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A Scientific Understanding if the Development of Indian Air Force and it's Challenge Ahead

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ABSTRACT: It's been 88 years since the formation of the Indian Air Force which has fought many wars , have been part of United Nations Peacekeeping missions . Over the years with the advance in machines and access to technology , it has total developed world's finest and deadly aircrafts . Indian Air Force has been functioning since the world war 1 , it was formed by the British Empire and today it has emerged as the 4th largest Air Force in the world . It has also promoted the manufacture and promotion of indigenous weapons and aircrafts , helicopters and engines . Indian Air Forces have also served during natural disasters in India. India has signed agreement with 20 countries for the use of dual technology in the manufacturing of defence weapons, aircrafts and missile .India along with Israel has launched many air to air missile and even Russia and India together have launched missiles .Russia and Israel are the largest exporters to India when it comes to defence cooperation . India in the upcoming year is going to manufacture the 5th generation fighter which only Russia , China and US has . India is strengthening it forces with the upcoming threat from China and Pakistan .

KEYWORDS: Indian Air Forces , Technology , Machines, aircrafts , missile , Israel , Russia , China , indigenous weapons .

I. INTRODUCTION

Air forces are highly depended on excellent quality air warriors and advance machines, It is the highest level fighters in the maintaining of operation readiness and efficiency . Air Forces all over the world depend on advance machines and technology where India is not an exception .The Indian Air Force is among the top four largest Air forces in the world , having the powerful aircrafts in the world and there are particular aircraft missile which make the more powerful . India has also started to manufacture its own aircraft , producing some of the deadly aircrafts like Tejas , Prime Minister Narendra Modi ambitious to make India Atmanirbhar has resulted in cut down of imports of Aircraft equipments and India is manufacturing its own India will now manufacture its own fifth generation aircraft under the Made in India scheme. The Hindustan Aeronautics Limited which was incorporated in 1940 , December at Bangalore , with the aim to manufacture Indian aircraft which was formed by Seth Walchand Hirachand .

In 1951 the Hindustan Aircraft Limited came under the administration of Ministry of Defence , Government of India . After the cold war between US and USSR , tension has amplified . India and Pakistan since the partition have been in constant war against each other in relation to the state of Kashmir , on the other hand China is also emerging as a threat to India across the borders especially in the Arunachal Pradesh and Ladhak region and Indian equipments needs to be strength to fight against China and Pakistan .Indian Air Forces are being strengthen and modified with the aim to counter China. India two main strategic priorities are its national security and force and second its threat from North West and Central Asia . The role of Indian Air Forces is to protect the airspace during war and bring peace .Indian Air Force is also part of United Peace Keeping . It has been 88 years since the Indian Air Force has been established it has



fought may wars and have been part of many operation preparedness . The Air Forces are most funded in the world , however when it comes to allocation task it is not funded properly . The Indian Air Forces are increasing the efficiency , technical strengthen and above all manpower and training professionals in this sector to counter China , who has the 3rd best army in the world and is equipped with the finest aircrafts and weapons . One of the loopholes of the Indian Air force is that it operates more fast jet plans than other air forces when it comes to operational efficiency .India told has launched many air to surface missiles and air to air missile, ballistic missile , in the past 5 years , under the Prime Ministership of Narendra Modi we have seen advancement and development in the Air Force Defence and India in the upcoming years is coming up with the most advanced aircrafts .

II. RESEARCH METHODOLOGY

For the purpose of this exploration , I have used a amalgamation of two of the archetypical social sciences research tools application –as they are authentic and brilliant method to assemble statistics from multiple appellants in a methodical and convenient way . Question were asked to the common youth , students of International relations , public policy ,survey , interviews –consisting of several interrogation which were dispersed among representative of each contender group .

Objective of the Research Paper

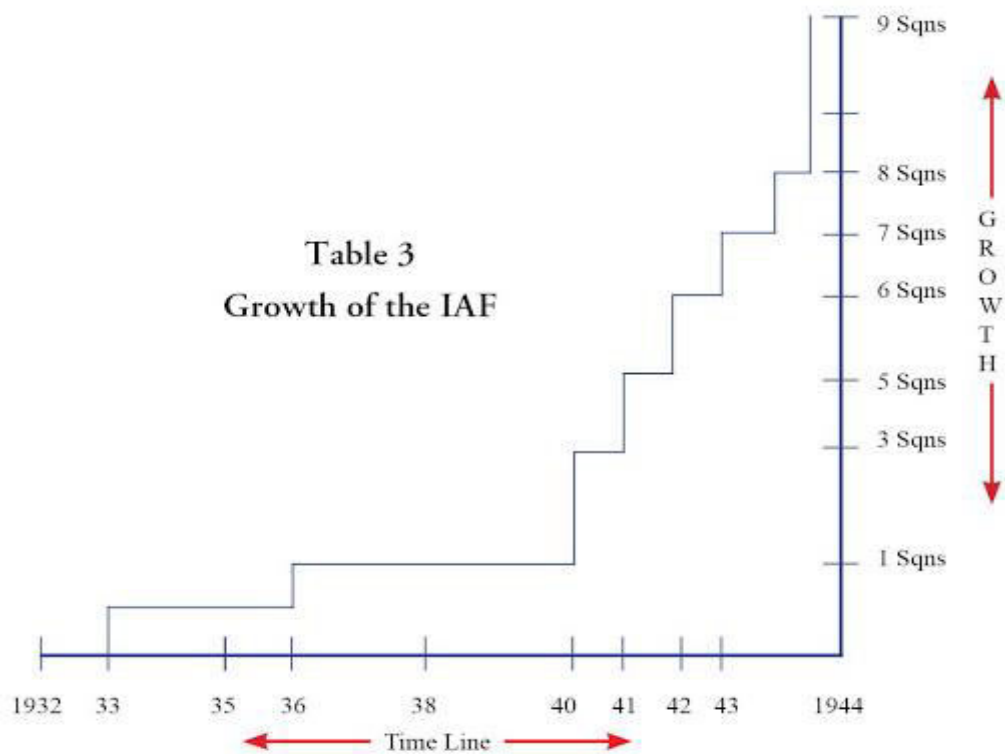
The main areas of exploration in this paper incorporates

- 1.Evolution of India Air Force since Independence
- 2.Success of Indian Air Force defence
- 3.Development in the IAF missiles ,aircrafts , indigenous fighters
- 4.Future of India Air Force

III. LITERATURE REVIEW

The Indian Air Force was established on 8th October , 1932 under the British colonial as an auxiliary air force of the British Empire ,India's aviation services has been part of the World war I under the British Empire and also the second world war it was named Royal Indian Air Forces , after the Independence of India in 1947 , the name Royal renamed till 1950. After 1950 , Indian Air Force have fought four wars , two major being one with Pakistan and the other with India and under major operations which includes operation vijay , operation cactus , operation Meghdoot and operation Poohmalai , it expands its mention beyond Hostile forces and are involved in UN peacekeeping Missions. During the second world war , the Indian Air Force(IAF) played a significant role in halting the Japanese army in Burma , where the first air strike execution was done by IAF .There were mainly involved in Strike , close air support, Bomber escort and aerial reconnaissance.IAF were train to gain combat experiences and communications training . The Indian Air Force also participated in air operations of Europe and North Africa , Indians joined Women auxiliary Air force and RAF ,people who volunteered in the British region . Westland wapiti was one of the first aircraft of India . The IAF played a major role in the Congo crisis and Annexation of Goa in 1960 to 61 .With Belgium 75 years colonialism ended in Congo that resulted in widespread violence the Indian Air Force activated it's no 5 Squadron to assist the United Nations Operation in Congo which ended in 1966. The Indian government had decided to attack the Portuguese colony of Goa after the disagreement between New Delhi and Lisbon ,which is also referred to as operation vijay .During the Sino-India war which was a three year long lasting when China attacked in the border region . India used its IAS against the Chinese force , followed by this was the Kashmir second war Pakistan launched operation Gibraltar , again to infiltrate the Jammu and Kashmir region and India for the first time was engaged in an air force war .IAF instead of providing support to the India army started their independent Raid against PAF .

The drawback was Pakistan Air Force was technologically more advance than Indian Air Force which made India vulnerable .India lost 60 Aircrafts in this conflict at the end and Pakistan lost 43 aircraft , after this heavy lost India started to improve its air force capability and started manufacturing indigenous Fighter planes HAL HF-24 Marut was one of the first fighter jet of India , it was an improved version of Folland Gnat , it also started inducting MiG 21 and Sukhoi Su -7 fighters , During the Liberation war of 1971 before the full start of a war Pakistan Air forces has attacked India , however IAF was successful in damaging Pakistan sabres and finally on 3rd December India formally declared war against Pakistan.



IV. FINDINGS

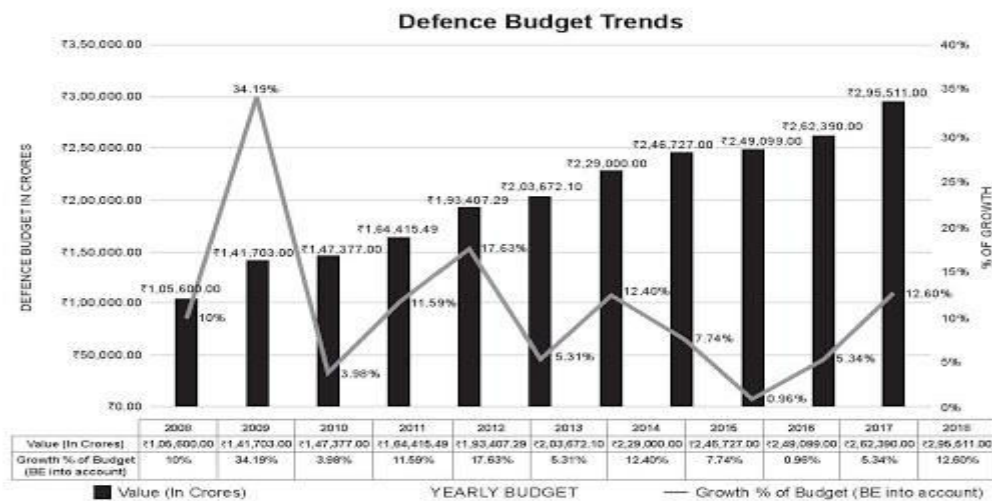
The Indian Air Force is the youngest, the air force is an important factor in shaping the future of conflicts. The Indian Air force over the years have developed into a major pillar of National Power, it has trained itself into a multi-polar force capable of equipments and multi-skill facilities. The rapid economic growth of the country also needs to work towards protecting its security, over the years Indian Air Forces have developed from a tactical to transoceanic force. With multiple forces like Flight Refuelling Aircraft (FRA) and Remotely Piloted Aircraft (RPA). IAF is trying to purchase or acquire best of the technology for the development of air craft missile, India and Israel are working together on this, where Israel is the leading technology advance country with defence items. In fact Israel is the largest exporter to India for defence equipments and even India and Russia are working on missile.

IAF has started to upgrade its combat aircraft feet after second Kashmir war between India and Pakistan. MiG-21, MiG-27 and Jaguar aircraft have been upgraded and Mirage-2000 and MiG-29. It is working on a very comprehensive modernization plan, with induce of Su-30 MKI aircraft, Medium Multi-role combat Aircraft (MMRCA) and Light Combat Aircraft (LCA). The Indian government is also working for the upgradation of helicopter and transport fleet too, India has purchased radars in various category to fulfil the Air Defence Requirements, advance weapons and network centric warfare system. India has seven commands and two functional which are HQ Central air command, Allahabad, HQ Western Command in New Delhi, HQ southern Command in Thiruvananthapuram, HQ Eastern Command in Shillong, then there is HQ South-Western Air command Nagpur, HQ Training Command, Bangalore.

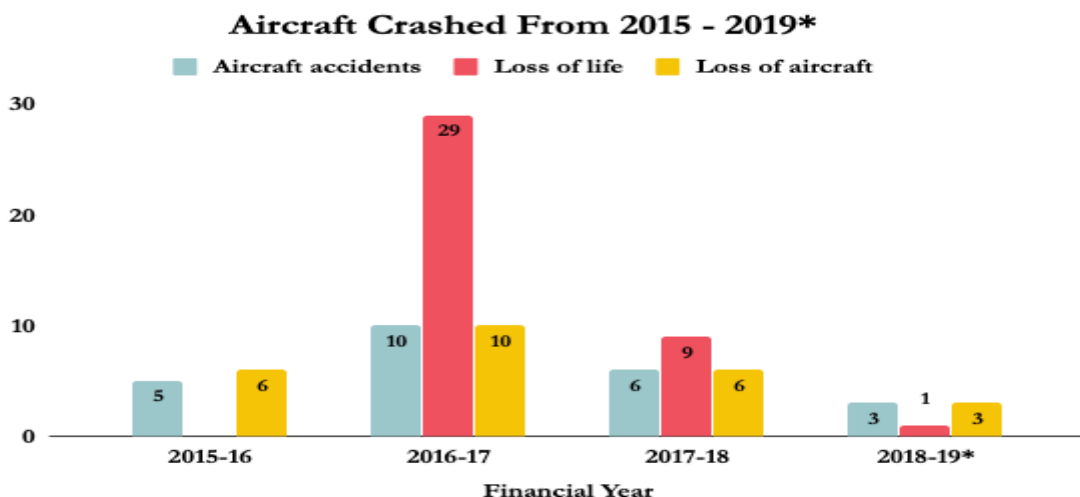
The Air Force helicopter fleet has also increased from US type to French, India and Soviet type. Mi-26 heavy lift helicopters have been operation in the mountains of the North India region, we have around 200 MI-17/MI-171V and Mi-8s, these are Medium lift helicopters. The induction of new machines, Mi-17 V5 which can perform in both hot and high altitude. The medium Lift Helicopter is also operating for Commando assault tasks, for carrying out search and rescue operation in the mountains areas and providing logistic support task in the some islands territories. The Chetak helicopter is the yardstick of carting out Support and rescue operations, Chetak helicopter was also used in Operation Meghdoot sectors, In fact Indigenous modified re-engined chetak have been induced. Now we have the HAL, ALK (Dhruv) ALH fleet in IAF has grown, we also have ALH MK-1 which has been used for communication, Cas Evac and SAR.



The few major aircrafts and strength of the India Air Forces are AVRO –It has two engine turboprop, it is of British origin and have a capacity of 48 paratroopers / 6 tonnes freight and speed of 452 km/h, followed by this Cheetah- It is a single engine Turboshaft FAC helicopter which is of French Origin which can hold three passenger or any external loads of 100 kg it has a speed of maximum 121 Km per hour, EMBRAER –It is meant for VIPS/VVIPs, executive jet air for reaching to place within India or abroad. We have the Chetak Helicopter which is also French origin has a capacity of 6 passengers or can carry a load of 500 kg having a speed of 220 Km/h. MI-17 V5- Equipped with modern avionics and glass cockpit instrumentation, weather radar, state-of-the-art navigational equipments, MI-26- Two engine turboshaft, Russian origin, capable of 70 combat equipped troops, MI-35- Twin engine, assault squad with four barrel 12.7 mm rotary gun, it can carry Scorpion Anti-tank missiles also, Boeing 737-200- Twin engine turbofan, American origin. We have AN-32, IL-76 C-17 C-130J, Jaguar, MiG-27, MiG 21 BISON, MiG-29, Mirage-2000, SU-30 MKI.



Under Prime Minister Narendra Modi with the scheme of Made in India in the defence sectors, we see India has launched many indigenous air crafts. India also has world-class weapon systems, platforms and military equipments based on cutting-edge technology developed by the Defence research and development organization. TEJAS Indian smallest and lightest multi-role supersonic fighter aircraft, single-engine, tactical fighter aircraft with compound Delta wing moving towards self-reliant. LAC Tejas relaxed static stability, Fly-by-wire control, advanced glass cockpit, integrated digital avionics and composite air frame. AEW&C, Airborne early warning and control system, providing surveillance, provides capabilities for adaptive beam scheduling, active electronically Scanned Array (AESA), identify friends and enemies. RUSTOM-11, the multi-missile, MALE UAV, carries out surveillance and intelligence role for the 3 armed forces with an endurance of 24 hours. NAKSHATRA.





Even during the time of a National Disasters or case of natural calamities and consist border blast , The Indian Air Force have played an important . Today India has also been an exporter of this indigenous air craft which are extremely dangerous and powerful . The President of India is the supreme commander of IAF .

V. FUTURE PERSPECTIVE

India is strengthening its Air Force Defence for the upcoming wars and threat that can come from China and Pakistan .China is providing humongous amount of weapons air , submarine and weapons to the Pakistan army to use it as a tool against India .Moreover India has emerged as an alternative to China , in the export of defence items to its friendly state .India plans to manufacture 5th generation fighters by 2023 as part of Atma Nirbhar Bharat , only China , Russia and US have developed the 5th generation aircraft so far . India Air Force is coming with new missile and aircrafts indigenous aircrafts which will increase the export business in the defence export . Transfer of technology has helped India in developing some of the deadly weapons . India is preparing itself for a war against China , with the support of majority of countries , especially Israel and Russia .

TYPE	Year 2030	Squadrons Strength
Sukhoi Su-30MKI	281	15.61
Mig-29UPG	87	4.83
Mirage-2000	54	3
Jaguar	80	4.44
MMRCA	80	4.44
Dassault Rafale	36	2
Tejas Mk1	40	2
Tejas Mk1A	83	4.15
MWF-Tejas AF Mk.2	64	3.2
Total Jets	805	43.67
Loss in Crashes	52	2.88
Total Squadrons	753	40.79

VI. CONCLUSION

The government of India will purchase 33 aircraft which comprises of 21 MiG-29s from Russia and Sukhoi-30 fighters from HAL , along with upgradation of 59 , MiG-29 jets .India from the time of British empire has fought many wars using Indian Air Forces from world war 1 to today preparing itself for a war against China .India has been successful in fighting its war against Pakistan and also in the Liberation war of 1971 . India has manufactured many defence items and indigenous aircrafts over the years and have emerged as the 4th largest Air force in the world and in the upcoming years it is going to manufacture the most dangerous weapons and missiles in the next 10 years by 2030 with increase in the defence export market .India is going to become self-sufficient and leading market in the defence .

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