of the HICO produce conforms to international standards. As is evident from Table 3, the HICO sample more than matched the purity levels of the French and German counterparts.

Table 3 Comparison of the Indian HICO sample with foreign counterparts

S. No.	Sample	Purity level (%)
1.	Rohone Poulenc (France)	99.8
2.	Wacker Chemie (Germany)	99.82
3.	HICO	99.95

Source Nath and Misra (1988)

Taking this movement forward, the Catalysis and Inorganic Chemistry Division of NCL has now proposed the creation of a National Centre for Industrial Catalysis (NCIC) with the twin objectives of undertaking R&D in industrial catalysis through an integrated approach, in particular, for the conversion of renewables to fuels and chemicals; and to impart training in refresher courses, particularly to those who are working in Indian chemical industries. It is expected that these activities would further bridge the existing gap between laboratory discoveries and their commercialization in the relevant industries (NCL 2017).

4.2.3 Case 3: Mini Cement Plants Using Vertical Shaft Kiln (VSK) Process (North East Institute of Science and Technology (NEIST), Formerly, Regional Research Laboratory (RRL), Jorhat)

Introduction

The North East Institute of Science and Technology (NEIST) is located in Jorhat in north-east region of India, within the state of Assam.

Cement is a critical material for any civil engineering construction. As per recent reports, the demand for cement in India is expected to increase due to government's push for large infrastructure projects, and India's demand for cement is expected to reach 550–600 million tonnes per annum (MPTA) by the year 2025 (NEIST 2017).

Essentially, the vertical shaft kiln (VSK) constitutes the heart of the cement plant for the production of quality ordinary portland cement (OPC) to Bureau of Indian Standards (BIS) specifications (IS:269) employing either a single kiln or multiple kilns. As a rule, the VSK is made up of a static vertical shaft, lined internally with refractory bricks. Integrated within the kiln is a chimney, a raw-meal feeding inlet, a rotary grate with provision for entry of combustion air, a material block tube, and discharge mechanism (NEIST 2017).

This process held the advantages of utilization of smaller deposits of limestone, lowest capital investment per unit capacity and low gestation period, efficient kiln performance, efficient clinker discharge mechanism, and uniform air distribution at multiple levels (NEIST 2017). The vision was to promote decentralization of an industry that is very basic to the development of a country's infrastructure.

Recent Initiatives

The first plant based on this technology of 9900 TPA capacity was commissioned at Kutch in the western Indian state of Gujarat. In the initial technology transfer phase, the project team had carried out detailed cost analysis and profitability analysis of plants of 25 TPD capacity. Evidence of the presence of the consortium strategy was clearly discernible in this case. Consultants and fabricators were appointed under a tripartite agreement for offering the technology on a turnkey basis. The consortium consisted of NEIST and CSIR, NRDC, the consultants, the fabricators and the user agencies. The consultants and fabricators were jointly endorsed by the laboratory and NRDC. The consultants, in collaboration with the fabricators, rendered

a variety of services to the entrepreneurs such as arrangement of licenses, preparation of feasibility reports, arrangement for evaluation of raw materials, preparation of detailed project engineering report including technical evaluation of tenders and vendor analysis, installation and commissioning of individual plants and machinery, arrangement for training of plant operating personnel, plant commissioning including stabilization for rated quality and quantity of product, and assistance in providing BIS certificate and any other technical assistance as and when required.

The scientists of the laboratory had designed the pilot plant. It was operated within the laboratory premises. However, in the technology transfer phase, the up-scaling of the technology to the commercial scale and other related design engineering problems were adequately taken care of by the consultants and fabricators endorsed by the laboratory and the NRDC. The project initially was envisaged both at the small and the medium-scale levels. At present, the technology is being offered only at the mini level at three levels of capacity—25 TPD, 50 TPD and 100 TPD. After the first technology transfer, 39 cement plants ranging from 25 to 100 TPD have come up in different parts of India with NEIST's technology (NEIST 2017).

4.2.4 Case 4: The Reverse Osmosis Process for Desalination of Brackish Water (Central Salt and Marine Chemicals Research Institute (CSMCRI), Bhavnagar

Introduction

The Central Salt and Marine Chemicals Research Institute (CSMCRI) is located in the west of India, in the Saurashtra region of Gujarat state that is dotted with salt firms. CSMCRI had undertaken R&D investigation on desalination of brackish water by a process known as reverse osmosis (RO). Osmosis is a process in which solvent flows spontaneously through a semi-permeable membrane from a dilute into a concentrated solution. In reverse osmosis, a pressure is applied to cause solvent flow in the opposite direction with the membrane material possessing suitable permeation properties. The success of the technique lies in the preparation of the correct type of the osmotic membrane. When the project was initiated, the research strategy dealt with two distinct areas, namely, the development of membrane and engineering hardware for a reverse osmosis system; and to satisfy a pressing need of supplying clean drinking water to a large section of the populace. The project was eventually incorporated into the National Drinking Water Mission of the Government of India.

The initial technology push was to develop a tubular RO brackish water desalination plant that was successfully demonstrated at a capacity level of 10,000–15,000 litres per day (LPD) at various places in the country including a plant for the Border Security Force at Vighakot in Kutch (Gujarat state). These plants had rejected total dissolved salts (TDS) up to 87–88%, yielding potable water on 50% recovery basis. The technology, however, had a few major issues that were highlighted in the field trials such as the plant cost and bulk, and difficulty in membrane replacement. These

and other issues were resolved in the spiral configuration RO plant that was subsequently developed and commissioned at a 10,000 LPD capacity level at Arnej, near Dhandhuka in Ahmedabad district in Gujarat state.

There was a conscious effort to bring together different public bodies, state and central government ministries—first, to create an awareness about the technology, and second, to install RO plants at different locations in the country such as Melakodumallur in the south (state of Tamil Nadu), Lolawas in the north (state of Rajasthan), Puthagaram in the south (near Chennai), and Gilledupadu near Tuni in the south (state of Andhra Pradesh). The performance data of these plants boosted investor confidence and the technology was licensed to Bharat Heavy Electricals Limited, Hyderabad, Hindusthan Shipyard Limited, Vishakhapatnam, and Arrow Technology, Ahmedabad.

Recent Initiatives

This technology has seen further improvement over the years and the latest offering from CSMCRI stable is the development of thin film composite (TFC) reverse osmosis membrane technology for desalination of brackish and sea water to obtain potable water with less than 500 ppm TDS. Continuing with the development of technologies that have wide societal impact, CSMCRI has developed a technology entitled 'Specific Polymeric Ion-Exchangers-Based Drinking Water Purification Domestic Units for Arsenic and Fluoride Removal'. The benefits of this technology have wide ramifications in the Indian context as the presence of highly toxic and hazardous chemicals such as arsenic and fluoride in drinking water is prevalent in certain locations of the country. CSMCRI has developed specific polymeric ion exchangers, useful for the selective removal of arsenic and fluoride from drinking water. This technology has already been transferred to units working in fluoride affected districts in the states of Bengal and Gujarat.

Some other related technologies on offer from CSMCRI include development of hollow fibre (HF) ultrafiltration membranes for efficient water purification with low rejection rate, production of high purity salt from natural brine, and production of low sodium salt from bitterns and vegetable salt from Salicornia.

One of the new projects in the area of desalination include the installation of community managed 4000 LPH RO water purification plants for drinking water treatment at Rajampet Kadapa district and Kosur, Krishan district of the state of Andhra Pradesh,[9] and also a sea water RO desalination plant 6000 LPH capacity using hollow fibre module for pre-treatment.[10]

[9] http://www.csmcri.org/Pages/Projects/projects.php?pageNum_Projects=8&totalRows_Projects=122.

[10] http://www.csmcri.org/Pages/Projects/projects.php?pageNum_Projects=8&totalRows_Projects=122.

5 Discussion and Conclusions

The laboratory-specific case studies provide us with considerable learning opportunities in the field of technological innovation in public R&D laboratory in an emerging economy context. Recognizing the existence of an industrial cluster close to a laboratory, or availability of specific technical skills and testing facilities, at the project initiation stage, could prove crucial to the ultimate success of the innovation effort.. For instance, certain projects taken up by CLRI provided positive support to the leather manufacturing cluster in the city of Chennai in solving some of their critical technological problems. This, in turn, provided the laboratory with support in terms of the financing of specific projects and of new commercial ventures run with CLRI technology with credit facilities from banks.

Bahrami (1992) suggests that the management of innovation involves a dialectical process of synthesis between multiple dilemmas—freedom and control, flexibility and focus, differentiation and integration, or incrementalism and discontinuity. What clearly emerges from a perusal of the case studies presented is that factors, such as complementary knowledge linkages, close monitoring, identification and early removal of possible bottlenecks in the implementation, and the market orientation, are the key elements of success enabled by the consortium mode. Continuing involvement with industrial associations and financing through contract/memoranda of understanding could provide additional support.

MSMEs populate the industrial clusters in India. But these MSMEs also constitute, overwhelmingly, a large population of licensees of CSIR technologies at the national level. It has been observed that such licensees are very often unable to commercialize the technology because of constraints of finance and manpower. And this phenomenon is not new. From a perusal of the results of the study of 51 cases of technology transfer from CSIR laboratories (Rajan et al. 1981), a number of factors were found to impact effective technology commercialization. Assistance, in the nature of training clients' personnel, was found to be the most important factor, while demonstration and follow-up actions were considered to be the second most important factor. The other important factors observed were equipment design, and start-up support and follow-through problem-solving.

Post-transfer services form a major component of any technology transfer package. However, very often such services are neglected, owing sometimes to the real physical distance between the transferor and transferee. Location nearness and physical contact often emerge as important factors in successful technology transfer. Porter (1996) succinctly points out that in a global economy, enduring competitive advantages would lie increasingly in local things that are unmatched by rivals such as relationships, motivation or knowledge. The strategy of the consortium mode of operation thus assumes significance.

The literature on the economics of innovation and technological change offers us the valuable insight that geography matters. Incorporating the idea of the spatial and local context in models of innovation and technological change has made a significant difference to our understanding of how technology is developed, commercialized and

diffused. Understanding this spatial context, together with the consortium strategy, provides opportunities for policy interventions to promote technology transfer and knowledge spillovers (Audretsch and Feldman 2003). The authors reference to the lack of knowledge of mechanisms for these spillovers and transfer effects is crucial in this regard. Our studies suggest developing a very clearly defined pro-active strategy for transfer of R&D knowledge as a public good to industry with a view to enhance industry productivity and competitive capability.

A noteworthy CSIR initiative in partnership with NCL towards promoting technological innovation in Pune region of India has been the establishment of an entity called the 'Venture Centre'. The Venture Centre is India's largest science business incubator specializing in technology startups offering products and services exploiting scientific expertise in the areas of materials, chemicals and biological sciences & engineering. It aims to empower and enable scientists and engineers in pursuing technology, innovation and entrepreneurship objectives.[11] The Centre has undertaken many projects in this direction supported by different government agencies. For instance, there are two projects funded by the Ministry of Micro, Small and Medium Enterprises, Government of India with the following objectives: (a) to help MSMEs pursue development & commercialization of technology innovations; and (b) to help MSMEs with various aspects of intellectual property: landscaping, creation, protection, commercialization.[12]

Asheim and Isaken (2002), Doloreux (2002), and Garrett-Jones (2004) and Mitra (2020), among others have extended the concept of the national innovation system model (Nelson 1993) to that of a localized innovation system in Australia, the UK, and various Scandinavian countries. According to them the elements of a localized innovation policy comprise the following: support for business, social and professional networks and for the knowledge infrastructure (including universities), for intermediary technology transfer and training agencies; and providing incentives for individual firms—a kind of social system of interactive and systematic relationships.. The topicality of the present chapter lies here. The study underscores the importance of targeting the technological, managerial and social problems and requirements of industrial clusters and firms located in various regions of India and the role the national R&D laboratories could play in this regard.

Finally, do these strategy initiatives find reflection in the output performance indicators of these R&D laboratories (Roy and Mitra 2015, 2018), especially in terms of the patent output record (the number of patents filed and accepted in India and internationally)? Tables 4, 5 and 6 present the patent output record of these seven CSIR laboratories, in terms of the number of patents filed and granted in India and abroad, over an eleven-year period (2003–04 to 2013–14).

[11] http://www.venturecenter.co.in/index.php.

[12] http://www.venturecenter.co.in/project.php.

Table 4 Patent record of the select CSIR laboratories (2003–04 to 2006–07)

S. No.	Laboratory	2003–04				2004–05				2005–06				2006–07			
		IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG
1.	NCL	59	53	111	19	61	35	44	32	38	59	49	26	17	57	81	28
2.	CMERI	4	2	0	0	1	0	7	0	9	0	0	0	4	0	6	1
3.	NML	12	6	2	2	7	3	12	5	15	3	5	1	1	11	16	6
4.	CLRI	20	7	12	3	8	3	19	4	14	8	21	2	9	8	13	8
5.	NEIST	4	24	1	0	14	16	44	8	7	14	25	8	7	7	3	1
6.	IIIM	10	3	8	12	9	2	7	13	13	12	0	1	3	10	8	19
7.	CSMCRI	15	4	25	2	19	4	48	13	14	3	68	9	4	2	89	22

Legend
IPF Indian Patents Filed; *IPG* Indian Patents Granted; *FPF* Foreign Patents Filed; *FPG* Foreign Patents Granted
Source CSIR Annual Reports of the respective years

Table 5 Patent record of the select CSIR laboratories (2007–08 to 2009–10)

S. No.	Laboratory	2007–08				2008–09				2009–10			
		IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG
1.	NCL	10	79	29	28	13	102	39	26	24	15	16	23
2.	CMERI	3	8	5	3	3	8	0	1	2	1	2	2
3.	NML	7	16	0	4	11	12	9	5	6	0	11	1
4.	CLRI	6	16	12	11	5	17	3	6	8	3	0	13
5.	NEIST	5	11	1	1	5	14	3	1	9	2	1	0
6.	IIIM	11	10	7	11	3	20	5	14	7	3	3	9
7.	CSMCRI	7	3	40	26	16	20	56	34	9	7	18	28

Legend
IPF Indian Patents Filed; *IPG* Indian Patents Granted; *FPF* Foreign Patents Filed; *FPG* Foreign Patents Granted
Source CSIR Annual Reports of the respective years

It can be observed from these Tables that there is no uniformity among the laboratories in their patent output record. The top three performers are NCL, CSMCRI and CLRI and the other laboratories have a moderate patent output record. Incidentally, all these three top-performing laboratories have attempted to build functional, fruitful and engaging collaboration within and beyond local clusters, as evidenced through the case studies presented above. The absence of any uniformity of outcome suggests that while technological innovation strategies might be in place, or the necessary policy regulations might be in force and even encouraged by the gogovernment, there is no evidence that the initial level of R&D inputs necessary for commercialization are managed effectively. This has potential implications for the development of a critical mass of innovation outcomes necessary for the development of firms, regions and the country. The asymmetries between precept and practice continue to haunt Indian innovation.

Table 6 Patent record of the select CSIR laboratories (2010–11 to 2013–14)

S. No.	Laboratory	2010–11				2011–12				2012–13				2013–14			
		IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG	IPF	IPG	FPF	FPG
1	NCL	31	39	41	45	11	80	17	17	73	20	159	31	122	10	115	65
2.	CMERI	2	3	0	4	0	0	1	1	0	1	0	0	2	2	0	1
3.	NML	4	15	0	2	4	0	3	3	7	7	0	0	14	2	0	0
4.	CLRI	11	15	0	1	5	4	0	0	6	5	1	1	13	6	2	0
5.	NEIST	8	6	8	1	3	4	0	0	6	4	24	4	4	2	4	4
6.	IIIM	4	5	5	18	0	4	2	2	1	0	9	0	7	0	3	13
7.	CSMCRI	9	8	22	49	3	49	53	53	17	6	43	41	10	1	60	70

Legend
IPF Indian Patents Filed; *IPG* Indian Patents Granted; *FPF* Foreign Patents Filed; *FPG* Foreign Patents Granted
Source CSIR Annual Reports of the respective years

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Case 6: Unscheduled Stops to Planned Behaviour

Renji George Amballoor

1 The Agri-entrepreneur

Chinmay Tanshikar
Tanshikar Spice Farm,
Netravali, Sanguem, Goa.

There is no quick fix recipe for success; hence, the youth should have patience and equanimity.

1.1 The Lush and Spicy Panorama of Opportunity

Tanshikar Spice Farm is located in the scenic and panoramic Netravali village, about an hour's drive through the lush green terrain bedecked with farmlands and the boondocks of Quepem, Sirvoi, Rivona, Colamb, and Sulcorna from Margao town. The original spice farm was full of coconut, betelnut, and jackfruit trees along with spices, bananas, pineapples, and other fruits. It is spread over an area of 12 ha, near the eco-sensitive Netravali Wildlife Sanctuary and besides the bubbling pond (*Budbudyachem tallem*), a fascination for visitors.

1.2 No Preparation for the Unexpected

The story has it that Chinmay was a very docile and average student while at school at Netravali. Since his village did not have any higher education facilities, he had to move to Curchorem to join the commerce stream at *CTN Higher Secondary School*

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and later on to Quepem to pursue a Bachelor's degree in Commerce at the *Government College*. Despite his simple and relaxed bearing, Chinmay worked hard to master and improve his English speaking and writing skills, a capability that is particularly handy for him today because most of his customers are foreigners with their numbers rocketing upwards over time.

After passing the B. Com degree, he proposed to study law and pursue an LLB degree. While processing his application, Chinmay, aged 23, suffered a personal loss with the death of his father due to a massive cardiac arrest. Even today, he laments that he could not save his father's life due to the absence of specialized medical care and well-timed transport network in his village. Chinmay was not prepared for stepping into the shoes of his father as an agriculturist. Reminiscing, he admitted that he did not even know the basics of cultivation and agriculture.

Being the eldest of the siblings, Chinmay had no other option but to take responsibility for his family and follow his father's work as an agri-entrepreneur. When he took over the family agriculture business he did not have a road map but had the gut feeling that in due course of time the business will prosper. For the first two to three years, Chinmay maintained status quo by carrying out only those agricultural activities which were previously part of his father's portfolio.

1.3 In Mentoring We Trust

About one year after taking over the reins of his agriculture unit, Chinmay went and met Dr. Abdul Rauf Sheikh at Sirsi, Uttara Kannada district of Karnataka state. Even though Dr. Sheikh was a school dropout, he had earned the status of a progressive farmer of that region and was fondly known as the *Pineapple King of Banavasi*. The pineapple king owned 60 hectares of agriculture land and the University of Agricultural Sciences, Darward endowed him with an Honorary Doctorate degree for spearheading the application of technological solutions in pineapple and pepper cultivation. The first interaction with Abdul Sheikh lasted only for about two hours but it was a turning point in the life of Chinmay. In Abdul Sheikh, Chinmay found a mentor to guide his future endeavours and generate the confidence with which to build on his father's business. This resulted in mutual and frequent visits by Chinmay and Abdul Sheikh to each other's farms.

During Abdul Sheikh's visit, he understood the huge potential of *Tanshikar farm* as an agricultural unit. His tips on farming were well imbibed and implemented by Chinmay, and over the period of time, the outcomes were astonishingly successful. Having started with traditional crops, Chinmay started experimenting with spices—pepper, nutmeg, vanilla, cardamom, and cinnamon. The good harvest led him to grow chillies, turmeric, betel nut, coffee, cocoa, pineapple, banana, papaya, and cashew nuts. The high yield from his agriculture holding led him to consider diversification and he did so with bee-keeping.

1.4 The Organic Eco-way

The flourishing hospitality sector in Goa provided for a large market for his farm products. His banana output is sold in Curchorem and Quepem markets while the pineapples are sold in Margao. Tourists visiting his farm provided the captive market for spices. In order to make his farming activities sustainable and eco-friendly, Chinmay introduced organic farming. This new initiative made the farming cost effective and easily generated 55–60% profit margin, laying the ground for new investment, expansion, and growth. The organic farm products did not have an exclusive market in those regions of South Goa, so the product differentiation did not fetch him any higher rewards.

All the development activities were carried on with his own funds and he declares proudly that he has not availed of any financial support from either the state and central government or private banks for farm-related agriculture operations. Even when he was eligible for government subsidies, Chinmay has politely turned down the opportunity to raise extra funds.

The prosperity and diversity of his farm initially created curiosity among his friends and peers. Slowly and gradually, the number of local visitors expanded. It was during the period Goa witnessed the need for a paradigm shift from beach to alternative tourism. To take the first mover advantage, he converted his farm into an eco-tourism spot. Initially, eco-tourism activities were restricted only to day time activities. In due course, the tourists especially those from foreign destinations expressed their preference for stronger affinity with the village environment by staying in the farm for few days. On the other side, the young agri-entrepreneur wanted to flaunt the natural beauty of his farm together with the peace and serenity of village life. Chinmay entertained the market expectation of his customers by building cottages using eco-friendly materials. Opening up of cottages augmented his customer base and today, 75% of tourists visiting his farm house are from Europe.

1.5 Planning with Opportunities

Chinmay also had a paddy field measuring 4 ha. It was having a detrimental impact in terms of profit due to cost escalation and labour shortages. As a restless and intrepid entrepreneur, Chinmay transformed the futile paddy cultivation into an arecanut[1] orchard and later into his new generation spice farm. He started planting arecanut at a time when the market price was Rs 50/- per kg. During the last three years, the price is in the range of Rs 300/- to Rs 350/- per kg. Today, from about 12,000 plants, the yield is around 6 tonnes, fetching him revenues of Rs 13–15 lakhs.

Chinmay did not have any specialized training in agriculture-related activities. All his accomplishments were based on observation and through trial and error

[1] Arecanut is popularly referred to as 'betel nut' and is a tropical crop generally found in parts of South and South East Asia and East Africa.

methods. Hence, when he started the entrepreneurial journey, he did not have any blueprint for the way ahead. Today, Chinmay has a clear perspective for the future. He wants to build a swimming pool, tree houses, and an adventure park to meet changing consumer expectations. Three perennial water sources in his farmland are a big boost for the growth of Chinmay's eco-tourism venture.

His success in agriculture venture fetched him two awards from state government of Goa—*Best Horticulturist Award* (2007) and *Krishi Bhushan Award* (2012).[2] Recently, the Shri Shri Instiute of Agricultural Sciences and Technology Trust acknowledged the contributions of Chinmay towards organic farming and awarded him *Krishi Ratna Award*.

During last two years, Chinmay added a new dimension to his business by growing local vegetables. All the visitors staying in the cottages are allowed to select the organically grown vegetables from their backyards to help prepare various dishes for lunch and dinner. Bee keeping and extraction of honey is yet another addition to his growing business.

Twenty years of successful entrepreneurial endeavour have been possible because of Chinmay's honest simple and down to earth outlook and pragmatic approach. Many of the foreign tourists visiting his farm have developed a strong interest in his dishes and its preparations and to help satisfy this interest, Gauri, Chinmay's wife also started conducting cooking classes for them.

Chinmay believes in quiet, systematic work and search for opportunity, a message he passes on to the youth of Goa, India and beyond. *Tanshikar's farm* provides employment to 15 workers directly and about 20 indirectly. About three years back, his farm activities were challenged by the lack of availability of local workforce. He had to overcome the crisis by bringing in labour from Karnataka and by offering 15–20% higher wages. Of late, he has succeeded in bringing back local labour for his farm activities. One of his greatest disappointments has been the irregularity and absenteeism of local labour. Chinmay suggests that the welfare schemes of the state government, guaranteeing basic levels of economic entitlement may have, to some extent contributed towards the laid-back attitude among local workers but there may well be other reasons.

As a part of marketing Tanshikar's farm, Chinmay has only created a website. Tourists from far and wide visit him only through word of mouth communication. The reviews posted by tourists after visiting Tanshikar's farm on various travel sites are a testimony for the splendid services offered. 'Lonely Planet', the bible of every tourist has also branded the farm as a must see destination in Goa.

For last two years, Chinmay has acted a mentor for agri students who join his farm for month long internships. He teaches them not only the fundamentals of agricultural activities but also empowers them with his success recipe. He was quite eager to announce that he belongs to a breed of agri-entrepreneurs who pay stipends to their interns.

[2]Krishi Bhushan Awards are National Level awards in India, handed out in recognition of the excellence in agriculture, agribusiness, and food processing sectors.

1.6 Sharing and Enriching

Chimnay's new ideology is to empower his stakeholders. For the last one year, the task of cooking food for his guests has been outsourced to a local family. Such outsourcing enhanced the income earning and employment of local families. Chimnay believed that he has already reached the highest pinnacle of growth; hence, his workers and their families should witness the next wave of prosperity and economic empowerment induced by his farm-related activities.

Chimnay thinks that tourism has a lot to offer for the development of the hinterlands of Goa. In his onward voyage, he is confident that he can partner with many others for the development of the catchment society and Netravali village.

Acknowledgements The author, Dr. Renji Amballoor wishes to acknowledge Springer and the esteemed editor for the seven cases published in this book. All cases have been revised to meet the requirements of this volume. He would also like to convey his sincere gratitude to all the inspiring entrepreneurs whose beautiful journeys are described in the cases and the unwavering support of his family & friends.

Case 7: Motivation and Self-determination for a Change

Renji George Amballoor

1 The Journey Towards a White Revolution

Shivananth Bakre
Dairy Farming,
Sanquelim, Goa.

Failures and challenges are the part of the life and without them there is no learning and the life will be boring.

1.1 Formal and Informal Knowledge Gathering

Graduating with a Diploma in Mechanical Engineering, Shivanath Bakre joined the Indian arm of the international brand for oral hygiene, Colgate, in its engineering section. This was Shivanath's first employment and to test the waters he worked for about six months, realizing that working for others was not quite his cup of tea. After quitting the salaried job, he partnered with his friend and started a small ice cream parlour business which also provided photocopying facilities and a telephone booth. Four years later, he came to the conclusion that a partnership business was not really compatible with his highly independent streak and self-belief, and he opted out. At that time, he was also a collection agent for a local cooperative bank, an assignment which he continues even today.

Shivanath was born in an ordinary family. His father was the local priest performing rituals at the local temple. He was educated in the local Marathi medium school. As is the case of many rural households, his family owned some agricultural land and a few buffaloes. Being unemployed but with a keen desire to be independent and self-reliant for work, Bakre was just waiting for an opportunity to kindle his

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venturing imagination for a start-up business. Sagar Jawadekar, his brother-in-law who was also the chief reporter for Marathi daily, *Tarun Bharat*, told him that the state agricultural department had many schemes for dairy farming. Having some basic knowledge of farming, Bakre found the impetus to achieve something of his own when Jawadekar introduced him to Dr. Dattaraj Naik Parikkar who was the surgeon at the nearby veterinary hospital.

An intense personal dialogue with Dr. Parikkar proved to be a turning point in the life of Bakre. Shivanath recalls that the interaction was motivational and inspirational making him consider the different perspectives of looking at entrepreneurial business opportunities. Another individual, Rajesh Kenny, a veterinary officer, also played a vital role in lighting the spark of entrepreneurship in Bakre.

In order to establish a successful dairy unit, Dr. Parrikar enumerated and shared important trade secrets with Bakre. The dairy sector is a $24 \times 7 \times 365$ business and he had to be ready to put in dedicated hard work underpinned by an enthusiasm for such endeavour. The business has to be run for a minimum incubation period of five years, after which a decision could be taken to either shut shop or to continue. Systematic record-keeping of every rupee which comes and goes out his dairy business had to be kept. If the outflows were more than the inflow at the end of the fifth year, the doctor promised to compensate him for his earlier losses. Knowing that running a new diary venture was going to be a back breaking job, Bakre had many questions to be answered. He was advised to document every question as and when it arises and to diligently go back to the doctor after five years for optimal solutions. Dr. Parrikar was instrumental in helping Shivanth imbibed the values of dignity of labour as an essential condition of venturing, and seeing a successful, salaried friend from the corporate world should not be a de-motivating factor. The early years, especially in a dairy industry, meant literally dirtying one's hands and foregoing the promise of a regular ride in a luxurious car. Humility was, therefore, another essential quality for a rookie entrepreneur.

1.2 Diving into Mud and Milk

Being new to business, Shivanath had no qualms to respect the mentorship of somebody who was well versed with the sector. After many deliberations and meetings, Bakre, a young boy from a traditional and conservative background, decided to jump into the dairy bandwagon. Calves can be reared into high productivity cows only if they are fed with four litres of milk every day for two years. This proved to be a very costly proposition for Bakre who started his business on borrowed funds. When he went back to the doctor with this feasibility issue, he was instructed to park his concerns and challenges until the end of the fifth year.

Bakre was a voracious reader, a typical passionate cricket lover, like many in the subcontinent of India, and used every moment to enjoy the natural beauties of life. So despite the valuable mentoring lessons and owning only a few buffaloes, he was unaware of their total count, because as a young boy, he had never stepped into the

cow barn or soiled his hands doing the menial tasks. What was missing from his search for venturing opportunities was any kind of felt experience of being a diary farmer.

Due to the inadequacy of funds, Bakre decided to ask for a bank loan, but he required somebody with regular income or property ownership to stand as a guarantor. Fearing just a whim of immaturity and on the pretext that his son had neither real exposure nor seriousness to handle the new business, his father initially declined to counter sign the loan papers. It was only because of the direct intervention of Shivanath's mother that his father agreed to provide him with that surety.

Buoyed with a loan of Rs 60,000/-, he purchased five expecting cows from Kolhapur district, and within 8–10 days, these cows started milking adding five female calves in the process to the extended family. Gradually, his business prospered with the milk output increasing from 40 to 150 L per day. He initially started with one employee but ended with three with the labour being supplemented with new technology. As of now, he has reared and sold 40 cows from his farm, a source for additional income generation.

At any point of time, he has 25 milking cows in his farm, a figure which he does not want to alter. According to Bakre, 25 cows are sufficient to generate income for a decent living for his family with six members and to maintain a high happiness quotient. He does not aspire to be super rich, hence decided against expansion.

About 5–6 years back, labour shortage created a severe setback for his business and he was almost on the verge of closing down the business. The timely intervention of his friend Ajay Dessai who arranging the introduction of a milking machine helped Bakre to stem the downturn and work towards revival.

Once upon a time, green fodder was a constraint for the dairy farmers. With new technological development, the regular supply of green fodder is not an issue of concern any more. Similarly, with the availability of milking parlours—automated milking facilities, the challenges posed due to non-availability of skilled labour, issues of hygiene and sanitation, are no longer the bottlenecks for the industry. Shivanth opines that if Israel can emerge as one of the largest milk producer, Goa with better agro-climatic conditions can surely go a step further.

Impressed with the small achievements of Bakre's model, the local Member of Legislative Assembly (MLA), Pramod Sawant, has roped him to share his expertize for setting up the community dairy farming unit for local youth under the cooperative sector. The society has received state government permission for rearing 100 cross bred cows with a one-time subsidy of Rs. 1 crore. Once the unit is operational, they propose to replicate this model in other parts of the state as well.

1.3 Spreading the Good Muck!

Bakre goes out of the way to encourage local boys to take up dairy business, because Goa is the only state which on an average provides about 80% subsidy on feed, shed, and dairy equipments. Further, the daily production of milk in Goa is about 1.5 lakh

litres but the requirement is nearly 4 lakh litres per day. The huge mismatch between demand and supply should provide for considerable opportunities for dairy business.

Young Bakre continuously updates his knowledge capital by reading books and visiting other farms. Even today, he devotes about 3–4 h for reading and has a good collection of reference books on dairy farming. He is very keen about training youth groups in dairy farming. At present, he is mentoring about 4–5 dairy groups from different parts of Goa. He has interacted with 50 group of farmers from different parts of the state with a view to inculcating an interest in dairy farming.

Bakre is also a great champion for knowledge capital sharing. He believes that there are wonderful entrepreneurship opportunities in Goa and that the youth need a helping hand in understanding the numerous schemes and programmes offered by the government. He mourns that even in the present knowledge economy, the knowledge capital is concentrated in the hands of few and that those with the know-how are too reluctant to share it. In his own small way, as a part of giving back to society, he shares his experience and expertize with youth groups for setting up dairy farms whenever and wherever possible.

Smart work, commitment and consistency have been the driving forces behind the success of the dairy industry. For Bakre, the quality of his work triumphs over its quantity. It is one industry which is tough on holidays and breaks. Looking back upon the road he travelled, he does not regret his decision to enter dairy business. For him, the venture guarantees cent percent peace of mind, mental satisfaction, and happiness to boot, especially when he refers to witnessing the show of gratitude the animals which he cares for and rears.

Bakre is of the opinion that the youth need not queue infront of government offices, industrial estates, and foreign embassies for obtaining a satisfying job to manage a happy family. The youth should explore the entrepreneurship opportunities available in every region, identify the suitable one, and work forward with self-belief, determination, and consistency. If Goa has to emerge as the entrepreneurship capital of India, Bakre feels that the seeds of entrepreneurship should be sown when the child is in the high school itself. In this endeavour, parents and teachers have to play a major role. According to him, if 15–20 youth groups can come forward to take up dairy industry, Goa can easily replicate a white revolution.

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