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INDIAN MANUFACTURING SECTOR IN THE POST-COVID-19 PERIOD: A SWOT CUM TOWS ANALYSIS

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Abstract

The manufacturing sector of Indian economy in the Pre-COVID-19 period was already passing through a turbulent phase and the initiative by the Government had already commenced to mitigate its effects. However, the sudden outbreak of COVID-19 pandemic created a massive disruption in the manufacturing sector resulting in factory closures, supply chain coming to a halt, informal migrant-labour chaos spreading across, witnessing wage reduction and job cuts, bringing huge uncertainty in the future. The challenges ahead in the manufacturing sector are immense but such situations are the foundation for huge opportunities too. The Post-COVID-19 period is going to create a new-normal in all areas of product, process, people, policy and performance in the manufacturing industries. Based on this transition new Strengths, Weaknesses, Opportunities and Threats (SWOT) will emerge in the sector. This paper attempts at understanding the likely new-normal of tomorrow, reviewing the changed SWOT and developing the TOWS matrix to handle the Post-COVID-19 period effectively of the manufacturing landscape of Indian economy.

Keywords: Manufacturing sector, SWOT analysis, TOWS matrix, Make-in-India, Ease-of-doing-business.

INTRODUCTION

The industry world-leaders till recently were engaged in evolving strategies to take the Industrial growth to next higher orbit through the Industry-4.0 initiatives. Indian manufacturing sector, however, was grappling with the low demand-side pull from the market then. In order to handle the challenge, the policy makers in India brought in the reduction of corporate taxes (Pandey 2020). Many other initiatives were expected. No one had ever dreamt of the sudden outbreak of COVID-19 pandemic that followed. The havoc of COVID-19 virus adversely affected the humanity and the business at large, in a short span. Production of goods and services came to a grinding halt. Supply chain experienced a level of disruption never experienced earlier. The significant lot of the most vulnerable truck-drivers and logistic workforce fled due to different reasons. Supply of non-essential goods and movement of people stopped due to health and safety reasons. Crude oil price plummeted to zero level. Life-protection, health-care, hygiene, food-supplies, social distancing and other basic need fulfillment became the only priority. The focus swiftly moved to the survival mode of *here and now.* This is also envisaged to lead to the rarest-of-the-rare phenomenon of a dual Demand and Supply shock even over a long post-COVID-19 period. But, what after lockdown? Humanity would continue needing goods and services. Manufacturing of goods would commence but with a new normal. Demand would manifest itself in a different avatar which would change the entire manufacturing practice in industry.

China, the factory of the world, during the last couple of years was going through some major challenges – shortage of workforce keen in manufacturing sector, rising labour wages, trade war with US, slow exit of certain factories and then the advent of the deadly virus COVID-19. In the same time creation of manufacturing hubs was being witnessed in ASEAN (Association of South East Asian Nations) countries – Vietnam, Philippines, Bangladesh and Thailand. These all had started indicating that China may not be able to return to its manufacturing leadership position. Indian manufacturing, in the current scenario stands a good chance to emerge as a strong and reliable substitute to China given its congenial manufacturing landscape.

OBJECTIVES

Under the current COVID-19 pandemic scenario manufacturing sector of Indian economy will experience a big change. Keeping this in perspective the three objectives of this paper are;

- Understand the transition expected in the different facets of Indian Manufacturing sector.
- Carryout a SWOT analysis of Indian Manufacturing sector in the current COVID-19 scenario.
- Recommend potential strategies to manage the Post-COVID-19 period using the TOWS matrix.

CHALLENGES, IMPLICATIONS AND RECOMMENDATIONS

During the Pre-COVID-19 period of the current year- 2020 the manufacturing sector of India was witnessing a big challenge in its demand side. Its 16% share in the GDP of Indian economy with a target of attaining 25% by the year- 2025 was looking very challenging, though not unachievable. The policy makers and the industry leaders were mobilizing strategies for its faster growth rate. However, the nation was then suddenly faced with the COVID-19 pandemic and the 55-day lockdown that followed left many envisaging *how is tomorrow going to look like*.

The first ninety days in the post-COVID-19 period are going to be critical for the manufacturing industries. The actions each industry take during these three months will largely decide its transitional speed from the Survival to Normalcy and finally to the Growth phase. Transitions are periods of opportunity, a platform to start with innovative ideas and to implement the desired strategies in the business. But they are also periods of acute vulnerability, because of the market uncertainty and the quality of next steps the industry leader and policy makers take. The envisaged top five concern areas in the ninety-days period are:

- Financial stress due to liquidity crisis, debt funding issues and survival to run businesses,
- Effect of chaos in production workforce in terms of their availability and productivity issues,
- Increased cost of production due to low asset utilization and additional health & safety expenses,
- Decreased consumer demand because of uncertainty, low confidence and risk taking ability, and
- Disruptions in Supply-chain due to chaos in the disrupted system and obstacles in import/export.

Short-term to Medium-term Impact and Recommendations

Though it is difficult to predict some of the envisaged short-term to medium-term challenges the manufacturing industries are likely to face, their effects and recommendations in the post-COVID-19 period, however an attempt has been made to share the inputs from the industry leaders:

• Health & Safety

Check-up of employees during every entry into and exit from the factories, adherence to the Social distancing, not crowing the attendance taking area, ensuring Hand-hygiene (regular washing), appropriate masking, towards contact-less (gloves / no-touch) *Gemba* operation, periodic sanitization of relevant areas, discipline and hygiene in canteens, and many such health related newer practices would get implemented. This would result in layout changes (spacious), more washing areas (contactless tap operation), increased water consumption, availability of disposable cost-effective masks / gloves, emergency health rooms, homing facility for worker, rules during taking meal and other eatable etc. This is bound to make manufacturing units a better place to work in terms of health and hygiene, however, there will be a cost to it.

• Workforce

A very large proportion of the work force in industry is informal-labour. The informal migrant labour and truck-drivers (Khan, 2020) returning back to the industry for work is likely to take a hit. Their fear psyche will dominate their decisions and they would adopt the *wait and watch* approach for a reasonable period of time. Local labour is not likely to be an equivalent early replacement to production to the migrant in terms of desired skill levels, productivity and quality output. Warehousing and other supply chain related activities are likely to be affected heavily, especially during the initial periods of post-COVID-19 when the pent-up demand rises. A lot would also depend on the responsiveness of MSME which have a large number of informal labours. This is the apt time for reforming the archaic labor laws with special focus on the burgeoning informal labour lot. MSME will be struggling due to the cash flow issues and informal migrant labour availability in the initial survival phase. The financial support from the OEMs and the government incentives would be the way out for them to manage the crisis.

• Machine / Equipment

Machine utilization will be a focus area for improvement in the uncertain market situation. Owing to social distancing and allowed limited workforce conditions, additional working shifts are expected to happen. Low cost automation on the machines would be an avenue which industry leaders would implement immediately keeping health & safety and productivity issues in the radar.

• Operational Systems and Processes

The need to operation with JIT (Just in Time) approach would gain momentum to enhance the Inventory turn ratio. A true application of Pull system / Kanban system is likely to be witnessed to ensure value flow. The hidden but commonly referred seven wastes will be identified by business leaders for its reduction and elimination. Shorter lead-times, reduced time to market, smaller lot-size, waste-free manufacturing systems, sweating out the plant assets, increased total cost of ownership and increased agility to respond to meet customer demand would provide relief and subsequently become the new-normal. The industry leaders will transform existing systems into lean and still leaner operational systems through various mapping techniques as these will provide long term sustained benefits.

• Market Demand

Though there would be an initial spurt in demand after opening up of the lockdown but in medium-term basis the consumer would be cautious in their consumption of non-essential goods. Health and safety related demands are bound to grow. New behaviours would define new customer demands, fear of the uncertain future, risk aversion behaviours and lower purchasing capacity are anticipated to bring in more severity to production process in terms of demand, quality and quality in deliveries.

Medium-term to Long-term Implications and Recommendations

The Manufacturing sector has always been referred as the growth engine of a nation's economy. Production of goods is

a sign of prosperity of a nation (Giffi et. al, 2013). Therefore, it is imperative to understand the long-term implications of COVID-19 on manufacturing sector and strategies to handle them. Its critical long-term implications and potential recommendations are as follows;

• Industry Operation

It is expected that chemical, electronic and auto industries will be affected considerably as a very large proportion of this is imported from China (Subash, 2020). The current situation in China and the possible future dynamics in world-trade with China could severely impact the availability of raw material and sub-assemblies. Sourcing challenges coupled with pressures of localization would throw new challenges to the manufacturing industry leaders. Innovation, localization and the make-in-India drive would accelerate further. The Government's support in the form of financial incentive to the MSMEs (Micro Small and Medium Enterprises) – life line of Indian manufacturing, could quickly move them to the normal trajectory. A big potential for labour intensive industries exists. As already evident there is going to be a huge continued demand for health care related products in India. E-commerce related business will grow rapidly to ensure deliveries of goods at the homes / offices of the customers.

• Relocation of Multinational Factories

Realignment of trading with China is likely to result in the movement of manufacturing factories to get relocated to more manufacturing conductive Asian countries. The galloping score of Ease-of-doing-business in India and the country's own strengths should result in attracting many factories to India.

• Reforms

This is the transition period and the apt time to bring in long awaited reforms in the areas of Labour market, Land acquisition, Power distribution, Taxation (GST-II), Mining, Circular economy (Dubois, 2020) and many more.

• Facilitating Sectors

Two sectors – Education and Agriculture have significant implications on the growth of manufacturing sector. In the next few years the policy makers, industry leaders and academia will have to revisit the education content in terms of its relevance and value addition to manufacturing growth. Similarly, major reforms are needed in the agriculture sector to improve their earnings and make the sector more attractive. This is bound to improve the prosperity of a large cross-section of people, improve their earnings and would increase the consumer demand of manufactured goods.

• Digitalization

Accelerated digitalization and application of digital media will be the crucial mantra of the Post-COVID-19 period with health and safety of humans in mind. It is expected that current the digital enabling mode would graduate to the digital empowering mode to the rural population to make an impact in the area of demand creation in India. The virtual rides through Website visit and browsers handling for new enquiry will become more important than the real ride of vehicle. The customer will become smarter and well equipped before interacting face-to-face with the sales person.

• Technology

The medium and long-term implications in the post COVID-19 period will drive low-cost automation in operations, application of robotics for non-value adding labor content of manufacturing, use of 3D printing for development of critical parts, accelerate the application of drones and Automated Guided vehicles for material movement and Artificial Intelligence (Srivasatava, 2018) would play a major role in consistent assessing and re-planning due to changing situations and increasing uncertainty. Physical and seamless supply-chain will become critical and would utilize technology (RFID) extensively. Innovation and New-product development shall see a leap in Indian manufacturing arena. However, these are likely to happen at a gradual pace.

METHODOLOGY AND APPLICATION

The research study has utilized the inputs from the manufacturing industry leaders for the SWOT analysis to identify the internal Strengths and Weaknesses of the Indian manufacturing sector as well as the associated external Opportunities and Threats. The identified Strengths and Weakness were then matched with the Opportunities and Threats to develop the TOWS (reverse spelt SWOT) matrix. Externally focused TOWS matrix provided different strategies developed with the following four questions: make the best use of the Strengths, Outwit the Weakness, capitalize on the Opportunities and finally, manage your Threats (Aslan et. al, 2012).

The Combination of Strengths and Opportunities (SO) provided strategies (MAX-MAX strategies) that focused on how to make use of the Strengths to take full advantage of the Opportunities available. The combination of Strengths and Threats (ST) highlighted the strategies (MAX-MIN strategies) that could take advantage of the Strengths to avoid the real and potential Threats. The other combination of Weaknesses and Opportunities (WO) showed the strategies (MIN-MAX strategies) that could make use of the available Opportunities to minimize the effects of the Weaknesses being experienced. Finally, the fourth combination of Weakness and Threats (WT) attempted to define the strategies (MIN-MIN strategies) that minimized the weaknesses and avoid the Threats.

With the involvement of the manufacturing industry leaders and academia experts and based on the methodology the SWOT table and TOWS matrix were developed and is shown in Fig.1.

Fig. 1. SWOT analysis and application of TOWS matrix to India's Manufacturing sector

	STRENGTHS	**WEAKNESSES**
	S1. A vast domestic consumer market in a population of 1.35 B.	W1. Quality of Infrastructure (Port and IT connectivity issues)
	S2. A rich pool of low-cost unskilled labour.	W2. Low labour productivity and rigid labour laws.
	S3. Country with rich natural resource base.	W3. Illegal mining, environment issues and slow mining growth.
	S4. Growing Startup business culture.	W4. Complex tax-structure, low compliance rate & IDS anomalies[1].
	S5. Galloping *Ease-of-doing-business* score.	W5. Long and agonizing land acquisition process
	S6. Large contribution of MSME to Indian industrial growth.	W6. Liquidity constraints in the informal MSME business.
	S7. A Large technical and managerial talent pool.	W7. Applied (R & D) Research and Development and Innovativeness.
	S8. Well formulated National Manufacturing Policy.	W8. Unattractive Mfg. profession and declining value-add growth.
	S9. Demographic dividend.	W9. Unhealthy employment trend.
	S10.World Class transforming ability-Scalability, Skill & Speed	W10. Back-end value-chain - New product development & new designs.
OPPORTUNITIES	**SO ('Maxi-Maxi' strategies)**	**WO ('Mini-Maxi' strategies)**
O1. Large export market – Automotive, Healthcare, Electronics, Pharma & Textile.	SO1. Roll out red-carpet to attract investors exiting China and other global giants.	WO1. Reforms port systems to reduce clearance lead time. Revisit rail transportation for effective tariff and improved efficiency.
O2. Young unemployed rural aspirants.	SO2. Recast and expand Apprenticeship system - Quality and relevance.	**W**O2. Provide quality and relevant vocational skilling. Fast track the long pending labor law related reforms.
O3. Gains from resource extraction efficiency to support manufacturing.	SO3. Table and implement National Mineral policy for faster economic growth.	WO3. Implement the National mineral policy to trigger direct / indirect job growth (Kapoor, 2019).
O4. Potential in MSME for exports or to large firms in India.	SO4. Incentivize the entrepreneurship drive in terms of technology / finance[5].	WO4. Simplify tax structure – GST and correct the IDS anomalies.
O5. Attract countries to relocate Chinese factories.	SO5. Build *Brand India* globally to attract large firms.	WO5. Long awaited reform to be defined and implemented.
O6. Export electronics and e-parts (China led).	SO6.Incentivize growth of informal labor-intensive units.	WO6. Revisit MSME funding and taxation system.
O7. Backward & forward value chain linkages coupled with AI & VR.	SO7. Engagement of technical / Mgmt. institute to contribute to the growth of MSME.	WO7. High quality industry relevant funded research from inter disciplinary Universities.
O8. Narrow the Trade deficit (Import - Export).	SO8. Incentivize (lower tax) *domestic buying & exporting*.	WO8. Invest in Heavy industries -defense, aerospace & railway
O9.Huge consumption potential in rural India.	SO9. Encourage *rural education and urbanization.*	WO9. Create NIMZs to facilitate MSME growth.
O10.US-China trade tiff & Post-COVID-19 scenario leading to relocation of manufacturing factories.	SO10. Create new s*trategic alliances for* technology, design, new markets and skilling. Streamline project clearances and relaxation in FRBM act[3].	WO10. Nurture Center-of-excellence in Universities for Design and New product development with industry leaders
	STRENGTHS	**WEAKNESSES**
	S1. Huge domestic market with a population of 1.35 b	W1. Quality of Infrastructure (Port and IT connectivity issues)
	S2. A rich pool of low-cost unskilled labour.	W2. Low labour productivity and rigid labour laws.
	S3. Country with rich natural resource base.	W3. Illegal mining, environment issues and slow mining growth.

	S4. Growing Startup business culture.	W4. Complex tax-structure, low compliance rate & IDS anomalies
	S5. Galloping *Ease-of-doing-business* score.	W5. Agonizing land acquisition process
	S6. Large contribution of MSME to industrial growth.	W6. Liquidity constraints in the informal MSME business.
	S7. Large technical and managerial talent pool.	W7. Applied R & D and Innovativeness.
	S8. Well formulated National Manufacturing Policy.	W8. Unattractive Mfg. profession & declining value-add growth.
	S9. Demographic dividend.	W9. Unhealthy employment trend
	S10.WCM transforming ability : Scalability, skill & speed.	W10. Back-end value-chain - New product development & new designs.
THREATS	**ST ('Maxi-Mini' strategies)**	**WT ('Mini-Mini' strategies)**
T1. Aggressive Chinese competition.	ST1. *Make-in-India* drive with multi-national Technical alliance	WT1.Revamp Port & Railways for transport effectiveness/efficiency
T2. Competitive South East Asian manufacturers[4].	ST2.Replicate *MII* success of Mobile phones in other factories.	WT2. *Skilling-India* drive to become imperative & labour law reform.
T3. E-waste generation from e-product utilization.	ST3. Hasten the '*Circular economy*' with its *6R* drive.	WT3. Reduce use of new material by setting re-manufacturing industries.
T4. Burgeoning informal employment in the Post-COVID-19 period.	ST4. Reform labour laws - flexibility / performance / Health & Safety.	WT4. Correct tax anomalies & reform labour laws-flexibility / performance / Health & safety.
T5. Average Corruption perception index (CPI).	ST5. Accelerate the *Digitization* drive and *online* transactions	WT5. Design and implement the land reform bill for speed & transparency.
T6. Post – COVID - 19 extinction of many MSME leading to large firm driven 'Dual' structure.	ST6. Provide swift big stimulus / GST reduction (Dewan, 2020) to the MSMEs and incentivize non-existent middle size firm growth.	WT6. Incentivize survival of MSME and their transitioning to mid-size firms.
T7. Depleting resources and increasing material consumption.	ST7. Leadership making the implementation of (Dubois, 2020) *Circular economy* imperative.	WT7. Academia - Industry engagement for relevant R & D. Tie-ups with Center of excellence.
T8. Non-performing and bleeding PSUs.	ST8. Develop and implement focused *turn-around strategies.*	WT8. *Exit decision* policy for bleeding Public sector units (PSU)
T9. Post-COVID-19 vulnerability from Cyber-threats in AI driven Mfg.[2]	ST9. Develop and priorities robust security in IT systems	WT9. Industry-Academia engagement in digital and operational security.
T10. Poor performance of Agriculture sector.	ST10. Modernize Cold-chain and Public Distribution system	WT10. Boost research in Agriculture and Food processing.

Acronyms used: WCM - World Class Manufacturing, IDS – Inverted Duty Structure, AI- Artificial Intelligence, MII- Make-in-India, 6R- Reduce, Reuse, Repair, Refurbish, Recover and Recycle, GST – Goods and Service Tax, NIMZ- National Investment Manufacturing Zones, FRBM act – Fiscal Responsibility and Budget Management act. VR-Virtual reality.

References: [1]- (Srivastava, 2019), [2]- (Our Bureau, 2019), [3]- (Swarup, 2020), [4]- (Subash, 2020), [5]- (Mathur, 2019).

DISCUSSIONS

COVID-19 pandemic is likely to have significant implications on the Manufacturing sector of India's economy. The first 90 days in the post-COVID period shall be critical and would witness a manthan / churning of new ideas and its implementation in manufacturing industries by policy makers and industry leaders in different areas: consumer behavior, new ways of working in the shop floors, safer ways of material movements, new online office floor systems, speedier application of low cost automation, and demand for the implementation of RFID / IIOT / 3D printing / Robotics (Seric & Winkler, 2020) and many more. Through Fig.1 the author has identified 10 sets of the key Strengths, Weaknesses, Opportunities and Threats which the manufacturing sector of Indian economy is witnessing in the current COVID-19 period. A set of forty strategies have been recommended, 10 from each combinations of SO, WO, ST and WT which are anticipated to first put on rails the manufacturing growth and then target its acceleration. It is envisaged that this is the apt time for the Government to implement reforms in the areas of Labor laws (focus on burgeoning informal labor), Land acquisition, Apprenticeship training quality, Infrastructure (Supply chain with focus on Port efficiency), Engagement relevant education and industry requirement (Jalote, 2019) and Farming / Agriculture. Utilizing the unique strengths that

the Indian manufacturing sector possesses for attracting new factories ready to get relocated from China or other industry giant from US / Europe would be a game changer. *Ease-of-doing-business* and India's congenial manufacturing landscape should facilitate this movement of factories to India. Actions in the *make-in-India* drive should display tangible results now. Incentivization of circular economy, technology (Digitization, Artificial Intelligence, Industrial Internet of Things, Robotics, 3D printer) and entrepreneurship would have a significant impact in manufacturing. In summary, opportunity exists and the policy makers and industry leaders will have to move swiftly to make the best use of it.

CONCLUSIONS

The transition from Survival to Normalcy and then to the Growth phase in the Post-COVID-19 period will be a challenging journey for many manufacturing industries in India. However, such a challenging situation will serve as an opportunity for many to evolve and implement new growth strategies. The manufacturing sector in Indian economy has many unique strengths coupled with the new opportunities to be taken advantage of in the periods ahead. The recommended forty strategies identified in the paper to handle the forty combinations of the four elements of SWOT would greatly facilitate the policy makers and the industry leaders to handle the challenging periods ahead, effectively. The few critical focus areas for the policy makers and leaders are – Implement the key reforms, attract investors, welcome the factories exiting China, provide support to MSME & farmers, provide the extra nudge to quickly enter the digital world and finally get ready for industry 4.0. The new landscape of the manufacturing sector in the India that emerges would make growth meaningful and faster with stability.

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