Challenges Encountered by Police Officers During Crime Investigations

Md. Imran Wahab

IPS, Inspector General of Police, West Bengal

Abstract:

This study highlights the vital function of police officers involved in criminal investigations in maintaining the integrity of Indian society through effective law enforcement and fair justice. However, it identifies several obstacles that impede their efficiency, including heavy workloads, lack of adequate resources, shortage of officers, external pressures, and technological limitations, particularly when addressing serious crimes, cybercrimes, and offences involving cryptocurrency. These issues contribute to decreased morale among officers who investigate crimes and increase public distrust, especially amidst growing media scrutiny. Furthermore, the psychological strain of handling complex cases worsens these challenges. The study calls for comprehensive reforms to alleviate workloads, enhance the number of investigative officers, increase the sanctioned strength of police officers, improve resource allocation, integrate technology into investigations, and create a more efficient and culturally sensitive police system. Implementing these reforms is essential for strengthening investigative capabilities, adapting to the changing criminal landscape of the 21st century, and ensuring law enforcement's dedication to safeguarding the integrity of Indian society.

Keywords: Investigating Officer, Challenges, Investigation, Pending Case, Sub-Inspector, Police Station.

1. Introduction:

Investigators of crime play a crucial role in law enforcement, ensuring justice and public safety. They not only respond to crimes but also perform pre-crime investigations through pattern recognition. Their work involves meticulously gathering data, interviewing witnesses, collecting physical evidence, and preparing detailed reports for court. While they have the authority to arrest and detain suspects, they must follow stringent legal protocols. Effective interrogation is vital for uncovering accurate information and informing legal decisions. Investigators foster community peace and positive relationships with law enforcement, forensic experts, and lawyers. By effectively handling criminal cases, they build public confidence in safety, utilizing advanced tools to enhance societal stability within legal frameworks.

2. Literature Review:

Early research, including that of Innes (2003), identifies the foundations of contemporary investigative techniques and emphasizes the importance of detective work and intuition in crime solving. With advances in forensic science, Chisum and Turvey (2011) noted an increased reliance on scientific evidence such as DNA analysis and fingerprints, which fundamentally changed investigative methods. Recent studies such as Ratcliffe's (2016) on intelligence-led policing highlight the incorporation of data

analytics and technology, enabling law enforcement to allocate resources more effectively.

However, problems in criminal investigations persist, including limited resources and insufficient training (Stelfox, 2013). Additionally, Newburn (2017) explored legal and ethical issues, particularly the need to balance civil liberties with the demand for thorough investigations. The global view presented by Bowling and Sheptycki (2012) emphasizes the complexity of transnational crime and the necessity of international cooperation. Innovative approaches such as predictive policing and community policing are influencing the future of investigative practices (Perry et al., 2013). Despite the progress, ongoing research advocates for better training, more equitable distribution of resources, and careful integration of technology into law enforcement investigations.

In 2004, economist Steven Levitt presented compelling evidence that increasing law enforcement personnel reduces crime rates. His analysis of two decades of data (1975-1995) showed a strong link between police force size and declining crime statistics. A 10% increase in police officers could yield a significant 5-6% nationwide drop in crime, with even larger reductions in major urban areas.

Similarly, Marvell and Moody's 1994 study supported Levitt's findings, indicating that each additional police officer was correlated with 24 fewer crimes, underscoring the impact of targeted personnel investments on public safety.

While Levitt and Marvell concentrated on quantitative data, other studies by Di Tella and Schargrodsky (2004) and Klick and Tabarrok (2005) explored qualitative aspects, revealing that strategic police deployment in response to specific threats could enhance crime reduction in surrounding areas.

Research by Garicano and Heaton in 2010 stressed the importance of not just the quantity but also the quality of law enforcement personnel, highlighting that specialized training and educated officers lead to greater crime reductions.

In conclusion, these findings illustrate that while increasing police numbers generally decreases crime, the effectiveness of law enforcement is also influenced by deployment strategies, the caliber of officers, and targeted investments, emphasizing the need for evidence-based and tailored approaches to crime prevention.

3. Who Conducts Investigations:

In India, police investigations are primarily led by Sub-Inspectors at the local police station level, while Assistant Sub-Inspectors are assigned to manage minor cases. Inspectors, Deputy Superintendents of Police (DySPs), and Sub-Divisional Police Officers (SDPOs) may either carry out investigations themselves or oversee them. Higher-ranking officials of the rank of Additional Superintendents of Police (Addl SPs), Superintendents of Police (SPs), and Senior Superintendents of Police (SSPs), typically have supervisory roles in investigations. Officers like Deputy Inspectors General (DIGs), Inspectors General (IGs), Additional Directors General (ADGs) and Director Generals (DGs) of police maintain broader administrative responsibilities and periodically supervise investigations. The structure of this hierarchy can differ from state to state. In areas governed by a Commissionerate, investigations are mainly conducted by Sub-Inspectors (SIs) and Assistant Sub-Inspectors (ASIs), under the supervision of various ranks, including Commissioners of Police (CPs), Special CPs, Additional CPs, Joint CPs, DCPs, ACPs and Inspectors. In central investigative agencies, such as the Central Bureau of Investigation (CBI) and National Investigative Agency (NIA), officers of different ranks - including Inspectors, DySPs, Additional SPs, and SPs - carry out investigations under the supervision of their senior officers. Even officers of Deputy Inspector General (DIG) rank conduct investigations within CBI and Criminal

Investigation Departments (CID) etc. However, investigations can be conducted by officers of any rank based on administrative directives or court orders.

4. Challenges Faced by Investigating Officers:

The challenges faced by the investigating officers are multifaceted which are enumerated below:

i. Excessive Workload: Investigating officers in India are under significant stress due to an overwhelming number of cases, which negatively impacts their performance and well-being. This overwork results in chronic fatigue, affecting their cognitive functions and attention to detail as they manage multiple cases simultaneously. A lack of focus on individual investigations can compromise their thoroughness and increase the likelihood of overlooking critical facts or connections. Consequently, this situation leads to delays in case resolution, reducing efficiency within the criminal justice system and hindering prompt justice delivery. To address these issues, comprehensive solutions are necessary, such as reducing workloads, increasing the number of investigating officers, and leveraging modern technology to facilitate thorough investigations and improve outcomes. According to the NCRB Report of 2022, over 5.8 million cognizable crime cases were reported, including those under the IPC and SLL, with a 4.5% decrease in registrations compared to 2021.

(The image below illustrates the immense strain on police investigating officers in India, depicting a chaotic scene in a police station filled with stacks of case files and documents, highlighting the pressures they face.)

ii. Shortage of Vehicles: Investigating officers face significant challenges due to a lack of vehicles, leading to slow response times, poor evidence management, and lower-quality investigations. This not only intensifies the workload for police officers but also reduces their chances of making arrests or cooperating with other agencies, ultimately threatening their safety during emergencies. Logistical issues in transporting key elements like evidence and suspects further delay the investigative process and lower officer morale, highlighting the need for better resource allocation to enhance police performance.

iii. Shortage of Fuels: The limited fuel supply for vehicles assigned to investigating officers restricts their mobility within police jurisdiction, hindering law enforcement, case investigations, and arrests. Fuel distribution at police stations is often inadequate, particularly in rural areas, affecting the police's

ability to maintain order. This fuel shortage also impacts the quality of investigations and officer morale while potentially promoting corrupt practices to cover fuel costs for urgent situations.

iv. Shortage of Family Quarters & Barracks: The insufficient availability of family quarters and inadequate living conditions in officer barracks force investigating officers to be away from their families for extended periods, diminishing their focus on work. The poor state of current barrack accommodations further lowers officer morale, necessitating improvements in housing provisions to benefit both law enforcement and investigation processes.

v. Political Interference: Political interference poses a severe threat to the autonomy of police investigations in India, compromising decision-making and case management. Such meddling undermines fair law enforcement and diminishes public trust in the justice system, as citizens may perceive a lack of accountability and objectivity. Preserving investigative independence from political influence is crucial for maintaining the integrity of the criminal justice system.
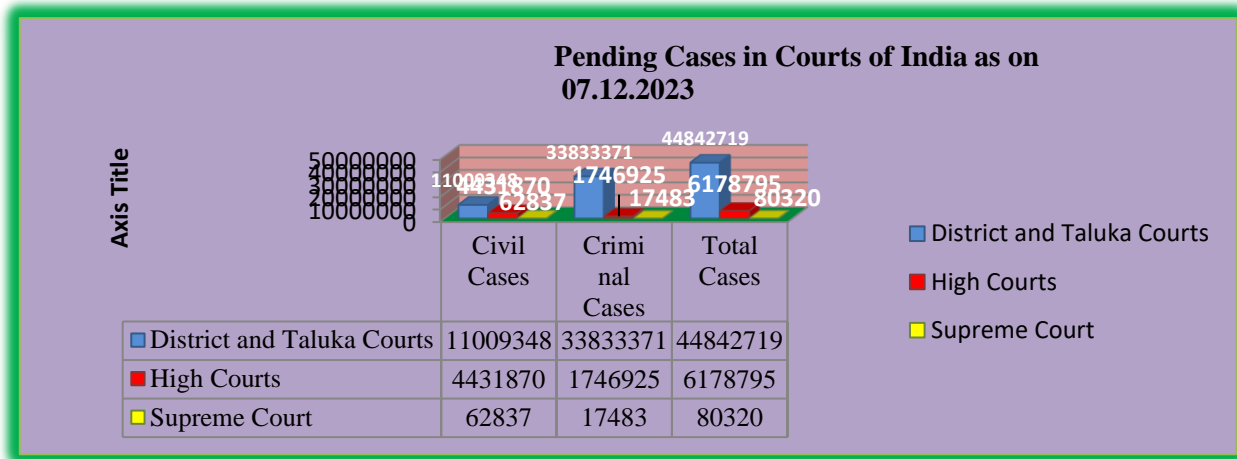
vi. Variety of Duties: The shortage of personnel in India results in officers juggling multiple responsibilities, which detracts from focused investigations. Alongside responding to incidents, officers must maintain law and order, protect property, intervene in conflicts, and handle various events, leading to insufficient time for thorough investigations. This "jack of all trades" situation can weaken charges against offenders and reduce accountability in court.

vii. Lack of Specialization: Investigating certain types of crimes, like cybercrime and financial fraud, is challenging for Indian law enforcement due to a lack of specialized training. As technology evolves, criminal activities become more complex, requiring specific skills that many officers currently lack. Implementing targeted training programs is essential for equipping officers with the necessary expertise to effectively tackle modern criminal challenges.

viii. Witness Intimidation: Witnesses' fear of retaliation significantly hampers investigations in India. Intimidation threats discourage them from sharing vital information, undermining evidence collection and the integrity of the justice system. This reluctance weakens accountability for offenders. To mitigate this issue, strong witness protection programs, legal safeguards, and community outreach initiatives are crucial. Such efforts aim to build trust and assure witnesses that their safety will be prioritized, promoting an environment that encourages open and effective investigations.

ix. Backlog of Cases in Courts: The overwhelming number of cases and the current backlog burden Indian courts, leading to significant delays in the justice process, much to the frustration of law enforcement officials. Overcrowded judicial systems frequently struggle to manage cases efficiently, resulting in extended wait times for trials and verdicts. This delay not only hampers the timely delivery of justice but also negatively impacts the morale of investigators who are confronted with a growing pile of unresolved cases. This situation underscores the critical need for judicial reforms, enhancements in court efficiency, and initiatives aimed at reducing the backlog to create a more agile and responsive criminal justice system.

Pending Cases in Courts of India as on 07.12.2023

	Civil Cases	Criminal Cases	Total Cases
District and Taluka Courts	11009348	33833371	44842719
High Courts	4431870	1746925	6178795
Supreme Court	62837	17483	80320

The chart above presents a summary of pending cases in Indian courts as of 7 December 2023, with information organized by court levels - District and Taluka Courts, High Courts and Supreme Court – as well as by case type, which includes civil and criminal and total cases. This review points to a significant backlog of cases at various levels of courts. There are 11,009,348 civil cases in the District Court and Taluka Court, while the number of criminal cases is significantly higher at 33,833,371. In total, these lower courts deal with 44,842,719 cases. The preponderance of criminal cases in these courts underlines the considerable pressure on local justice. At the High Court level, there are 4,431,870 civil cases along with 1,746,925 criminal cases, for a total of 6,178,795 pending cases.

Although the High Courts also see a larger number of civil cases compared to criminal cases, the total backlog is significantly lower than that of the District Court and Taluka Court. As the highest judicial body, the Supreme Court faces a much smaller number of cases, currently dealing with 62,837 civil and 17,483 criminal cases, culminating in a total backlog of 80,320 cases. This relatively small number reflects the Supreme Court's focus on critical appeals and constitutional issues. In short, the backlog of cases in District Courts and Taluka Courts - especially in criminal cases - stands out significantly. Supreme Courts maintain a more even distribution between civil and criminal cases, while the Supreme Court hears the fewest cases. The data visualization highlights the urgent need for reforms, particularly aimed at reducing the backlog of criminal cases in lower courts.

x. Legal Challenges: The lengthy nature of legal procedures and the existence of outdated laws significantly hinder the efficiency of investigations in India. Extended court processes can cause delays in resolving cases, preventing the timely delivery of justice. Laws that are out of step with contemporary social norms or technological progress create challenges for investigators attempting to tackle new forms of criminal activity. This stagnation in the legal framework not only delays investigations but also complicates the ability to quickly adapt to evolving criminal tactics. Urgent reforms are needed, focusing on streamlining processes and modernizing legislation, to improve the responsiveness and effectiveness of the criminal justice system.

xi. Cultural Awareness: A failure to recognize the cultural context surrounding a crime in India can lead to serious misunderstandings and biases. Neglecting cultural factors may result in investigators misinterpreting motivations, behaviors, or social interactions, which in turn can affect the accuracy and impartiality of their evaluations. Cultural insensitivity may also introduce biases that influence how cases are prioritized or how individuals are treated, potentially undermining the objectivity of investigations. To ensure that law enforcement effectively handles cases with the requisite cultural

awareness and sensitivity, culturally competent training and a nuanced understanding of diverse social contexts are essential, ultimately promoting fair and just outcomes in the criminal justice system.

xii. Poor Interagency Coordination: The inadequate coordination among law enforcement agencies in India presents a significant barrier to effective information sharing and collaboration during investigations. A lack of efficient communication can lead to oversight of crucial details, resulting in a fragmented approach to addressing criminal activities. To improve the effectiveness and efficiency of law enforcement efforts, it is necessary to establish better communication pathways, standardized procedures, and collaborative task forces to enhance interagency cooperation. This will ensure that all relevant entities work cohesively to address the complex and evolving security threats more effectively.

xiii. Growing Cybercrime: The rising prevalence of cybercrime and crypto crime in India presents significant challenges for law enforcement, demanding specialized skills and advanced technological resources for effective investigations. The ever-evolving and sophisticated nature of cybercrimes - such as hacking, online fraud, and cyber espionage - requires a distinct set of investigative techniques and tools. Investigators must undergo extensive training in digital forensics, data analysis, and cyber threat assessment to keep pace with the shifting cyber threats. Furthermore, the adoption of cutting-edge technology is crucial for tracking digital footprints, securing electronic evidence, and collaborating with global partners to combat cybercriminal networks. Addressing this challenge necessitates a proactive approach to cultivate the skills and technological infrastructure needed to tackle cybercrime effectively. According to the NCRB Report of 2022, there was a 24.4% increase in cybercrime reporting, with 65,893 cases compared to 52,974 in 2021. Cyber fraud made up 64.8% of the reported cases, with extortion at 5.5% and sexual exploitation at 5.2%. This surge contributed to an overall increase in the crime rate from 3.9% in 2021 to 4.8% in 2022.

xiv. Subpar Infrastructure: To enhance the investigative capabilities of law enforcement agencies in India and foster a more efficient and responsive criminal justice system, investment in modern facilities, technology, and resources is critical. The failure to implement the latest technological advancements slows down evidence collection, examination, and case management. This deficiency forces investigators to rely on traditional, time-consuming methods, thereby hindering the overall progress of investigations. Inadequate infrastructure, such as poorly equipped police stations and forensic laboratories, severely impacts the effectiveness of investigations. A lack of resources and outdated facilities limits the ability to conduct comprehensive and timely investigations. Police stations that lack essential equipment and technology struggle to gather accurate information and communicate effectively. Additionally, deficiencies in forensic labs delay the rapid and precise analysis of evidence, resulting in prolonged case resolutions.

xv. Overworked: In India, police officers face incredibly demanding working conditions, often putting in up to 14 hours a day with erratic days off, which starkly contrasts with the typical 8-10-hour shifts and 48-hour workweek seen in the United Kingdom. This prolonged work schedule is largely due to a low police-to-population ratio, which places immense pressure on officers and results in an overwhelming workload. The police per lakh population ratio in India is below the standards set by the United Nations, contributing to unreported crimes. The physical and mental exhaustion experienced by investigative officers adversely affects their performance and diminishes conviction rates. This situation underscores the critical need for adequate rest and more reasonable working hours to promote effective investigations and enhance conviction rates in India.

xvi. Public Perception: The negative perceptions and scepticism held by the public can significantly impact the working environment for investigating officers in India. When the community lacks trust in the police, detectives may find themselves facing increased scrutiny and hesitation when attempting to solve cases. This unwelcoming atmosphere not only complicates officers' relationships with the communities they serve but also disrupts the essential collaboration needed for effective crime resolution. Distrust may result in decreased community cooperation, which negatively affects the critical information flow necessary for investigations. To restore public confidence, it is imperative to foster open communication, engage with the community, and take proactive steps to enhance accountability, ultimately creating a more positive and supportive environment for investigative officers.

xvii. Stagnant Sanctioned Strength: A persistent challenge within law enforcement is the gap between the authorized number of investigators and the actual personnel available. Annual reviews are crucial to align these figures, yet the sanctioned strength often remains unchanged, leading to a continual personnel shortage. This lack of regular assessment impedes the ability to adapt to changing demands, thereby compromising the effectiveness of investigations. The unwillingness to modify the sanctioned strength contributes to a systemic deficiency, obstructing optimal operations and prompt responses to new challenges faced by law enforcement agencies.

xviii. Manpower Shortages: Constables make up 86% of India's state police force, serving as the primary enforcers of law and order. However, despite their critical role, their involvement in investigations is limited. The Police Act and Bharatiya Nagarik Suraksha Sanhita outline the duties of police officers, which include crime prevention, investigation, and prosecution. A 20% personnel shortage significantly hampers effective law enforcement, correlating with rising crime rates. Lack of adequate training and understaffing further complicate the challenges of achieving successful conviction rates, as highlighted by the Law Commission. Investigative officers frequently find themselves overwhelmed, making it difficult to maintain the quality and quantity of their work. It is essential to take urgent measures such as recruitment, training, and capacity enhancement to address the current needs within law enforcement.

xix. Mental Block: Investigating officers are responsible for safeguarding the public through evidence collection, witness interviews, and offender identification. However, many view themselves as societal protectors, which can lead to unethical behavior, such as altering or fabricating evidence for convictions. This may result in custodial violence and violations of fundamental rights under Articles 21 and 22 of the Indian Constitution. Despite legal rights, officers often deny accused individuals access to charge information and legal representation during interrogations. Each case should be treated with sensitivity and specific attention, regardless of the crime's nature.

xx. Media and Public Pressure: In India, media and public demands for rapid case resolutions can compromise exhaustive investigations, persuading officers to focus on quick results over thorough processes. This underscores the need for police independence to maintain impartiality and accountability during investigations.

xxi. Poor Forensic Facilities: India's outdated forensic facilities hinder effective evidence collection and analysis, compromising case investigations and court reliability. There is an urgent need for modern forensic resources and technology investments. Currently, only a handful of forensic laboratories exist, many of which are understaffed and under-resourced, leading to significant backlogs in reports.

xxii. Inadequate Protection: The safety of investigating officers is crucial, as threats can impede their effectiveness. Officers who feel unsafe may shy away from conducting thorough investigations,

impacting law enforcement performance. Ensuring their safety is vital for enabling them to fulfill their duties without fear.

xxiii. Lack of Public Cooperation: Public cooperation is essential for successful investigations in India. Fear and mistrust can deter individuals from acting as witnesses or providing crucial information, hindering evidence collection and damaging police-community ties. Building trust through community engagement and transparency is key to ensuring public safety and enhancing police effectiveness.

5. Impact of Officer Shortage in the USA:

The United States is grappling with a significant shortage of police officers, a situation worsened by ongoing retirements and resignations that have far-reaching implications. This deficit heavily impacts law enforcement agencies and critical roles such as 911 dispatchers. As a consequence, response times in emergencies are lengthening, rates of solving crimes are decreasing, and the stress experienced by current officers is escalating. Despite the introduction of various recruitment tactics, including financial bonuses and educational incentives, difficulties remain due to negative perceptions of the policing profession and the drawn-out nature of hiring processes.

This ongoing crisis poses a substantial risk to community safety and well-being, highlighting an urgent need for effective strategies to improve recruitment and retention within law enforcement. Without prompt action to tackle these challenges, communities nationwide could face heightened risks. The sustainability of police work and the safety of citizens depend on overcoming the current obstacles, ensuring that law enforcement agencies can effectively meet public safety demands. It is critical to foster a more positive public outlook on police services and streamline hiring practices to attract and maintain a skilled and diverse workforce. Addressing these issues not only provides immediate relief to current personnel but also strengthens the foundations of community trust and safety that underpin the social fabric of society. Ultimately, innovative solutions and concerted efforts are vital to reversing this troubling trend and securing the future of public safety.

6. Sanctioned Strength, Actual Strength and Vacancy position of main investigating officers (ASI, SI, Inspector, Dy. SP) in West Bengal Police as on 01.05.2022:
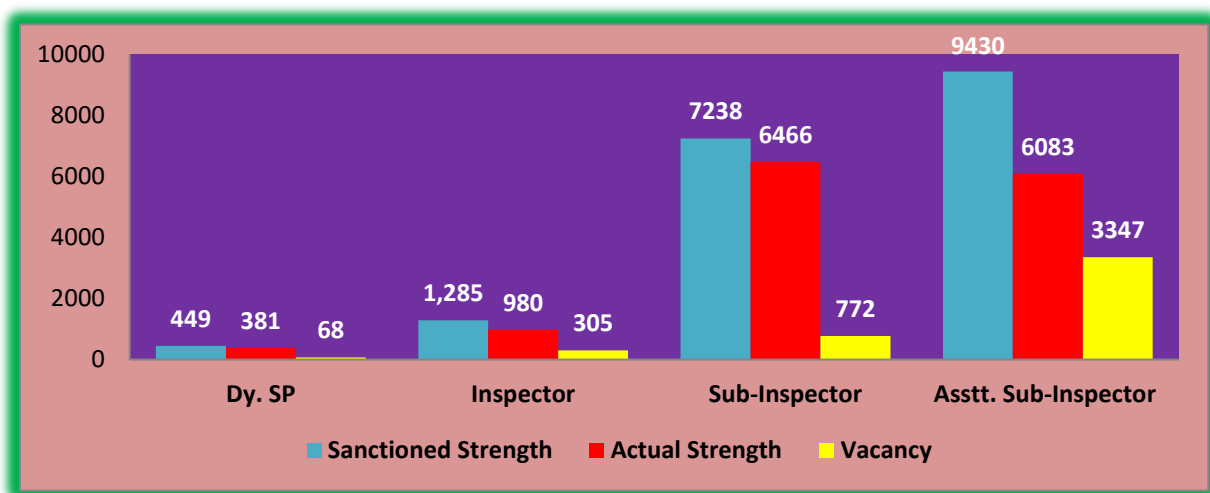
The chart above presents an examination of the authorized personnel, current staffing levels, and vacancies for different ranks normally engaged in investigation of cases within the police force, specifically concentrating on the positions of Deputy Superintendent of Police (Dy. SP), Inspector, Sub-

Inspector, and Assistant Sub-Inspector. It underscores the gap between the necessary manpower and the actual available workforce in these roles.

For Deputy Superintendents of Police (Dy. SP), the authorized strength stands at 449, while the current staffing is at 381, resulting in 68 vacant positions. Although the discrepancy between the required and actual numbers is relatively small, it nonetheless signifies a shortfall in the fulfilment of the necessary staffing.

In the case of inspectors, the authorized figure is 1,285, compared to an actual count of 980 police officers, leaving a notable shortfall of 305 vacancies. This rank demonstrates a significant deficiency, which may hinder investigation of crimes and the supervision and operational effectiveness of the police force at this level.

Regarding Sub-Inspectors, the sanctioned strength is recorded at 7,238, yet the actual strength is only 6,466, creating a shortfall of 772 vacancies. Given the critical role Sub-Inspectors play in investigation of cases and law enforcement, this gap may lead to challenges in executing daily police operations and investigative work effectively.

The most substantial disparity is found in the Assistant Sub-Inspector (Assistant Sub-Inspector) rank, where the sanctioned strength is 9,430, whereas the actual number is merely 6,083, resulting in a considerable vacancy rate of 3,347. Such a high level of vacancies at this rank could overload the police force's capacity, particularly impacting investigations of crime, field operations and frontline responsibilities.

7. Sanctioned Strength, Actual Strength and Vacancy position of lady police officers (ASI, SI, Inspector, Dy. SP) in West Bengal Police as on 01.05.2022:
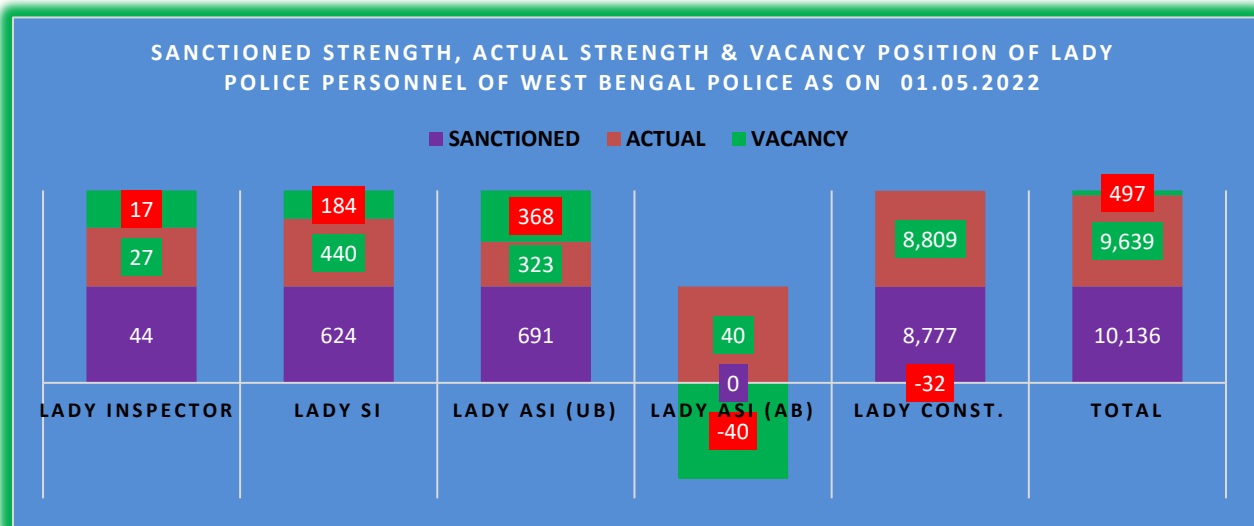
The chart above presents the sanctioned personnel strength, actual personnel strength, and vacant positions for lady police personnel in West Bengal as of May 1, 2022, categorized by ranks: Lady Inspector, Lady Sub-Inspector (SI), Lady Assistant Sub-Inspector (ASI) in Unarmed Branch (UB) and Armed Branch (AB), and Lady Constable. It sheds light on the discrepancies between the intended and actual numbers of female police officers.

For the position of Lady Inspectors, the approved strength stands at 44, but only 27 positions are currently filled, resulting in 17 vacancies. This rank exhibits a moderate vacancy rate, suggesting the

necessity for promotional efforts to address the shortfall and ensure proper investigation of crime, adequate supervision and leadership among senior officers.

In contrast, the role of Lady Sub-Inspectors (SI) reveals a more significant gap. Out of 624 sanctioned positions, only 440 are currently occupied, leaving 184 vacancies. This shortfall underscores the urgent need for enhanced recruitment and promotional initiatives to bridge the gap and ensure effective investigation of crime and law enforcement at the operational level.

Regarding the Lady Assistant Sub-Inspectors (ASI) in the Unarmed Branch (UB), the sanctioned strength is 691, with only 323 officers currently in place, resulting in 368 vacancies. This notable difference in ASIs (UB) could impact day-to-day policing, investigation of crimes, and operational effectiveness, as ASIs play a crucial role in frontline activities. On the other hand, in the Lady ASI Armed Branch (AB), the approved and actual personnel numbers match exactly at 40, with no vacancies present, demonstrating complete staffing in this area; however, officers in the Armed Branch typically do not conduct criminal investigations under normal circumstances.

Lastly, the rank of Lady Constable shows minimal disparity, with an approved strength of 8,809 and an actual strength of 8,777, leaving just 32 vacancies. Overall, the total sanctioned strength across all ranks amounts to 10,136, with 9,639 positions filled, resulting in 497 vacancies. This indicates that while there are certain shortcomings, the force is generally well-staffed, with the primary deficiencies occurring in the Lady SI and ASI (UB) ranks. Necessary initiatives have been taken by the West Bengal Police to fill up the vacancies and rectify the shortcomings. Nevertheless, it is essential to enhance the sanctioned strength of police units, taking into account the growing population.

8. Conclusion:

The Indian law enforcement system confronts various intricate challenges. A critical shortage of investigators and insufficient infrastructure lead to prolonged investigations and a climate of insecurity. Prioritizing high-profile cases often results in a rise in crime rates as other cases are neglected. Resource deficits erode public trust, and there are dangers associated with officers who are overworked and sometimes disillusioned. To strengthen the justice system, it is essential to accelerate recruitment processes, provide comprehensive training, and modernize legal procedures. It is also crucial to address issues of cultural insensitivity among officers and improve interagency collaboration. Insufficient infrastructure poses a significant barrier to combating the increasing threat of law-and-order problems and cybercrime, compounded by overburdened investigators, public perception challenges, a shortage of personnel, and psychological hurdles. External factors such as media scrutiny, inadequate police protection, and limited public cooperation further intensify these difficulties. To create a responsive criminal justice system, it is vital to promptly implement legal reforms, utilize technological advancements, and bolster resources.

References:

1. Scheider, M. C., Spence, D. L., & Mansourian, J. (2012, September). The relationship between economic conditions, policing, and crime trends: An addendum to 'The impact of the economic downturn on American police agencies'.
2. Di Tella, R., & Schargrodsky, E. (2004). Do police reduce crime? Estimates using the allocation of police forces after a terrorist attack. The American Economic Review, 94(1), 115-133. https://doi.org/10.1257/000282804322970733

3. Garicano, L., & Heaton, P. (2010). Information technology, organization, and productivity in the public sector: Evidence from police departments. Journal of Labor Economics, 28(1), 167-201. https://doi.org/10.1086/649844

4. Marvell, T. B., & Moody, C. E. (1994). Prison population and crime reduction. Journal of Quantitative Criminology, 10(1), 109-139. https://doi.org/10.1007/BF02221153

5. Levitt, S. D. (2004). Understanding why crime fell in the 1990s: Four factors that explain the decline and six that do not. Journal of Economic Perspectives, 18(1), 163-190.

6. Wilson, J. Q., & Petersilia, J. (2002). Crime: Public policies for crime control. Oakland, CA: ICS Press.

7. Singh, T. (2021, May 24). Problems faced by investigating officers during investigation. O.P. Jindal Global Law School. https://doi.org/10.2139/ssrn.3851165

8. Directorate of Forensic Science Services, Ministry of Home Affairs, Government of India. (2023). Website of Directorate of Forensic Science Services. https://dfs.mha.gov.in

9. Drishti IAS. (2023). NCRB's Crime in India 2022 Report. Daily News Analysis. https://www.drishtiias.com/daily-updates/daily-news-analysis/ncrbs-crime-in-india-2022-report

10. Bureau of Police Research and Development (BPRD), Ministry of Home Affairs, Government of India. (2022). Data on police organizations as of January 01, 2022. New Delhi, India.

11. Young, R., Sayers, D. M., & Sanchez, R. (2022, July 20). 'We need them desperately': US police departments struggle with critical staffing shortages. CNN. https://edition.cnn.com/2022/07/20/us/police-staffing-shortages/index.html

12. Interaction with police officers of West Bengal, Uttar Pradesh, Rajasthan, Bihar, Assam, Tripura, Telangana, and Gujarat (2017-2023).

13. National Crime Records Bureau (NCRB). (2022). Crime in India - 2022. New Delhi, India.

14. Statements Compiled by West Bengal Police Directorate.

15. Chisum, W.J., & Turvey, B.E. (2011). Reconstruction of crime. Elsevier.

16. Innes, M. (2003). A murder investigation. Oxford University Press.

17. Ratcliffe, J.H. (2016). Intelligence-driven policing. Routledge.

18. Stelfox, P. (2013). Criminal Investigation: An Introduction to Principles and Practice. Routledge.

19. Newburn, T. (2017). Police Manual. Routledge.

20. Bowling, B., & Sheptycki, J. (2012). Global policing. SAGE.