Review Article

Contract Manufacturing in Pharma - India, the Emerging Global Accommodator

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ABSTRACT

International pharmaceutical industry is one of the key revenue generating industries that is driven heavily by knowledge and innovation. Of late, core activities such as R&D that require high investments and high turnaround time have begun to move offshore to countries such as India. India's capability not just as a cost competitive production centre but also as cutting edge knowledge-hub endowed with rich scientific research talent pool that can create, mass produce, market and supply, is fast being recognized by key Pharma players globally. Leveraging India for their shared services, leading drug and pharmaceutical manufacturers of the world are increasingly looking at Indian companies as their strategic knowledge partners at all levels of value chain, be it in the form of contract manufacturing, contract research, preclinical, clinical trials or of late, contract marketing and contract selling. The objectives of the study among others include a) understanding the reason(s) why Pharma manufacturers contemplate a shared service or outsourcing arrangement (CRAMS – Contract Research and Manufacturing Services) and b) how a country like India which is seen as one of the most preferred destinations for CRAMS, can maximize the opportunity. The research is exploratory in nature and more of a review of available data as well as projections for the future. It does not involve the use of any statistical tool. Key findings of the study include identification of key drivers for contract manufacturing and it is expected that the study provides a strong case for Pharma shared services in India.

Keywords: Shared services, Contract Research and Manufacturing Services (CRAMS), Contract Manufacturing, Pharmaceutical Companies, Research & Development, Innovation, Contract Marketing, Contract Research.

INTRODUCTION

Explosive growth in global population which has been almost doubling every twenty five years as suggested by Robert Thomas Malthus comes with a lot of advantages and worries as well. Macroeconomic fundamentals advocate that a growing population is an opportunity because it increases consumption, production, employment, income and is more likely to be an outward spiral. However, development is not measured only by per-capita income and GDP. There are also other key indicators that are socio-economic in nature such as literacy, education, and standard of living and most importantly health care. In a *laissez-faire* system, private players take the lead role in supporting the government in almost all initiatives, and when it comes to health care (providers/drugs/bio-tech/pharma) they become even more prominent. Be it hospital or a multi-speciality medical institution or manufacturing pharmaceutical products and medical equipment, they account for more than a lion's share in terms of the contribution and service rendered. Among others, pharmaceutical research and development, manufacturing of drugs and medicines have become the point of active debate owing to their very nature that attract stringent regulations from policymakers and close scrutiny from industry watchdogs. The industry regulators world-wide such as the USFDA, MHRA-UK, TGA-Australia, MCC-South Africa have been consistently tightening the legal and ethical norms for end-to-end operations in the manufacture of drugs, patents, clinical trials and research in this field. Consequently, MNCs in this industry which is essentially knowledge-based and knowhow driven, have found it more advantageous to move out of their parent countries. Complete operations or part of it such as R&D or manufacturing were shifted out to low-cost destinations, such as India, in order to remain profitable. These host countries had significant positives to drive better operational efficiencies such as conducive business environment, competitive cost position in operations and continuous access to high talent pool for lower costs- just to name a few.

The emergence of a business model popularly known as shared services was an ideal launch pad for Indian Pharmaceutical Industry to take off into the arena of mass production in the late nineties. The model spread its tentacles to cover the sharing of premises, facilities, licenses and knowledge capital and led to the introduction of a new concept called contract manufacturing. Contract manufacturing generally is referred to the outsourcing of certain production activities of a company to third-party vendors. This could include outsourcing of the production of parts, components, and systems or the finished product itself. For instance, pharmaceutical companies share the chemical composition or formula of a drug with pharmaceutical contract manufacturing organizations (CMO) which in turn mass manufacture them at their facilities. The high degree talent pool and affordable labour in terms of comparative costs have made India one of the most preferred destinations for contract manufacturing and firms from USA and Europe and of late from Japan have already started moving towards India in a big way mostly through collaborative arrangements and facility sharing. The rise of Indian drug and pharmaceutical industry IDPI in the world pharmaceutical map can be ascribed to the move from product to process patent after 1970, combined with the Liberalization, Privatization and Globalization (LPG) policy reforms in 1991[1]. The cutting edge cost advantage has already resulted in more than 50% of the revenue of Indian Pharmaceutical industry coming from overseas markets. Added to that, innovation in functional distribution and marketing has given a new dimension to the shared services model in India.

Contract manufacturing is increasingly seen as a strategic option by Pharma players to increase their global market footprint for many reasons. The key drivers among others for rise in Pharma contract manufacturing are:

1. Dwindling profit margins in highly competitive global Pharma marketplace;
2. Growing demand for generic drugs; patent expiration of major therapeutic brands;
3. Demand for up-to-date processes;
4. Need for high-quality & D facilities and cost-effective production technologies that meet global regulatory requirements (especially as current manufacturers are forced to move out of many antiquated plants in the west);
5. Government initiatives in the healthcare sector;
6. Innovation in biologics and high potency API; and
7. Finally, escalation in the incidence and rate of growth of diabetes, cancer, cardiovascular diseases and psychological illnesses.

With this background, based on the academic, practitioner and government published literature, the current paper aims to review the current Pharma shared service space in India, understand its strengths, challenges and opportunities. The nature of the research is exploratory and secondary data i.e., published academic, industry and government literature in the field of pharmaceutical shared services is used to identify patterns and trends in the field of Pharma shared services as documented over recent years.

DISCUSSION

Leveraging India for Pharma Shared services

As per a study conducted by Zinnov Management Consulting, a leading globalization advisory firm, of the seven verticals which contribute heavily to the growth of India's Shared Services space, Aerospace & Defence, Automotive, BFSI, Retail, Drugs / Bio-Tech / Pharma, Insurance, Oil & Gas, Banking/Financial Services & Insurance are the most mature segments, while Retail and Healthcare (Providers/Drugs/Bio-Tech/Pharma) are the emerging verticals[2]. Adoption of technology in order to scale up the business operations seems to be common to both the segments. The Indian pharma landscape offers a vibrant business platform that is complete with start-ups; R&D centres that deliver cutting edge technology solutions and finally service provider eco-system that innovates on processes and business models - which is undoubtedly the best eclectic mix of pluses that a potential shared service centre destination can possibly offer.

Leveraging India for their shared services where the head start was given by cost and human capital arbitrage, businesses world-wide now are fast embracing the high value propositions that India has to offer as a strategic knowledge partner in terms of 'value addition' and 'innovation'. On the other hand, it is imperative for Indian companies to prove that they are not redundant and are indeed the global leaders of over 100 most sought after shared service potential destinations in the emerging off shores. According to the consulting firms Capgemini[3] and Zinnov, a Pharma shared service centre in India is a win-win for both parent organization and host country for a host of reasons such as:

1. Economies of scale(including economies of experience and better management control) to the parent organization where 'less is more' and where every dollar spent delivers more value than anywhere else in the world;
2. Process standardization that results in quicker transaction cycles and consistent processes; better service levels for customers;
3. Disciplined business practices as all aspects are defined to the minute detail by SLAs;
4. Better operational efficiencies to the parent organization as shared service centres operate as specialized centres of excellence;
5. Conducive and stable business environment that enables the parent organization to envision long term business plans. This includes strategic investment for process or business model innovation and sustains good manufacturing practices (GMP);
6. Attracting and retaining the best human capital, as, global career path is made possible because of the end-to-end process ownership.
7. The collaborative arrangements either in the form of a short term joint venture or a long term strategic sale, enables the Indian companies to augment their resources to scale up into the big league.

Pharma industry and contract manufacturing- global and Indian scenario

The dynamics of global pharmaceutical contract manufacturing market can be better understood by means of two broad segmentations, as reported by Mordor Intelligence in their March 2017 report. One: by region; and two: by type. By region, the five market segments are: North America, Europe, Asia-Pacific, Latin America and the Middle East & Africa. North America holds a lion's share of the market, with an approximate share of 36%, followed by Europe and Asia-Pacific. The emerging markets of China, India and Japan are spearheading the growth in the Asia-Pacific region.

By type, the three Pharma market segments are active pharmaceutical ingredient (API), final dosage formulation (FDF) and secondary. The growth in the API market is driven by several factors such as: the increase in development of biological APIs, increase in demand for API packaging, upsurge in demand for abbreviated new drug applications (ANDA) and rise in drug master files (DMF) from Indian companies. Also, API packaging is significantly revenue-generating sub-segment. An important observation here is that even though captive manufacturers are currently leading the API market, they are expected to eventually partner with contract manufacturers to overcome the challenges of complex and costly in-house API manufacturing and increasing competition.

As per a late 2016 report by Technavio, the global pharmaceutical contract manufacturing market was valued at USD 65.10 billion in 2016, and by 2022, the same is estimated to touch USD 94.38 billion, at a CAGR of 6.36% during the forecast period from 2017 to 2022 [4]

India is the third largest Pharma manufacturer in terms of volume and thirteenth in terms of value[5], contributing about 10% to global production. The country is way ahead of its competitors in Drug Master File (DMF) filings that is going up

more than three times for the last few years. As one of the single-most contributors to the global exports to the tune of 20% by volume, Indian Pharma market now stands at USD30 billion, signifying the vital role played by the Indian Pharma companies both as local revenue generators and global players. Indian pharmaceutical exports to over 200 countries are expected to grow between 8-10% in FY 2016-17.The estimated rate of Indian Pharma industry growth is over 15% per annum between 2015 and 2020, which is much higher than the global rate of 5% for the same period. The decade from 2005 to 2015 witnessed growth in India's generic market by 22%, which, by 2020 is expected to capture at least 6-7% of USD760 billion global generics market, making it the sixth largest pharmaceutical market globally by absolute size, as stated by Mr. Arun Singh, Indian Ambassador to the US. India accounts for around 30 per cent (by volume) and about 10 per cent (value) in the USD 70-80 billion US generics market. The India Pharma industry as a whole grew by 18% for the last decade. Clearly, the facts and figures of the Indian Pharma industry for the past few years are strong indicators that India has not only arrived in the global Pharma map, but is here to stay. Further, with 600 to 700 US Food and Drug Administration (USFDA) approved pharmaceutical manufacturing facilities; accounting to close to 40% of the total facilities, India has the highest number of such facilities outside the US. USFDA given drug approvals to Indian companies have almost doubled to 201 in FY 2015-16 from the previous year's 109. India has an important role in the production and supply of drugs at international level, as, currently over 80% of the USFDA-approved antiretroviral drugs used globally to combat AIDS (Acquired Immuno Deficiency Syndrome) are supplied by Indian pharmaceutical firms.

The road ahead –Challenges and Opportunities

The contract manufacturing in Pharma business setting has never been more challenging and interesting at the same time. Challenging, due to the complex and unique interplay of ever increasing factors that increase the gap between strategic vision and operational reality and interesting, as companies intrepidly aspire and venture to be the part of the growth story despite the local and global challenges. The latest case in point is the Goods and Services Tax (GST) that is touted to be game-changing and is expected to have far-reaching impact on all elements of the Pharma business such as sourcing, production, distribution, transportation and warehousing[5]. The impact of the same is expected to be significant whether in terms of refund of accumulated credit (resulting out of increased rate for inputs *vis-a-vis* reduced rate of output) when GST is applicable or possible tax-free import of certain Active Pharmaceutical Ingredients APIs used in manufacture of life saving drugs, or duty-free movement of goods under job work model. All these in turn are bound to trigger issues such as moderating costs, price and quality.

India, along with Brazil & China, has earned a place for itself as a top generic Pharma player in the export market to the developed western countries by producing and supplying superior quality pharmaceuticals that come with reasonable pricing. The Indian Pharma industry has shown tremendous progress on several indices such as infrastructure, technology, product range, GMP (Good Manufacturing Practices), regulation compliant manufacturing facilities. Also, the high quality standards of purity; stability and international safety; health and environmental protection under which bulk active ingredients are manufactured and supplied by Indian Pharmaceutical companies ensure that they will pass through several rounds of stringent assessment by various regulatory authorities in the importing countries of buyer companies. Aggressively pursuing overseas market expansion, Indian Pharma companies are now seeking regulatory approvals in USA in specialized segments like Anti-infectives, Cardiovascular and CNS group.

The most important factors that are likely to keep contract manufacturing in the IDPI in good stead in the global market include:

1. Fast approaching patent expiries;
2. Availability of adequate compliant facilities in the country to meet high magnitude of demand;
3. Rise in production approvals/licenses and supply contracts with overseas companies;
4. Changing preferences in regulated markets for generic compositions to keep the rising health care costs under check.

According to Gray, Tomlin & Roth (2009), the power of contract manufacturers in fact comes from the learning-by-doing approach wherein they base their future cost decisions on their past outsourcing strategies. In the same article they advocate that partial outsourcing and production for leverage could be an optimal strategy, be it for original equipment manufacturers or the contract manufacturers[6]

As per a report released by the Department of Industrial Policy and Promotion (DIPP), India, the ID&PI (IDPI) sector received cumulative Foreign Direct Investment (FDI) inflows worth US$ 14.53 billion for the period between April 2000 and December 2016[7].Further, the investment scene in the Indian pharmaceutical sector looks buoyant with the latest amendment of the existing FDI policy that permits FDI up to 100 per cent under the automatic route for manufacturing of medical devices subject to certain conditions. With established domestic drug manufacturers looking at tapping new overseas markets in order to increase export revenues, local manufacturing facilities are being stepped up in terms of meeting capacity requirements and international quality standards. Perhaps it is important to note here that huge investments are underway not just by the private players, but also few state government bodies such as Kerala State Industrial Development Corporation (KSIDC) and Kerala Industrial Infrastructure Development Corporation (KIIDC) in putting up the manufacturing facilities for injections and vaccines in addition to formulations and APIs, in order to cater to the increased demand for Indian generic drugs[5]

India's growing importance in the global Pharma arena is contributed by small and big companies alike, albeit the roles differ. For instance, smaller and relatively newer companies are starting at the lowest rung by churning out volumes in production where-in they take over the manufacture of the simple, low-margin generic pills - the larger companies built their businesses on, while the larger and seasoned players are diligently progressing up the value chain into the manufacture of differentiated, more complex, higher-margin medicines that require more valuable approvals[8]. The steps taken by companies to survive and sustain in times of tough competition whether from local or international players include -product, process diversification and consolidation of highly fragmented IDPI with big players holding a major share. According to the latest data compiled by Bloomberg, the leaning towards R&D is particularly evident by the steadily increasing cost allocation made by top Indian pharmaceutical companies which reached 10% of their respective sales last fiscal year. An important feature that clearly puts India at advantage is its readily available large pool of

skilled scientists and trained engineers who have the talent to navigate the industry ahead to an even greater level. Major initiatives taken by the Indian government to promote pharmaceutical sector include the decision to allow 50% public funding in the pharmaceutical sector through its Public Private Partnership (PPP) model, incentivise bulk drug manufacturers to reduce dependence on imports of APIs, about 85% of which is from China[5].

That shared service can be an efficient sourcing and effective delivery model of back office operations has been proved beyond doubt to control expenses and optimization in Pharma business, just as in other segments. But in taking the SS model up the value chain, it is vital for the Pharma companies to review the business model at various levels such as the scope of service offerings, extent of process standardization, relevance of Sales Level Agreements (SLAs) and reasonable pricing mechanism. The shared services model for the pharmaceutical industry has been well explored for contract manufacturing (third party manufacturers), but the other strategic areas such as working with Clinical Research Organizations on R&D and more recently sales and marketing through Contract Sales Organizations are the areas that need to be further explored.

Contract manufacturing, like other forms of shared services or outsourcing has two sides to it. There are both benefits and risks associated with it. The nature of possible risks that could possibly have performance repercussions could range from direct economic ones, such as, unprincipled/poor contracting decisions and expensive renegotiations; and the other contingency factors such as quality risk arising out of the aging manufacturing facility[9].

While India has already made its presence felt in the early and late clinical stages of contract research, targeting the untapped markets for pre-clinical and early drug discovery studies could give the much needed impetus to the under-utilized facilities of contract research segment. There still remain opportunities in the services of medicinal chemistry, bioinformatics, regulatory filings, and pharmacovigilance and biopharmaceutical development[10]. Collective capacity management and multi-project relationships could be considered to forge long-term relationship with old customers. The untapped market of biosimilars, biobetters and lifecycle management support of off-patent, modified generic drugs is also identified to be the best suited to technically advanced, cost-effective contract service providers.

CONCLUSION

The Indian Pharma industry poised to grow to US$100 billion by 2025 has unfailingly been on a strong growth trajectory for many years now. The outlook for the next five-year period remains extremely positive especially in the bulk exports of generics or off-patent products. This is good news specifically for Indian Pharma CRAMS. The sub-sector which already has earned its well-deserved place in the global Pharma manufacturing space by offering a globally competitive and cost-effective integrated product mix of high-technology services, high-end research and production facilities and innovative biologics, can maximize the opportunity. India's 1.25 billion populations that is in urgent need of affordable health solutions is another reason why many global Pharma players are looking for options to forge JVs with successful Indian Pharma companies. Further, with government's 'Pharma Vision 2020' that envisions India as a global leader in end-to-end drug manufacture in years to come, Indian Pharma companies must seize the opportunity in outpacing its cut-throat rivals and become the largest Pharma player in the world from its current share of roughly 2.5%. The seamless and borderless integration of processes and technology, ably aided by people has already taken Indian Pharma shared services to the next level. It is now time for the Indian model to become the global benchmark. This will not only help realize the ambitious target of USD 100 billion world- wide by 2025 but also ensure a big piece of a pie for Indian Pharma. The pharmaceutical business is driven by research and development; the financial viability and sustenance is driven by cost advantage; and the growth is driven by a good blend of systems, processes and procedures which are the result of continuous monitoring and human involvement. Innovation is not necessarily the outcome of compelling necessity, but it should be viewed as a constant and unflinching quest for raising the bar. It is said that a journey to thousand miles begins with a single step, but what is witnessed here is a giant leap and hence the journey may go a long way bringing in its way not only economies of scale but also economies of shared management of the highest professional order.

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