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Performance Evaluation of Ordnance Factories, Their Relevance in Future and Way-Ahead

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Introduction

The ordnance factories form one of the largest and oldest departmentally-run industrial organisations in India.[1] The East India Company set up the first Gun and Shell factory in Cossipore near Kolkata in 1801. The British added a dozen ordnance factories after the 1857 revolt. The newly independent Indian state established a number of factories post 1962 war with China, to equip its expanding armed forces. These factories were set up in clusters and were insulated from the need to raise finance or fight for orders. At present, there are 41 ordnance factories in India, which include the two new factories recently established at Nalanda (Bihar) and Korwa (Uttar Pradesh). All these factories function under the direct control of Ordnance Factory Board (OFB). These factories together have a vast infrastructure, skilled manpower and years of experience in defence production. The Ordnance Factories were setup with the objective of achieving self-reliance in equipping the armed forces with state-of-the art battlefield equipment.[2] They are responsible for the manufacture of arms, ammunition, armoured vehicles and ordnance stores required primarily by the defence forces.

It is a well-known fact that India imports nearly 60% of its military hardware requirements from the global arms manufacturing countries. As per SIPRI data, the value of imports of defence equipments and weapon systems by India for the period 2013-16 was approximately Rs 82,496 crores. India accounts for 14%

Key Points

- The ordnance factories form one of the largest and oldest departmentally-run industrial organisations in India. At present, there are 41 ordnance factories in India.
- These factories together have a vast infrastructure, skilled manpower and years of experience in defence production. They are responsible for manufacturing of arms, ammunition, armoured vehicles, ordnance stores, etc., for the defence forces.
- Ordnance factories have successfully added many new indigenously designed and developed products in its armoury, namely, Rockets for Multi Barrel Rocket Launcher Pinaka, the tactical game changer 155 × 45 mm Dhanush artillery guns, the robust and safe Mine Protected Vehicles (MPV), and the Main Battle Tank Arjun.
- Total turnover of ordnance factories during financial year 2016-17 was Rs 21,392 crore. The projected turnover for 2017-18 was Rs 23,500 crore against which the achievement up to December 31, 2017 was Rs 12,543 crore. Nearly 80% of the supplies made by OFB in the year 2016-17 were for the Indian Army.
- The ordnance factories as a whole have often been criticized for their sub-optimal performance, which gets amply reflected in over-delay in supplies, cost-overruns and India's over-dependency on arms import.
- This issue brief aims to examine the performance of the ordnance factories in the near past, their relevance in future and way-ahead for them.

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of entire global arms imports and has been one of the largest importer of arms in the world. Though India does have a vast Defence Industrial Base (DIB) in the country, yet the long-cherished goal of achieving minimum 70% self-sufficiency in defence procurement is still elusive. Currently, India's self-reliance is hovering around just 35-40 percent.[3] India is mostly involved in licensed production or manufacturing of defence equipment based on the Transfer of Technologies (ToT) obtained through the purchase of main equipment/systems in the past from the OEMs.

The ordnance factories as a whole have often been criticised for their sub-optimal performance, which gets amply reflected in over-delay in supplies, cost-overruns and India's over-dependency on arms import. The basic question therefore arises that whether the ordnance factories are geared up to meet the present as well as futuristic requirements of our armed forces or not. *This issue brief aims to examine the performance of the* ordnance factories *in the near past, their relevance in future and way-ahead for them.*

In the past, some selective restructuring of OFB and Defence Public Sector Units (DPSUs) has been undertaken by the government, but it has not fructified into reduction in foreign imports. The procurement of defence equipment ex-import is primarily to meet the urgent and unavoidable needs of the armed forces, in order to maintain the minimum acceptable level of operational preparedness. However, it is largely due to the non-availability of modern, hi-tech and advanced weapon systems from the domestic industry (public and private). Though such imports serve the immediate needs of the country but in larger perspective, delays the process of indigenisation.

Salient Features of Ordnance Factories

The salient features in respect of ordnance factories are highlighted in the succeeding paragraphs.

- ***Objectives of OFB.*** The major objectives of the OFB are listed below. The performance of the ordnance factories needs to be evaluated against the backdrop of these objectives.
  - — To supply quality arms, ammunition, tanks, military equipments, weapon systems, etc, to the armed forces.
  - — To modernise production facilities to improve quality.
  - — To equip themselves with technologies through Transfer of Technology (ToT) and in-house R&D.
  - — To meet customer satisfaction and expand consumer base.

Table 1: Core Competence of Ordnance Factories

Category	*Type of Products*
Weapons	Small, Medium and Large Calibre Weapons & Mortar Equipment
Ammunition, Explosives & Propellants	Small, Medium and Large Calibre Ammunition, Mortar Bombs, Signaling and related stores, Rockets and Aerial Bombs, Fuzes, Explosives, Chemicals and Propellants
Military Vehicles	Trucks, Mine protected and Special Security Vehicles
Armoured Vehicles	Tanks and its variants, Armoured Personnel Carrier (APCs) & Engines
Instruments and Optical Devices	Night & Day Vision Sights & Instruments
Parachutes	Brake Parachutes, Man dropping & Supply dropping Parachutes
Troop comfort & General Stores	Tentage, Clothings, Personal Equipment, Bridges, Boats, Cables, etc.

Source: MoD Annual Report, 2017-18.

- ***Management Structure of Ordnance Factories.*** The ordnance factories are managed by a three-layered system. The highest level of management is provided by the Department of Defence Production (DDP), which is an integral part of the Ministry of Defence (MoD). At the mid-level is the Ordnance Factory Board (OFB), which is headed by a Director General, who is also its Chairman. At the bottom level is the General Manager or the Senior General Manager, who normally heads an ordnance factory and is responsible for its day-to-day functioning.
- ***Employee Strength & Budget of OFB.*** The ordnance factories as a whole have a high ratio of officers to industrial employees. As per the data compiled by Mr Laxman K Behera, a renowned researcher and author on the subject, the ratio of industrial employees to officers in 2013-14 was 1.97, implying one supervisor for nearly every two direct labour.
- ***Restructuring and Reforms.*** The governments in the past have undertaken various projects related to restructuring/ reforms of ordnance factories, however, the results have been very limited.
- ***R&D Initiatives.*** A large number of products have been developed and produced by the ordnance factories over the years through in-house R&D initiatives. However, production of large systems and weapon platforms by ordnance factories has been achieved primarily through ToT/ under licensed production (obtained from OEM).
- ***Outsourcing by OFB.*** The ordnance factories largely outsource their requirements of raw materials, components and sub-systems from a wide vendor base, which includes domestic MSMEs and large industries.
- ***Major Achievements of OFB.*** Some of the significant achievements of the OFB in the recent past are listed below:
  - — Development and supply of first NBC vehicle to Indian Army.
  - — Participation in RFP for up-gunning of 130 mm guns to 155 mm, wherein the field trial has been successful.
  - — Development of 7.62×39 mm Assault Rifle 'Ghatak', as an alternative to AK-47.
  - — Successful development of Bi Modular Charge System (BMCS).

- — Licensed production of 155 MM Gun System 'Dhanush', under the ToT from Bofors.
- — Recent Development – Establishment of production facility for manufacture of assault rifles (AK-203) for armed forces at Ordnance Factory, Korba (UP).
- — OFB has signed umbrella Memorandum of Understanding (MOU) with BEML and MIDHANI to establish a framework for co-operation and to jointly address the requirements of Indian Defence and export market. The MOU will cover the on-going projects as well as new projects.
- — A grid connected solar power plant of 16 MW capacities has been installed at Ordnance Factory, Medak recently. The plant has been set up on 80 acres of land, making it self-sufficient for its power requirement. The Solar Power Plant will also mark OFB contribution towards reduction of carbon footprint.
- — Ordnance Factory, Medak has taken up BMP II Armament Upgrade through in-house R&D.
- — Ordnance Factory, Medak has been selected as the winner of RM's Best Performing Factory Award for the years 2014-15 as well as 2015-16.

- ***Production Achievement.*** The total turnover of ordnance factories during financial year 2016-17 was Rs 21,392 crore. The projected turnover for 2017-18 was Rs 23,500 crore against which the achievement up to December 31, 2017 was Rs 12,543 crore. Nearly 80% of the supplies made by OFB in the year 2016-17 were for the Indian Army.
- ***Modernisation.*** OFB is continuously modernising its existing facilities by replacing old machines with the state-of-the art machines to manufacture quality products, taking into account the current and long term future requirements of the customer. To achieve this, a comprehensive Modernisation Plan has been prepared, which would be implemented during next five years.
- ***Quality Management.*** The process of quality management has been strengthened by creation of test facilities for input material inspection and NABL accreditation of labs, establishment of Quality Audit Groups for audit manufacturing process, introduction of NQDBMS (Networked Quality Data Base Management System). Further, a Failure Review Board (FRB) has been formed with representatives of DGQA and OFB to review and analyse the cause of defects during manufacturing and final acceptance inspection and suggest remedial measures thereon.
- ***Digital India Initiatives.*** Various initiatives are being undertaken by ordnance factories towards Digital India. Some of them are listed below.
  - — E-procurement – All procurements cases valuing more than two lakh are made through e-procurement.
  - — E-auction – All auction cases related to scraps and disposable items are made through MSTC e-auction.
  - — E-payment – In most of the cases, payment to employees as well as vendors are made through direct credit by electronic transfer into their Bank Accounts.
  - — E-services – The provision/ link to facilitate users to provide feedback has been made available on ofb.gov.in website.
- ***Adoption of 'Make in India' Initiative.*** OFB has a deep rooted culture of developing the items indigenously. The 'Make in India' initiative of the union government has provided a definite further push to the indigenisation efforts of OFB. The initiative will enable OFB to capitalise on its core strength as manufacturer of arms and ammunitions and emerge as one of the largest indigenous supplier to our Armed Forces. This will eventually increase self-reliance and reduced imports of defence equipment.
  - In the recent past, ordnance factories have successfully added many new indigenously designed and developed products in its armoury. Some of the noticeable equipments include Rockets for Multi Barrel Rocket Launcher Pinaka, the tactical game changer 155×45 mm Dhanush artillery guns, the robust and safe Mine Protected Vehicles (MPV), and the Main Battle Tank Arjun. In addition to above, OFB has carried out substantial indigenisation of other major equipment's such as T-72 and T-90 Tanks, ICV BMP-II, AK 630 Gun for Indian Navy, 84mm Rocket Launcher and 40 mm pre-fragmented anti-aircraft ammunition, among others. OFB has also developed various Reduced Danger Zone (RDZ) bombs for Air Force and RGB-12 & RGB-60 rockets for Indian Navy.
  - — Current product range of OFB largely consists of conventional arms and ammunition. However, OFB is working on the modalities of the Futuristic Infantry Combat Vehicle (FICV) in collaboration with defence PSUs & IIT Chennai. Further, with in-house R&D efforts, OFB is developing Electronic Fuzes for Artillery Ammunition in coordination with DRDO and technical inputs from IIT Bombay. OFB is also into the development of Precision Guided Artillery Shell by aligning with ARDE & IIT Kanpur.
- ***National Skill Development Mission.*** The National Skill Development Mission has been launched to create convergence across sectors in terms of skill training activities. Ordnance Factories are contributing meaningfully and actively in skill development mission of the nation. OFB has increased engagement of Trade Apprentices from 2.5% to 10% of the total strength including the contractual staff in 2017, thereby engaging about 7038 Trade Apprentices in various trades and increasing their employability and skill in the sector.

Performance Evaluation of Ordnance Factories

It is a well-known fact that many of the India's defence public sector organisations including DPSUs/OFB/DRDO are suffering

from various ills which include lack of professional approach, excessive bureaucratic control and poor work efficiency. This leads to substantial time-delays and cost-overruns in completion of orders/projects as well as delay in decision making on critical defence matters. Though there has been tremendous movement on the policy front in last few years, but the results are yet to be visible.

Cost of Production and Value of Issues (Sales) of OFB

Table 2: Cost of Production and value of Issues of OFB

Year	*Cost of Production (Rs crore)*	*Value of Issues Including IFD (Rs crore)**	**Ossies Agaomst OFD (Inter Factory Demand) (Rs crore)*	*Value of Issues Excluding IFD*
2011-12	15933	17273	4883	12390
2012-13	15972	17119	5145	11974
2013-14	15637	16122	4999	11123
2014-15	16476	16664	5301	11363
2015-16	18294	18624	5879	12745

Source: CAG, Report No 15 of 2017.
* IFD – Inter Factory Demand, whereby sister ordnance factories feed the need for stores of other ordnance factories.

Table 2 provides the trend in OFB's cost of production (both including as well as excluding Inter Factory Demand (IFD)) and value of issues during the five year period 2011-16. An analysis of cost of production as well as value of issues in respect of OFB during 2015-16, is produced below:

Cost of Production of OFB (2015-16).

- Total cost of production for OFB was Rs 18,294 crore. There has been an increase in cost of production by 11% over 2014-15.
- Out of the above mentioned cost of production, the share of stores was 57%; labour 11%, direct expenses 2% and overhead cost 30%.
- During the five year period 2011-16, average overhead charges per annum was Rs 4,674 crore, which was approx 28% of the average annual cost of production (ie Rs 16,462 crore) for the same period.

Value of Issues by OFB (2015-16).

- Value of issues increased by 12% from Rs 16,664 crore in 2014-15 to Rs 18,624 crore in 2015-16.
- Army accounts for nearly 80% of the total issues made by OFB.

As can be seen, around 30% of the production is accounted for by the IFD. In recent years, both the cost of production and value of sales of OFB have come under pressure. Nearly 80% of OFB's sales in 2015-16 were accounted for by the Indian Army (refer Table 3), i.e. Rs 10,202 crore out of total net sales of Rs 12,745 crore (less IFD) by OFB. However, from Army's perspective, OFB could meet less than 50% of its requirement. It may be noted that being a departmentally run organisation, the OFB is not required to follow commercial accounting. It simply presents an annual report, which is known as Annual Accounts. Moreover, the Annual Accounts of OFB do not contain the 'Statement of Profit and Loss' as well as the 'Balance Sheet' of the organisation.

Table 3: Indentor-wise Supplies of OFB, 2015-16

Indenter	*Value of Supplies*	
	Rs Crore	*%*
Army	10,202	54.77
Navy & Air Force	719	3.87
Other Defence Department	221	1.18
Sub Total: Defence	11,142	59.82
Ministry of Home Affairs	571	3.06
Civil Trade and Export	1,032	5.54
IFD*	5,879	31.58
Grand Total	18,624	100

Source: OFB, Annual Accounts 2015-16.

Execution of Orders by OFB

Table 4: Delay in Execution of Orders by OFB

Year	*No of Items for which Target Fixed*	*No of Items Manufactured as per Target*	*% Shortfall with Regard to Target Fixed*
2011-12	547	195	64
2012-13	529	205	61
2013-14	382	163	57
2014-15	693	251	64
2015-16	580	194	67

Source: CAG, Report No 15 of 2017.

As can be seen from above table (Table 4), the shortfall in meeting the target by OFB is about 60%. Inability to execute orders in time is a major cause of concern for the ordnance factories. Further, OFB's failure to meet the production target for ammunition is a far bigger cause of concern for the army as well as MoD. The concerns have often been raised by the Army Headquarters that the ordnance factories have the tendency to inflate their capabilities in order to get increased number of orders. However, at times there are certain other factors which may cause delay in execution of orders by OFB, which are failure in purchase or delay in supply of material from trade sources/ vendors, delay in product development by DRDO, delay in proof due to inadequate proof infrastructure and non-receipt of bulk production clearance from users.

Pricing of OFB Products

Ordnance factories work on no-profit-no-loss basis. The products are priced and supplied at a price that takes into account the actual cost of production, which includes cost of material, cost of labour and overhead charges. However, this **cost-plus mechanism of pricing** is widely believed to be

inefficient. The high overhead cost indicates lack of efficiency in the usage of labour and material in any organisation.[4] A study of overhead cost of the ordnance factories (as percentage of cost of production) is shown in Table 5.[5] The data indicates that there has not been any visible improvement in reduction of overhead cost by the ordnance factories over last few years. Needless to say, the large overhead cost leads to substantial rise in the overall cost of production of the OFB. Therefore, the users (primarily Armed Forces) need to scrutinise this aspect more critically.

Table 5: Total Cost of Production vs High Cost of Overheads

Year	*Cost of Production (COP)*	*Overhead Cost (% of COP)*	*Supervision Charges (% of Overhead Cost)*	*Indirect Labour Cost (% of Overhead Cost)*
2011-12	15,933	4,214 (26%)	1,799 (43%)	1,149 (27%)
2012-13	15,972	4,393 (28%)	1,867 (42%)	913 (21%)
2013-14	15,637	4,389 (28%)	1,940 (44%)	940 (21%)
2014-15	16,476	4,973 (30%)	2,103 (42%)	954 (19%)
2015-16	18,294	5,401 (30%)	2,220 (41%)	1,024 (19%)
Total	82,312	23,370	9,929	4,980
Average	16,462	4,674 (28%)	1,986 (42%)	996 (21%)

Source: CAG, Report No 15 of 2017.

Quality of Products

For quality control and assurance, there is a twin-tiered system in place in all the ordnance factories. Firstly, each factory has got its own quality control (QC) section, which is entrusted with the task of inspecting the receipts as well as carrying out 100% check of the final product. Secondly, there is a representative of Directorate General of Quality Assurance (DGQA) in each factory, who is mandated to provide quality assurance. It has been noted that the present system however, does not work efficiently. There are instances where quality assurance was given for products having defects, which could have been easily detected during the visual inspection.[6] The ordnance factories are often criticised for poor quality of products and audit agencies have also reported deficiencies in OFB products. There have been numerous examples, where the poor quality of OFB products has come to light.

Exports

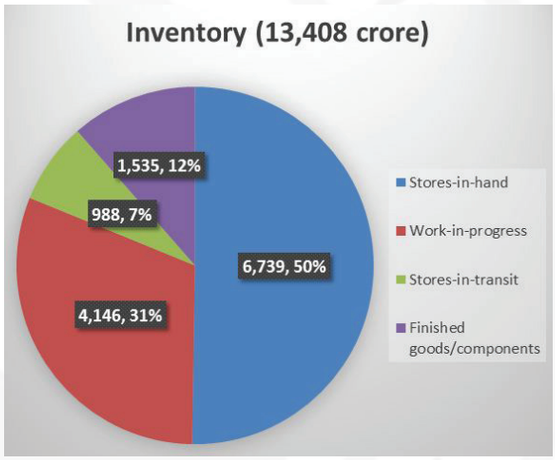
As regards export, the performance of ordnance factories has not been very encouraging so far. In comparison to OFB, the DPSUs have had higher exports so far. DPSUs such as HAL and BEL have exports in the range of 4-5 per cent of its total sales, whereas the OFB has less than one percent. Although, in the recent past, OFB has taken a few measures to boost its export such as simplification of procedures, hosting of website, product demonstration in major arms exhibitions, but these have not yet resulted in any significant gains. The poor response from potential customers to OFB products is primarily due to two reasons – firstly, lack of conviction regarding competitiveness of OFB products and secondly, inability of OFB to establish a brand image for its products.

Capacity Utilisation and Modernisation

Efficient utilisation of production capacity and modernisation of plant and machinery, are very important factors for growth of any manufacturing organisation. OFB has always claimed that its existing capacity with respect to plant and machinery is optimally utilised. It is widely known that the government-owned companies including ordnance factories are permitted to book exorbitantly high man and machine hours for any job they do.[7] It was noted with concern by the CAG that the OFB had spent a huge sum of money on purchase of new plant and machinery during the period 2008-13, however, no linkages were found between such a high expenditure on plant & machinery and cost efficiency.[8]

Poor Inventory Management

Table 6: State of Inventory Held by OFB (at end of FY 2015-16)
(All figs in Rs crore)



Source: CAG, Report No 15 of 2017.

It has emerged that the inventory management being carried out by OFB is not up to the mark and needs improvement to reduce the overall cost of production. It can be seen from the above table (Table 6) that a very large value of inventory (Rs 13,408 crore) was held by the OFB at the end of FY 2015-16, which was about 73% of the total cost of production (Rs 18,294 crore) during the same period.[9] Further, CAG in a comprehensive review of inventory management of nine factories has observed that 90 per cent of their stores-in-hand (SIH) exceeded the prescribed time limit as laid down in OFB's procurement manual. In view of the above, it is desirable that procurement of stores by OFB should be closely linked to its production plan, lead time and production cycle.

Outsourcing by OFB

The level of outsourcing by OFB is about 50 per cent of its total value of production, which is quite high for any manufacturing organisation. These figures include purchases from both Indian and foreign vendors. It has emerged that the high rate of outsourcing is primarily due to OFB's inadequate performance in respect of utilisation of existing resources, technology absorption

and focus on R&D.[10] It is therefore imperative that outsourcing should be resorted to only when it is cost-effective and leads to overall efficiency and improvement in the output of the OFB.

Lack of Autonomy

At present, the MoD is responsible for OFB's major policy decisions. This system curtails the autonomy of the OFB and leaves little or no incentive to innovate. In comparison to ordnance factories, the DPSUs are more autonomous. The DPSUs have the powers to form joint ventures and strategic alliances, invest in modernisation projects, undertake R&D projects, and collaborate with foreign partners for technical know-how.[11] In contrast, the ordnance factories are not board-managed. To address this deficiency in the management of ordnance factories, various government-appointed committees and oversight agencies have suggested that the OFB should be corporatised. The rationale is to allow greater autonomy to the organisation to run its own affairs, while at the same time being accountable for its performance. The CAG also in its recommendations has suggested that the ordnance factories and the ordnance factory secretariat should be board managed…similar to the Board of a company. Though the government had recently announced its intention to corporatise the ordnance factories, however, this is yet to be implemented on ground. One probable reason for the delay is the strong opposition and apprehension of the workers' unions of ordnance factories.

Research and Development (R&D) and Technology Absorption

Table 7: OFB's R&D Expenditure

Year	*R&D Expenditure (Rs crore)*	*Actual Revenue Expenditure (Rs crore)*	*R&D as % of Value of Sales*
2011-12	36	12,141	0.30
2012-13	48	11,936	0.40
2013-14	43	12,834	0.34
2014-15	56	12,832	0.44
2015-16	88	14,133	0.62

Source: CAG, Report No 15 of 2017.

There is enormous scope for investment in defence R&D by public as well as private sectors, but in reality the participation by public sector has been dismal, whereas there has been nil participation by the private sector. As can be seen from CAG Report no 15 of 2017 (refer Table 7), OFB has invested less than 0.7% of its budget in R&D in 2015-16, against the minimum inescapable requirement of 3%.

Over the years, ordnance factories have had technical cooperation with many countries like Russia (erstwhile USSR), UK, Sweden, Poland, etc., for production of defence equipments primarily through the routes of license production or from SKD/CKDs kits. This was meant not only to provide the factories opportunity to utilise the existing capability and meet the operational requirements of the armed forces but also to enable them to enhance India's self-reliance in defence production, by absorbing the technical know-how/why and production process. However, the ordnance factories have not been very successful in this regard. The OFB's poor indigenisation record in several important projects has been far from being satisfactory. Further, the ordnance factories have been dependent on import to a large extent for rolling out their indigenous products.

Observations Raised by CAG against OFB (Report No 15 of 2017)

Some of the observations highlighted by the CAG in its report (Report No 15 of 2017) against OFB are enumerated below. These observations are self-explanatory and points towards the voids in the functioning of the ordnance factories, which must be addressed by the OFB in a constructive manner at the earliest.

- Deficiency in management of import contracts by ordnance factories.
  - — Deficiency in the management of import contracts at pre-contract as well as post-contract stages.
  - — Undue delay in negotiations and approval of supply order.
  - — Out of 28 test cases checked by CAG, only in two cases supply orders were placed within stipulated timeframe.
  - — Delay in supplies from vendors ranging between 2 to 17 months.
  - — Delay in finalisation of quality claims.
- Non-revision of labour estimates after introduction of CNC (computer Numerically Controlled) machines and incorrect payments to Industrial Employees (IEs).
- Procurement of Defective Radiators for T-90 Tanks.
  - — Order placed by HVF, Avadi on a firm, which had no prior experience of manufacturing radiators.
  - — Factory purchased radiators (worth Rs 2.78 crore), which did not confirm to the stipulated technical requirements.
  - — T-90 tanks fitted with such radiators were not accepted by the Army.
- Avoidable loss of Rs 31.32 crore towards rejection of Fuze A-670 M due to delay in defect investigation.
  - — Production of defective Fuze A-670 M continued by OFB despite repeated failures of the item during test.
  - — Entire lot rejected during inspection, incurring heavy loss to the state.
- Delay in Production of BLT variant of Tank T-72 by HVF, Avadi.
  - — As per indents placed by Army, T-72 variant BLTs scheduled for delivery between 2012 and 2017.
  - — Production could not start till 2017 – due to delay in execution of infrastructure project and frequent changes in the design of T 72 BLT.

Relevance of Ordnance Factories in Future

Ordnance factories being one of the most important pillars of Indian defence industrial base, will continue to be relevant in the

defence industry arena in the years to come. They have a vast pool of resources to include land, labour, plant and machinery. They are having a substantial number of highly skilled, trained and experienced manpower and pool of talent, which can be of utmost importance to the country in future. Further, these factories are the repository of large number of ToTs/technical know-how.

Moreover, ordnance factories have worked hard with the armed forces over a long period of time including several wars and conflicts and have deep knowledge of the functioning, requirements and ethos of the armed forces. Therefore, it is considered that the future requirements of the armed forces can also be met to a great extent by the ordnance factories, though with desired changes in their work culture, ethos and efficiency.

With the arrival of the private sector and strategic partnership in the Indian defence sector, the challenges for ordnance factories seems to have increased in view of the envisaged competition. However, the private sector is still in the nascent stage and will need considerable amount of time to build up its capacities, capabilities and skills in producing large scale defence equipments and weapon platforms. In the long run, it is envisaged that both private sector as well as public sector will co-exist and work in a healthy competitive environment. Moreover, ordnance factories can provide tough competition to private players in terms of quality and pricing, thus can check the monopoly of private sector in future. Overall, this would be good for the country's defence industry and will help in creating a much wider and competent defence manufacturing eco-system inclusive of MSMEs within the country.

Recommendations and Way-Ahead

In order to ensure that India grows to become self-reliant in defence manufacturing, it is of utmost importance that the ordnance factories, one of the important pillars of India's defence industrial base, be strenthened. Some of the significant recommendations are:

- **Build up Capacities and Capabilities of Ordnance Factories**. India should try to build up capacities and capabilities of its domestic industrial base especially the ordnance factories and the DPSUs. The aim should be to meet the requirements of the defence forces for modernisation as well as upgradation of weapon systems/equipments indigenously. This will result in reducing dependency on imports, saving of forex reserves and will lead to attaining strategic autonomy in true sense.
- **Focus on R&D, Innovations and Absorption of Technology**. There is a need for ordnance factories to continuously focus on the R&D, innovations and absorption of imported technologies. This will not only help them in gaining the competitive edge, but will also result in getting larger share of domestic business as well as enhance their export potential.
- **Change in Work Culture**. There is a need to bring a total change in the work culture and ethos of the ordnance factories with an aim to inculcate sense of efficiency, accountability and professionalism in the work force. There is a need to incentivise the high performers as well as achievers and discard the lethargic and unproductive resources.
- **Reduction in Overhead Cost**. In order to reduce the overall cost of production, the ordnance factories need to reduce their overhead cost. The only way the overhead cost can be reduced is through better utilization of labour, plant & machinery and stores.
- **Pricing of Stores by OFB.** This being an essential factor of defence acquisition, it is imperative that OFB should adopt a more transparent and professional way of pricing its products. This will not only make it more cost-efficient, but will also improve its credibility amongst the armed forces as well as towards exports.
- **Linkages between Induction of new Plant & Machinery and Performance of Factories**. Needless to say, there should be clear linkages between the induction of new plant and machinery and the performance of the factories in terms of cost reduction, quality enhancement and improved timeframes for production. With the induction of new plant and machinery, there should be corresponding increase in efficiency and reduction in overall cost of production. The OFB management should be proactive in ensuring this.
- **Infusing Sense of Competition**. The ordnance factories should be driven by competition. They should compete for orders rather than being nominated for production orders. Further, there should be healthy competition among the public sector (OFB/DPSUs) as well as the private sector and they should complement each other in terms of efforts and resources.
- **Restructuring of Ordnance Factories**. There is an urgent need to restructure the organisation, functioning, system and processes being followed by the ordnance factories in order to enhance their productivity, efficiency and accountability. **Following measures are suggested to make ordnance factories more relevant and competitive** in the current scenario:
  - There is an urgent requirement to critically assess the strategic need as well as commercial viability for having such a large number of ordnance factories in the country. Subsequent to the study, all the non-performing factories should be closed down at the earliest, to avoid further drain of government resources.
  - Similarly, the factories which are involved in producing non-war like stores or those type of stores which are of civil-end use and available easily in domestic market, should also be closed down else these can be upgraded to manufacture other types of defence equipments, which are required by our armed forces but are not readily available in the open market.

...Their Relevance in Future and Way-Ahead

— The remaining ordnance factories should be corporatised and be made more autonomous. Further, these should form the base of the India's defence industrial base. These factories must be reorganised to be lean, modern and competitive, so that they can be made more efficient and effective. Further, they should be made fully accountable for their performance including time delays and price-overruns, if any.

— Post corporatisation, these factories should be disinvested in order to leverage their value and expertise. This will help in generating capital, which can be used for their modernisation and capacity expansion projects. Further, this will help in ensuring higher level of corporate governance standards in the public sector units.

— Qualified persons ex private sector/academia should be inducted for efficient running and management of these organisations.

— The small or low-tech tasks and jobs should be outsourced to the MSME sector. This would lead to the growth of defence industrial base within the country.

— There is a need to up-skill/refresh the technical skills of the work force employed at these organisations. This will enhance overall efficiency of these organisations.

— As far as possible, the government should avoid being the manufacturer/controller of the defence sector. Rather, it should be the regulator and facilitator for the growth of defence industry within the country.

Conclusion

It is high time that the government initiates the process for reforming the OFB. There is a need to bring corporatisation and greater efficiency in the OFB, which has also been suggested by various MoD committees. Some recent successes suggest a hidden potential in the ordnance factories. One such example is the production of 155 mm gun 'Dhanush', which is an indigenously produced upgraded version of the Bofors howitzers. Though the OFB has an order for building a large number of howitzers for the Indian Army, it presently lacks the capacity to produce them within the required timeframe.

There is a need to enhance the capacity and capability of the ordnance factories. They should be allowed to form joint ventures, partnership with other industry players and invest in R&D. As it would be difficult for the government to make sufficient money available for the expansion and modernisation of the ordnance factories, the factories should be allowed to raise their capital requirement through monetising their assets and resources. While making the management of the ordnance factories more accountable and professional is essential, it is considered that transforming the work culture of ordnance factories should also be high on the agenda of the government as well as OFB.

Notes

1. Laxman Kumar Behera, *Indian Defence Industry – An Agenda for Making in India*; Pentagon Press and IDSA, New Delhi, 2016, p. 20.
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3. Laxmankumar Behera, *Indian Defence Industry : An Agenda for Making in India*, IDSA, New Delhi, 2016, preface.
4. Laxman Kumar Behera, *Indian Defence Industry – An Agenda for Making in India*; PENTAGON PRESS and IDSA, New Delhi, 2016, p. 29.
5. *CAG*, Report No 15 of 2017.
6. Laxman Kumar Behera, *Indian Defence Industry – An Agenda for Making in India*; PENTAGON PRESS and IDSA, New Delhi, 2016, p. 31.
7. Laxman Kumar Behera, *Indian Defence Industry – An Agenda for Making in India*; PENTAGON PRESS and IDSA, New Delhi, 2016, p. 33.
8. *CAG*, Report No 35 of 2014, p. 120.
9. *CAG*, Report No 15 of 2017.
10. Laxman Kumar Behera, *Indian Defence Industry – An Agenda for Making in India*; Pentagon Press and IDSA, New Delhi, 2016, p. 34.
11. Laxman Kumar Behera, *Indian Defence Industry – An Agenda for Making in India*; PENTAGON PRESS and IDSA, New Delhi, 2016, p. 35.

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