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Self-Reliance in Defence Manufacturing: An Assessment of Government Initiatives

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Abstract

"The country which has the indigenous design capability is the winner. If you have second hand technology, you can never hope to catch up with or have access to the state of art equipment. You will always be behind".

- Dr APJ Abdul Kalam

All nation states strive for a competitive advantage over its competitors especially in the defence sector. This facilitates shaping of the external and internal environment in pursuit of the National Vision, Aim, Missions and Objectives. The Republic of India has taken giant steps since independence in becoming a force to reckon with, in the comity of nations. However, despite having a vast defence industrial public sector coupled with a vibrant private sector, India is still largely dependent on foreign countries for crucial military equipment and technology. As a result, self-reliance in defence remains an elusive goal.

The Government has introduced a number of initiatives towards establishment of a state-of-the-art defence manufacturing hub. These include evolution of the Defence Procurement Manual (DPM) through the years, 'Make in India' initiative since 2014, 'Strategic Partnership Model' under Chapter 7 of the DPM-2016, launch of the visionary initiative of 'AatmaNirbhar Bharat' and finally, the Defence Acquisition Procedure. (DAP-2020).

The said initiatives have been duly supported with commensurate policy and structural amendments to realize this vision in totality. As on date, the defence acquisition framework comprises of the Defence Acquisition Council with its subordinate bodies namely Defence Production Board, Defence R&D Board and Defence Procurement Board with the Acquisition Wing handling all Capital procurements. However, in spite of all the forward-looking changes, the said framework has not been able to meet the defence requisites in a time bound manner either through domestic manufacturing or ex import.

The need to fully integrate the private sector towards developing the much-required indigenous capability in defence manufacturing has been established. The Government has dovetailed this aspect into policy development by providing the private sector an opportunity to play a meaningful role in defence production. In doing so, the Government has been able to create a conducive environment towards establishment of a commensurate defence manufacturing base which shall enable the country to achieve self-reliance in defence manufacturing.

No individual or collective research is singularly conclusive towards ascertaining the impact of Government initiatives on self-reliance in defence sector over the last 70 years. However, considering the policy, decision making structures and mechanisms governing the defence sector, it is an enormous challenge to acquire state-of-the-art defence technology or equipment without commensurate defence manufacturing ecosystem having its own research and development entity. This study provides an insight

into the said impact with key inputs based on the perception of a sample drawn from the population across the spectrum.

Keywords: Self Reliance, Defence Manufacturing, Make in India, SP Model, AatmaNirbhar Bharat, Defence Acquisition Procedure (DAP 2020)

Nature of the Study. The study is a Mixed Methods Research (Quantitative and Qualitative) using objectivism as ontological position and positivism as epistemology approach.

Sub Areas.The concept of Self-Reliance in Defence is vast and consists of large number of sub areas (not restricted to the following):-

(a) Evolution of the Defence Industry since Independence.
(b) Assessment of Make in India Initiative.
(c) Efficacy of the Defence Procurement Procedure.
(d) Strategic Partnership Model under DPM-2016.
(e) Policy Framework and Government Structures for Defence Sector.
(f) Assessment of Government Initiatives towards sufficiency in Defence sector.
(g) Performance of Defence industry including contribution of the Private Sector.

Selected Sub Area.

Self-Reliance in Defence sector is a prerequisite towards achieving a competitive advantage and thus, it is prudent to assess the significance of impact of Government initiatives towards achieving Self-Reliance in Defence. Whilst isolated studies have been undertaken to understand the key aspects towards achieving self-reliance in defence, this study has been restricted towards assessing the significant impact of Government initiatives on growth of Indian defence manufacturing ecosystem.

Research Questions.

The study explores the perception on the following key aspects:-

(a) Adequacy of the Government policies and structures governing Defence Sector towards achieving self-reliance in defence?
(b) Examine footprint of 'Make in India' in Defence Sector since inception?
(c) Have the Government initiatives successfully leveraged the potential of the private sector including R&D?
(d) Has the SP Model made a significant impact towards systemic indigenization and growth of defence manufacturing ecosystem?
(e) Has there been a significant transformation in the defence equipment procurement process through DAP-2020?
(f) Likely Impact of AatmaNirbhar Bharat initiative towards addressing existing voids and creation of a viable defence manufacturing hub?

Research Problem

"Progress is impossible without change and those who cannot change their minds cannot change anything."

- George Bernard Shaw

Since independence, the quest for achieving self-sufficiency in defence sector has been ever evolving. Initially, the defence sector was restricted to the ambit of the public sector only. From 1991 to 2002, industrial liberalisation led to technology gain in various sectors except defence. The Kargil Review Committee recommended opening up of defence manufacturing in the year 2001. Concrete steps were initiated in the year 2002 in the form of the Kelkar Committee recommendations aimed at reducing the Defence Import component from 70 % to 30 % in a time bound manner through indigenization, however, constraints of technology and resources have proved to be limiting barriers towards the desired end state. Reducing the protracted dependence on imports for military prowess has been the focus area for the Government over more than two decades. Our nation today has a vibrant mosaic of a developed Public Sector coupled with a state-of-the-art Private Sector with matching infrastructure. The Private industry today is capable of being a key player in defence projects and be a force multiplier in the country's search for self-reliance through indigenization.

The Government has taken numerous initiatives including the 'Make in India' Campaign since 2014 followed by the Strategic Partnership Model in 2016 coupled with an ambitious 'Defence Production Policy' of 2018 and finally, the 'AatmaNirbhar Bharat' programme in the year 2020. In addition, the acquisition process has been revamped recently in the form of Defence Acquisition Procedure (DAP-2020). All these initiatives are aimed at providing a conducive environment for the growth of a viable indigenous defence industrial base.

The said initiatives stand apart as unique and well-articulated schemes however, successful implementation of these programmes is paramount towards attaining the elusive goal of self-reliance in defence manufacturing. This study undertakes an assessment of the significance of impact of these Government initiatives towards achieving systemic indigenization in defence manufacturing.

Data Collection Plan.

(a) **Primary Data**.The primary data was collected through a questionnaire designed specifically for the purpose.

(b) **Secondary Data**. Open-source literature pertaining to the Indian defence sector in terms of policies, structures, annual reports, opinions, analysis, articles and publications etc.

Review of Literature.

A wide range of literature was reviewed so as to develop a fair understanding of the undermentioned aspects, prior to identification of the knowledge gaps and selection of the gap for further research:-

(a) Defence industry in India.
(b) Evolution of Defence Procurement Procedure (DPP 2005 to DAP 2020).
(c) 'Make in India' Initiative.
(d) Strategic Partnership Model 2016 and Defence Production policy 2018.
(e) Worldview on Public Private Partnerships (PPP) and its efficacy.
(f) AatmaNirbhar Bharat - Key aspects.
(g) Global perspectives and associated challenges.

Knowledge Gaps.

Post a comprehensive literature review on the subject, the following knowledge gaps emerge:-

(a) Marked contextual and operational differences govern the success of a PPP venture in a developing vis-à-vis developed economy. Study of these factors is a pre-requisite for any nation prior to undertaking any PPP venture. This area merits research to contribute to the existing literature.

(b) Existing model of defence procurement in India i.e., DPP 2016 had limitations and has made way for DAP-2020. Some degree of success has been achieved in acquisition of defence equipment. The SP Model needs to leverage the DAP-2020 to address the extant limitations. Limited literature is available on the implementation of the model and its progress in acquisition of defence equipment. This area merits research to provide avenues for measuring the relative success of the model.

(c) No literature is available on the contribution of the SP Model in the field of defence manufacturing. A study on assessment of the relative contribution of the model towards indigenization in defence manufacturing sector shall enrich the existing literature while providing research avenues to others in the field of PPPs in defence sector.

(d) While policy guidelines exist, no value research could be found on assessment of growth of Indian Defence Manufacturing Ecosystem as a direct fallout of evolution of policies, structures and direct contribution of Government initiatives including Make in India, SP Model (DPP 2016) and now, 'AatmaNirbhar Bharat'. An endeavour in this regard shall contribute to the existing literature.

Gap Selected for Research.

Limited literature is available on the contribution of impact of Government initiatives including Make in India, SP Model (DPP 2016) and now 'AatmaNirbhar Bharat' towards indigenization in defence manufacturing sector. Hence, a study on assessing the relative contribution of the initiatives towards indigenization in defence manufacturing sector shall enrich the existing literature while providing research avenues to others in the field of growth of Indian defence sector.

Likely Contribution of the Study.

There is not much research available to establish the congruence / linkages between the policy and regulatory framework governing the defence industry, willingness of the private sector to invest in R&D against the commercial adage of assured business, its effect on implementation of Government initiatives like 'Make in India', SP Model and its efficacy in facilitating acquisition of defence equipment. Further, the existing research presents contrarian views on the success of PPPs especially in defence sector. Limited literature and research material is available on the implementation of these initiatives and the benefits accrued till date. The extant study would attempt to identify the congruence / incongruence of above critical aspects in assessing the contribution of the said initiatives towards indigenization and growth of the defence-manufacturing ecosystem. It is likely to assist in reviewing the performance of the initiatives, identify areas of concern/voids, if any that merit a midcourse review and incorporation of global best practices, towards enabling seamless implementation of the initiatives and achieving self-reliance in defence manufacturing.

Theoretical Framework.

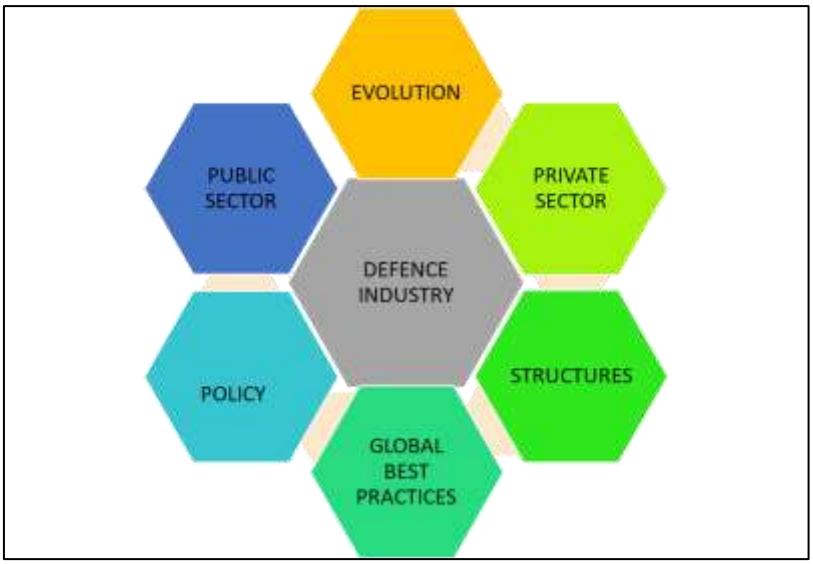
Extensive review of literature including analysis of the growth of the Indian defence industry, evolution of the defence procurement procedure, role and performance of the public sector, Make in India initiative,

promulgation of the SP Model, evolution and role of the private sector in defence, insight into the worldview of efficacy of PPP ventures, global perspectives on defence procurement and key aspects associated with the said Government initiatives including AatmaNirbhar Bharat, has resulted in the following theoretical framework:-

(a) **Policy Framework**: Post-independence in 1947, the Indian defence industry has evolved with the public sector solely shouldering the onerous task of equipping the defence forces to an extent, with the balance being met ex import. The policy framework governing the defence industry has been reviewed periodically including the technology roadmap and the enduring needs of the three Services. However, the competence of the private sector has remained largely untapped. Resultantly, the defence-manufacturing sector has been dormant and indigenization of defence equipment has been limited to a few verticals. Lately, the policy has been revised to incorporate the private sector in defence manufacturing. The Make in India initiative, Defence Procurement Procedure 2016 coupled with the Defence production policy 2018 pave the way for the private sector to enter the defence-manufacturing ecosystem through a PPP venture. However, a policy is only as good as its implementation. It remains to be seen if the policy changes have been able to bring about the desired effect in the growth of the defence-manufacturing sector.

(b) **Structural Framework - Defence Procurement Procedure (DPP)**. In spite of the periodic review of the defence procurement procedure for more than a decade, the gestation period for fructification of acquisition of defence equipment remains quite large. The procedure continues to be cumbersome and has limitations leading to a large gap between what the Armed Forces have and what they need to maintain the cutting edge of mission reliability. Time and cost overruns have been the main reasons for the deficiency in defence equipment and inability to keep pace with technological developments across the globe. More often than not, the Government-to-Government route has been preferred for defence procurements with foreign firms thus obviating the DPP and defeating the purpose of the policy. DPP 2016 has attempted to obviate the extant limitations by promulgating a SP Model for acquisition of defence equipment. Finally, the Defence Acquisition Procedure (DAP - 2020) has been rolled out. Whether it has been able to meet the requirement and obviate the extant stumbling blocks resulting in seamless procurement of defence equipment, remains a moot question.

(c) **Make in India**. Launched in 2014, aimed at raising the contribution of the manufacturing segment towards the GDP of the country. It targets 25 sectors including defence manufacturing by incorporation de-licensing, deregulation norms, encouraging FDI and infrastructure development while making commensurate policy and structural changes. The progress has been modest and this initiative has been largely successful in many sectors.



Theoretical Framework

(d) **SP Model**. Chapter VII of the DPP 2016 promulgates a SP Model aimed at revitalising the defence-manufacturing ecosystem by selecting a strategic partner (SP) in the form of a foreign original equipment manufacturer and an Indian private company in support of the venture through competitive bidding. The SP is a system integrator wherein the Public and Private sectors have been given a level playing field. This facilitates creation of defence production foundation and much required investment on critical and niche technology R&D. The initiative enhances the vendor base and makes a firm commitment to self-reliance in defence. The SP model is in harmony with 'Make in India' through streamlining policy and procedures to stimulate investment and growth rate for holistic development of the defence-manufacturing ecosystem. The 'SP Model' though has been in existence for more than five years now, however, is yet to have a major impact towards self-reliance in the defence. It would be prudent to assess the contribution of the SP Model towards indigenization in the defence-manufacturing sector.

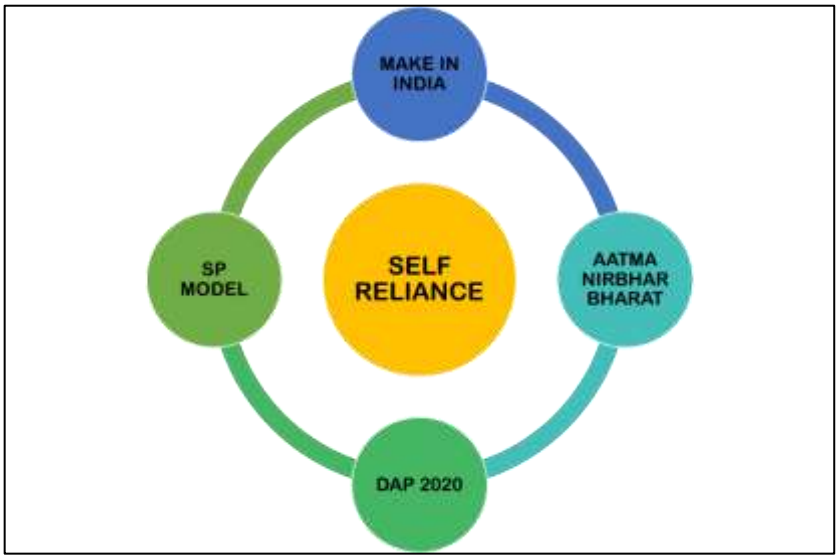
(d) **PPP Ventures**. As a concept, PPPs brings together the skillsets, resources of both sides with the larger aim of optimization. However, in the real world, PPPs in the defence sector are far more complex and have a much higher risk factor associated with them. This brings forth complex challenges from tendering to contract conclusion and post contract management including maintenance of the defence assets. In the volatile, unpredictable, complex and ambiguous world, the security concerns are dynamic and fraught with risks and every contingency cannot be envisaged and included in the contractual obligations. Hence, formulation of wide-ranging policies and execution framework is a criterion for a fruitful PPP endeavour.

(e) **AatmaNirbhar Bharat**. Launched in May 2020, aimed at reducing imports and complement 'Make in India' initiative to gain a global market share. AatmaNirbhar Bharat Abhiyan comprises of an economic stimulus package of Rs 20 lakh crores which is approximately 10 percent of the GDP. The focus shall remain on Land, Labour, Liquidity and Laws to cater to common man. AatmaNirbhar Bharat Abhiyan is a long-term initiative and focuses on capacity building in the long run. Its proper implementation through the years merits attention to reap the benefits as envisioned in the scheme to make India self-reliant as envisioned.

(f) **Global Perspectives and Associated Challenges**. Developed nations strive to undertake strategic defence procurement based on sound policy and structural frameworks coupled with a well-defined dual use defence industrial production base. Over the years, countries like USA and France have developed niche capabilities in terms of defence exports and have arrived at permutations and combinations of contracts with cost fairness to suit the requirements of the buyer. Associated challenges of development of high-end technology through dedicated R&D framework and addressing policy and structural voids have been suitably addressed by these nations. The interface of the Public and Private sector is seamless and integration with defence platforms have also been clearly earmarked. These successful models have certain best practices which could be absorbed for enhancing the Indian defence production ecosystem.

Conceptual Framework.

With the holistic concept of attaining 'Self-Reliance in Defence' manifesting as a result of Government initiatives viz. Make in India, SP Model (DPP 2016), 'AatmaNirbhar Bharat' and Defence Acquisition Procedure -2020. Hence, it is prudent that the conceptual framework derives its form from the following dimensions:-



Conceptual Framework

(a) Insight into adequacy and efficacy of Government policies associated with the growth of the defence industry including the well-established Public and vibrant Private sector.
(b) Evolution of the defence acquisition procedure and its efficacy leading up to promulgation of DAP-2020.
(c) Impact of 'Make in India' initiative on the growth of defence manufacturing ecosystem.
(d) Strategic Partnership Model of DPP 2016, in concert with the Defence Production Policy-2018.
(e) Areas of concern/voids mitigated via the AatmaNirbhar Bharat initiative and key aspects for successful implementation of Government initiatives.

Hypothesis

Null (Ho).Government Initiatives including 'Make in India' and 'SP Model (DPP 2016)' etc have **NOT** contributed significantly towards self-reliance in Defence Manufacturing.

Alternate (H1).Government Initiatives 'Make in India' and 'SP Model (DPP 2016)' etc have contributed significantly towards self-reliance in Defence Manufacturing.

Research Design

Type of Design. A Cross-Sectional Design with Quantitative data collected through responses to a questionnaire on the subject was selected. In addition, the Ontological Position has been Objectivism with Positivism being the Epistemological Position and Deductive Logic used for analysis of the data.

Sample Design. Convenience sampling technique has been used for collection of responses from Academia, Armed Forces Personnel, Subject Matter Experts from Public and Private Sector.

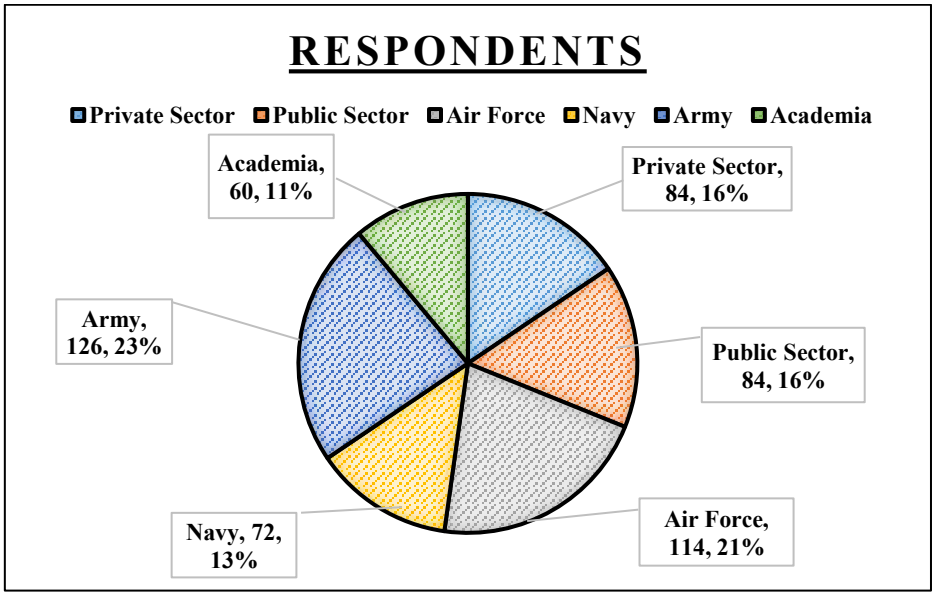
Observational Design. A two stage (pilot and main) using attitude scale and quantitative data has been undertaken for collection of responses. Qualitative analysis has also been undertaken for the open-ended questions.

Statistical Design. Descriptive and Inferential analysis has been undertaken on the data collected using SPSS software (for quantitative analysis) and open source 'R' based applications (for qualitative analysis).

Analysis

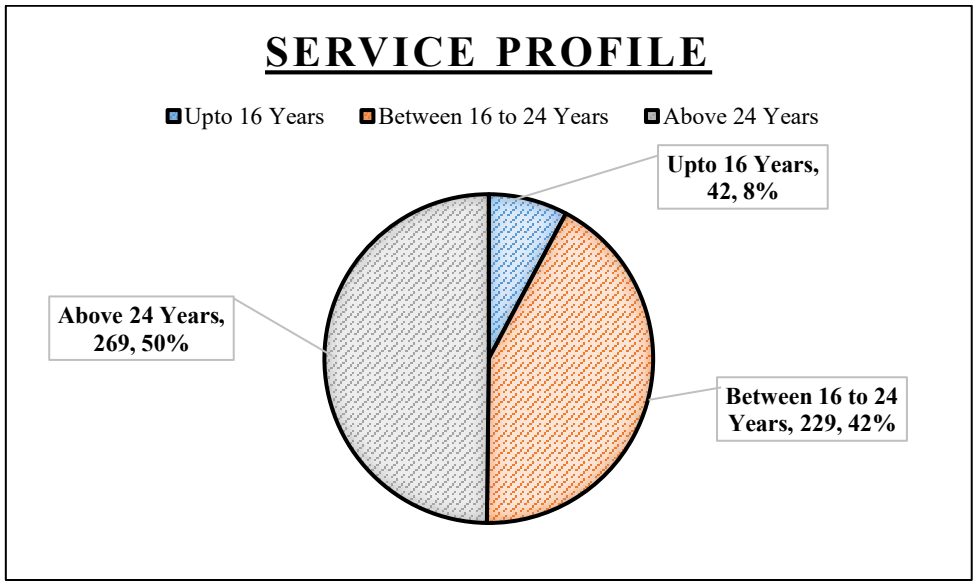
This study was aimed at assessing the perception regarding the contribution of Government initiatives viz. Make in India, SP Model etc towards revitalising the defence-manufacturing ecosystem in pursuit of self-reliance in defence. The study has been based on the responses received from 540 personnel from the three Services, SMEs from the defence industry (DPSUs & Private Sector) and members from the academia. The assessment was based on four constructs viz. Adequacy of Policy framework, Efficacy of Procurement framework, Performance of Public sector and Harnessing the Potential of the Private sector. In addition, independent questions with respect to implementation of specific Government initiatives and related policy and structural issues provided key insights to map the perception of the sample on the subject. Descriptive and Inferential analysis were used to examine each dimension. Finally, qualitative analyses were also undertaken including text and sentiment value of the responses. The demographic pattern of 540 responses is depicted as under: -

(a) **Strata Profile.** A fair mix of the respondents are from Army, Navy, Air Force, Public, Private Sector as also from the academia.



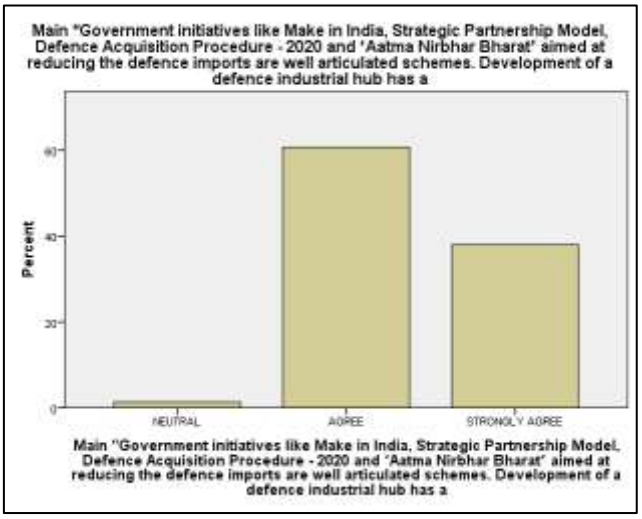
Strata of Respondents

(b) **Service Experience**. Majority (50 percent) of respondents are having more than 24 years of service with 42 percent between the service bracket of 16 to 24 years and only 8 percent up to 16 years. Hence, the findings are based on inputs received from an extremely experienced set of respondents.



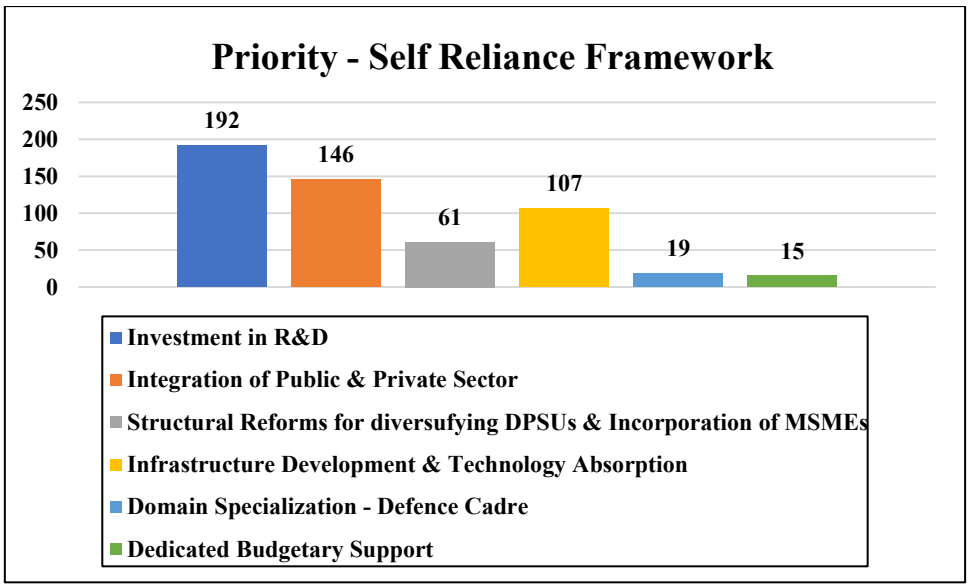
Service Profile of Respondents

Data Analysis. The verdict from the respondents is undisputed as **98.7%** respondents agree that the "Government initiatives like Make in India, Strategic Partnership Model, Defence Acquisition Procedure - 2020 and 'AatmaNirbhar Bharat' aimed at reducing the defence imports indeed well-articulated structures. Development of a defence industrial hub has a gestation period and these initiatives have already made humble inroads towards achieving self-reliance in defence and tangible results shall fructify by the year 2035".



Vision 2035 - Self Reliance in Defence

An open-ended question was included in the questionnaire primarily seeking the Priority 1 aspect that needs to be addressed for successful implementation of the Government initiatives for revitalizing the defence-manufacturing ecosystem towards making India a major defence manufacturing hub. The responses received are represented in form of a bar graph below.



Priority - Self Reliance Framework

Almost 63 % of the respondents feel that Integration of the Public and Private Sector along with a major outlay by the Private sector towards Defence R&D are the key aspects that merit immediate attention for absorption into the self-reliance framework. Infrastructure development, technology absorption and structural reforms for diversifying the DPSUs and incorporating the MSMEs are also a prerequisite for making India a major defence manufacturing hub, 4 % respondents also feel that creating a specialist cadre for defence acquisition will assist in making the acquisition process robust and seamless thereby overcoming the delays in procurement.

Qualitative Analysis. An endeavour was made to capture frank and bias free inputs from the responses by incorporating Qualitative analysis using the 'R' based tools developed by Dr Sudhir Voleti, Professor at Indian Business School Hyderabad. These tools are open-source applications and can easily be used for this purpose. Several applications viz. text analysis, sentiment analysis etc are available for undertaking an analysis of qualitative data. However, in order to restrict the scope, two types of applications viz basic textual analysis and sentiment analysis have been picked up for the purpose of this thesis.

Basic Textual Analysis through Word Cloud. A brief summary of the responses to the questions conforming to the four constructs as well as open ended questions was loaded into the application. The application coverts the input into an image comprising of all the predominant words used repeatedly in the document. The size of the word determines the frequency of usage of the word in the responses received. The image conforms to the holistic response by the sample and resultantly, reflects the words of essence as under.

Word Cloud

Sentiment Analysis. Basic sentiment analysis carried out using the said R based application, reported utmost positivity for the question number 25 viz. "Government initiatives like Make in India, Strategic Partnership Model, Defence Acquisition Procedure - 2020 and 'AatmaNirbhar Bharat' aimed at reducing the defence imports indeed well-articulated structures. Development of a defence industrial hub has a gestation period and these initiatives have already made humble inroads towards achieving self-reliance in defence and tangible results shall fructify by the year 2035". This clearly reflects that the respondents across different professions, experience and educational profiles have a positive sentiment towards the topic of 'Self-Reliance in defence'. The belief that we are on the right path and shall achieve the goal of becoming a world class defence manufacturing hub by 2035 has been emphatically demonstrated. This also correlates with the unanimity of the responses to this question.

Statistical and Administrative Decision

Statistical Decision. Based on the analyses of One Sample T-Test coupled with non-parametric tests of important questions specifically relating to Government initiatives in pursuit of self-reliance in defence, it clearly emerges that there is insufficient statistical evidence to reject the Null Hypothesis.

Administrative Decision.The population feels that the Government initiatives viz. Make in India, SP Model etc coupled with commensurate policy and structural changes are yet to contribute significantly towards revitalizing the defence-manufacturing ecosystem in search of the elusive goal of self-reliance in defence.

Findings

Adequacy - Policy Framework. The perception indicates that the Policy framework is inadequate and has NOT contributed significantly towards Government initiatives aimed at achieving self-reliance in defence. The respondents felt that the existing policy framework does not provide a conducive working environment for defence acquisition as the existing structures for evaluating and awarding defence contracts are inadequate. Further, policy initiatives for public and private sector integration are a prerequisite to achieve the ambitious goal of the Defence Production Policy 2018 of making India a major defence manufacturing hub by the year 2035.

Efficacy - Procurement Framework. The perception directs that the Procurement framework has been unsuccessful in seamless acquisition of defence equipment and has NOT contributed significantly towards Government initiatives aimed at achieving self-reliance in defence. The respondents felt that lack of

domain specialization adversely affects implementation of well-meaning Government initiatives. Further, the extant regulatory framework does not facilitate timely execution of defence contracts and does not lend itself to effective dispute resolution in respect of contracts in vogue. It is also felt that the extant framework of defence acquisition does not have a balanced interface with the Armed Forces.

Performance - Public Sector. The perception shows that the Public Sector has NOT contributed significantly towards Government initiatives aimed at achieving self-reliance in defence. The respondents felt that the extant performance of the Public Sector is inadequate to meet the mandate of the Forces and the protectionist approach towards the public sector needs to be shed by the bureaucracy for growth of the indigenous capability in defence manufacturing. The need to explore synergies with the private sector in terms of major investment in defence R&D towards promoting high technology capability shall boost the performance of the public sector manifolds.

Potential - Private Sector. The perception indicates that the potential of the Private Sector has NOT been harnessed optimally for successful implementation of Government initiatives aimed at achieving self-reliance in defence. The respondents felt that the Government needs to integrate the private sector into main stream initiatives and critical defence production through assured business incentives. Integration of the public and private sector is a prerequisite for reducing dependence on imports and holistic growth of an indigenous defence manufacturing hub.

Make in India. The perception shows that 'Make in India' initiative has been largely successful in making inroads in the defence manufacturing sector. However, small success stories will take reasonable time to reach critical defence platforms which are being procured ex import as on date. Negative defence import lists have gained momentum as indigenous ventures stabilize and Defence Start-ups explore niche areas. Hence, the respondents are divided with the amount of success that has been achieved under the umbrella initiative, with 49 % calling this venture a success as against 51 % still not convinced of its significant contribution towards realizing the overarching aim of self-reliance in defence.

SP Model. The perception indicates that the contribution of the SP Model towards revitalising the defence-manufacturing ecosystem as on date is relatively low. Overall, only 19 % of the respondents agreed that the SP Model has contributed significantly towards the defence-manufacturing sector. Such a low perceived level for a strategic and well thought out initiative is a matter of concern. However, when seen in light of the large ticket defence acquisitions being made via Government-to-Government route completely circumventing the SP Model owing to the duration of the procurement process, the perception is justified. Further, the progress card of this venture has only a handful of procurements till date and some of them are still in processing stages.

Defence Acquisition Procedure (DAP-2020) and AatmaNirbhar Bharat Abhiyan. The perception emerges that the Defence Acquisition Procedure (DAP-2020) aimed at addressing existing voids, is likely to result in seamless procurement of defence equipment. In addition, the respondents are unanimous in stating that the new AatmaNirbhar Bharat - 2020 initiative provides a welcome opportunity to the private sector for making permanent inroads in defence. Being fairly new initiatives, the holistic sentiment is, that realistic contribution can only be gauged after a reasonable duration has been completed and tangible gains made towards self-reliance in defence.

Self-Reliance Framework. The perception regarding an ideal self-reliance framework indicates integration of the Public and Private Sector along with a major outlay by the Private sector towards Defence R&D are the key aspects that merit immediate attention. Infrastructure development, technology absorption and structural reforms for diversifying the DPSUs and incorporating the MSMEs are also

essential criterion for making India a major defence manufacturing hub. In addition, domain specialization vide creation a specialist cadre for defence acquisition will assist in making the acquisition process robust and seamless thereby overcoming the delays in procurement.

Self-Reliance: Vision 2035. The verdict from the respondents is undisputed as 98.7% respondents agree that Government initiatives like Make in India, Strategic Partnership Model, Defence Acquisition Procedure - 2020 and 'AatmaNirbhar Bharat' aimed at reducing the defence imports are indeed well-articulated structures. Development of a defence industrial hub has a gestation period and these initiatives have already made humble inroads towards achieving self-reliance in defence and tangible results shall fructify by the year 2035. This clearly reflects that the respondents across different professions, experience and educational profiles have a positive sentiment towards the topic of 'Self-Reliance in defence'. The belief that we are on the right path and shall achieve the goal of becoming a world class defence manufacturing hub by 2035 has been emphatically demonstrated.

Recommendations

Policy. All policy matters governing the defence sector must include geostrategic considerations as an assessment criterion for defence production/ procurement. Focus on foreign policy initiatives coupled with defence diplomacy are a must for maintaining sustained international relations to facilitate free flow of technology and military aid from global military powers. With this side being secure, the focus would be on providing a conducive environment for development of critical and multi-faceted defence platforms by the manufacturing ecosystem irrespective of it being public or private sector. A whole of nation approach is a prerequisite for creation of a global defence manufacturing hub.

Merit Based Development of Defence Platforms. The Government needs to shed its protectionist approach towards the public sector for development of defence technologies. Today, the private sector has a vibrant capability which needs to be harnessed towards development of a sound defence manufacturing ecosystem. The same is also true for initiatives viz. Make in India and SP Model.

Integration of Private Sector. Nations with strong defence industrial base have achieved the same through extensive participation of private sector entities. The private sector needs to be integrated in main stream defence production including critical platforms. To facilitate the same, Government policies must permit transition of the private sector from system integrators to equal partners. This would entail removing the distinction between the two sectors and utilizing infrastructure including test facilities etc as a common pool for sustained development of niche defence technologies.

Defence R&D. The Government needs to invite the private sector towards major R&D investment through assured business incentives. Other initiatives under the umbrella term of 'Defence Start Ups' is another key area that needs a sustained push.

Procurement Regulations. Traditionally, Russia has been the largest supplier of defence equipment to India. In the recent past, USA and Israel have garnered a share along with France. Incidentally, the Government-to-Government route has been the preferred procurement mechanism in the said deals thus being the fastest and most successful. The critical requirement has been met via this route to bridge the gap between extant technologies and emerging ones to keep the nation safe from any threats. However, this cannot become a standard practice. The SP Model vide DPP- 2016 and now, the DAP-2020 have a set methodology with inbuilt competition and regulatory safeguards. Essentially, it is not as fast as the Government-to-Government route however, it carries with it an all-inclusive responsibility of concurrent development of the domestic defence manufacturing ecosystem, which is the need of the hour. Further,

Selection process of a potential strategic partner needs to be based on the parameter of 'Best Value' to the Government in terms of cutting-edge technology and deviate from the age-old adage of the lowest bidder (L1 bid) in financial jargon.

Structure. Different agencies handle procurement of defence equipment as under:-

(a) **Service HQ**. Define technological features of the weapon system and undertake trial evaluation.
(b) **Directorate General Quality Assurance (DGQA)** Responsible for quality assurance.
(c) **Defence Acquisition Council (DAC)**. Undertakes contract negotiation.
(d) **Department of Defence Production**. Responsible for industrial development.
(e) **Defence Research and Development Organisation (DRDO)**. Responsible for sponsoring research on futuristic technology.

Merger of Entities. The above-mentioned entities need to be merged into one organization for accruing long term benefits, for ensuring expeditious acquisition while promoting holistic defence industrial development. Thus, integration of procurement and acquisition functions under one administrative head is mandatory. The acquisition and production functions are placed under two power centres in the Ministry of Defence i.e., Director General, Acquisition and Secretary, Defence Production, who is responsible for indigenous production of defence requirements through the public and private entities. While the former awards contracts against allocated budget irrespective of the source of supply, the latter is interested in obtaining contracts for DPSUs/OFB. Resultantly, the domestic industry has not received the necessary attention and weapon systems continue to be reliant on ex import sources.

Domain Specialization. Functionaries handling defence acquisition are not professionals but drawn from the civil bureaucracy and the Armed Forces. They lack understanding of legal, contractual and technical matters owing to short tenures in office. There is a felt need to create a specialist cadre for defence acquisition having domain expertise in technological, financial and managerial verticals to bridge the knowledge gap between the Government and the industry. This will enable an effective mechanism for seamless implementation of the Government initiatives including wherewithal for periodic assessment of performance audit regarding technology absorption and cost.

Framework for Coordination and Contract Management. There is a felt need for establishment of a dedicated body/ framework for coordination and interaction between the State, Military and the Industry akin to the NDIA (USA) or the DGA (France) as also an exclusive organization for defence production and contract management akin to the DCMA (USA) or the DE&S (UK).

Merge Service Specific Directorates. There is a need to consider merging various Service specific directorates into one agency. The agency would have a single mandate of equipping the Armed Forces, ensuring R&D in the industry, development of a defence manufacturing hub and promote exports for indigenous arms. In doing so, integrate the user throughout the process from the initial stages of development to rolling out of the assembly line for production to avoid delays and ensure optimal utilization of resources.

Decisive Take on PSUs. The Government needs to consider structural reforms in terms of bold and unbiased decision making for merging, diversifying the non performing PSU's while providing an equal opportunity to MSMEs for production of components for larger weapon platforms. The recent decision to corporatize the Ordnance Factory Board is symbolic of this recommendation. However, the road from inefficiency to efficient production entities is bumpy and has a large gestation period.

Timebound Fructification of Tangible Gains. The extant procurement procedure has an inherent gestation period at every stage thus invariably delaying the timely fructification of contracts for the desired technology and weapon platform. This adversely affects the support infrastructure of the private sector as any delay translates into losses very quickly. The delay on part of the functionaries needs to be obviated for achieving the requisite goals.

Decision Making. Decision making at the hierarchical levels needs to be addressed in a time bound manner, to enable Government initiatives deliver a force multiplier effect towards growth of the indigenous defence manufacturing hub. Protracted delay has resulted in cost escalation on many occasions wherein the production lines have already been shut down when the orders are placed. Procurement cases of Pinaka MBRL system, Akash missile system and 145 M 777 Howitzer etc all fall in this category.

Budgetary Support.Dedicated budgetary support is an inescapable requirement to make Government initiatives viz. Make in India and SP model, a success. The Government needs to decide in favour of a substantial and sustained increase in allotment of defence budget for procurement and R&D for a period of 20 years to facilitate development of the defence-manufacturing base in sync with the Defence Production Policy objectives.

Outcome Based Outlook. The Government needs to have an outcome-based outlook. It is prudent to note that while the process is important, the outcome is more important. There is no tangible gain if the process has been followed to the hilt without any outcome. Government initiatives viz. Make in India, SP Model, DAP-2020, AatmaNirbhar Bharat Abhiyan etc are all well-meaning initiatives however, periodic reviews and implementation of commensurate policy and structural changes, are crucial to reach the desired end state. The progress card of the growth of our defence manufacturing ecosystem needs to be seen as a whole rather that the success of independent verticals/ initiatives.

Limitations of the Study

The main limiting factor during the research was inability to gain direct access for free interaction with the population owing to spatial challenges. This was overcome to a great extent via use of Google Forms. However, the researcher did not have the opportunity to clarify the accurate context of the issues circulated vide questionnaires for mapping the perception of the sample. Further, owing to the stark difference in the knowledge base on the subject, the responses of the sample may not be free from potential biases. An attempt has been made to overcome this to some extent by ensuring anonymity and confidentiality. Exact contribution of Government initiatives concerning the defence sector are not readily available and sensitivity of the content available, merits due consideration. Hence, only the essence of matter has been referred and the intricate details have not been included in the study.

Scope for Further Study

It is pertinent to note and acknowledge the exploratory nature of the study, as not much research or study material is available to establish the congruence / linkages between the policy and regulatory framework governing the defence industry with initiatives viz Make in India, SP Model etc. Further, existing literature does not establish the nuances of integration of the public and private sector or willingness of the private sector to invest in R&D against the commercial adage of assured business and its effect on implementation Government initiatives aimed at growth of the defence-manufacturing ecosystem.

The extant study has attempted to identify the congruence / incongruence of the abovementioned critical aspects in assessing the contribution to the Government initiatives and systemic indigenization at large.

However, the methodology of using closed questions, which have been applied in this study, only gives a picture about perceptions of the sample from the three Services, defence industry and the academia based on their knowledge on the subject.

Though, the study has brought out certain areas of concern / voids that merit attention for successful implementation of these initiatives, the same can be enhanced in scope and reach after a reasonable duration, to allow tangible gains into the defence manufacturing ecosystem towards obtaining more meaningful results.

Conclusion

The study mapped the perception towards assessing contribution of the Government initiatives viz. Make in India, SP Model etc towards growth of the defence-manufacturing sector. The results indicate that all constructs arrived at, have positive correlational values to a certain degree and were significant towards measuring the stated purpose. Overall, the response from the sample population and their candid inputs have added immense value to the researcher in understanding the fundamental issues.

It is also prudent to note that successful implementation of these initiatives is dependent on different factors and attributes. Respondents react differently to different variables in diverse situations based on their inbuilt biases, which are a part of this study. However, the researcher believes that the larger issues brought out by the respondents in this study need to be addressed for holistic growth of the defence-manufacturing sector.

This study is a humble contribution to existing literature in the sense that it provides information about the Government initiatives and associated variables which impact their successful implementation for all-inclusive growth of the defence manufacturing ecosystem.

Lastly, to remain relevant and effective, a midcourse review and continuous reforms (when required) are essential as these initiatives have tremendous potential for achieving self-reliance in defence thus, taking the nation towards its rightful place among the comity of nations.

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