

# A Study on Unified Payment System and its Role in the Growth of Fintech Sector in India

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**Abstract:** The study aims to identify the potential of Unified Payment System (UPI) as common interface for consumer payment solutions in India. India is one of the fastest-growing Fin-Tech marketplaces in the world. India is currently ranked fourth in terms of total fintech funding. A number of important elements contribute to India's status as a hub for the growth of fintech sector. The fintech market in India is expected to grow at a compound annual growth rate (CAGR) of 32.7%, from a value of US\$106.2 billion in 2024 to US\$769.5 billion by the end of 2031. By 2025, the worldwide fintech market is expected to be worth \$306 billion. With an impressive 14% of worldwide investment, India's FinTech industry is a major player on the international scene. The FinTech Market Opportunity is expected to reach an astounding \$2.1 trillion by 2030, and the nation ranks second in terms of deal volume. The methods we use as customers to access our bank accounts, make purchases, and obtain loans are all undergoing significant change. In an effort to anticipate consumer demands, cater to existing clients, and stop fraud, financial institutions are also continuously changing and adopting UPI as most widely acceptable payment gateway.

**Keywords:** Fintech, Financial Inclusion, Partner Applications, Digital Payment Systems, United Payment Interface

## 1. Introduction

India's vision directed to an organized financial ecosystem is essential towards achieving the country's goal of being a developed nation by 2047. India is now a more financially inclusive nation due to the tremendous growth of digital payments. India's reliance on cash is declining as the use of digital payments are increasing. In recent years, India has emerged as a pioneer in digital payments thanks to the development of an environment that facilitates the adoption and usage of these payment methods. UPI, handles more than 75% of retail digital payments in India, is still leading this growth story. By eliminating the difficulties associated with cash transactions, digital payments are promoting the expansion of new industry sectors (both B2B and B2C). In India, digital payments are being commonly adopted from a small kirana shop to a big merchant establishments managing complex payments. They are developing solutions to better safeguard customers against fraud and money laundering with the aid of artificial intelligence (AI) and machine learning (ML).

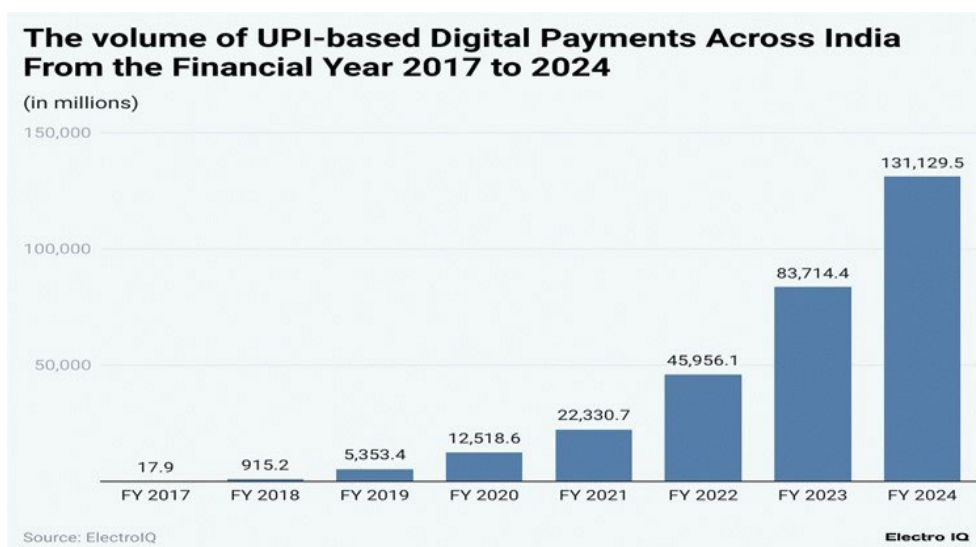


Figure 1: Volume of UPI- based Digital Payments from 2017-24 in India

Source Statista 2024

According to UPI statistics, the number of UPI payments made in India has been steadily rising. By the end of 2023, the transaction volume had grown from 17.9 million in 2017 to 83714.4 million. The number of transactions is expected to reach 131,129.5 million by the end of 2024. Approximately 147 million households

also lacked access to any kind of banking. Addressing corruption and black money, which primarily occurred in cash, was another issue. In 2014, the RBI published a four-year vision statement outlining its commitment to creating an authorized, safe, accessible, and inclusive payment and settlement system in India. The RBI has expressed its intention to regulate the FinTech sector and take a more targeted approach in order to support and expand the business in India. In October 2024, UPI handled 16.58 billion financial transactions totaling ₹23.49 lakh crores, a 45% increase from the 11.40 billion transactions in October 2023. This increase in usage, which has 632 banks linked to its platform, demonstrates UPI's growing monopoly in India's payment market. The National Payment Corporation of India (NPCI) was established in April 2009 with the goal of standardizing and integrating all of India's payment methods for retail transactions. The Green Initiative, which aimed to reduce the amount of paper used in domestic payments. UPI was formally introduced to the general public of India in 2016.

## **2. Literature Review**

The advent of United Payment System has revolutionized the rural and urban financial landscape by enhancing the efficiency thereby disrupting traditional banking models in India. Unified Payment System (UPS) acts as the backbone for various fintech innovations. This literature review synthesizes existing research on the role of UPS in the growth of the fintech sector across different regions, highlighting key findings, knowledge gaps, and potential future research directions. A unified payment system serves as a crucial infrastructure that enables seamless transactions across diverse financial services. The volume and value of UPI transactions in rural areas rose by 118% and 106%, respectively in 2023-24. This increase is a result of Tier-II cities moving toward digital payments for services including assisted commerce, insurance, and utility payments. The automation of payment processes through UPS can lead to cost-effective solutions that is essential for fintech growth. While some argue Fintech completely disrupts traditional banks, others see opportunities for collaboration through hybrid models (Arner et al., 2020). The integration of various payment methods—including cryptocurrencies—through UPS enhances user experience and trust, which is critical for the sector's expansion (Ducas & Wilner, 2017). Furthermore, the ability of UPS to streamline payment processes is vital for enhancing the efficiency of credit supply and payment services (Agarwal & Zhang, 2020). Several studies emphasize the potential of UPS to promote financial inclusion, particularly for small and medium enterprises (SMEs) and low-income households including rural areas. In China, for instance, a standardized platform offered by UPS enables easier access to financial services, addressing regulatory uncertainties while fostering innovation (Hua & Huang, 2020). Similarly, in emerging markets, UPS can enhance the adoption of e-wallets by providing consistent and secure transaction platform thus supporting economic development (Tian et al., 2023).

The growth of Fintech is rooted in digitalization and disruptive technologies (Arner et al., 2020). Early literature focuses on the transition from traditional banking to technology-driven platforms, highlighting innovations such as digital wallets (PayPal, Venmo), blockchain-enabled transactions, and peer-to-peer (P2P) systems (Gomber et al., 2017). Unified payment systems are seen as the latest innovation in this context, integrating multiple payment channels (mobile apps, QR codes, NFC) into one cohesive ecosystem (Maurya et al., 2022). Unified payment systems rely on technologies like Artificial Intelligence (AI), blockchain, and Application Programming Interfaces (APIs). Studies emphasize how APIs allow interoperability and seamless integration across service providers supporting financial inclusion (Chen et al., 2019). Blockchain technology, often linked with cryptocurrency, offers secure, efficient, and transparent solutions for unified systems (Wamba et al., 2020). Literature review also emphasizes AI's role in fraud detection and user personalization within payment systems (Kou et al., 2021). The success of unified payment systems depends largely on user adoption in Tier 1, Tier 2 and Tier 3 cities largely influenced by ease of use, trust, security, accessibility and perceived usefulness (Venkatesh et al., 2003).

Researchers have examined customer segmentation and demographic influences, identifying digital literacy as a key barrier in developing economies (Maurya et al., 2022). However, there is limited research on behavioral economics and cultural influences in this domain.

## **3. Methodology**

Exploratory research methodology have been used to conduct secondary data analysis of the existing literature and data collection from various government websites to assess and evaluate the growing success of UPI in India.

## 4. Results and Discussion

### 4.1 UPI Version 2.0 in India: Transforming the Fintech Sector landscape

By the end of 2024, it is anticipated that there will be over 367 million UPI users, highlighting the growing acceptance of UPI as a preferred payment method.

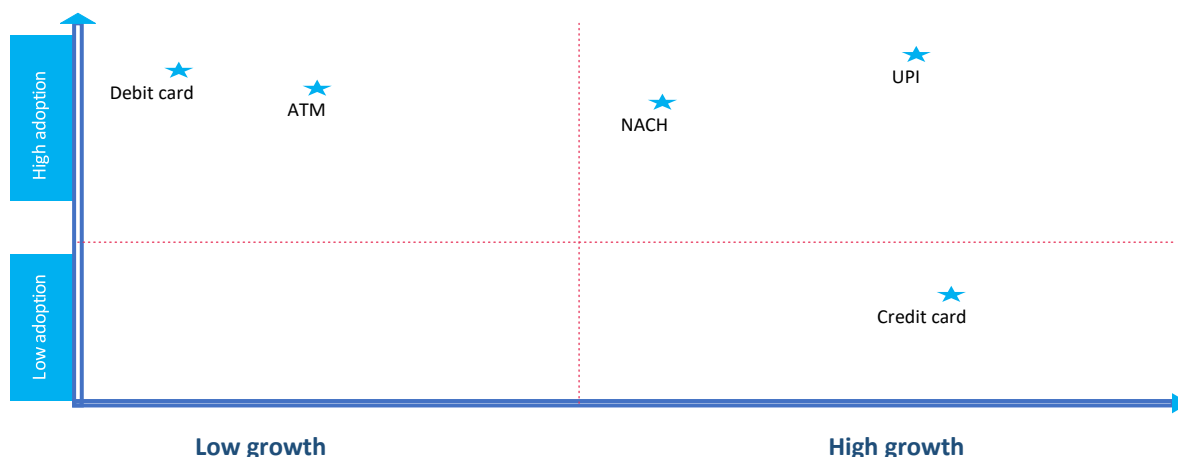
**Table 1: India Payment System Indicators December 2024**

Financial Market Infrastructures (FMIs)			
Settlement Systems	FY 2023-24	November 2024	December 2024
1 Credit Transfers - RTGS	170886670	14826882	19163587
1.1 Customer Transactions	152406168	13504833	17161423
1.2 Interbank Transactions	18480503	1322050	2002163
<b>II Retail</b>			
2 Credit Transfers - Retail	67542859	6274182	6935632
2.1 AePS (Fund Transfers) @	261	14	17
2.2 APBS \$	390743	32384	58705
2.3 IMPS	6495652	558328	601549
2.4 NACH Cr \$	1525104	147385	135695
2.5 NEFT	39136014	3380884	3814966
2.6 UPI @	19995086	2155187	2324700
2.6.1 of which USSD	352	16	16
3 Debit Transfers and Direct Debits	1687658	185643	198303
3.1 BHIM Aadhaar Pay @	6112	629	547
3.2 NACH Dr \$	1678769	184814	197549
3.3 NETC (linked to bank account) @	2777	200	207
4 Card Payments	2423563	208387	228757
4.1 Credit Cards	1831134	169298	188086
4.1.1 PoS based \$	651911	68233	73185
4.1.2 Others \$	1179223	101065	114901
4.2 Debit Cards	592429	39089	40671
4.2.1 PoS based \$	393589	26756	27681
4.2.2 Others \$	198840	12333	12990
5 Prepaid Payment Instruments	283048	19214	18992
5.1 Wallets	234353	13130	14437
5.2 Cards	48695	6083	4556
5.2.1 PoS based \$	11247	915	991
5.2.2 Others \$	37447	5168	3565
6 Paper-based Instruments	7212333	537849	587879
6.1 CTS (NPCI Managed)	7212333	537849	587879
6.2 Others	0.00	0.00	0.00
<b>Total Retail Payments (2+3+4+5+6)</b>	<b>79149461</b>	<b>7225275</b>	<b>7969563</b>
<b>Total Payments (1+2+3+4+5+6)</b>	<b>250036131</b>	<b>22052158</b>	<b>27133149</b>
<b>Total Digital Payments (1+2+3+4+5)</b>	<b>242823799</b>	<b>21514309</b>	<b>26545270</b>

Source RBI: <https://www.rbi.org.in/Scripts/PSIUserView.aspx?Id=21>

As per the table above the total Digital payments increased from INR 21514309 in November 2024 to INR 26545270 in December 2024 with almost an increase of 123% which is remarkable. By December 2024, it is estimated that there will be 465 million UPI transactions per day. In 2016, instant payment system known as Unified Payments Interface (UPI) was developed by the National Payments Corporation of India. This facilitates inter-bank peer-to-peer (P2P) and person-to-merchant transactions.

Both person-to-merchant and interbank peer-to-peer (P2P) transactions are made easier by this technology. It is used to instantly move money between two bank accounts on mobile devices. With the RBI's Digital Payments Index (RBI-DPI) increasing by 4.45% from March 2024 to 465.33 by September, India's digital payment system demonstrated significant progress in 2024. The Unified Payments Interface, or UPI, maintained its hegemony with a 32% increase in transaction value and a 45% increase in transactions from 2016 to 2024.



**Figure 2: Mapping payment instruments for growth and adoption rate in India**

Source: PwC.in

As per the above graph, UPI shows both high growth potential and high rate of adoption in India in comparison to other financial instruments like credit cards, debit cards, NACH, and use of ATMs'. With UPI accounting for 48% of all immediate payment transactions globally in 2022-23, India remains the global leader in rapid payments making up 48% of all instantaneous payments worldwide. In India, the site boasted over 300 million monthly active users as of November 2022.

With a 60% increase in transaction volume and a 47% increase in transaction value over 2022, the total annual value of UPI transactions in India in 2023 rose to ₹183 lakh crore, or \$2.3 trillion. In 2023, the RBI governor introduced the UPI 123PAY service, which aims to assist the nation's almost 400 million feature phone customers. Up until recently, smartphone payment apps were the only way to make UPI payments. FASTag recharges, insurance payments, and EMI collections are a few of the early use cases, according to NPCI.

According to the Reserve Bank of India's (RBI) Payments System Report, the United Payments Interface (UPI) has become the most important platform in India's digital payments ecosystem, accounting for 81% of all payments by the end of 2024, up from 34% in 2019. At the same time, the proportion of alternative payment methods, such as card-based payments, National Electronic Funds Transfer (NEFT), Immediate Payment Service (IMPS), and Real-Time Gross Settlement (RTGS), decreased to just 19%. By 2024, UPI's transaction volume had increased from 375 crore in 2018 to 17,221 crore, and the overall volume of digital payments had reached 20,787 crore.

**Table 2: Comparison of UPI Payment Partners from 2016 to 2024**

Year	No. of Payment Partners on UPI	Transaction volume (in mn)	INR value (in mn)	USD value (in bn)
2024	634	139,995.97	202,026,334	2,393.32
2023	523	117,675.99	182,844,068.2	2,195.03
2022	384	74,044.48	125,948,187.3	1,699.71
2021	285	38,744.55	71,592,858.0	966.17

Year	No. of Payment Partners on UPI	Transaction volume (in mn)	INR value (in mn)	USD value (in bn)
2020	200	18,880.89	33,877,447.2	457.19
2019	142	10,787.54	18,366,381.8	247.86
2018	128	3,746	5,857,104.5	79.04
2017	65	418	570,208.7	7.7
2016	32	2.65	8,930.7	0.12

Source NPCI portal

As evident from the Table 2 above comparing UPI transaction payment between the period from 2016 to 2024. UPI payments partners increased tremendously from only 32 in 2016 to 634 payment partners in 2024 enhancing financial inclusion and economic growth. Similarly, transaction volume increased from 2.65 million having INR value of 8930.7 million to 418 mn in 2017 to 139,995.97 mn in 2024 with INR value 202,026,334 mn in 2024 highlighting the transformative impact in India’s financial landscape.

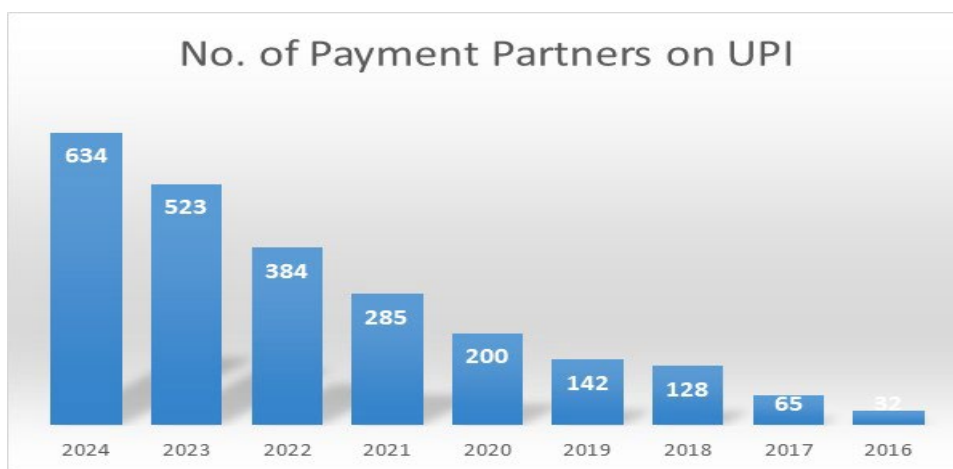


Figure 3: Increase in Fintech Payment using UPI since 2016-2024

Source NCPI Portal

The graph above shows the growing potential of Fintech Sector related to digital payment using UPI in India from 32 payment partners to 634 in the last nine years. Digital payments have increased significantly in fintech sector especially in recent years with increased acceptance of cashless payments/ transactions. Significant increases in digital payment volumes, greater financial inclusion, and expansion of digital payment acceptance locations including rural areas have all contributed to the growing success of cashless payments in India. In the FY 2022–2023, digital payments in India maintained a robust YoY growth rate of 58.5%. India also intends to establish emergency payment systems like a lightweight payment and settlement system (LPSS) and has made investments in contemporary payment systems like Central Bank Digital Currency (CBDC). India's digital payments sector is expanding, but it also confronts obstacles like rising fraud rates, restricted access to clients in rural areas, pressure on stakeholder profitability, and the need to raise consumer knowledge.

Table 3: UPI Application Based Market Share 2024 in Fintech Sector in India

Market Share by Applications-2024						
Application	Transaction Volume (Mn)	Rank (Volume)	% Volume	Transaction Value (₹ Mn)	% Value	Rank (Value)
PhonePe	6500.14	1	48.86%	10016796.3	51.00%	1
Google Pay	5027.32	2	37.79%	6941896.8	35.34%	2
Paytm	1117.13	3	8.40%	1225542.5	6.24%	3
Cred	138.46	4	1.04%	432332.1	2.20%	4
Axis Bank Apps	69.80	5	0.52%	64832.4	0.33%	8
Amazon Pay	64.33	6	0.48%	67848.2	0.35%	7

Market Share by Applications-2024						
Application	Transaction Volume (Mn)	Rank (Volume)	% Volume	Transaction Value (₹ Mn)	% Value	Rank (Value)
ICICI Bank Apps	47.41	7	0.36%	266388.8	1.36%	5
FamApp	46.64	8	0.35%	5880.0	0.03%	10
Kotak Mahindra Bank Apps	41.54	9	0.31%	61018.8	0.31%	9
HDFC Bank Apps	35.99	10	0.27%	76897.6	0.39%	6
Others	215.75	–	1.62%	480980.0	2.45%	–
Total	13304.51	–	100.00%	19640413.5	100.00%	–

Source NCPI Portal

As per Table 3 above it can be established that PhonePe recorded highest transaction volume of 48% ranked first followed by google pay at 37%. These two apps capture almost 86% of the total market share of UPI transactions followed by Paytm. The other transaction platforms such as cred, axis bank, amazon pay, icici bank, kotak, and others have only 14% of the total market share. UPI has successfully generated 940 million transactions totaling ₹1450 billion up from 94,000 transactions by 2020 valued at ₹35 million. UPI also reported 7.66 million IPO mandates in 2020-21. This was the highest since the Securities and Exchange Board of India mandated that domestic retail investors use UPI for the IPO process. 17% of India's GDP was transferred via UPI transaction. With the highest average daily transaction of about 150 million, UPI recorded 435 million transactions, accounting for ₹577,356 million, which is double the amount from 2020. UPI grew at a 147% CAGR. The value of UPI transactions rose from ₹1 lakh crore in FY 2017–18 to ₹139 lakh crore in FY 2022–23 at a compound annual growth rate (CAGR) of 168%. UPI has been the main force behind the growth of digital payment transactions in India overall, accounting for 62% of all transactions in FY 2022–2023.

#### 4.2 UPI Fintech Internationalization Initiatives in India

In 2021, almost 700 million Indian shoppers crossed the border. On November 17, 2021, NPCI International Payments Limited (NIPL) and UK-based PPRO Financial signed a memorandum of understanding (MoU) to increase the acceptance of UPI in international markets, particularly those in China and the US, which account for half of all international transactions originating from India. This was done to facilitate payments. Transact365, a fintech startup located in the UK, enabled UPI for international merchants on January 26, 2022, providing real-time currency conversion capabilities that will enable them to conduct business in India without the need for local presence. In accordance with bilateral treaties, the RBI will work to internationalize UPI with countries that use the US currency, the pound sterling, and the euro after releasing the Payments Vision 2025.

**Table 4: List of countries that accept UPI**

List of Countries That Accept UPI		
India	Singapore	South Korea
Armenia	Thailand	Bahrain
Bhutan	Cambodia	Maldives
Nepal	Vietnam	United Arab Emirates
France	Sri Lanka	Australia
Qatar	Indonesia	Japan
Saudi Arabia	Oman	Switzerland
Malaysia	Mauritius	Russia
United Kingdom	European Union	Canada

Source NCPI.

Around 27 countries are accepting UPI as listed in the Table 4 above. In 2023-24, PhonePe declared that it would be expanding UPI's capability for international payments in the United Arab Emirates, Singapore, Mauritius, Nepal, and Bhutan. From Indian bank accounts, users would be able to make direct payments in foreign

currencies. NIPL and PPRO Financial inked a final agreement that will allow international merchant acquirers and payment service providers (PSPs) to accept UPI. Additionally, it aims to expedite international remittances by utilizing the UPI infrastructure. Users of Apple iPhones, iPads, and iPod Touches in India will also be able to use UPI. The UPI AutoPay option, which was previously restricted to credit and debit cards from Visa, Mastercard was added by Netflix for Indian users. Hotstar began to implement the UPI AutoPay service in August 2021. Jio launched UPI AutoPay for postpaid and prepaid mobile users. Tata Mutual Fund with CAMSPay implemented the Systematic Investment Plan (SIP) with UPI AutoPay capability. Zomato and Swiggy introduced their own UPI to streamline the checkout process, minimize unsuccessful payments, and lessen dependency on third-party apps.

## 5. Conclusion

India remains the global leader in Fintech digital payments making up to 48% of all instantaneous payments worldwide. With the growing acceptance of UPI as preferred payment method more and more customers and businesses in India are adopting UPI as the safer alternative for doing cashless (online) transactions. From 92 crore in FY 2018 to 8,375 crore in FY 2022–2023, UPI grew at almost 147% CAGR. Also, more than 75% of retail digital payments including rural areas are done via UPI creating a huge scope for growth of Fintech sector in India enabling financial inclusion and economic development. UPI has become a powerful instrument for India as a result of its growing success. It an example of India's most prosperous deep-tech financial innovation till date. Approximately 75% of UPI users currently come from non-Tier-1 cities. Additionally, Tier-2 cities including rural areas account for more than 80% of newly enrolled users. The ability to view and save an invoice for every transaction was also provided in UPI.

Despite the promising findings regarding UPS's role in fintech growth, several knowledge gaps exists. First, there is a need for comprehensive studies examining consumer behavior in relation to UPI adoption across different demographics and regions. Understanding the factors that influence user trust and perceived risks can help tailor UPS implementations to diverse markets. Second, the impact of UPI on specific fintech services, such as lending and investment, remains underexplored. Future research could investigate how UPS facilitates interactions between fintech companies and traditional banks, particularly in terms of collaboration and competition. Lastly, the long-term implications of UPI on financial stability and economic growth require more rigorous examination. As fintech continues to evolve, understanding the role of UPS in fostering innovation while maintaining stability will be essential for policymakers and stakeholders in the financial sector. The Unified Payment System is a pivotal element in the growth of the fintech sector, facilitating efficiency, financial inclusion, and regulatory compliance. Foreign visitors to India may now use the UPI Wallet feature, which allows them to add money using their preferred debit or credit card and begin scanning their purchases at more than 20 million Indian stores without incurring commission fees. Due to the wallet's widespread acceptability, customers may easily transact anywhere both nationally and internationally.

## Ethics Declaration

This research does not need ethical clearance for the research.

## AI Declaration

I have not used any AI tool for writing this research paper. This is my original research.

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