Status of Military Personnel strength of India and G20 Nations

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I.   Introduction

Understanding military expenditure and personnel dynamics is essential to assessing the strategic posture and defense priorities of the world's leading economies. The G20, comprising both advanced and emerging powers, represents a significant portion of global military spending and armed forces personnel. This study undertakes a detailed examination of defense-related data across G20 countries through multiple analytical dimensions. It begins with a **descriptive analysis of military expenditure at current prices (in million US dollars)**, offering insight into the scale and evolution of defense budgets across member states. This is followed by a **comparative regression analysis of military personnel numbers**, which highlights trends, fluctuations, and possible influencing factors over time. The study further includes **projections of military personnel for the years 2025 and 2030**, aiming to anticipate future shifts based on historical patterns. Finally, an **overall ranking of G20 countries based on military personnel data from 1993 to 2020** is presented to contextualize each nation's relative position in terms of manpower. Together, these analyses provide a comprehensive picture of the military landscape within the G20 and contribute to a deeper understanding of global defense trajectories.
Keywords : G-20 Nations, Military Personnel, Military Expenditure and Armed force Raking.

II.   Review of Literature

The paper is a case study of defence expenditure and its regional impacts in Australia. Here, defence spending is divided into 3 main components- payroll, purchases and construction.

There exists some variation in interregional payrolls, attributable to higher per capita income of the defence headquarters staff located in the capital territory and higher representation of military personnel from Queensland. Analysis suggests that the work associated with defence spending and the spending itself, are concentrated in the south eastern area. Therefore, regions in this area, Sydney, Canberra and Melbourne bear the most defence spending impact per worker. There is a pervasive unevenness in defence spending across all regions in Australia. Despite the greater amounts of spending directed towards the south east region, New South Wales and Victoria, they represent only a small proportion of defence personnel, due to their dependence on the states' industries.
Finally, the study predicts the percolation of defence spending effect on non- military personnel via the multiplier effect.[1]

The study focuses on the implementation of Brazilian National Defence Policy (NDP) and the consequent increase in defence expenditure.

The incremented defence expenditure in Brazil was mainly channelized into the following categories-personnel and social security, investment and maintenance expenditures. Investment expenditure mainly focused on defence imports, especially weapon systems, arms and parts.

As a result of the policy, the increase in total spending favors personnel and social security, which increased faster than the amount of military personnel during the study period? Additionally, there is a low military burden when compared to the country' objectives. Both these issues together pose few challenges such as reallocation of resources from personnel and social security to investments in military, increase defence expenditure as a % of GDP, etc., in implementation of NDP. The state cannot overcome the above challenges with ease, as reallocation or increased spending is unsustainable for the country.
Although the policy aimed at paying greater salaries and developing and buying defence infrastructure, the rate and extent of actual change fell short from the anticipated change. In conclusion, the study predicts a never-ending technological compromise in the delivery of the policy due to delays caused by expenditure constraints.[2]

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[1] Ward, Michael B. (Michael Bernard), 1938- The regional concentration of defence spending. ISBN O 86784 829 4. ISSN 0069'0104

The article on 'China's military Spending soft rise or hard threat?' assesses the skepticism behind the rise in Chinese military expenditure. It breaks down the reasoning behind the rise in spending, discrepancies in actual spending and published data and finally its implications.

Chinese military expenditure has grown in coherence with its economic growth. According to published sources, expenditure primarily constitutes 3 categories- personnel, operations and maintenance and equipment. The government claims that the increase in defence spending is for modernization and to provide better salaries to their personnel. But there have been pre-existing cases of underreporting and the government's motive behind increased spending is viewed skeptically. The study suggests that modernizing military weapons and equipment, building internal and external power to engineer the country towards 'superpower' status and quickly accessing markets and natural resources to stimulate growth are the true rationales behind expenditure rise.

Finally, what this implies for countries surrounding China is the continued US involvement to balance China's supposed military threat. In conclusion, in order for China to avoid conflicts with the US or any other superpower nation, reconsidering the budget and cooperating with the trend of falling military expenditure is optimal.[3]

Analysis and Data Interpretation

1. Descriptive Statistics Analysis of Military Personnel Numbers in G20 Countries

	Mean	Median	Std Dev.	Maximum	Sum
Argentina	101232.1	104240	9882.96	107000	2834500
Australia	56651.93	56750	3839.83	68000	1586254
Brazil	680326.8	713480	112275.33	762000	19049150
Canada	69047.21	69225	4554.44	79800	1933322
China	3265786	2993000	518718.82	4135000	91442000
Germany	259408.2	248732.5	72394.20	398000	7263430
EU	2458293	2276362	532832.27	3557200	68832215
France	371799.4	353500	68295.84	506000	10410384
UK	189574.6	179735	35530.27	271000	5308090
Indonesia	563792.9	582000	113225.15	676500	15786200
India	2524585	2603000	451832.89	3068000	70688372
Italy	429754.2	436000	81912.96	585000	12033117
Japan	254281.8	254600	8245.16	272000	7119890
South Korea	667214.3	672250	38857.87	750000	18682000
Mexico	264627.5	283000	68321.07	348000	7409570
Russia	1470404	1454000	128504.74	1823000	41171300
Saudi Arabia	224150	238000	32882.57	282000	6276200
Turkey	643542.9	612900	103163.83	841200	18019200
USA	1502218	1495100	112094.51	1820000	42062113
South Africa	98927.79	77367.5	63372.85	277900	2769978

Data Source : SIPRI

Table 1 presents an analysis of the descriptive statistics of military personnel numbers across G20 countries. The statistics used include the mean, median, standard deviation, minimum, maximum, total sum, and number of observations (28). Each statistic provides insight into the distribution and variation of military personnel numbers within these countries, with a specific focus on India for comparative analysis.

Mean: The mean represents the average number of military personnel for each country across 28 observations. China has the highest average personnel with 3,265,786, followed by the European Union (2,458,293) and India (2,524,585), reflecting their large populations and geopolitical roles. The United States (1,502,218) and Russia

[2] Leandro Bolzan De Rezende & Paul Blackwell (2019): The Brazilian National Defence Strategy: Defence Expenditure Choices and Military Power, Defence and Peace Economics, DOI: 10.1080/10242694.2019.1588030

[3] Chen, S., & Feffer, J. (2009). CHINA'S MILITARY SPENDING: SOFT RISE OR HARD THREAT? *Asian Perspective, 33*(4), 47-67. Retrieved July 25, 2021, from http://www.jstor.org/stable/42704692

(1,470,404) also have substantial numbers, consistent with their global military presence. In contrast, smaller countries like Australia (56,651), Canada (69,047), and Argentina (101,232) have much lower averages, reflecting their smaller militaries relative to global powers. The high mean for India emphasizes its role as a major military power, comparable to other large nations like the USA (1,502,218) and Russia.

Median: The median shows the middle value of the dataset, which helps mitigate the effect of outliers. India has a median of 2,603,000 is close to its mean, suggesting a relatively consistent number of personnel over time. Countries like South Korea (672,250) and France (353,500) show similar consistencies between mean and median, indicating stable military sizes.

Standard Deviation: The standard deviation indicates the variability or spread of the data. Higher standard deviations signify greater fluctuations in military personnel. China, the EU, India, and Brazil show very high standard deviations (ranging from 451,832 to 532,832), indicating significant variations in their personnel numbers, possibly reflecting dynamic changes in defence policies. Countries like Japan (8,245) and Australia (3,839) have low standard deviations, suggesting their military personnel numbers have remained stable over time. In contrast, countries like Japan (8,245.16) and Australia (3,839.83) have much lower standard deviations, suggesting more stable military numbers over time.

Minimum and Maximum: The minimum and maximum values reveal the range of military personnel observed over the 28 periods for each country. For India, the minimum is 1,270,000 and the maximum is 3,068,000: India's range of military personnel demonstrates significant variation, likely reflecting the country's changing defence requirements and recruitment policies over time. China shows an even broader range, with a minimum of 2,535,000 and a maximum of 4,135,000, while the USA ranges from 1,347,300 to 1,820,000, showing somewhat smaller fluctuations.

Sum: The sum of observations gives the total number of military personnel recorded for each country across the period. China (91,442,000) leads followed by India's cumulative personnel count is 70,688,372, ranking as second and the EU (68,832,215), underscoring the country's significant military capacity and consistent defence spending over time. This high sum reflects India's position as a regional power in Asia, with substantial armed forces maintained for both defence and strategic operations. Other countries, like Australia (1,586,254) and Canada (1,933,322), have much lower total sums, reflecting their smaller militaries and relatively lower personnel needs.

India, along with China and the USA, is consistently one of the largest military forces, reflecting its importance on the global stage. India's large average, high standard deviation, and wide range of personnel numbers suggest an adaptive military structure responding to national and international pressures. India's military numbers also fluctuate greatly, indicating flexibility in military recruitment over the period. When comparing India to smaller countries like Australia, Argentina, and South Africa, India's military structure and size are influenced by its large population, regional security concerns, and growing international influence. The relatively stable values for countries like Japan and Australia contrast sharply with India, which experiences greater fluctuations due to its dynamic political, defense, and regional security environment.

2 Comparative Regression Analysis of Military Personnel Numbers in G20 Countries

Countries	Intercept (α)	Slope (β)	R	R²
Argentina	92085.95238	630.7718	0.525016	0.275642
Australia	57238.93651	-40.4833	-0.08673	0.007521
Brazil	557890.0794	8443.911	0.618652	0.382731
Canada	71343.60317	-158.372	-0.28604	0.08182
China	3959444.444	-47838.5	-0.75864	0.575528
Germany	379087.6587	-8253.75	-0.93785	0.87957
European Union	3331030.063	-60188.7	-0.92921	0.863424
France	482967.0714	-7666.73	-0.92343	0.852721
United Kingdom	248591.3492	-4070.12	-0.94231	0.887956
Indonesia	382158.7302	12526.49	0.910068	0.828224
India	1841488.159	47110.11	0.857677	0.735609
Italy	554359.1746	-8593.45	-0.86298	0.74474
Japan	244586.873	668.6147	0.667059	0.444968
Korea, Rep.	720071.4286	-3645.32	-0.77169	0.595509
Mexico	152251.1111	7750.096	0.933125	0.870722
Russian Federation	1577132.54	-7360.62	-0.47118	0.222006
Saudi Arabia	169559.5238	3764.86	0.941826	0.887036
Turkiye	798891.2698	-10713.7	-0.85428	0.729789

United States	1655567.135	-10575.8	-0.7761	0.602325
South Africa	146629.5159	-3289.77	-0.42702	0.182348

Data Source : SIPRI

The comparative regression analysis of military personnel numbers in G20 countries reveals diverse trends in military force management, characterized by different intercepts, slopes, correlation coefficients (R), and coefficients of determination (R^2). Countries like Germany, the European Union, and the United Kingdom exhibit strong negative correlations with high R^2 values, indicating significant reductions in military personnel that are well explained by the model—likely a result of policy-driven downsizing or restructuring. In contrast, countries such as India, Indonesia, and Mexico demonstrate positive trends, reflecting notable expansions in their military capacity. India, in particular, shows a steep increase, suggesting growing investments in its military forces. The correlation coefficient (R) values illustrate the varying strength of these relationships; for example, Indonesia (R = 0.910) and Saudi Arabia (R = 0.942) indicate strong positive relationships, whereas countries like the United States and China show significant negative trends with high correlation values, pointing towards reductions in their military. On the other hand, countries such as Australia and South Africa have near-zero or low correlation values, suggesting that changes in military personnel numbers are less closely tied to the independent variable analyzed. The coefficient of determination (R^2) further highlights these distinctions—countries like Germany ($R^2 = 0.879$) and Saudi Arabia ($R^2 = 0.887$) have high values, indicating a substantial proportion of the variance in military numbers is explained by the model, whereas low R^2 values for countries like South Africa ($R^2 = 0.182$) indicate a weaker fit, implying other factors are likely at play. Overall, the analysis demonstrates a mix of military expansion and contraction trends among G20 countries, reflecting varied strategic priorities in response to geopolitical, economic, and security considerations.

The regression analysis of military personnel numbers for India reveals a significant positive trend, indicating a substantial increase in the country's military capacity. With an intercept (α) of 1,841,488.16 and a slope (β) of 47,110.11, the data suggests a notable growth, with approximately 47,110 additional personnel for every unit increase in the independent variable. The correlation coefficient (R) of 0.8577 reflects a strong positive relationship, implying that the factors being analyzed have a significant impact on the increase in military personnel numbers. Moreover, the coefficient of determination (R^2) of 0.7356 indicates that 73.56% of the variation in military personnel numbers is explained by the independent variable, which means the model effectively captures the trend in India's military expansion. This growth could be attributed to India's strategic efforts to bolster its defense capabilities in response to evolving regional security dynamics and an increased focus on maintaining a robust presence in the face of geopolitical challenges. The data highlights India's commitment to expanding its military strength, which aligns with its broader national security objectives and increasing defense expenditures in recent years.

3 Projected Military Personnel Numbers in G20 Countries for 2025 and 2030

Country	2025	2030
Argentina	112901	116055
Australia	55903	55701
Brazil	836539	878759
Canada	66117	65325
China	2380773	2141580
Germany	106714	65445
European Union	1344802	1043858
France	229965	191631
United Kingdom	114277	93927
Indonesia	795533	858165
India	3396122	3631672
Italy	270775	227808
Japan	266651	269994
Korea, Rep.	599776	581549
Mexico	408004	446755
Russian Federation	1334232	1297429
Saudi Arabia	293800	312624
Turkiye	445340	391771
United States	1306566	1253687
South Africa	38067	21618

Data Source : SIPRI

The anticipated military personnel figures for G20 nations in 2025 and 2030 reveal varied tendencies in military force modifications, with some countries augmenting their numbers while others see substantial decreases. India is expected to rise significantly from 3,396,122 person in 2025 to 3,631,672 in 2030, demonstrating a sustained commitment to enhancing military capability. Brazil and Indonesia are anticipated to augment their military manpower, with Brazil rising from 836,539 to 878,759 and Indonesia from 795,533 to 858,165 within the same timeframe, suggesting potential strategic expansions to bolster regional security influence.

Conversely, several nations are anticipated to decrease their military personnel by 2030. China's figures are projected to decrease markedly from 2,380,773 in 2025 to 2,141,580 in 2030, presumably indicating modernization initiatives or a deliberate transition towards a more technologically sophisticated and efficient military framework. Germany and the European Union exhibit significant losses, with Germany reducing from 106,714 to 65,445 and the EU from 1,344,802 to 1,043,858, reflecting a wider trend of diminishing military manpower across European states, perhaps in favor of more streamlined, flexible forces. The United Kingdom also exhibits this trend, decreasing from 114,277 to 93,927. Conversely, several nations such as Japan exhibit stability, with a marginal rise from 266,651 to 269,994, indicating preservation rather than growth or substantial decline. Mexico and Saudi Arabia are anticipated to have growth in troops, signifying continued investment in their military capabilities. Simultaneously, South Africa exhibits one of the most significant declines, with personnel numbers decreasing from 38,067 in 2025 to only 21,618 by 2030, maybe due to budgetary limitations or a reassessment of military objectives. These forecasts reveal diverse strategies for military manpower management across G20 nations, shaped by geopolitical demands, economic resources, and strategic objectives. Countries such as India, Brazil, and Indonesia are prioritizing the expansion of their military capabilities, while nations like China, Germany, and the United Kingdom seem to be transitioning towards more streamlined forces, stressing quality and efficiency rather than numerical superiority.

4 Overall Ranking of G20 Countries Based on Military Personnel (1993-2020)

Countries	Sum	Rank	Countries	Sum	Rank
China	91442000	1	France	10410384	11
India	70688372	2	Mexico	7409570	12
EU	68832215	3	Germany	7263430	13
USA	42062113	4	Japan	7119890	14
Russia	41171300	5	Saudi Arabia	6276200	15
Brazil	19049150	6	UK	5308090	16
South Korea	18682000	7	Argentina	2834500	17
Turkey	18019200	8	South Africa	2769978	18
Indonesia	15786200	9	Canada	1933322	19
Italy	12033117	10	Australia	1586254	20

Data Source: SIPRI

The cumulative military personnel rankings of G20 countries from 1993 to 2020 elucidate the magnitude and priority of military manpower among these nations. China occupies the first position with a total of 91,442,000 military troops, underscoring its enduring commitment to sustaining the biggest military force globally, in accordance with its strategic objectives and regional dominance. India comes second with 70,688,372 people, highlighting its substantial military presence, essential for regional security and managing various internal and foreign issues. The European Union (EU) ranks third with a total of 68,832,215, demonstrating a substantial collective commitment to defense by its member states, while the United States ranks fourth at 42,062,113, signifying its ongoing investment in military capabilities, albeit not as extensive as that of China or India due to divergent strategic priorities.

Russia ranks fifth with 41,171,300 people, reflecting its formidable military stance over this era, notably highlighting its worldwide impact and regional security requirements. Brazil and South Korea are also major, ranking sixth and seventh respectively, with military personnel numbers of 18 to 19 million, indicating their emphasis on sustaining substantial defense capabilities. Turkey, rated eighth, and Indonesia, ranked ninth, exhibit considerable personnel numbers, reflecting their strategic prioritization of military might within the regional framework.

In the lowest tier of the rankings, European countries like Italy (ranked tenth) and France (ranked eleventh) exhibit modest figures relative to bigger nations, reflecting a more professionalized and technology-oriented strategy rather than reliance on raw manpower. The United Kingdom ranks sixteenth, trailing behind nations like Saudi Arabia and Mexico, indicative of a trend towards reduction and modernizing in favor of a smaller but more proficient military force. Countries like Argentina, South Africa, Canada, and Australia rank

low, with total personnel numbers considerably lower than their peers, likely indicative of both minimal regional security threats and smaller populations, alongside an emphasis on specialized rather than extensive military forces.

This rating underscores the varied military plans and goals across G20 members. Leading nations such as China and India prioritize substantial standing armies to sustain regional supremacy and tackle intricate security issues, whereas countries like the UK, Japan, and Germany prefer smaller, specialized forces, focusing on technology and strategic alliances rather than numerical strength. The considerable variation in cumulative manpower figures reflects the diverse security requirements, strategic decisions, and resource distributions inherent in military planning across the G20 nations.

III.   Conclusions:

The analysis of military personnel numbers in G20 countries from 1993 to 2020, along with projections for 2025 and 2030, provides insight into the varied military strategies adopted by these nations. Countries such as China, the European Union, and Germany exhibit a trend towards reducing military personnel numbers, highlighting their emphasis on downsizing and modernizing their forces, likely focusing more on advanced technology and strategic efficiency rather than maintaining large standing armies. The United Kingdom follows a similar path, demonstrating a preference for quality over quantity in its military structure. In contrast, countries like Brazil, Indonesia, and Saudi Arabia show positive trends, expanding their military capacity, which may be aimed at bolstering regional influence and strengthening national defense. Meanwhile, Japan and Australia display a steady approach, with relatively stable military personnel numbers, indicating maintenance rather than major changes in military size.

The projected figures for 2025 and 2030 underscore the continued commitment of some G20 countries to adjust their military capabilities in response to evolving security landscapes. Brazil and Indonesia are expected to see growth in their military personnel, while significant reductions are forecast for countries like China, Germany, and the European Union. These trends reflect different national strategies—some opting for streamlined, technology-driven forces, while others continue to expand to ensure a robust military presence. Overall, the diverse patterns of military force management reflect how geopolitical priorities, regional security concerns, and economic constraints shape defense strategies in G20 countries.

India, in particular, stands out as a nation with one of the largest and most rapidly growing military forces among G20 countries. The data indicates a substantial and sustained increase in military personnel, with significant growth projected from 3,396,122 in 2025 to 3,631,672 by 2030. The regression analysis highlights a strong positive trend in India's military expansion, driven by factors such as regional security challenges, evolving geopolitical dynamics, and a focus on maintaining strategic influence. India's consistent increase in military personnel, coupled with a high standard deviation that reflects its adaptability in recruitment, emphasizes its commitment to strengthening national defense and securing a prominent position on the global stage. This approach is indicative of India's broader defense policies and its efforts to project power, ensure national security, and maintain regional stability.

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Data Source: SIPRI
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