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Editorial

Rebooting Criminal Justice Systems in India

Kanika Bansal*

ABSTRACT

Bharatiya Nyaya Sanhita 2023, *Bharatiya Nagarik Suraksha Sanhita* 2023 and *Bharatiya Sakshya Adhiniyam* 2023 are set to replace the archaic laws for criminal justice viz. Indian Penal Code 1860, the Code of Criminal Procedure 1898 as revised in 1973, and the Indian Evidence Act 1872. The new laws are reformative in terms of their unwavering victim-centricity, resolute focus on internal security and copious use of technology in investigation of crimes as well as court proceedings. These laws are likely to bring in ease, accountability and transparency in the administration justice while ensuring safeguards for all the stakeholders. The new laws are also likely to expedite investigations in time-bound manner and eliminate axiomatic delays in delivering justice by leveraging technologies in meaningful ways. However, success of the new laws for effective criminal justice warrants significant investments in translation of the new laws in regional languages, human resources both in police and judiciary, training, infrastructure, and technologies.

KEYWORDS: *Bharatiya Nyaya Sanhita* 2023, *Bharatiya Nagarik Suraksha Sanhita* 2023 and *Bharatiya Sakshya Adhiniyam* 2023, Criminal Justice System, India

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"*Bharatiya Nyaya Sanhita 2023, Bharatiya Nagarik Suraksha Sanhita 2023 and Bharatiya Sakshya Adhiniyam 2023 will speed up the judicial process…The three new criminal laws which are slated to come into force from 1 July 2024, will provide justice rather than punishment, which was the mindset during the British regime*". –Draupadi Murmu, President of India, while addressing joint session of parliament on 27 June 2024 (Press Trust of India, 2024)

INTRODUCTION

Bharatiya Nagarik Suraksha Sanhita, 2023, Bharatiya Nyaya Sanhita, 2023, and Bharatiya Sakshya Adhiniyam, 2023, are set to replace the Indian Penal Code 1860, the Code of Criminal Procedure 1898 as revised in 1973, and the Indian Evidence Act 1872, respectively from 1 July 2024. The new laws are aimed at eliminating the archaic criminal justice systems imposed on the country by the British Raj during colonial era. The new laws for strengthening the criminal justice systems are based on the victim-centric approach as opposed to the older ones that aimed at perpetuating the authority of the British Raj through coercion of police authority. Besides, the new laws also focus on internal security and use of technology in administering justice as opposed to the extreme emphasis of the British Raj on maintaining law and order, protecting the properties and strategic installations of the then government and curbing sedition.

Victim-centric Approach

An e-poster of the Ministry of Home Affairs, Government of India, captures the essence of victim-centric approach in the following words: "The new laws aim to enhance the efficiency, fairness, and accountability of the justice system. It recognises the victim as a stakeholder in the criminal proceedings, providing participatory rights and expanded right to information for the victim. The law has been reformed to place victims at the centre of the criminal justice system, offering unprecedented rights and opportunities". (Ministry of Home Affairs, Government of India, n.d.)

Most characteristic feature of the victim-centric approach of the new laws for criminal justice is the voice given to the victims in terms of sharing their views and emphasising their role as stakeholder in the matters being probed by the police. Besides, the victim's consent has been made mandatory in instances of case withdrawal as per Section 360 of the Bharatiya Nagarik

Suraksha Sanhita (BNSS) 2023. Further, the filing of first information report has been made easier with such provisions as e-FIR (online first information report mechanism), and institutionalization of Zero FIR which allows the victims to file first information report in any police station irrespective of the place of incident. The police is now obligated to provide progress report on investigation to the victims within 90 days of filing of the first information report. In addition, the victims also have the entitlement to obtain copies of first information report and statements made by witnesses.

Generally, victims of crime have to face double-edged sword –one at the hands of the criminals and unscrupulous individuals and other at inordinate delays in administration of justice. The new laws provide a great relief to the victims of crime with a promise of time-bound disposal of cases within three years of the date of the first information report. It may be challenging but can be attained by means of augmented resources and appropriate manpower in the courts at all levels. The new laws take care of the due interests of the accused as well. Hence, first time offenders in petty crimes can get an opportunity to improvise their behaviour through community service engagements without serving a term in prisons. Thus, proverbial load on Indian prisons which are flooded with under-trials will be reduced significantly. Besides, compulsory videography of search and seizure operations by police will ensure that fair-play and integrity of the law enforcing agencies are not compromised at any cost.

Focus on Internal Security

Bhartiya Nyaya Sanhita 2023 included punitive provisions vis-à-vis terrorism, organized crimes and any attack on the sovereignty and integrity of the country while sedition has been removed from the statute. In the new law, the organized crimes include kidnapping, robbery, vehicle theft, extortion, land grabbing, contract killing, economic offences, cyber-crimes, and trafficking in persons, drugs, weapons, or illicit goods or services (Singh, 2024).

Use of Technology in Criminal Justice Administration

Section 173 of *Bharatiya Nagarik Suraksha Sanhita* 2023 provides for use of digital technologies for investigation of crimes, trial of the accused and documentation of court proceedings. Further, Section 57 of the Bharatiya Sakshya Adhiniyam 2023 underlines the

value of electronic records as primary evidence. The law also allows the electronic presentation of oral evidence. Now the witnesses can testify remotely using information and communication technology. New law recognizes electronic or digital records, emails, server logs, smartphones, computers, laptops, SMS, websites, locational evidence, and messages available on devices as documents admissible in courts of law (Ojha, 2024).

Further, the National Crime Records Bureau (NCRB) has made several functional adjustments in the Crime and Criminal Tracking and Network Systems (CCTNS) to augment the use of technology in criminal justice administration (Jain, 2024). NCRB has set up 36 support teams and a call centre to enable review and handholding of states and union territories (Jain, 2024). National Informatics Centre (NIC) has developed apps like e-Sakshya, Nyay-Shruti, and e-Summon for effective implementation of the new laws (Jain, 2024).

CRITIQUE

The three new laws have been described as a unique project of the government of India to decolonize the criminal justice systems. However, efforts of the government of India aimed at cleansing the statues of colonial baggage are imbued with ad-hocism and tokenism (Parashar and Janardhanan, 2024). Indeed, the claim of doing away with the colonial legacy appears to be hollow as 75% of the provisions of the so-called archaic laws have been retained verbatim in the new statutes (Surendranath and Vishwanath, 2024). Further, Certain new provisions that confer excessive police power using vague definitions of offences, enhance durations of police custody and permit trials in-absentia are regressive (Surendranath and Vishwanath, 2024). Critics also observe that “positive changes like timelines for different stages of the criminal process, recording of search and seizure by the police and more scientific investigations do not come with the commensurate effort to build the necessary procedural protections or institutional capacity to deliver all of this” (Surendranath and Vishwanath, 2024).

Critics like Indira Jaising believe that the new laws meant for criminal justice are likely to unleash legal and judicial mess endangering life and liberty (Thapar, 2024). Jainsing (2024) observes: “Notwithstanding the fact that section 124A of the Indian Penal Code which defines sedition is challenged and stayed by the Supreme Court of India, it has been

repackaged in a more virulent form and enacted in the new criminal law. (See: Section 152 of the Bharatiya Nyaya Sanhita Act, 2023). While the earlier law made no reference to the sovereignty and integrity of India, the new law introduces this as an offence for the first time in the revised Indian Penal Code (BNS). The result as we have seen is that an ordinary riot can be elevated to the level of an attack on the sovereignty and integrity of India".

Reactions of the critics over the new criminal laws show their cynicism, regressive mindset and deleterious political leanings. Their reactions would have been different, had the new criminal laws been brought about by a Congress government. While a few loopholes in any piece of legislation are natural, the new statutes truly reflect the aspirations of contemporary India that values citizen-centricity, technology and indigenization.

CONCLUSION

All the three new laws under review viz., Bhartiya Nyaya Sanhits 2023, Bhartiya Nagrik Suraksha Sanhita 2023 and *Bhartiya Sakshya Adhiniyam* 2023 have cleansed the criminal justice systems of colonial baggage and regressive paradigm imbued with unreasonable restrictions on civil liberties. These laws are likely to bring in ease, accountability and transparency in the administration justice while ensuring safeguards for all the stakeholders. The new laws are also likely to expedite investigations in time-bound manner and eliminate axiomatic delays in delivering justice by leveraging technologies in meaningful ways. However, success of the new laws for effective criminal justice warrants significant investments in translation of the new laws in regional languages, human resources both in police and judiciary, training, infrastructure, and technologies.

Both critics and flagbearers of new statutes agree on the ensuing challenges about implementation. Bajpai (2024) has rightly observed: "The effective implementation of the new criminal laws in India requires a proactive approach towards enhancing the training needs of criminal justice officers. Two suggestions can be considered at this stage. One, the existing police officials must be trained to deal with the essential forensic work of preserving the crime scene and collecting and packing exhibits until a cadre of forensic personnel becomes available. Two, young forensic researchers and postgraduates in forensics should be trained as para forensic workers to assist the local police". While the institutional readiness for

implementing the new laws for criminal justice is a matter of concern for all the stakeholders, the government agencies are trying their best to rollout the statutes in a seamless manner. The government has already trained 6.2 lakh police/prison officials and 40 lakh grassroots workers on the new laws before their implementation (Jain, 2024, Mint, 2024). Technological readiness for implementation of the new criminal justice system has also been augmented by timely interventions of the National Crime Records Bureau as well as the Ministry of Home Affairs, Government of India.

People of India can look forward to the implementation of new criminal justice system as panacea for their woes as manifested in inordinate delays in investigation of crimes and prolonged court proceedings.

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Incorporation of Artificial Intelligence in Judicial Administration: Utility, Challenges and Solutions

Nitesh Saraswat[*] and Shivani Pundir[**]

ABSTRACT

With the rising incorporation of technology in the legal sphere, whether it is research work, drafting, pleading, or even filing of cases, it is evident that software using Artificial Intelligence (hereinafter known as 'AI') will be widely used in future. Ten years down the line, we may enter an era where an AI Bot has replaced Judges in petty cases. Further, such technology may be deployed in public places or high-security areas that recognise a person's facial features to predict that they are about to commit a crime and, in turn, alert the authorities beforehand. AI may, on the one hand, come across as an efficient, impartial and cost-effective tool in the justice delivery system, but it may also pose several challenges for the lawmakers pertaining to culpability, ethics and threats of generative AI. Therefore, this paper aims to examine the utility & challenges arising from integrating AI-based technology in judicial administration. Apart from navigating the utility and risks of using such technology, the paper offers viable solutions for the said challenges. The methodology adopted for this paper is a mix of Doctrinal and Socio-Legal Research Approach.

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KEYWORDS: Artificial Intelligence (AI); Ethics; Utility; Challenges; Threat; AI Judicial Administration

"Integrating AI in modern processes, including court proceedings, raises complex ethical, legal, and practical considerations that demand a thorough examination. The use of AI in court adjudication presents both opportunities and challenges that warrant nuanced deliberation"[1]
–Justice DY Chandrachud, Chief Justice of India

SCOPE AND CHALLENGES OF INCORPORATION OF ARTIFICIAL INTELLIGENCE IN ADJUDICATION

For a generation whose attention span is merely 15 seconds, is data-driven Judicial decision-making by Artificial Intelligence (hereinafter known as 'AI') the way forward? We have entered an era of quick commerce, where time is of the essence, and results are certainly more important than the process. Automation is going to be the driving force in the next decade. With the introduction of self-driving cars, smart televisions, watches, fridges and even speakers, we have entered an exciting phase of human evolution where the lines between machines and humans are blurring. For instance, a man in Belgium committed suicide after being encouraged to do so by an AI-powered chatbot.[2] Given the fact that it is generative AI, the liability can not be fastened upon coders, who merely programmed the bot to generate answers based on the data fed to it nor can it be fastened upon the company, as it lacks the requisite mens rea.[3]

Renowned legal expert Mark Lemley expressed concerns about the accuracy of this technology. He warns against the lack of preparedness of the lawmakers against the risks posed by AI.[4] It is essential to clarify that the term 'artificial intelligence' was first coined by John McCarthy in 1956, where he envisioned a program that would process and act upon information, such that the result is parallel to how an intelligent person would respond to a similar input.[5] Therefore, this technology has been around for a while, as automated chatbots, voice recognition programs, etc. were introduced worldwide. However, the recent feat has been in the field of generative AI, which was made possible after the introduction of cloud computing and natural learning processing.

Prosecution is also using generative AI by using Facial Recognition Techniques (hereinafter known as 'FRT'). This technology alerts the authorities about the likelihood of a person committing a crime by reading their facial features, and it has been used in Russia to nab protestors.[6] Such technology is highly intrusive and questions the idea of actus reus in criminal law, as the person is being prosecuted even before surpassing the stage of 'attempt'. We are in dire need of devising policies, legislations & frameworks that will address the scope and challenges of Artificial Intelligence. The European Union, in fact, has come up with legislation named – the EU AI Act, which will regulate artificial intelligence (AI) to ensure better conditions for developing and using this innovative technology.[7]

Coming to the use of AI in the field of judiciary. There are two factions in this debate. One school advocates using AI only in case management, research work and administrative work to assist in the smooth functioning of courtrooms. In contrast, the other school advocates the use of generative AI in adjudication, primarily in cases involving petty offences and small monetary. Additionally, certain jurisdictions have also started using AI for judicial adjudication and Alternative Dispute Redressal Mechanisms.

Now, to evaluate whether AI can replace Judges, various factors need to be considered. Some might suggest that AI, being a data-driven intelligent machine, is comparatively fair as it is not tainted with bias associated with human beings due to ethnicity, culture, education, and societal pressure. Further, such adjudication will be swifter, cheaper, and more efficient in terms of case disposal than human judges. Conversely, certain critics of AI-driven adjudication refute such claims of 'fairness' based on incomplete, inaccurate, or biased data. An algorithm developed by the Illinois Institute of Technology and the University of South Texas based on the data of the Supreme Court from 1791 to 2015 predicted the decisions and votes of Supreme Court justices from 1815 to 2015 with 70.2% accuracy, and 71.9% accuracy, which has surpassed the 66% predictive accuracy of jurists (Katz. et al. 2017; Stanila, 2020).[8]

With the rising incorporation of technology in the legal sphere, whether it is research work, drafting, pleading, or even filing of cases, it is evident that software using Artificial Intelligence

(hereinafter known as 'AI') will be widely used in future. Ten years down the line, we may enter an era where an AI Bot has replaced Judges in petty cases. Further, such technology may be deployed in public places or high-security areas that recognise a person's facial features to predict that they are about to commit a crime and, in turn, alert the authorities beforehand. AI may, on the one hand, come across as an efficient, impartial and cost-effective tool in the justice delivery system, but it may also pose several challenges for the lawmakers pertaining to culpability, ethics and threats of generative AI. Therefore, it is essential to examine the utility & challenges arising from integrating AI-based technology in judicial administration. Apart from navigating the utility and risks involved in the usage of such technology, this paper attempts to offer viable solutions for the said challenges. It would be prudent to quote the following observation made by Justice DY Chandrachud, Chief Justice of India *"Integrating AI in modern processes including court proceedings, raises complex ethical, legal, and practical considerations that demand a thorough examination. The use of AI in court adjudication presents both opportunities and challenges that warrant nuanced deliberation".*[9] *Thus*, as we enter the exciting era of generative AI, this paper focuses on harnessing AI's true potential in judicial adjudication and using it to address the ever-increasing pendency in Indian Courts.

USE OF AI IN ADJUDICATION: DEVELOPMENTS AROUND THE WORLD

Given the advent of AI-driven technology, its emergence as the new normal may be close. There may come a day when we arrive in a court governed by an AI Bot, specialising in certain fields of law, like – taxation, the Motor Vehicle Act, consumer rights, rent disputes, etc. This is not a farfetched dream but a reality in many jurisdictions in China.[10] Three AI Internet Courts in China (Hangzhou, Beijing and Guangzhou) are judging disputes relating to online transactions of sale of goods and services, copyright and trademark, ownership and infringement of domains, trade disputes, and e-commerce product liability claims.[11]

The average duration of these online trials in Hangzhou was 28 minutes, and the average processing period from filing to trial and conclusion by a verdict was 38 days.[12] The litigation process is conducted solely online, including the service of legal documents, the presentation of evidence, and the actual trial itself.[13] To comply with the standards of a legal

trial, it opts for an 'in person and direct speech principle' through an online video system.[14] Similarly, Estonia has been using an AI Bot to adjudicate claims under €7,000 since 2019. Both parties upload documents and other relevant information, and the AI system issues a decision that can be appealed to a human judge. Further, using AI as a mediator or conciliator to provide innovative solutions to the parties has excellent potential. However, attorneys will adjust their language to accommodate the algorithm and may even use unintelligible or fantastical language to influence the results.[15] For instance, Canada is using AI as a mediator to settle disputes by providing unbiased and creative solutions to the parties.[16] The negotiation app Smartsettle ONE, is so effective that it managed to resolve a three-month dispute over unpaid fees in less than an hour.[17]

The UK is using an AI bot to predict the possibility of a claim in the Civil Resolution Tribunal (CRT).[18] It is being used to encourage people to take up mediation to save time and costs. In Mexico, AI is being utilised to compute the pension for the elderly. Surprisingly, AI is being used in the criminal justice system in the USA. COMPAS (Correctional Offender Management Profiling for Alternative Sanctions tool) is used to assess the likelihood that an offender will break the law again.[19] An offender having a high COMPAS score is likely to re-offend. Therefore, it is used to compute the appropriate sentencing of the accused. Although this system is criticised for being biased towards African Americans.[20]

In the case of *State v. Loomis,*[21]*,* the validity of this system was challenged on the grounds of lack of transparency (Access to source code was not given to the convict) & racial discrimination against him. But the US Supreme Court has upheld the validity of this systemas being part of due process.[22] It is worth noting that Indian judges have not missed AI, either. Justice Anoop Chitkara (Punjab and Haryana High Court), referred to ChatGPT, to determine the grant of bail in case of murder.[23] Upon search for 'the jurisprudence on bail when assailants assaulted with cruelty', ChatGPT responded, *'The jurisprudence on bail for cases where the assailants have assaulted with cruelty will depend on the specific circumstances of the case and the laws and regulations of the jurisdiction where the case is being tried. However, in general, if the assailants have been charged with a violent crime that involves cruelty, such as murder, aggravated assault, or torture, they may be considered a danger to*

the community and a flight risk.

In such cases, the judge may be less inclined to grant bail or set the bail amount very high to ensure that the defendant appears in court and does not pose a risk to public safety. The severity of the assault, the defendant's criminal history, and the strength of the evidence against them are all factors that a judge will consider when deciding whether to grant bail. It is important to note that the presumption of innocence is a fundamental principle of the justice system, and all defendants are entitled to bail unless there are compelling reasons to deny it.'[24] Though the court added a caveat that the AI platform was not used to decide the merits of the bail plea, the very notion that a constitutional court's functionary referred to AI raises questions both from a technological and a fundamental rights perspective.[25]

In another significant case[26], Justice A Guneshwar Sharma (High Court of Manipur) turned to ChatGpt 3.5 to understand the nature of the post–Village Defence Force (VDF). The matter pertained to the wrongful termination of VDF, and due to the lack of explanation from the government, the court referred to AI, which found the following information – *'The Village Defence Force, popularly known as VDF, in Manipur was established to enhance local security and assist the police in maintaining law and order, especially in the rural areas. Initiated under the Manipur Police, the VDF consists of volunteers from the local communities who are trained and equipped to guard their villages against various threats, including insurgent activities and ethnic violence.'*[27]

UTILITIES OF AI IN ADJUDICATION

The above-mentioned developments confirm the acceptance of AI as a reliable source of legal research and highlight the willingness of judges to use technology – to find an objective outlook regarding a sensitive issue, and it is up to their discretion whether to rely upon the same or not. Such objectivity is essential in adjudication; hence, AI, if used correctly, can transform the country's judicial ecosystem. Following are the potential Utilities of using AI in Adjudication:

a) Fair – AI being a data driven intelligent machine, is comparatively fair as it is not tainted with biases usually associated with human beings due to – ethnicity, culture, education and

societal pressure. Even the much criticised power of Master of Roaster, wherein the Chief Justice, allocates the cases to different judges, can be assigned to AI powered bot, based on the qualification and background of the Judges.

b) Reduce Pendency – As per the latest NJDG data, 4.5 Crore cases are pending in India, out of which 69% are older than one year. Since AI can take up hundreds of cases each day, such adjudication will be swifter, cheaper and more efficient in terms of case disposal, than human judges. This would in turn reduce pendency in courts.

c) Reduce Delay – Justice delayed is justice denied. As the adjudication process becomes automated, the average time for trial will significantly reduce to months, instead of years. If commercial cases under a certain valuation are mandatorily referred to AI-adjudicated courts, it will boost the economy and instil a sense of confidence among parties and investors.

d) More Accurate—The Illinois Institute of Technology and the University of South Texas, based on the Supreme Court data from 1791 to 2015, predicted the decisions and votes of Supreme Court justices from 1815 to 2015 with 70.2% and 71.9% accuracy, respectively, surpassing the 66% predictive accuracy of jurists.

e) Easing the Burden of Courts—India has only 21 judges per million people.[28] AI has the potential to significantly ease the workload of judges by undertaking research work, appreciating evidence, transcribing speeches, finding similar cases/precedents, and writing judgments.

f) Creative Solutions—With its huge data mining capacity, AI may provide equitable and creative solutions to the parties. Given its objectivity, Companies, in their terms and conditions, insist upon pre-trial arbitration by an AI-powered bot. This would save the much-needed time and litigation costs of the companies and the parties.

g) Potential Use in Administrative Law – Given the specified area of expertise & lack of formal court formalities, Tribunals have huge potential to incorporate AI in adjudication. The reason beings, mining subject specific laws & precedents, and getting real time AI Courtrooms. For instance, computation of compensation in Motor Vehicle Act, computation of Maintenance under various acts, Consumer Rights forum, industrial disputes, tax disputes, etc. Such cases are massive in volume but require an objective viewpoint, in which AI can help.

h) Corporate Solutions—As the number of commercial transactions and corporate

infrastructure is booming in the country, AI-assisted mediation or arbitration before trial may be mandatory. This will ease the burden of courts and reduce delays in commercial adjudication. Both these factors contribute to the ease of doing business and will enhance the confidence of investors.

i) Shorten the Tedious Court Procedures – Apart from adjudication, if the entire court procedure, including filing, sending summons, recording evidence, transcribing etc. can be automated via - AI assisted platform, then the valuable time of the court and parties can be saved. In fact, the system can be coded in such a way, that any defect in filing can be automatically detected and the said party is alerted about it. This system will assist in saving the time and resources of the court.

j) Help in Criminal Profiling – AI has the ability to analyse data from various sources (e.g., social media activities, call records, travel history, browsing history and other information), to suggest a list of suspects in crime. Further, it can aid in criminal profiling by analysing crime clusters, patterns and correlations with environmental factors. For instance, Jamtara, in Jharkhand, is infamous for running phishing scams across India. Various factors can be identified for it like – lack of education and employment opportunities, inefficient police

vigilance etc. Such data backed criminal profiling will in turn facilitate the government in curbing those offences, by deploying tailor-made policies.

CHALLENGES OF AI IN ADJUDICATION

However, implementing such AI-assisted adjudication is not entirely a piece of cake. With the benefits of AI, several important challenges need to be factored in, for instance:

a) Anchoring Effect—This refers to people's bias towards computer-generated data. Most judges follow the result generated by AI without making an independent decision.[29] Thus, judges fall victim to bias in the face of unchecked AI outcomes. [30] Fair Trial being the foundation stone of fair trial in India, it needs to be ensured that judges do not become prejudicial due to the use of such technology.

b) Lack of accountability—With the appellate authority, legislation, and pressure from the bar and media in place, a human judge is accountable to a number of authorities, but an AI bot is a machine and cannot be penalised. In the absence of a robust policy framework

fastening liability upon the makers of the technology, regular screening, adherence to a particular code of conduct, and systems should be put in place to avoid high-risk behaviour.

c) Garbage in - Garbage Out Effect – Some critics question the authenticity of the data mined for such technology. If the data fed to the program is biased, the AI-generated outcome will also be biased.[31] For instance, the racial incarceration of Blacks and Latin Americans in the USA is likely to reflect in the adjudication by AI. This effect is known as the 'garbage in – garbage out'. To resolve it, various experts suggest that the data should be actively made unbiased, but this premise of feeding doctored data is in itself unethical.[32]

d) Authenticity of Blockchain Evidence – Given that AI relies heavily upon blockchain evidence, experts have warned that blockchain isn't tamper-proof.[33] The Supreme People's Court in China disagrees with this proposition and states that such data is reliable and verifiable.[34]

e) Need to Enhance Machine Learning – The current legislation is written in English, but some legislation can be written in a way that computers can process it. This is suggested by Professor Lyria Bennett Moses, Director of the Allens Hub for Technology, Law and Innovation-

"It is much easier for AI systems to answer legal questions where the laws are written in a language that computers can understand. If we start with rules written in computer code, then they can be executed by a computer automatically."[35]

f) Appreciation of Evidence – Despite all the technological advancements in the field of generative AI, it is far from matching the complexities of the human mind. For instance, the quality of the human mind to gauge through emotions like fear, ignorance, deceit, anger, etc., is uncanny. This skill is handy in judging the demeanour of the accused and witnesses and assists the judge in adjudication. Although the much-talked-about facial recognition technology (FRT) is an attempt to bridge this gap, its veracity is yet to be tested.

g) Intellectual Property in the realm of AI – Since generative AI can create its own music, images, codes, and written content, the ethos of intellectual property jurisprudence is present worldwide. Who will get the copyright with open-source AI-generated content – the company owning the AI software or the person giving instructions to the AI software (user) or no one? Different courts across the world are offering different interpretations to this conundrum. Without clear regulations, most countries still associate copyright as a

human's intellectual right to create an original piece of work and give exclusive use for its use and distribution.

SOLUTIONS OF AI IN ADJUDICATION

In the face of such obstacles, a solution-centric approach should be adopted to tackle the challenges of AI software. As to the hallucinations against such technology, one needs to focus on the potential of these intelligent programs and integrate them to reduce the ever-growing pendency in the judicial system. Following are some viable solutions.

a) Training of Judges & Other Stakeholders – The notion that those who know technology lack the knowledge of the law and those who know the law lack the knowledge of technology needs to change. There is a need for collaborative programs, certifications, and research centres for the betterment of this technology in the legal sphere is need of the hour. UNESCO has started a programme to train judges to harness AI in justice.

b) Removing the Bias Inherent in Data—Special attention shall be directed towards curbing biased outcomes when the data itself is discriminatory. For instance, people of certain minorities, ethnicities, or localities may be associated with certain types of crimes, but this, in turn, should not affect the outcome of the AI-based system or the trend of handing down inadequate punishment to the wrongdoer.

c) Addressing Data Privacy – With the risk of data tampering, deep fakes and the rise of fraudulent activities using AI, it is important that AI systems ensure the privacy of the users in compliance with data protection regulations like GDPR (General Data Protection Regulation) & DPDP Act (Digital Personal Data Protection Act, 2023). To meet future requirements, the state should implement data encryption, anonymization techniques, and secure data storage solutions.

d) Review by Human Judges—Given the nascent stage of AI adjudication, it is better to introduce a prototype that is run on a trial basis. A resolution process must be put in place to review, approve, or override the decision of AI Bots by human judges. Further, such cases may be tried by human judges that involve a question of law.

e) Limit the Scope—Primarily, only such cases must be referred for AI-based adjudication that is trivial or involves only fines of under Rs. 10,000 or the ones that can be tried summarily. For instance, Fines under the Motor Vehicle Act Cheque Bounce cases, Rent

Disputes, Consumer Rights Disputes Cheque Bounce Cases, and challans under the Water Act, Electricity Act, etc. Though trivial, such cases would build public trust and provide room for improvement.

f) Bring More Transparency—Technology should only be relied upon when it is transparent, reliable, and accurate. AI should not remain a black box, but efforts should be made to make it fair and transparent. Currently, if AI comes up with a defamatory response regarding a person, there is no way to find out on what material the system based its response. Efforts should be made to resolve this debacle.

g) Legislations be Coded – It will be much better for systems to answer legal questions where the laws are written in a language that computers can understand. If we start with rules written in computer code, then they can be executed by a computer automatically.

h) Coherent AI Policy—A robust policy framework fastens liability upon the technology makers, regular screening, adherence to a particular code of conduct, and systems being put in place to avoid high-risk behaviour. To harness the full potential of this technology, a coherent policy regulating the use of AI is essential. For instance, the European Union has introduced the EU AI Act, which will regulate artificial intelligence (AI) to ensure better conditions for developing and using this innovative technology.[36]

The act takes a risk-based approach: the higher the risk, the stricter the rules.[37] It allocates various responsibilities to the makers and users of AI. It prohibits using AI in social scoring, biometric categorisation of sensitive data, predictive policing for individuals, emotion recognition at the workplace, etc.[38] Further, the Act imposes fines of up to 35 million euros or 7% of turnover.[39] As the next Silicon Valley, India also needs robust legislation or regulations centring around the use of AI in the country. The focus should be on bringing more transparency and curbing unethical and high-risk use of AI. Specific provisions shall be introduced for curbing and penalising the use of AI in creating defamatory content, deep fakes, fraudulent activities using - voice theft, fake news, etc. The aim should be to promote the ethical use of AI and impose responsibility on developers and users for violating these regulations.

Further, the State should endeavour to encourage the adaptation of this technology across its departments. This will reduce the stress upon employees, minimise the processing time, and make people habitual of adapting AI-enabled technology.

i) Addressing the ethical considerations – A human judge has the discretion of examining those present in court and taking into factors that are not necessarily listed in legislation but are important for an equitable justice delivery system. For instance, in a maintenance case, while computing just compensation for the wife, the judge may consider the – demeanour, way of speaking, willingness to pay and capacity to gain lawful employment by examining the husband in court. Despite the husband being unemployed, the court reserves the discretion to decide whether unemployment is willful. Such complexities of human behaviour are difficult for an AI bot to address. But with the improvement in facial recognition technology, steps should be taken towards a culturally & ethically intelligent bot. However, such prototypes shall primarily be tested in trivial matters only, with a review mechanism in place.

j) Continuous Assessment—With regular monitoring, efforts shall be made to weed out discrepancies and challenges in AI-enabled adjudication. Parties and other stakeholders must seek periodic feedback as to their experiences, time taken, ease of trial, challenges faced, etc. Efforts should be made to make the justice delivery system fair, reasonable, efficient, and hassle-free.

WAY FORWARD

With the ever-rising pendency of cases and infrastructural limitations, it is high time technology was relied upon to deal with cases that are devoid of judicial discretion, like petty offences involving only fines. Such automated adjudication may pave the way for a state-of-the-art Judicial System, where decisions are churned out at an unprecedented pace and the workload of both judges, and their support staff is eased by technology. Further, such a data-driven adjudicatory system will facilitate policymakers' identification of the patterns of several types of litigation. This will help them address the causes of such litigation and resolve them.

In this context, the following words of Chief Justice DY Chandrachud are worth mentioning,

"As we navigate the integration of AI into the legal domain, it is imperative that we remain vigilant in addressing the systemic challenges and ensuring that AI technologies serve to enhance, rather than undermine, the pursuit of justice for all. By embracing collaboration and fostering international cooperation, we establish a framework promoting responsible and ethical use of AI technologies across borders. This paves the way for a future where technology empowers and uplifts every member of society, fostering inclusivity, innovation, and progress. Together, we shape a world where the promise of AI is realized for the betterment of humanity."[40]

Therefore, AI has immense potential to transform the adjudication system. Whether it is case management, legal research, computational analysis, mediation or simply adjudication – AI has the innate ability to ease the burden of courts. It can significantly reduce pendency, if utilised, across a wide range of subject matters that form a vast majority of commercial disputes and can be delegated to AI to save time & resources of the parties. Further, the objective nature of AI can be utilised in mandatory pre-trial mediation, as it can find equitable and creative solutions. It can also assist the parties in calculating the approximate time and money to proceed with a trial. This way, parties can be encouraged to settle matters outside courts instead of a long-drawn legal battle, resulting in the loss of one party and the win of another.

As to the potential risks involved with this technology, it is better to formulate comprehensive guidelines for developers and users and regulate the use of AI for the welfare of society. Given the availability of affordable internet connectivity across India, developments of digital payments, e-commerce, quick commerce, digitisation of courts & booming IT industry in India, it is time that we harness the AI capabilities of the nation to address the rising litigation in the country.

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Impact of Technology on Customer Experience in the Metaverse Era

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ABSTRACT

Immersive technologies like AR/VR/MR redefine customer experiences and co-creating value, impacting customer experience management. Studies focus on customer experience (CX), defined as cognitive, emotional, and social responses to a firm's offerings throughout the purchase journey. This research paper provides an overview of existing literature on customer experience, exploring immersive technology's potential impact on human engagement. Integrating AI, machine learning, and chatbots enhance customer interactions, and immersive technologies like AR and VR transform product visualization, fostering emotional connections and brand loyalty. Experiential marketing and immersive technologies create memorable interactions, creating greater satisfaction and brand differentiation. The study analyzes experiential dimensions like sensory, affective, cognitive, pragmatic, and social-identity experiences, contributing to customer pleasure and satisfaction. Collaborative efforts between marketing and information systems researchers shed light on virtual consumer behaviour and its implications for managing immersive customer experiences.

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KEYWORDS: Augmented Reality, Mixed Reality, Virtual Reality, Customer Experience, Virtual Continuum

INTRODUCTION

In the not-so-distant future, a cutting-edge store was entered, which appeared straight out of a sci-fi novel. Instead of being guided by human salespeople, AI assistants led the way, analyzing preferences and suggesting personalized product recommendations. The store operated like Amazon Go, with no checkout lines or cashiers – just seamless AI-powered transactions. The virtual mirror that allowed trying on clothes without changing physically was found intriguing, with outfits projected onto the reflection in real-time. It felt like magic as various styles and colours were experimented with. Upon leaving the store, the incredible fusion of artificial intelligence and advanced technologies, making shopping an extraordinary and futuristic experience, was marvelled at.

In addition to the awe-inspiring AI salespeople and futuristic store features, this establishment was no ordinary brick-and-mortar space. It was a gateway to the metaverse, where customers could immerse themselves in a virtual store environment unlike any other. The Metaverse store was a sprawling digital realm with endless possibilities, allowing shoppers to explore various products and brands from their homes. Using VR headsets, customers could step into this virtual wonderland and browse through virtual shelves, interact with products, and even interact with other shoppers from around the globe. The Metaverse store provided a unique and captivating shopping experience, blurring the lines between reality and imagination. As the boundaries between the physical and virtual worlds continued to merge, this futuristic store became a glimpse into the endless possibilities of retail in the ever-evolving landscape of technology.

The world of interactive technologies is on the cusp of a transformative era, poised to revolutionize various dimensions of human experience. Interactive technologies such as augmented reality (AR), virtual reality (VR), and mixed reality (MR) are leading the charge in shaping the future of immersive interactions. In this research paper, we explore the potential

impact of these cutting-edge technologies on various aspects of human engagement. As users immerse themselves in this visionary world, they will witness a fusion of physical and digital realms, where information overlays enrich their surroundings, interactive virtual environments spark creativity, and the boundaries between reality and imagination blur. By delving into the potential of AR, VR, and MR to enhance human interactions, experiences, and cognitive processes, this research aims to uncover the profound possibilities in the era of immersive technologies.

In today's digital landscape, technology plays a significant role in shaping customer experience. Technology integration enables businesses to engage with customers through various channels, including websites, mobile apps, social media, and AI-powered chatbots. Automation and self-service options allow customers to access information and support whenever needed, increasing convenience and responsiveness. Moreover, technology facilitates personalization and customization, where businesses can offer individualized recommendations, targeted promotions, and personalized content based on customer data and preferences. This level of personalization creates a more meaningful and relevant experience for the customer, fostering stronger relationships with the brand.

Customer experience is one of the essential components of a successful business strategy, and technology has become an indispensable tool in creating and optimizing these experiences. By leveraging technology to deliver personalized, efficient, and consistent interactions, businesses can build lasting customer relationships and thrive in today's competitive marketplace.

CUSTOMER EXPERIENCE

Customer experience can be broadly defined as the overall impression and perception a customer has towards a brand or business based on their interactions and encounters throughout the entire customer journey. In marketing, retailing, and service management, customer experience has traditionally been regarded as something other than an independent construct. Instead, researchers have predominantly focused on measuring customer satisfaction and service quality, leaving the notion of customer experience needing to be more noticed. Despite practitioners acknowledging the significance of customer experience,

academic marketing literature exploring this subject has remained limited. Research publications on customer experience predominantly appear in practitioner-oriented journals or management books. These works often prioritize discussions on managerial actions and outcomes rather than delving into the theoretical foundations concerning the factors that influence and result from customer experience (Verhoef et al., 2009).

Customer satisfaction is achieved through a comprehensive approach beyond mere measurement. It is the result of effectively bridging the gap between customer expectations and actual experiences. Companies must delve deeply into individual customer experiences to truly succeed in fostering satisfaction, recognizing that more than brand messages and offerings are needed to shape the overall customer experience. By understanding the full range of customer interactions and emotions, businesses can proactively adapt strategies to create lasting positive impressions and strong customer relationships(Schwager & Meyer, 2007).

American multinational technology company Oracle Corporation defines customer experience as the sum total of all interactions with the customer and the brand at every point of their buying journey, from marketing to sales to customer service (Oracle, n.d.). Meanwhile, the technological research and consulting firm Gartner defines customer experience as the perceptions, emotions, and attitudes resulting from all interactions with suppliers, employees, systems, channels, and products(Gartner, n.d.). As stated by the management consulting firm McKinsey & Company, customer experience comprises all the endeavours undertaken by an organization to provide exceptional experiences, unmatched value, and foster customer growth. (McKinsey & Company, 2022).

According to marketing scholars, the customer experience emerges from interactions between a customer and a product, company, or specific part of the organization, eliciting a response. This experience is inherently individual and involves the customer's engagement on various levels - rational, emotional, sensory, physical, and spiritual. Evaluating the Customer Experience relies on comparing the customer's expectations with the stimuli encountered during interactions with the company and its offerings at different touchpoints or moments of contact (Gentile et al., 2007). According to (Becker & Jaakkola, 2020) customer experience

involves customers' non-deliberate, spontaneous responses and reactions to stimuli related to the offering throughout the customer journey. It encompasses their perceptions, emotions, and satisfaction as they engage with the company's products or services. By understanding and optimizing these interactions, businesses can create more positive and memorable experiences that foster customer loyalty and advocacy.

In the experience economy, customer experience has two dimensions: customer participation and customer connection. In the first dimension, passive participation lies in one spectrum where customers do not affect performance. In contrast, active participation lies at the other end of the spectrum, where customers play critical roles in creating the event or performance that yields the experience. The second dimension of experience involves the connection, or environmental relationship, that binds customers with the event or performance. On one end of the dimension, connection, spectrum is absorption, while immersion resides at the opposite end. This dimension delineates how deeply customers engage and interact with the experience. These two dimensions can be subdivided into four components: Educational, aesthetic, Escapist, and Entertainment experiences for the business. The entertainment and aesthetic dimensions of a business experience are characterized by passive customer participation, whereas active customer participation characterizes educational and aesthetic experiences(Pine & Gilmore, 1998).

In holistic customer experience research, a two-dimensional space has traditionally been highlighted, encompassing the digital and social realms, with the physical realm often considered the reference condition. However, recent research has seen the inclusion of a third dimension, comprising a more extensive range of physical components. As a result, the interconnectedness and integration of these three realms—social, digital, and physical—can give rise to superior customer experiences. Empathy is essential in customer experience, where customer satisfaction and motivation can be either enhanced or diminished. Since the virtual world lacks intelligence and compassion, researchers are exploring the development of virtual reality agents that exhibit social qualities and have a natural appearance. This concept has created a new branch, "socially intelligent robotics." Soon, the virtual environment interacting with the customer will display signs of empathy, including recognizing

the customer's emotional state, engaging in communication, displaying emotion, and demonstrating the ability to take the customer's perspective.

In customer experience research, another intriguing avenue investigates the dimensions of internal and subjective experiences evoked by these touchpoints, referred to as "brand experience." This line of inquiry delves into the profound impact of touchpoints on customers' perceptions, emotions, and overall subjective encounters, providing valuable insights into the intricate relationship between customers and the brand. By understanding these dimensions, businesses can enhance their understanding of customer behaviour and preferences, leading to more effective strategies for building stronger brand connections and fostering customer loyalty. Two distinct approaches have driven research on customer experience and its management. The first approach involves delineating the customer's contact with a company as a comprehensive journey comprising various experience touchpoints.

On the other hand, the second approach centres on identifying and understanding the diverse types of internal and subjective responses elicited during these interactions. By exploring these two dimensions, researchers gain valuable insights into enhancing customer experiences and optimizing business management strategies. (Hoyer et al., 2020).

TECHNOLOGICAL IMPACT ON CUSTOMER EXPERIENCE

How businesses engage and interact with their clientele has been revolutionized by the impact of technology on customer experience. From personalized interactions and seamless communication to data analytics and artificial intelligence, the landscape has been reshaped, empowering companies to deliver exceptional and tailored experiences, ultimately fostering customer satisfaction and loyalty. Furthermore, in light of these transformative changes, the models will necessitate a shift towards increased customer participation, reduced reliance on service personnel, enhanced data capture capabilities, and a blending of the traditional back and front office boundaries. These adaptations are essential as businesses strive to optimize their customer experience strategies and stay at the forefront of delivering superior and tailored interactions in the dynamic digital landscape. A journey of discovery and innovation is signified for businesses as they seek to meet their customers' ever-changing needs and expectations through the continuing evolution of technology in customer experience (Dawes

& Rowley, 1998). Over the years, a significant shift has occurred in how customers assess a company's offerings. Beyond merely scrutinizing product or service features, customers now place paramount importance on the quality of experiences they encounter while interacting with the company. These customer experiences have become crucial to overall satisfaction and brand loyalty (Prahalad & Ramaswamy, 2004). In the contemporary consumer market, co-creating value through interactions spanning services and products has become increasingly prominent. Technological advancements have triggered a power shift from businesses to customers, fostering active engagement across various industries, including retail, tourism, and education.

Furthermore, the involvement of multiple stakeholders in the value co-creation process is flourishing. As a platform for value co-creation among customers, immersive technology holds significant potential to revolutionize the design and consumption of customer experiences. This technology integration enables a deeper and more immersive engagement, providing unique opportunities to shape and enhance customer value (Tom et al., 2022).

Amidst the dynamic landscape of mixed (VR & AR) environments, social presence emerges as a compelling predictor across four realms of the experience economy. The entertainment experience is the most influential predictor of the overall visitor experience. Moreover, VR and AR entertainment experiences can enhance visitors' overall experience. Furthermore, each realm, except for the esthetic experience, significantly impacts visitors' intention to revisit the attraction. These findings underscore the pivotal role of social interaction and immersive entertainment in shaping the visitor's journey and satisfaction within such environments (Jung et al., 2016). In the last decade, the evolution of artificial intelligence (AI) and machine learning has revolutionized customer interactions through personalized recommendations and virtual assistants. The advent of chatbots and AI-powered customer service has enhanced communication and responsiveness. Moreover, the integration of augmented reality (AR) and virtual reality (VR) has transformed product visualization and immersive experiences for customers.

Additionally, the widespread use of social media platforms has facilitated real-time customer engagement and feedback, fostering social networks and user-generated content among

consumers. These technological advancements significantly shape and elevate the overall customer experience in the digital era. IoT, AR/VR/MR, and virtual assistants/chatbots/robots have radically transformed the concept of customer experience and will result in the next level of customer experience encompassing how shoppers perceive the world, interact with others, and perceive objects within their surroundings. This innovative perspective redefines the essence of the customer's journey and interactions, shedding new light on their overall experience with products, services, and brands (Hoyer et al., 2020).

Experiential marketing and technology form a dynamic and powerful duo, revolutionizing how businesses engage with customers. Experiential marketing creates immersive and memorable customer interactions by leveraging immersive technologies such as augmented reality (AR), virtual reality (VR), interactive displays, and personalized mobile apps. These tech-driven experiences enable businesses to forge deeper emotional connections, enhance brand loyalty, and drive customer satisfaction. Embracing technology in experiential marketing amplifies the impact of brand messaging and enables data-driven insights for continuous improvement and customer-centric strategies. This seamless integration of technology into experiential marketing opens new possibilities for companies to deliver exceptional and personalized experiences, ultimately differentiating themselves in today's competitive landscape. Experiential marketing consumers are rational and emotionally focused on achieving pleasurable experiences (Schmitt, 1999).

Various dimensions of experience encompass multiple touchpoints, and technology-enabled marketers aim to concentrate on these touchpoints to create immersive and memorable experiences. In the existing literature, experiential dimensions have exhibited diversity in their number and content. According to (Schmitt, 1999), marketers can create five strategic experiential modules (SEMs) for their consumers. The modules include sensory experiences (SENSE), affective experiences (FEEL), creative cognitive experiences (THINK), physical experiences, behaviours and lifestyles (ACT), and social-identity experiences that result from relating to a reference group or culture (RELATE). Gentile et al. (2007) proposed six experiential components that include sensorial, emotional, cognitive, pragmatic, lifestyle, and relational. Brand experience has four dimensions: sensory, affective, intellectual, and behavioural (Brakus et al., 2009). Pleasure is often connected with immersive and memorable

experiences. Pleasure is conceptualized hierarchically, where distinct pleasure types (intellectual, emotional, social, and physical) are integrated and unified under a higher-level unitary form of pleasure (Dubé & Le Bel, 2003).

The types of experiences are not mutually exclusive. A holistic experience can be evoked when multiple dimensions of experience are simultaneously triggered. Not all types of experience hold equal significance and relevance in the context of technological impact(Hoyer et al., 2020). This conceptual paper provides an overview of the research literature on the impact of immersive technologies on customer experience.

UNLEASHING THE SENSES: VR AND HAPTICS ENHANCING DIGITAL INTERACTIONS

VR can be defined as the utilization of a computer-generated 3D environment, referred to as a 'virtual environment' (VE), where users can navigate and potentially interact with it, thus enabling the real-time simulation of one or more of the user's five senses. 'Navigate' pertains to the ability to move around and explore the VE, while 'interact' involves the capability to select and manipulate objects within the VE (Guttentag, 2010).

Virtual Reality (VR) has evolved as a powerful tool for evaluating cognitive functions, particularly attention and memory, with episodic memory being vital for daily activities, enabling individuals to recall experiences within their spatial and temporal contexts consciously. The 360° camera, a groundbreaking technology in immersive VR, has been the focus of recent research examining its validity for assessing episodic memory. Findings reveal that a more immersive condition strengthens memory retention for specific objects, attributed to the sense of spatial presence experienced during the VR encounter. The realism provided by the 360° immersive environment and the relative sense of spatial presence play a crucial role in enhancing the memory trace, a feat non-immersive conditions fail to achieve (Ventura et al., 2019).

Another dimension of virtual reality technology has recently emerged: haptics. Haptics is the science and technology that focuses on transmitting and comprehending information through touch. This innovative field holds the potential to revolutionize how users interact with virtual environments, enhancing the sensory experience and deepening the level of immersion in

virtual reality simulations. For instance, smartwatches showcase the practical application of haptics, with distinct vibration patterns for various use cases. The user can easily discern the vibration pattern without visual confirmation, whether it is notifications from an e-commerce app or social media. This seamless integration of haptics introduces the sense of touch to digital experiences, fundamentally transforming consumers' interactions with brands in virtual realms. The personalized and intuitive feedback from smartwatches exemplifies how haptics enrich digital interactions, making them more immersive and impactful for users. With its evolution, haptic technology holds immense potential to reshape how consumers engage with brands and enhance the overall virtual experience.

Using haptics through hand movements offers valuable insights into how consumers learn and perceive objects, including product judgments. Haptics in technology can be categorized into two forms: tactile and force. Tactile haptics enable consumers to feel textures, temperature, and vibrations, while force haptics produce directional forces conveying a sense of boundaries, weight, or compliance with virtual objects' movements. This technology directly influences brand attitude and, in turn, significantly impacts purchase intentions. Consumers exposed to haptics will report higher brand attitudes and purchase intentions, demonstrating the profound impact of haptic experiences on consumer behaviour and brand perception (Mulcahy & Riedel, 2022). As haptics continue to play a pivotal role in enhancing digital interactions, businesses can harness them to craft captivating and unforgettable experiences that nurture stronger brand connections and drive purchase decisions.

VR holds significant potential as a valuable and innovative tool for studying cognitive functions and memory processes. Through continuously exploring immersive technologies, researchers can delve deeper into understanding how virtual environments influence human cognition and memory abilities in diverse contexts. This dynamic field of study opens up exciting possibilities for enhancing our knowledge of human cognition and optimizing the practical applications of immersive technologies in various domains.

ENRICHING REALITIES: EXPLORING THE IMPACT OF MIXED REALITY (MR) TECHNOLOGY

Mixed Reality (MR) is a distinct subset of Virtual Reality (VR) technologies that seamlessly blend real and virtual worlds, positioned along the "virtuality continuum." This continuum connects authentic environments to entirely virtual ones, offering users a spectrum of experiences that combine elements from both realms cohesively and interactively. Mixed Reality (MR) interfaces encompass diverse hybrid display environments grouped into several classes based on their characteristics. Class 1 includes non-immersive video displays, often termed "window-on-the-world" (WoW) displays, overlaying computer-generated images on monitors using electronic or digital techniques. For a more immersive experience, Class 2 adopts head-mounted displays (HMDs) rather than traditional monitors. Class 3 introduces HMDs with see-through capabilities, allowing computer-generated graphics to be optically superimposed on real-world scenes using half-silvered mirrors.

Similarly, Class 4 employs video viewing of the outside world, aiming for orthoscopic correspondence with the real world, creating a "video see-through" system. Class 5 involves completely graphic display environments, either fully or partially immersive, where video "reality" is integrated to enrich the user experience. Finally, Class 6 comprises completely graphic yet partially immersive environments, incorporating natural physical objects from the user's surroundings to interact with or affect the computer-generated scene. These diverse classes of MR interfaces showcase the fusion of virtual and real-world elements, providing a continuum of experiences for users to explore and engage with in novel and interactive ways (Milgram & Kishino, 1994). Mixed Reality (MR) wearable devices seamlessly integrate with the user's body, significantly enhancing immersive experiences. This integration expands the perceived sensorial stimulation and creates a more seamless and natural interaction between the user and the digital environment, further enriching the overall MR experience (Gil-López et al. 2023).

A recent study delving into consumer responses to Mixed Reality (MR) features, and their influence on behaviour reveals intriguing findings. Participants wearing MR glasses exhibited distinct patterns of interaction, including differences in frequency and duration of product engagement compared to those without MR technology. Moreover, using MR smart glasses affected purchase decisions and altered decision times, particularly for utilitarian purchases. The perceived hedonic and utilitarian values of the purchase experience were notably higher

with MR utilization, impacting future purchase intentions and the users' perceived emotional state (Gil-López et al., 2023). These results highlight the significant impact of MR on consumer behaviour and underscore its potential as a powerful tool for enhancing the overall purchase experience.

Optimizing the AI's capabilities, particularly in speech recognition and synthesis through advanced machine learning, significantly enhances MR immersion, spatial immersion, MR enjoyment, and consumers' perception of novel experiences when interacting with augmented objects. This improvement in AI quality fosters a more captivating and immersive Mixed Reality encounter, enriching the overall user experience and elevating the potential of augmented objects in the MR domain(Sung et al., 2021). Elevating engagement, engrossment, and total immersion significantly enhances overall user satisfaction when using MR devices (Dehghani et al., 2020). These factors work synergistically to create a deeply satisfying and captivating user experience, making MR technology a compelling choice for immersive interactions.

AUGMENTED REALITY (AR): SHAPING THE FUTURE OF CUSTOMER INTERACTION

The impact of Augmented Reality (AR) on customer experience has been nothing short of transformative, reshaping the way businesses engage with their clientele. Through AR technology, customer interactions have become more dynamic and interactive as virtual elements seamlessly merge with the real-world environment. This integration allows customers to visualize products in their physical space, empowering them with a deeper understanding and appreciation of the offerings before making purchase decisions. As a result, customer confidence and satisfaction have soared, leading to increased brand loyalty and advocacy. Across various industries, AR-powered applications have revolutionized the customer journey, providing personalized and immersive experiences that resonate with users on a profound level.

By leveraging AR's potential, businesses can forge meaningful connections with their audiences, elevating the overall customer experience to unprecedented heights. AR represents an interactive technology that seamlessly blends the physical and digital realms, overlaying real-time virtual annotations such as information, images, and audio onto the

user's environment. The primary objective of AR is to craft immersive brand experiences, interactive marketing campaigns, and innovative product encounters for consumers. Leveraging mobile AR in physical stores significantly enhances the shopping experience, offering consumers enriched product information surpassing virtual and traditional brick-and-mortar stores without AR.

Moreover, the inclusion of virtual product demonstrations in-store fosters increased purchase certainty, a distinct and valuable aspect of AR perceived by consumers (Moorhouse et al., 2018). AR stands apart from virtual reality (VR) by offering users a partial immersion experience in a computer-enhanced version of their physical environment. Unlike VR, which entirely replaces the user's real-world surroundings with a computer-generated environment, AR enriches the user's existing environment with digital information. The concept of AR was initially introduced as a prototype in the 1960s. However, only recently have marketers embraced this technology as a potent tool for marketing communications (Baek et al., 2018). Augmented reality provides various interactive experiences, seamlessly blending virtual elements with the real world. From immersive gaming adventures to interactive learning environments and innovative marketing campaigns, AR opens endless possibilities for engaging and captivating interactions that captivate users across various industries.

Interactive experiences with augmented reality encompass a range of activities, such as exploring product details, personalizing products, and virtually trying them on through in-store AR displays or mobile app features. The augmented reality within stores elevates brand value, streamlines customer decision-making, boosts brand engagement, and intensifies purchase intent. For example, in the restaurant industry, AR services influence consumer perceptions of dining experiences and drive preferences towards premium offerings. Moreover, in the hospitality sector, AR applications, particularly those integrated with wearable devices, impact tourists' intention to visit destinations, amplify enjoyment, enrich travel experiences, and even elevate their willingness to spend more(Du, Liu, and Wang, 2022).

Another important aspect of AR's implementation in a virtual try-on setting is its potential to reduce product returns significantly. This cutting-edge technology empowers brands to

furnish comprehensive product information, enabling consumers to explore multiple views of the item. An essential aspect of AR in virtual try-on is its capacity to augment information, instilling confidence in consumers' decisions. Interacting with the product fosters a sense of assurance, bolstering customers' confidence in their choices. AR exerts its influence across seven core themes pertinent to the customer journey. It widens product consideration, narrows the choice set, and mitigates the value of brand curation of outfits.

Additionally, AR drives hedonic value through playfulness and impacts post-purchase experiences, amplifying cognitive dissonance. At the point of purchase, AR proves beneficial in product curation and enhances hedonic value through playful interactions. Furthermore, findings demonstrate that AR can impact consumer choice confidence and further amplify cognitive dissonance during the post-purchase stage(Romano et al., 2021). AR's impact on the customer journey extends beyond the purchase phase. At the post-purchase stage, it significantly influences consumer choice confidence and amplifies cognitive dissonance, encouraging customers to reevaluate their decisions.

Moreover, AR's immersive capabilities facilitate a more enjoyable and customized shopping experience, increasing customer satisfaction and loyalty. AR fosters more profound connections between consumers and brands by providing interactive and engaging interactions with products, ultimately driving brand loyalty and advocacy. Additionally, the ability of AR to offer personalized product recommendations and virtual try-on experiences further enhances the customer's decision-making process and reduces the likelihood of product returns. Overall, AR emerges as a transformative technology that revolutionizes how consumers interact with brands, transforming the customer journey into a seamless, immersive, and memorable experience.

CONCLUSION

Marketing science delves into the study of consumer-company exchanges; human-computer interaction (HCI) centres on interactions between users and digital devices. Given the ever-evolving digital technologies impacting consumer interactions with companies, marketers must know how human-computer interaction influences marketing research and practices. Collaboration between marketing and information systems researchers is crucial to gaining

deeper insights into virtual consumer behaviour and enhancing understanding (Moutinho, 2014).

Several factors, including interactivity, realism, ease of use, and immersion, influence satisfaction with the experience. Interactivity refers to the speed and extent of users' ability to manipulate technology, stimulating product appearance and functionality and ultimately enhancing enjoyment and satisfaction. Additionally, greater interactivity is linked to improved cognitive and affective responses in consumers. Ease of use and content involvement contribute to perceived efficacy and control. Realism is another significant aspect, representing how closely a media representation aligns with real-world experiences, including plausibility, typicality, emotional realism, factuality, consistency, and perceptual quality. The plausibility, typicality, and factuality dimensions determine how much an experience relates to one's reality.

The concept of immersion, explored in contexts like gaming, VR, AR, and XR, refers to belonging or being present in a virtual environment. Immersion involves the perception of physical presence in a non-physical, virtual world. Notably, AR is considered more immersive due to its interactive and vivid nature, allowing users to experience a heightened sense of presence and engagement. These factors collectively shape the level of satisfaction consumers derive from their experiences with interactive technologies. The satisfaction with experience is intricately tied to various factors such as interactivity, realism, ease of use, and immersion. Enhanced interactivity leads to improved product exploration and enjoyment, promoting positive cognitive and affective responses in consumers. Realism is vital in bridging media representations with real-world experiences, influencing the perception of plausibility, typicality, and factuality.

Additionally, immersion fosters a sense of presence and engagement in virtual environments, with AR being particularly immersive due to its interactive and vivid nature. Moreover, the naturalness and vividness of sensorial rich mediated environments contribute significantly to the overall evaluation of experiences, making VR encounters particularly appealing to consumers. By providing a heightened level of presence and engagement, VR experiences are poised to leave a lasting impression on consumers, reflecting their preference for such

interactive technologies. As technology continues to evolve and new dimensions of experience are explored, understanding these factors will be essential for designing more compelling and satisfying consumer interactions with immersive technologies (Bialkova & Barr, 2022).

Soon, augmented reality (AR) is anticipated to play a significant role in marketing efforts, especially for body-involved products like beauty, hairdressing, shoes, and clothing, revolutionizing the virtual shopping experience for consumers. Incorporating AR into virtual stores empowers companies to maintain control over product and service delivery while influencing consumer buying behaviour. By enhancing the shopping experience through AR, consumers can project their self-image, leading to greater engagement and satisfaction in the shopping process(Huang et al., 2019).

Despite virtual reality's current popularity and continuous research, the technology's simulation environments still grapple with certain limitations that may impede the user experience. Immersion plays a pivotal role in the success of VR applications, and any disruptions in immersion can hinder the intended effects of the procedure. This may lead to user dissatisfaction with commercial head-mounted displays (HMDs) and, in specific industry-based cases, can adversely manipulate data, compromising the validity of simulations relied upon for safety-critical situations. Addressing these challenges is essential to ensure VR's continued advancement and effectiveness in various domains (DeVito & Ngalamou, 2021).

Virtual Reality (VR) escape experiences allow individuals to immerse themselves in captivating virtual environments, providing an illusion of an alternate reality - the metaverse - where they can spend countless hours interacting with engaging content. Despite the extensive discussions on usability challenges, research still needs to be conducted concerning the broader social, psychological, and physical implications of immersive Virtual Reality (VR) experiences. This gap in knowledge calls for a deeper understanding of how this technology affects individuals and demands careful consideration by both consumers and businesses before embracing its widespread use. Making informed decisions about VR's implementation is crucial to ensure positive outcomes and avert potential risks. In today's fast-paced world, people often resort to maladaptive coping strategies, such as self-indulgent escapism, due to

the pressures of their environment and social conditions. This desire to escape is fueling the search for alternative realities, leading to the development of VR consumer experience escapes evolving into a metaverse. The allure of fully immersive virtual worlds, where users experience a heightened sense of presence, can trigger feelings of euphoria and even lead to addictive behaviours (Han et al., 2022).

In the context of marketing science and human-computer interaction (HCI), understanding the factors that influence user satisfaction with interactive technologies is crucial. Interactivity, realism, ease of use, and immersion are critical in shaping consumers' experiences. Collaborative efforts between marketing and information systems researchers are essential to gain deeper insights into virtual consumer behaviour. Augmented reality (AR) can transform the virtual shopping experience for body-involved products. However, challenges with immersion in virtual reality (VR) applications need addressing to ensure optimal user experience. Despite VR's popularity, further research is needed to explore the broader social, psychological, and physical implications of immersive VR experiences. Informed decisions about VR's implementation are necessary to mitigate potential risks. The growing desire for escape and the allure of immersive virtual worlds drive the development of the VR consumer experience esc apes. However, careful consideration is needed to use this technology correctly.

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Impact of Government Policies on the Growth of Start-ups in Delhi NCR

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ABSTRACT

In India, the union and state governments have rolled out numerous initiatives encouraging entrepreneurship nationwide, including notable programs like Start-up India, Stand-up India, Ease of Doing Business, etc. These efforts have positively influenced the perception of start-ups among markets, aspiring entrepreneurs, and investors. Furthermore, multiple policies among the government, industry, etc., aimed to develop a thriving start-up culture. However, the start-up ecosystem in Delhi and the NCR is complicated due to the involvement of start-up policies from Delhi, Uttar Pradesh, and Haryana. Despite being the national capital and hosting several educational institutions and ample infrastructure, Delhi NCR needs to catch up to Bangalore in the start-up domain. This study examines how government policies affect the start-up ecosystem in the Delhi NCR area, aiming to offer insights into the factors influencing the start-up landscape in this region.

Keywords: Entrepreneurship, Start-up, Entrepreneur, Government Policies,

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INTRODUCTION

Entrepreneurs are critical drivers of economic and social progress. Rapidly growing entrepreneurial ventures are often viewed as relevant sources of innovation, productivity, growth and employment. To catalyse start-up culture and strengthen the inclusive ecosystem for innovation and entrepreneurship, the Government of India launched the Start-up India initiative in January 2016. Driven by areas such as "Simplification and handholding", "Funding support and incentives", and "Industry-academia partnership & incubation" (DIPP, 2018), the Start-up India initiative lays down the roadmap for the creation of a conducive ecosystem for the growth of start-ups in India. Start-up India has rolled out several initiatives to build a robust start-up ecosystem and transform India into a country of job creators instead of job seekers. Under the Start-up India initiative, eligible companies can get recognised as start-ups by DPIIT to access a host of tax benefits, easier compliance, IPR fast-tracking and other benefits. (Godha, et.al., 2020)

Government & regulatory framework, human capital and funding & finance are the areas of pivotal importance in the entrepreneurial ecosystem. Government Policies and Regulations: Access to necessary infrastructure, e.g. transport, water, and electricity, plays a crucial role in ecosystem development. India ranked 77th in the "ease of doing business" ranking in 2019, against the 100th in 2018. Institutional support such as Incubators and Accelerators: Incubators and accelerators are essential partners in the overall start-up ecosystem, which accelerates business prospects. They offer office spaces, shared resources, research labs, entrepreneur networks, investor networking opportunities, start-up boot camps, summits, alumni support, technology support, and client-specific business solutions. The emergence of successful start-ups in India within the last one to two years has notably bolstered the economy across retail, hospitality, healthcare, and transportation sectors. Notable examples include Flipkart, Ola Cabs, Paytm, Zomato, and Nykaa (Jitender & Pravesh. 2017).

The link between geographic location and innovation can be more complex. Being near a cluster of businesses might improve communication, but it doesn't necessarily mean more

innovation for start-ups. What counts is being part of a robust social network, which significantly impacts business success. (Allen et al., 2016). Government policies have a significant influence on the environment for entrepreneurs. Tax breaks, funding, regulations, infrastructure, and support programs shape the landscape for starting businesses. By studying these policies, we can understand how governments help or hinder entrepreneurial ecosystems. (Ajayi-Nifise et al., 2024). When comparing regions like Delhi NCR, which is celebrated for its vibrant entrepreneurial culture and the abundant talent emerging from its numerous educational institutions, with other areas, we can discern the unique challenges and opportunities each place faces in supporting entrepreneurship. In this research, we are studying whether government policies and tax concessions impact the progress of start-ups in Delhi NCR.

LITERATURE REVIEW

There is a greater recognition that social enterprises could have a role in solving social issues. We need to create an environment where entrepreneurs feel confident that they will not face any obstacles if they develop business models to benefit people experiencing poverty. (Jayanthi,2019). A start-up can be defined as a project-based organisation or company in various business fields that commercialises a new business model by combining innovative ideas or advanced technologies to deal with uncertain environments. According to the Support for SMEs Act in Korea, start-ups are defined as individual businesses or corporations that have been in operation for less than seven years since commencement. Therefore, start-ups based on government support can be defined as those that received government support in the early stages since foundation or during the preparation for establishment. (Lee & Kim, 2019).

Due to the global trend of low growth, an increasing social consensus supports the growth of large corporations, and more than SMEs alone is needed to secure new growth engines for economic development. Accordingly, significant countries such as the USA, Japan, and China actively implement entrepreneurship and start-up development policies according to their situations. In the USA, the Obama administration implemented the Start-up America Initiative,

which supported innovative entrepreneurs in the private sector and actively pursued innovative start-ups and venture investments by enacting the 2012 JOBS Act (Jumpstart Our Business Start-ups Act) to facilitate start-up financing. The Trump administration is also issuing administrative orders for deregulation and is constantly carrying out support policies by establishing the Office of American Innovation within the White House Office. Moreover, various entrepreneurial ecosystems (state governments, universities, large corporations, investors, incubators, etc.) are activated in large cities such as Silicon Valley, San Francisco; Silicon Alley, New York; and Silicon Beach, which significantly contribute to economic revitalisation and urban development (Cockayne, 2019)

Japan also plans to establish a venture ecosystem as a national growth strategy. According to the Japanese government's 2017 Growth Strategy, their goal is to create an environment for the cycle of innovation within society by building partnerships among research institutes such as universities, large corporations, governments, and private ventures, thereby doubling the ratio of venture capital investments of GDP by 2022. China began to focus on entrepreneurship-related policies upon entering the 2000s and enacted a law on the promotion of SMEs in 2002, through which they established support policies for the development of SMEs. In addition, major countries are also implementing various entrepreneurship and start-up support policies at the government level to build an innovation-driven economy and secure new growth engines for motivating the start-up ecosystem (Lukason & Kasper, 2017).

The benefits accessible to start-ups under the government's flagship initiative, "Start-up India," are comprehensively outlined by (Mittal & Garg, 2018). These include tax breaks on profits and long-term capital gains, self-certification mechanisms, legal assistance for patent applications, and access to advanced incubator facilities, all as fundamental support pillars. In conjunction with Start-up India, the Indian government has launched various programs to nurture entrepreneurship nationwide. Initiatives led by NITI Aayog (Atal Innovation Mission) and the Biotechnology Industry Research Assistance Council, alongside broader campaigns like Make in

India and Stand up India, underscore the multifaceted strategy to bolster entrepreneurial endeavors. The success of Start-up India hinges on overcoming significant obstacles such as stringent licensing requirements, inadequate banking support, and the need for tax incentives for emerging businesses (Shah & Jokhi, 2023).

Through programs like Made in India, Digital India, Skill India, and MUDRA, the government aims to address systemic deficiencies and cultivate an environment conducive to entrepreneurial growth. Meticulously evaluates the performance of these initiatives, delving into key issues and proposing potential solutions based on the experiences of Indian start-ups (Bairwa & Chand, 2019).

The Indian start-up ecosystem has been rapidly evolving, attracting attention globally. It delves into this dynamic landscape, aiming to identify emerging trends and understand the role of ecosystem enablers in nurturing start-ups. The study also evaluates the effectiveness of the Start-up India initiative while proposing strategies for start-ups to scale up, reflecting the growing interest in fostering a conducive environment for entrepreneurial ventures in India (Godha et al., 2020). On a more localised scale, the focus is placed on the complex start-up ecosystem of Delhi NCR, where governance is fragmented across multiple state and central authorities. Despite over 30 universities, prestigious educational institutes, and numerous incubators, the number of registered start-ups needs to catch up to other regions like Maharashtra and Bangalore. This prompts an investigation into the impact of government policies on the start-up landscape within the region (Kumar & Aquil, 2024).

Delving deeper into government initiatives such as the Start-up India program and various support schemes designed to bolster entrepreneurial ecosystems across India, their research sheds light on the benefits these policies offer, ranging from tax exemptions to simplified business procedures (Patel & Pandya, 2023). They also analyse the specific implications of these policies on start-ups within the Delhi NCR region. The Indian start-up scene has witnessed exponential growth in recent years, buoyed by technological advancements, evolving

consumer behavior, and supportive government policies (Kumar & Aquil, 2024). However, despite its rich educational and infrastructural resources, the growth trajectory of start-ups within Delhi NCR presents a contrasting picture.

Government policies play a pivotal role in shaping the start-up landscape at the national and regional levels. The Start-up India initiative, launched in 2016, aimed to provide a conducive environment for start-ups to flourish by offering incentives and support schemes (Nambiar & Balasubramanian, 2021). However, the effectiveness of these policies in Delhi NCR remains a subject of scrutiny, given the disparity between the region's potential and actual start-up registrations. Delhi NCR's start-up ecosystem offers a fertile ground for entrepreneurial ventures with its diverse blend of educational institutions, incubators, and government support programs. However, bureaucratic hurdles and regulatory complexities hinder the growth of start-ups, underscoring the need for streamlined governance and policy interventions (Badra & Sharma, 2016).

To address these challenges, policymakers must prioritise initiatives to simplify regulatory processes, foster collaboration between government agencies, and enhance access to funding and mentorship opportunities. A cohesive policy framework tailored to the unique needs of Delhi NCR's start-up ecosystem could unlock its full potential and propel it towards sustainable growth. The Indian start-up landscape presents a tale of two realities – one of immense promise and potential and the other of regulatory hurdles and bureaucratic inefficiencies. While initiatives like Start-up India and various government policies have positively impacted regional ecosystems like Delhi NCR, further evaluation and targeted interventions are needed to address existing challenges and maximise opportunities for growth.

OBJECTIVE OF THE STUDY

- Examine the impact of government policies on the start-up ecosystem in the Delhi NCR region.
- Assess how tax policy concessions influence entrepreneurs to launch new start-ups in

Delhi NCR.

- Evaluate whether the government's aggressive infrastructure improvements in Delhi NCR have motivated the start-up ecosystem.
- Scrutinise the effectiveness of government policies in Delhi NCR in fostering new start-ups.
- Investigate the effect of the regulatory framework on the start-up ecosystem in Delhi NCR.

RESEARCH METHODOLOGY

This study's primary source is secondary data, providing a broad foundation for analysis. This research is a conceptual survey with both exploratory and descriptive elements, aiming to uncover new insights and describe existing phenomena. The information relevant to the study has been meticulously collected from various credible sources. These include academic websites, peer-reviewed journals, industry magazines, reputable newspapers, and authoritative books. By utilising a wide range of sources, the study ensures a comprehensive understanding of the topic and a robust basis for its findings.

GOVERNMENT POLICIES

In the ever-changing world of entrepreneurship, the impact of government policies stands out as a crucial factor in moulding the path of economic progress. This comparative examination of government policies in Delhi and the NCR region has highlighted challenges and opportunities, emphasising the need for strategic actions to nurture lively entrepreneurial ecosystems. Government policies form the foundation upon which entrepreneurial environments either thrive or struggle. Policymakers possess the means to establish a setting where entrepreneurs can flourish, innovate, and make substantial contributions to economic advancement (Lee & Kim, 2019). By cultivating a favourable environment, governments can spur investment, draw in talent, and lay the groundwork for job creation – essential components for sustainable and inclusive development.

Table 1: Policies/Programs of the Government of India to Promote Entrepreneurship

Sl. No.	Government Policies/Programs	Brief description
1.	Start-up India	Launched to support entrepreneurs, building a robust start-up ecosystem.
2.	Stand-up India	Started in 2016 to support women, SC/ST entrepreneurs
3.	Make in India	To create and encourage companies to develop, manufacture and assemble products in India.
4.	Start-up India Seed Fund Scheme Launch (SISFs)	Launched April 2021, with an outlay of INR 945 Crore to provide financial assistance to start-ups for Proof of Concept, prototype development, product trials, market-entry, and commercialization.
5.	Income Tax benefits U/s 80 IAC	Under this section, income tax is exempt for three consecutive financial years out of the first ten years after incorporation.
6.	Income Tax benefits U/s 56(2)(VIIB)	In this section, start-ups are exempt from paying capital gain tax while transferring their share over and above the fare price.
7.	Government tenders	Participation in government tenders without prior experience, Turnover and without EMD
8.	Self-certification of laws	Self-certification of 6 labor laws and 3 environmental laws
9.	Easy winding up of the company	As per the Insolvency and Bankruptcy Code, 2016, start-ups can be wound up within 90 days of applying for insolvency.
10.	National Single Window System	The National Single Window System (NSWS) is a digital portal for Exploring, Applying, Tracking, and Obtaining all your business approvals.
11.	Atal Innovation Mission (AIM)	AIM has taken a holistic approach to ensuring the creation of a problem-solving, innovative mindset in schools and an

		ecosystem of entrepreneurship in universities, research institutions, the private sector, and the MSME sector.
12.	Pradhan Mantri Mudra Yojana	MUDRA loan provides banks and financial institutions up to INR 10 (Indian rupee ten) lakhs without collateral security.

FINDINGS OF THIS STUDY

Various stakeholders, including the government, state authorities, universities, and start-up support organisations, champion diverse measures to bolster the requirements for start-ups, diversity, and the start-up ecosystem. One pivotal system widely embraced in academic circles is the concept of the entrepreneurial ecosystem. In Delhi NCR, many universities, colleges, and institutions actively encourage and support entrepreneurial ventures by implementing various government programs. Besides nurturing local start-ups, collaborations extend support to start-ups beyond the region, even welcoming assistance from abroad. This interconnectedness links multiple domestic and international ecosystems, amplifying the ecosystem's scale and enhancing the benefits for start-ups operating in the area (Watanabe et al., 2024).

An essential determinant of a country's economic trajectory lies in how much its government backs entrepreneurial initiatives. Governments that cultivate an environment fostering risk-taking, innovation, and entrepreneurship pave the way for individuals to embark on entrepreneurial pursuits. Government policies are the foundation upon which entrepreneurship flourishes, catalysing the birth of new ideas, job creation, and economic growth (Sharma & Saini, 2022). A myriad of policies, such as Start-up India, Stand up India, Made in India, Make in India, tax exemptions, self -certification of laws, ease of doing business measures, Atal Innovation Mission, and various funding schemes, spearheaded by the central government, significantly contribute to fostering an entrepreneurial ethos among the youth.
Additionally, state governments roll out competitive schemes and support mechanisms, including appointing nodal officers and dedicated call centres to address issues raised by start-ups and entrepreneurs. State-level start-up policies further incentivise youth and aspiring

entrepreneurs to embark on the entrepreneurial journey. Moreover, government-led infrastructure development in the area plays a pivotal role in fostering the burgeoning start-up landscape. Despite the myriad challenges and opportunities inherent in the entrepreneurial journey, government support and initiatives serve as a beacon, encouraging entrepreneurs to cultivate and fortify the start-up ecosystem..

CONCLUSION

The developmental trajectory of the Delhi NCR start-up ecosystem is intricately woven with the fabric of governmental policies, serving as both accelerants and obstacles along the path to innovation and prosperity. Tax policies wield considerable influence, with lower tax burdens fostering an environment conducive to entrepreneurial ventures. These policies catalyse growth and encourage risk-taking by alleviating the financial strain on start-ups, ultimately propelling the ecosystem forward. Equally pivotal are government initiatives providing funding and grants to nascent start-ups. These lifelines offer crucial support to early-stage ventures, empowering them to navigate the tumultuous terrain of entrepreneurship with greater resilience and resourcefulness.

Furthermore, the quality of infrastructure, spanning transportation, energy, and communications, is a cornerstone of start-up success. Governmental investments in infrastructure modernisation enhance operational efficiency and lay the groundwork for sustained growth and scalability. In the context of Delhi NCR, a nexus of innovation and ambition, these policy interventions assume heightened significance. Policies crafted to nurture a supportive ecosystem bolster the region's competitive edge, fostering a culture of innovation and entrepreneurship. By breaking down barriers to entry and providing a fertile ground for start-ups to flourish, these policies drive economic growth and job creation, positioning Delhi NCR as a beacon of innovation on the global stage.

The symbiotic relationship between governmental policies and the start-up ecosystem in Delhi NCR underscores the transformative power of strategic interventions. By fostering an

environment ripe for innovation and growth, these policies lay the foundation for a vibrant and resilient entrepreneurial landscape poised to shape the region's future and beyond.

LIMITATION

This study is confined to the Delhi NCR area, limiting its geographical scope. Data was exclusively collected from secondary sources, which include websites, literature reviews, and various study reports. Future research should consider incorporating primary data and expanding the geographical scope to enhance the study's comprehensiveness.

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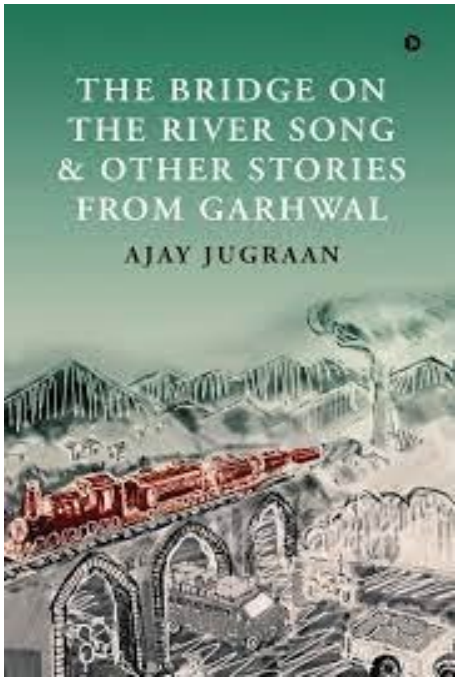
Book Review: The Bridge on the River Song & Other Stories from Garhwal by Ajay Jugraan

Srirang K Jha*

ABSTRACT

This article reviews a collection of stories titled 'The Bridge on the Rever Song & Other Stories from Garhwal' by Ajay Jugraan, a cross-border investment, business and arbitration lawyer based in Delhi, India. He is a master storyteller who keeps the readers engaged with his unique ability to create an intense narrative with characters and plots one can easily relate to. In the anthology under review, there are 23 absorbing short stories set in culturally rich Garhwal region of India. The anthology comprises author's original stories in English, a few of his stories translated from Hindi and a few others taken from folk traditions with fresh rendition. All the stories have one thing in common –the nuances of the distinctive socio-cultural milieu of Garhwal and Kumaon region. The stories in the anthology are imbued with varied themes ranging from romance to bravery, suspense, history, and mystery. Also, the stories trigger emotions like love, compassion, empathy, gratitude, joy, hope, pride, awe, and peace. The stories in the



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anthology capture all shades of life both in rural and urban settings. The reviewer has a vivid reminiscence of having crossed the bridge on the river Song during a recent road trip to Dehradun. The book truly captures the magic of the bridge over river Song as well as the rich traditions of Garhwal region for the readers.

Keywords: Anthology, Nature, Family, Life, Garhwal, India

The Bridge on River Song & Other Stories from Garhwal
Published by Notion Press, 2023; Pages: 219; Price: INR 300

The Bridge on River Song & Other Stories from Garhwal by Ajay Jugran is a noteworthy omnibus of 23 fascinating short stories set in culturally rich Garhwal region of India. The anthology comprises author's original stories in English, a few of his stories translated from Hindi and a few others taken from folk traditions with fresh rendition. All the stories have one thing in common –the nuances of the distinctive socio-cultural milieu of Garhwal and Kumaon region. The stories in the anthology are imbued with varied themes ranging from romance to bravery, suspense, history, and mystery. Also, the stories trigger emotions like love, compassion, empathy, gratitude, joy, hope, pride, awe, and peace. The stories in the anthology capture all shades of life both in rural and urban settings.

The first story of the collection, 'The Small Radio' is an adorable narration of love and separation, attachment and detachment, and primacy of the call of duty, even if the job of the soldier does not bring any accolades for the protagonist. The story captures the nuances of the soldier's life during World War II, when Indian soldiers were drafted to fight under the British Raj in any part of the world, far away from their sweet homes and loving families. Typical of a soldier's life, the story ends with his departure in response to the call of duty, leaving behind his beautiful wife with a small radio as memento. Both have no idea when they would reunite.

Second story titled 'Be as Resilient as a Cockroach' is equally captivating. It revolves around candid conversations among five friends who have accomplished professional success but

failed to experience happiness in their lives. All the friends have some health issues which often come with privilege and prosperity. However, taking cue from another interwoven narrative from battlefield in the story, they learn the finest lesson in their life –one can be as resilient as a cockroach and that giving up in any circumstance was not an option. The third story, 'A Small Price to Pay' is about a captivating narrative of a rescue operation in which the protagonist –a senior army officer, hurt his back badly and lost three of his toes in the right and two in the left. Yet, he was not too keen to accept the accolades as he had just paid the small price for saving his boys.

The fourth story titled 'Fearless Mahipal' is about a soldier who is fearless at the battlefront but scared of cats in the backyard of his home. The fifth story, 'Paradise Calls', is about a failed suicide attempt and how the protagonist surprises the narrator by being sighted as a volunteer art teacher in a rehabilitation centre whom the latter had taken for dead. The sixth story, 'A Bouquet for the Florist', is equally intriguing. It is about an unrequited love which lasted a lifetime and the protagonist ended up dedicating an anthology of poetry written over past 30 years to his beloved, not knowing whether she would ever be privy to his emotions. The next story, 'The Choice of Love' is a cute narrative of how the protagonist finally finds his lost love.

The story titled 'Point Sudha Ju' has captured an interesting quest to delve into the excellent family tradition of cartography which is cut short by the protagonist's own intrinsic interest in creative writing instead of drawing maps of the hilly terrains. Likewise, stories titled 'Apola Princess', 'Just Three Bad Habits', 'Tapka Mangoes', 'The Musical Hillock', 'Miss Beautiful Thorn', 'Badrinath Beckons', and 'Just One Game of Chess' are also imbued with ruminations from familial bonding. 'Karnavati: The Queen of Garhwal Who Cut Mughal Noses' is a fascinating rendition of a folktale from the region. 'The Bridge on the River Song' is yet another emotional narrative about how people in Garhwal region relate to the rivers in their daily lives how desperately they desire to save them. Title of the anthology also comes from this story.

'The First Car Uphill' is an interesting tale drawn from local tradition. The story narrates how the Pahadi King Bolendu's Rolls Royce reached his palace at the hilltop about a hundred years ago when the roads in the mountainous terrains were not at all developed. 'Missing the Essence' is satire on how the politicians befool their followers. 'Chhamna Devi' is a captivating

story about rise and fall of a self-made God-woman. 'The Benefit of the Doubt' has captured improbity of a judge of a district court in an interesting manner. 'The Scrap dealer of Dalanwala' is a noteworthy story about a visually challenged micro entrepreneur who was extremely adept in his work. 'Don's Big House' is a story about malicious person who destroys all the family ties due to his greed with a predictable end.

Quality of all the stories in the anthology is splendid in terms of plot, characters, and narration. Characters in most of the stories may resonate with the readers. Illustrations by Dr Sunil Parulkar, Rachna Sharma Joshi, Deepak Kotnala, Twisha Singh, Shobha Uniyal, Manish Kala, Meena Kothari, Mishika Kala, Aayushi Thandassery, Nyla Khera, and Ambar Agnihotri have added great value to the anthology. Cover Art designed by Ambar Agnihotri is quite appealing. A few photographs by Sanjay Nainwal have been used in the anthology. Mallika Ramachandran has edited the anthology efficiently.

Luminaries like Lt Gen (Retired) Syed Ata Hasnain (Chancellor, Central University of Kashmir); Ambassador Bhaswati Mukherjee (an expert in international affairs); Tarun Khiwal (noted visual artist); R. N.Bhaskar (Consulting Editor, Free Press Journal); Dr Varada Nikalje (Professor, NCERT); and Akshat Ghildial (award-winning author of '*Badhai Ho'*, '*Badhai Do*' and other Bollywood films) have appreciated the book profusely. Likewise, some of the readers namely Anil Bhatt, Rachna Joshi, Archana Nautiyal, Sona Kukreti, Moushami Ghosh, Akshaya Dhaundiyal, Rakesh Jadly, Sumit Dutta, Megha, Arjumand Fatma, Neera Ramachandran and Dr Alok Saklani among others have also commended the book in their micro reviews on the Literary Potpourri.

Some of the stories of Ajay Jugraan are also available in audio format on StoryJam and other podcast/youtube channels. He has also published a collection of poems in Hindi titled '*Atrang Satrang'*.

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