

FDI AND PPP IN INDIAN DEFENCE SECTOR (A PERCEPTION BASED ANALYSIS)

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ABSTRACT

India is the largest arms importer in the world. During the last five years India imported almost 15per cent of the volume of global arms more than three times as much as China.India needs to strengthen its R&D and develop a strong defence industrial base in order to become self-reliant in the field of Defence. Govt. recently eased FDI norms for Defence, by enhancing the limit from 26% to 49%. In order to be self-sustainable, 100% PPP is allowed in defence. The Defence Procurement Manual has been amended from time to time in order to take into stride the wave of globalisation and liberalisation. However, despite all this, India still stands at a point where it must take flight over the globe on its wings of modernisation and a strong industrial base. India has to make its dream of being self-reliant in Defence a reality. The Present study has been divided into two sections. Section -1 helps us to understand the Indian defence environment and the macro variables affecting PPP and FDI in terms of Opportunities, Threats, Weakness and Strengths. Section -2 of this study analyses the factors influencing the requirementof Public Private Participation and FDI in Indian Defence Sector.

Keywords: *Foreign Direct Investment, Public Private Partnership, Defence, Research and Development , JEL Classification: E61, R42, O33, N40*

I. BACKDROP

India has a large infrastructure for furthering its defence production capabilities. But it is yet to grow and build on this potential. In the mid-1990s, the country decided that it would not depend on outside world for defence related equipment and hence, India had to turn to other countries to help it meet its defence related equipment. Indian military stakeholders and the government have started to re-assess the need of revamp of the present approach of defence Industry.

1.1 Overview of Indian Defence Sector

India's security environment is complex. It is an intricate interplay of regional and global challenges. The country being strategically located, needs to be prepared to counter the various impacts likely to be caused by the regional and global forces and hostile neighbourhood.

Considering the neighbourhood and India's continuously growing economy, we require a robust defence industry which in turn would depend on the robust defence strategy and Government policies. The aim of the nation is to deter the wide spectrum of all types of security threats faced by our country today. India's role and location is not only restricted to its immediate neighbours, but also in middle East, South Eastern Asia and Indian Ocean Regional countries. The Global security scenario is no longer just a conventional war but non state actors have made the threat more volatile and uncertain.

1.2 Organisation Structure of Ministry of Defence

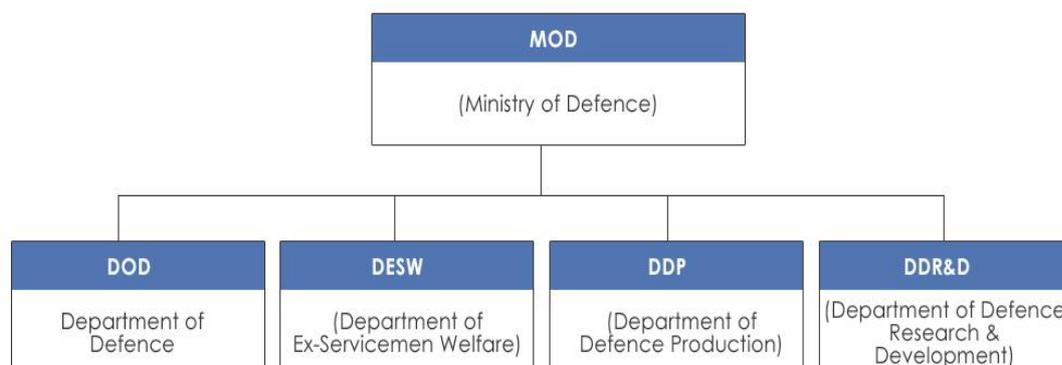
The primary task of the Ministry is to formulate policy on defence and security related matters and communicate the same to the Services Headquarters, within the service Organisations (ISOs), Production facilities and R&D Organisations. The main functions of the Departments are as under:-

I **The Department of Defence** handles the Integrated Defence Staff (IDS) and three Services (Army, Navy and Air Force) and various Inter Service Organisations. It is mainly responsible for the making policies related to Defence and establishment matters, Defence Budget, Parliament related matters and defence co-operation with foreign countries etc.

II **The Department of Defence Production** as the name suggests deals with the matters related to the defence material production and is headed by a secretary level officer.

III **The Department of Defence Research and Development** is the department which looks after the research and development of Defence equipment and spares required for the security of the nation.

IV **The Department of Ex-Servicemen Welfare** handles the issues and matters related to all welfare, their resettlement and pension of Ex-Servicemen.



1.3 Defence Production in Public Sector

The Defence Production department deals with for the defence production units which is a well-developed infrastructure comprising of 39 Ordnance Factories and 08 Defence Public Sector Undertakings (DPSUs). DPSUs are involved in the production of aircraft and helicopters, submarines, warships, heavy vehicles, earthmovers, and missiles. Presently, there are 41 Ordnance factories in India spread all the country.

1.4 Make in India Initiative by Government of India

In order to make India an international manufacturing hub, which is a tall order at this point of time for the country, the Government of India has launched an initiative called 'Make in India' which is a political slogan encompassing encouragement of FDI in India and making business easier i.e. facilitating 'ease of doing business' in the country. All this is being done to improve the country's economy in a longer run. Make in India aims to increase manufacturing growth rate to 10% by changing the unnecessary laws, assisting in easier bureaucratic processes, transparency and accountability.

1.5 'Make In India' Policy for the Defence Sector

As Defence sector depends heavily on imports, Make in India can bring about a balance in imported and indigenized equipment without affecting the requirements of the services. There are different scenarios in which India can do it. First, we should be able to design, develop and make i.e. manufacture, test, maintain and upgrade on our own. We should be able to take along the private sector and create synergy amongst the industry, Govt and R&D. The best case would be if we can export these equipment.

The second best scenario would be to at least manufacture or integrate the system within the country with the help of full technology transfer. This situation is not prevalent as of now in India. In such cases, if we are not able to do mid-life up gradation, then at least we should be able to provide a life cycle support.

1.6 Indian Defence Sector and the Acquisition policies.

In order to holistically understand the impact of FDI, PPP or Make in India initiative, it is important to mention about the defence sector, its various stake holders, their perspectives and the Defence Ministry policies for Defence acquisition.

Defence Acquisition is decision-making process which meets the requirements of procurement, indigenous defence production and higher transparency and accountability. The Defence **Procurement Manual 2013**, is the main policy document which describes the terms and procedures for defence acquisition in India. Over the years, considerable changes have taken place from the 'Buy' cases to 'Buy and Make through Transfer of Technology', basically promoting 'Buy and Make (Indian)'. The idea is to promote Indian defence industry with the involvement of private players initially and subsequently shifting to the 'Buy (Indian)', 'Buy and Make (Indian)' and 'Make' categorisation.

II. OBJECTIVE OF THE PRESENT STUDY

- i. To analyse the Indian defence sector and study the macro variables affecting PPP and FDI in terms of Opportunities, Threats, Weakness, Strengths.
- ii. To examine the Factors influencing the requirement of Foreign Direct Investment and PPP on Defence production in India.

III. SCOPE OF THE STUDY

The scope of the study is limited to:-

- i. Indian Defence sector
- ii. Secondary data available on websites, journal, books, newspapers and Reports of Government and Industry bodies. Only open source data available for last five years covering period 2011-2015 will be analyzed
- iii. Primary data has been collected from 125 Govt officers serving in Defence Sector for the perception based analysis.

IV. STATISTICAL TREATMENT FOR DATA

Responses to the questionnaire have been statistically analysed keeping the objective in mind. Factor Analysis with the help of SPSS has been used to know the factors influencing the PPP and FDI in defence sector. Twenty Questions based on different attributes had been asked from 125 respondent.

V. LIMITATIONS OF STUDY

The limitations of the study are as follows:-

- i. **No Previous Detailed Research Work.**
- ii. **Access to Data:** The subject matter is the defence sector, therefore, the restriction of access to data is there. Only unclassified data and information available on open forums can be used.
- iii. Time constraint. Due to constraint of time available for project, researcher cannot go too much into details of subject

VI. REVIEW OF LITERATURE

Kaushal (December, 2014) in his article about need of Public Private Partnership in the Defence Aviation Industry in India has brought out the various facets of Defence production. His article aims at bringing out reasons as to why Indian aviation industry depends heavily on imports, despite the fact that Defence PSUs like HAL are there. It has been recommended by the author that taking strategy based decisions instead of project based decisions, preparing a long term plan for technology acquisition and mid-life upgradation and harnessing public private partnership is the way forward.

Kaur(2013) in her paper brings out various facets of Defence Industrial base in India and the role of PPP in making India self-reliant. While the Defence Procurement Procedure (DPP) 2013 emphasizes on indigenous

development. Last few decades have seen Indian private sector growing exponentially. Its growth trajectory had been steep and the capacity to innovate and develop world class solutions in various technologies had been immense. In India, PPP model has worked well in building large and complex infrastructure projects like roads highways, airports etc. The same approach can be adapted in Defence research and development and production.

Dr Vijay Kelkar Committee Report (April 2005) identified the potential of private sector and the positive opportunities and possibilities that could happen if PPP model is implemented in Defence Sector. The Paper concludes that significant factors like fair play for competitors, Public Private Partnerships, foreign Joint Ventures can catalyse defence manufacturing and given necessary impetus to innovation and dynamism. The author has expressed appreciation for the Government efforts to make the system more transparent and streamlined. However, he opines that the private sector should be provided level playing field with DPSUs.

VII. POPULATION AND SAMPLE OF THE STUDY

Random sampling is used to select officers from different services (Army, Air force, Navy) holding different ranks and different levels of experience.

VIII. RESEARCH DESIGN

The Research design used is that descriptive research. This type has been used because the population to be studied is the officers of Government of India, especially those working in defence sector. This has been found to be the ideal design when studying the population as in this research. Two methods under descriptive studies have been used which are:

i. Questionnaire

ii. Interview

8.1 Research Instrument Used

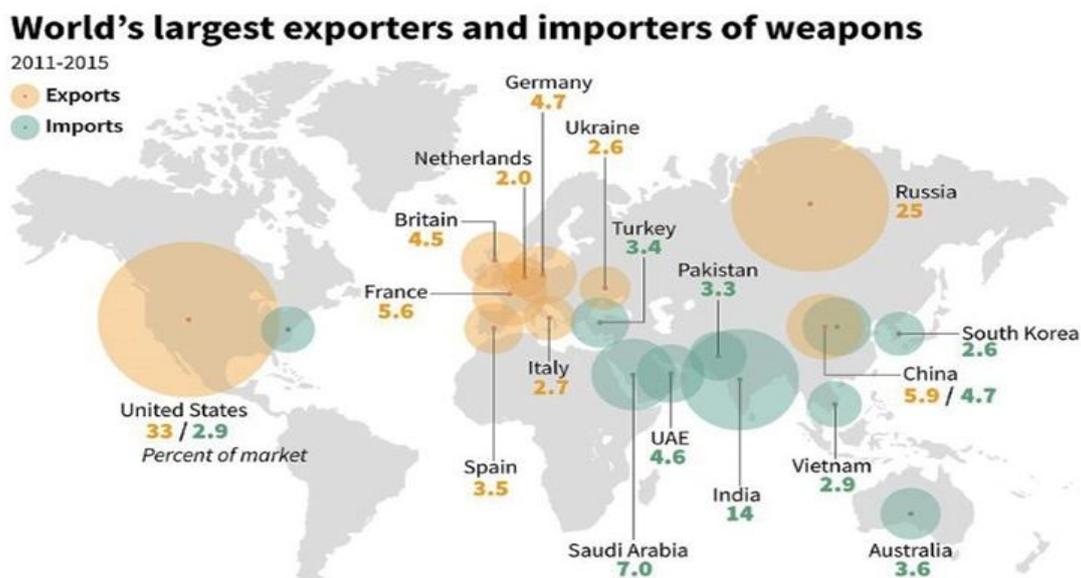
The instrument for collecting primary data used has been Questionnaire. The questionnaire has been drafted based on the researcher's own experience and understanding of the subject and various defence related literature published in journals and online.

Section-1

8.2 The Indian Defence Environment Analysis

The analysis of impact of FDI in Defense sector is a tricky affair. First because it is a newly increased cap and the effect of increased limit to 49% in Defense sector is yet to show its impact. And second because Defence sector in India is a complex and specialized field in which any private and more so a foreign party cannot venture. Obviously, the deterrence are in place for a private player to participate in production of Defence equipment in the country. Interestingly, not the Indian but the foreign firms are a big part of Indian Defence sector, as India heavily relies on imported arms and equipment like never before. The figure -1 given below suggests us that India is the largest importer (14%) of weapons.

Figure 1: World's largest Importers and Exporters of Arms (2011-2015)



The table-1 given below suggests us that India has secured 6th rank regarding military expenditure in the year 2015

Table 1: Countries with highest Military Expenditure

| Rank | | Country | Spending, 2015 (\$ b.) | Change, 2006-15 (%) | World share 2015 (%) | Spending as a share of GDP (%) ^b | |
|---------------------|-------------------|------------------|------------------------|---------------------|----------------------|---|------------|
| 2015 | 2014 ^a | | | | | 2015 | 2006 |
| 1 | 1 | USA | 596 | -3.9 | 36 | 3.3 | 3.8 |
| 2 | 2 | China | (215) | 132 | (13) | (1.9) | (2.0) |
| 3 | 4 ↓ | Saudi Arabia | 87.2 | 97 | 5.2 | 13.7 | 7.8 |
| 4 | 3 ↑ | Russia | 66.4 | 91 | 4.0 | 5.4 | 3.5 |
| 5 | 6 ↓ | UK | 55.5 | -7.2 | 3.3 | 2.0 | 2.2 |
| 6 | 7 ↓ | India | 51.3 | 43 | 3.1 | 2.3 | 2.5 |
| 7 | 5 ↑ | France | 50.9 | -5.9 | 3.0 | 2.1 | 2.3 |
| 8 | 9 ↓ | Japan | 40.9 | -0.5 | 2.4 | 1.0 | 1.0 |
| 9 | 8 ↑ | Germany | 39.4 | 2.8 | 2.4 | 1.2 | 1.3 |
| 10 | 10 | South Korea | 36.4 | 37 | 2.2 | 2.6 | 2.5 |
| 11 | 11 | Brazil | 24.6 | 38 | 1.5 | 1.4 | 1.5 |
| 12 | 12 | Italy | 23.8 | -30 | 1.4 | 1.3 | 1.7 |
| 13 | 13 | Australia | 23.6 | 32 | 1.4 | 1.9 | 1.8 |
| 14 | 14 | UAE ^c | (22.8) | 136 | (1.4) | (5.7) | (3.2) |
| 15 | 15 | Israel | 16.1 | 2.6 | 1.0 | 5.4 | 7.5 |
| Total top 15 | | | 1 350 | | 81 | | |
| World total | | | 1 676 | 19 | 100 | 2.3 | 2.3 |

(Source: Stockholm International Peace Research Institute 2016)

The table no -2 given below makes SWOT analysis of Indian Defence Sector

Table -2:SWOT Analysis of IndianDefence Sector

| | |
|--|---|
| <p style="text-align: center;"><u>STRENGTHS</u></p> <ul style="list-style-type: none"> • Huge Demand • Adequate Manufacturing infrastructure • Sufficient R&D facilities • Large pool of scientists, engineers and skilled manpower | <p style="text-align: center;"><u>WEAKNESSES</u></p> <ul style="list-style-type: none"> • Huge import • Lack of indigenization • Minimal absorption of Technology • Inability to retain talented scientists • Unfavorable policies like FDI and Taxation |
| <p style="text-align: center;"><u>OPPORTUNITIES</u></p> <ul style="list-style-type: none"> • Reduction in Defence budgets in USA and Europe • Domestic industry can be benefitted • Private sector participation • Increased FDI limit to 49% • Make in India Initiative • New Defence Procurement Procedure-2016 | <p style="text-align: center;"><u>THREATS</u></p> <ul style="list-style-type: none"> • Over dependence on foreign companies may lead to sanction by Foreign Governments • Untrustable neighborhood viz Pakistan, China • Adversaries (Pakistan)investing heavily in acquisition and development of defence equipment • Indigenization of defence equipment though reverse engineering by China • Increasing clout and military power of China |

8.3 Where to Restrict the FDI inDefence:

For the Defence sector, the FDI has been increased to 49% from 26% which hardly attracted any FDI in the previous years. FDI more than 49% can be allowed on case-to-case basis. Apart from easing FDI norms, the present Government is taking steps to make doing business in India a procedurally easy affair. But there is still a sense of discontentment in the private sector and foreign investors on the issue of cap of 49% FDI in Defence sector in India.

There are mainly two reasons why increase in FDI in Defence is being opposed by some sectors in Government. **One**, that it hampers the security environment in the country. There is this fear that the national security will be compromised when defence Ministry shares what all they need and in what quantity, there by exposing the strategic requirements and plans of armed forces. .

Secondly, there is a protectionist quarter in the Government, who would not like the monopoly of the Government machinery to go. It is a presumption by some that opening defence sector to foreign investment would hamper the interests of private Indian companies. This would disturb an already fragile environment of defence industrial base in India.

8.4 The Economics of Public Private Participation

If India is to attain self-reliance in the defence industry, better infrastructure is needed to build, sustain and improve upon the present capabilities. The government therefore is looking to Public-Private sector partnerships

to meet this challenge. There is a understanding that the private sector is better at some aspects like handling certain risks, and on the other hand the public sector can handles some other issues better some others. The private sector is better in reducing the construction cost and time over runs, thereby achieving good operational efficiency and maintenance. On the other hand, the public sector is better placed in taking a longer term view of the benefits of projects particularly when they involve costs that flow to the larger society such as lower transport costs enabling producers to realise higher margins.

8.5 Summary of the Analysis:

1. To reduce license regime and boost indigenous industrial capabilities. Success of this kind will not only validate India's defence-industrial capabilities to meet domestic demands but also increase its confidence in many ways.
2. Second, the recent opening up of the defence sector for private participation has generated a lot of interest in the country. Fears regarding the ability of the private sector to match expectations of the country in the highly demanding and technology-dominated industrial sector are countered by industrialists.
3. The simplification of production and procurement rules promise better buyer-seller relations. Significant diversification and closer private participation are significantly influencing India's defence industry in many ways.
4. Fourth, the encouragement provided by the government is driving the defence industry to have more joint-design, development and production collaborations to reduce dependence on imports.
5. Fifth, the Government's export-related incentives, including subsidies, to the industry is a significant result oriented strategy. India has been spending roughly US \$0.5 billion on an average annually for the last five years. This is likely to go up to US \$1 billion in the next decade. However, the current and future production may eventually take India close to the desired level of self-reliance.

Section -2

8.6 FDI and PPP in Indian Defence Sector (A Perception Based Analysis)

The section 2 of the present study is a Perception based analysis regarding the requirement of FDI and PPP in Indian Defence Sector. For this purpose twenty questions, based on different attributes had been asked from 125 defence officers of Indian government. The output of factorial analysis in SPSS has been explained below –

8.7 Output of the Factor Analysis:

Table -3 given below highlights the descriptive statistics of various attributes

Table – 3 :Descriptive Statistics

| | Mean | Std. Deviation | Analysis N |
|-----------------------------------|--------|----------------|------------|
| Permission for FDI | 2.1774 | 1.19653 | 124 |
| Role of DRDO not up to mark | 2.1613 | 1.23227 | 124 |
| Own industrial base using PPP | 1.5000 | .70423 | 124 |
| Vagueness of PPP model in Defence | 3.0887 | .90178 | 124 |

| | | | |
|--|--------|---------|-----|
| Liberalisation for Ease of Doing Business | 2.0161 | .76492 | 124 |
| Self-Reliance in Defence Sector | 1.7500 | .73942 | 124 |
| Insufficiency in Defence Production | 2.4194 | 1.30725 | 124 |
| Insufficiency of Defence Budget | 3.0484 | 1.28059 | 124 |
| Constraint of 26% FDI limit | 2.4032 | .98707 | 124 |
| Confidential nature of work as deterrence in PPP | 2.9194 | 1.20025 | 124 |
| FDI limit more than 49% | 2.3871 | 1.14558 | 124 |
| High Upgradation cost | 2.2177 | .95900 | 124 |
| Liberalised Defence Production Policies | 2.2016 | 1.21628 | 124 |
| Insufficiency of 49% FDI limit | 3.0565 | 1.17080 | 124 |
| Make in India for cost minimisation | 2.1613 | .91409 | 124 |
| Make in India for economic growth | 1.6694 | .79349 | 124 |
| Unsatisfactory performance of DPSUs | 2.0323 | .94512 | 124 |
| Promoting Defence Production through PPP | 2.2419 | .89598 | 124 |
| Requirement of skilled manpower | 2.7661 | 1.16945 | 124 |
| Security threats with FDI more than 49% | 3.0161 | 1.28774 | 124 |

8.8 Communalities

The next item from the output is a table of communalities which shows how much of the variance (i.e. the communality value which should be more than 0.5 to be considered for further analysis. Else these variables are to be removed from further steps factor analysis) in the variables has been accounted for by the extracted factors. The table no 4 given below shows us the communalities of the respective attributes based on the Principal Component Analysis

Table -4: Communality

| | Initial | Extraction |
|---|---------|------------|
| Permission for FDI | 1.000 | .701 |
| Role of DRDO not up to mark | 1.000 | .652 |
| Own industrial base using PPP | 1.000 | .660 |
| Vagueness of PPP model in Defence | 1.000 | .514 |
| Liberalisation for Ease of Doing Business | 1.000 | .570 |
| Self-Reliance in Defence Sector | 1.000 | .717 |
| Insufficiency in Defence Production | 1.000 | .694 |
| Insufficiency of Defence Budget | 1.000 | .723 |
| Constraint of 26% FDI limit | 1.000 | .683 |

| | | |
|--|-------|------|
| Confidential nature of work as deterrence in PPP | 1.000 | .607 |
| FDI limit more than 49% | 1.000 | .734 |
| High Upgradation cost | 1.000 | .589 |
| Liberalised Defence Production Policies | 1.000 | .723 |
| Insufficiency of 49% FDI limit | 1.000 | .653 |
| Make in India for cost minimisation | 1.000 | .790 |
| Make in India for economic growth | 1.000 | .629 |
| Unsatisfactory performance of DPSUs | 1.000 | .750 |
| Promoting Defence Production through PPP | 1.000 | .659 |
| Requirement of skilled manpower | 1.000 | .590 |
| Security threats with FDI more than 49% | 1.000 | .643 |

Extraction Method: Principal Component Analysis.

IX. TOTAL VARIANCE EXPLAINED

The table no. 5 given below shows us the actual factors that were extracted. If we look at the section labelled "Rotation Sums of Squared Loadings," it shows us only those factors that met our cut-off Criterion (extraction method). In this case, there were seven factors with eigenvalues greater than 1. SPSS always extracts as many factors initially as there are variables in the dataset, but the rest of these didn't make the grade. The "% of variance" column tells us how much of the total variability (in all of the variables together) can be accounted for by each of these summary scales or factors. Factor 1 accounts for 15.838% of the variability in all 20 variables, and so on. Thus the seven factors identified explain 66.39 % variance.

Table No -5 : Total Variance Explained

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|-----------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 3.891 | 19.454 | 19.454 | 3.891 | 19.454 | 19.454 | 3.168 | 15.838 | 15.838 |
| 2 | 2.325 | 11.626 | 31.080 | 2.325 | 11.626 | 31.080 | 1.966 | 9.829 | 25.668 |
| 3 | 1.865 | 9.323 | 40.403 | 1.865 | 9.323 | 40.403 | 1.854 | 9.271 | 34.939 |
| 4 | 1.646 | 8.228 | 48.632 | 1.646 | 8.228 | 48.632 | 1.689 | 8.443 | 43.382 |

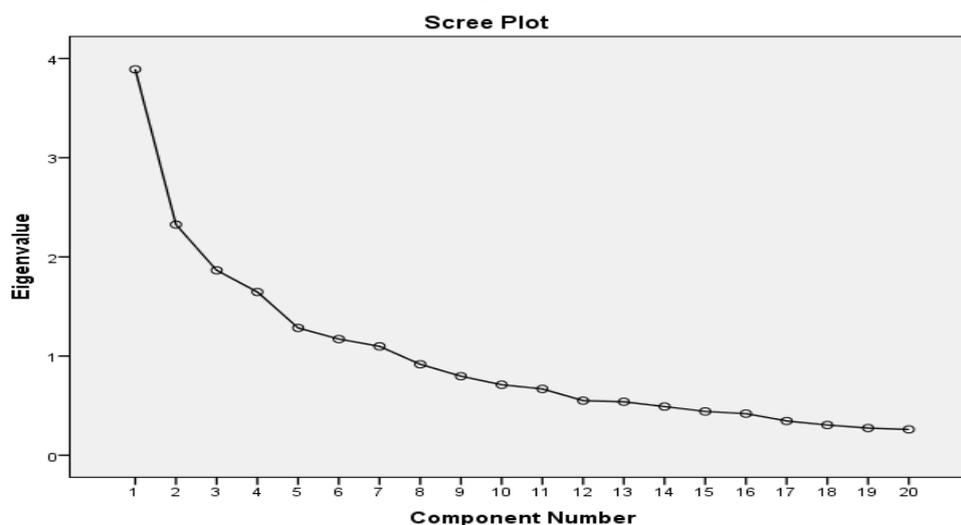
| | | | | | | | | | |
|----|-------|-------|---------|-------|-------|--------|-------|-------|--------|
| 5 | 1.284 | 6.418 | 55.050 | 1.284 | 6.418 | 55.050 | 1.594 | 7.968 | 51.350 |
| 6 | 1.171 | 5.857 | 60.906 | 1.171 | 5.857 | 60.906 | 1.569 | 7.845 | 59.195 |
| 7 | 1.098 | 5.490 | 66.396 | 1.098 | 5.490 | 66.396 | 1.440 | 7.201 | 66.396 |
| 8 | .917 | 4.586 | 70.982 | | | | | | |
| 9 | .797 | 3.984 | 74.966 | | | | | | |
| 10 | .711 | 3.554 | 78.520 | | | | | | |
| 11 | .669 | 3.343 | 81.863 | | | | | | |
| 12 | .551 | 2.753 | 84.616 | | | | | | |
| 13 | .539 | 2.696 | 87.312 | | | | | | |
| 14 | .491 | 2.454 | 89.766 | | | | | | |
| 15 | .442 | 2.209 | 91.975 | | | | | | |
| 16 | .420 | 2.100 | 94.075 | | | | | | |
| 17 | .346 | 1.728 | 95.802 | | | | | | |
| 18 | .305 | 1.524 | 97.326 | | | | | | |
| 19 | .275 | 1.373 | 98.699 | | | | | | |
| 20 | .260 | 1.301 | 100.000 | | | | | | |

Extraction Method: Principal Component Analysis.

X. SCREE PLOT

The scree plot is a graph of the eigenvalues against all the factors. The graph is useful for determining how many factors to retain. The point of interest is where the curve starts to flatten. It can be seen that the curve begins to flatten between factors 7 and 8. Note also that factor 7 onwards have an eigenvalue of less than 1, so only 7 factors have been retained.

Figure No-3: ScreePlot



XI. ROTATED FACTOR LOADING

A summary of the exploratory factorial analysis of requirement of PPP and FDI in defense sector is given in the

Table No –3: Summary of the Exploratory Factorial Analysis of requirement of PPP and FDI in defense sector of India.

| | Rotated Factor Loading | | | | | | |
|--|---|--|------------------|-------------------------|-----------------------------|----------------------------------|------------------------|
| | Overcoming Research and Production inefficiencies | Security concern with enhanced FDI limit | Cap on FDI limit | Promoting Make in India | Insufficient Defence Budget | Enhancement in present FDI limit | High up gradation cost |
| Permission for FDI | .787 | .181 | .056 | .095 | .172 | -.021 | -.087 |
| Own industrial base using PPP | .086 | .337 | .177 | .674 | .169 | -.120 | -.049 |
| Permission for FDI | .653 | -.110 | -.076 | .157 | .296 | -.112 | -.300 |
| Role of DRDO not up to mark | .036 | .424 | .405 | .049 | .254 | .159 | .276 |
| Own industrial base using PPP | -.121 | .145 | -.006 | -.044 | -.087 | .722 | .064 |
| Vagueness of PPP model in Defence | .036 | .824 | -.059 | -.019 | -.059 | .030 | .168 |
| Liberalisation for Ease of Doing Business | .431 | .539 | -.112 | -.029 | .219 | .203 | -.340 |
| Self-Reliance in Defence Sector | -.185 | .070 | .060 | .030 | -.106 | .070 | .814 |
| Insufficiency in Defence Production | -.436 | .347 | -.045 | .076 | .440 | .360 | -.203 |
| Insufficiency of Defence Budget | .219 | .202 | -.530 | -.099 | .072 | .466 | -.071 |
| Constraint of 26% FDI limit | -.018 | -.016 | .842 | .011 | -.023 | .102 | .115 |
| Confidential nature of work as deterrence in PPP | .739 | .126 | -.070 | .038 | -.106 | -.088 | -.044 |
| FDI limit more than 49% | .447 | -.147 | -.008 | .076 | .429 | .486 | .274 |
| High Upgradation cost | .490 | .072 | .337 | -.346 | -.087 | .217 | -.345 |
| Liberalised Defence Production Policies | -.003 | -.276 | .117 | .634 | -.232 | .422 | -.258 |
| Insufficiency of 49% FDI limit | .202 | -.130 | -.042 | .735 | .007 | -.065 | .158 |
| Make in India for cost minimisation | .217 | -.015 | .120 | .009 | .818 | -.097 | -.098 |
| Make in India for economic growth | .425 | .558 | -.220 | -.071 | -.203 | .183 | -.195 |

| | | | | | | | |
|--|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Unsatisfactory performance of DPSUs | .611 | .075 | -.242 | .311 | .187 | .137 | .053 |
| Promoting Defence Production through PPP | .106 | .135 | -.618 | -.088 | -.334 | .237 | .236 |
| <i>Eigen Value</i> | 3.891 | 2.325 | 1.865 | 1.646 | 1.284 | 1.171 | 1.098 |
| <i>% of Variation</i> | 15.838 | 9.829 | 9.271 | 8.443 | 7.968 | 7.845 | 7.201 |
| <i>Cumulative % of Variation</i> | 15.838 | 25.668 | 34.939 | 43.382 | 51.350 | 59.195 | 66.396 |

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 12 iterations.

Interpretation of the Output

Based on the 20 attributes, 7 factors have been identified to know the impact on FDI and PPP in Indian defence sector which are as follows:-

Factor 1 : In factor 1, we see that the various attributes like permission for FDI having loading of .780, non-performance of DRDO having loading .66, insufficiency in defence production having loading .72, promoting defence production through PPP having loading of .59 and requirement of skilled manpower loading of .67. Based on the commonality, we can define this factor as “**Overcoming Research and Production inefficiencies**” by our subjective approach.

Factor 2: In factor 2, we see that security threat with FDI more than 49% have loading of .66 and no other attribute have loading of more than .50. So, we define “**Security concern with enhanced FDI limit**”. It means while making enhancement in FDI limit, we need to keep in mind the security concern for the country also.

Factor 3: In factor 3, we see that a cap of 26% in FDI limit is having loading of .55 is being viewed as one of the major causes of low investment by foreign companies in Indian Defence sector. We term it as, “**Cap on FDI limit**”.

Factor 4: In factor 4, we observe that focus on Make in India for cost reduction (explained by loading of .55) is viewed as one of the important factors. Therefore, we may address it as “**Promoting Make in India**”.

Factor 5: Sufficiency of Defence Budget is being explained by loading of .44. So, we may take it as another factor, “**Insufficient Defence Budget**”.

Factor 6: “**Enhancement in present FDI limit**” having loading of .84 has been viewed as one of the important factor by the respondents.

Factor 7: “**High up gradation cost**” having loading of .48 may be taken as another factor for promoting PPP and enhancement in FDI limit in Defence sector.

XI. FINDINGS AND SUGGESTIONS:

To sum up it can be inferred from the above analysis that there is a need of FDI and PPP in Indian Defence sector for overcoming research and production related inefficiencies (Factor 1), and to minimise high up gradation costs (factor 7). We need to promote Make in India (Factor 4) along with removing cap on FDI limit (factor 3) keeping in view the security concerns of the country (factor2) with the provision of existing sufficient budget (factor 5)

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