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How the UPI System Boosts the Indian Economy: Insights from Fuzzy Cognitive Map Analysis

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Abstract. The Unified Payments Interface (UPI) has emerged as a transformative force in India's financial landscape. The model categorizes concepts into drivers, ordinary factors, and the receiver, offering a structured framework to understand their interactions and collective influence on the economy. Steady-state analysis uncovers the system's stability, emphasizing the pivotal role of driver concepts. When we analyze a 10% increase in these drivers, it becomes evident that UPI has a profound impact on the economy, resulting in a 17% boost. Factors such as Boost Workforce, Cash Flow Management, Financial Stability, Improved Financial Inclusion, Better Access to Credit, Increased Investment, and Increased Economic Mobility play significant roles in driving the FCM system. The dynamic analysis observes UPI's concepts over 100 iterations. 'Safer & Secured' remains stable, impacting the economy. Factors like saving working time, increased transparency, and suitability for e-Commerce enhance UPI's efficiency, while others fluctuate to some extent.

Keywords: Fuzzy Cognitive Map, UPI, Steady-state analysis, Dynamic analysis, Economy

1. Introduction

The Unified Payments Interface (UPI) has emerged as a game-changer in the Indian economy, rewriting the rules of financial transactions and reshaping the country's digital landscape. Since its inception in 2016, UPI has been on an exponential growth trajectory, fundamentally altering the way individuals and businesses handle payments, manage their finances, and participate in the formal economy. This revolutionary digital payment platform, developed by the National Payments Corporation of India (NPCI), has catalysed change, unleashing a wave of innovation, financial inclusion, and economic growth. The rapid and widespread adoption of UPI can be attributed to several converging factors. Firstly, India has witnessed a significant increase in smartphone penetration, with millions of people gaining access to affordable mobile devices and reliable internet connectivity. Secondly, the burgeoning fintech ecosystem in the country has leveraged UPI to develop a plethora of user-friendly and feature-rich apps, making digital payments convenient and versatile. Thirdly, government policies and initiatives, such as the demonetization drive in 2016 and the "Digital India" campaign, have provided the necessary impetus for digital payment adoption. At its core, the UPI system offers a straightforward, secure, and real-time payment mechanism, allowing users to transfer money seamlessly between bank

accounts using mobile phones. What sets UPI apart is its interoperability, enabling users to easily initiate transactions between different banks. This interoperability has been a critical factor in its success, fostering competition among banks and payment service providers to enhance their offerings continually. One of the most significant achievements of the UPI system has been its role in promoting financial inclusion. UPI has helped millions of people open bank accounts and participate in the formal financial system by providing access to digital financial services to even the most remote and underserved populations. This has far-reaching implications, empowering individuals to save, invest, and access credit, essential to economic empowerment and poverty alleviation. Furthermore, UPI has played a pivotal role in reshaping India's digital payments landscape. Traditional banking systems and cash transactions have faced increasing competition from UPI-based solutions, as more people opt for the convenience and security offered by digital payments. This shift has led to a reduction in cash transactions, curbing the shadow economy, and increasing transparency in financial transactions. From an economic perspective, the UPI system has generated a range of benefits and challenges. On the positive side, it has contributed to economic growth by fostering entrepreneurship and enabling small businesses to participate more actively in the digital economy. It has also boosted consumer spending, which is a crucial driver of economic activity. However, the rapid adoption of digital payment methods, including UPI, has also brought about challenges, such as cybersecurity concerns and the need for robust data protection measures. Ensuring the security of digital transactions and protecting user data are paramount in maintaining trust in the system. The main objective of this paper is to develop a Fuzzy Cognitive Map model to represent the complex, interrelated factors and variables within the UPI system and its interaction with the Indian economy. FCM, a robust tool for modeling and analysis, excels in revealing concealed patterns and causal relationships within complex systems.

Fuzzy Cognitive Maps (FCMs) have emerged as a versatile tool across diverse domains, facilitating stakeholder integration, policy simulation, and scenario modeling. Özesmi et al. (2004) [1] highlight their utility in ecological modeling, particularly in data-limited contexts, while Stach et al. (2005) [2] explore FCMs' adaptability and the push toward automation through Hebbian learning and genetic algorithms, despite scalability constraints. Banerjee (2009) [3] applies FCMs to assess R&D risk and strategic planning, whereas van Vliet et al. (2010) [4] highlight their role in participatory scenario development, enhancing stakeholder communication and consensus-building. In the financial domain, Rastogi et al. (2021) [5] examine UPI’s impact on financial inclusion and economic stability, integrating marginalized groups into the formal system, while Gupta et al. (2017) [6] leverage FCMs to model economic variables, recommending key policy measures for GDP growth in India. Similarly, Johnson (2015) [7]applies FCMs to analyze India's economy, identifying influential factors and suggesting government interventions. Meanwhile, Veen et al. (2020) [8] examine India’s 2016 demonetization, recognizing its intent to curb black money but acknowledging its disruptive execution. Bhoi (2021) [9] explores India's digital payment transformation, addressing challenges and the potential of central bank digital currencies (CBDCs) in reducing cash dependency. Lastly, Papageorgiou et al. (2019) [10] apply FCMs to model poverty alleviation in rural India, utilizing OWA learning aggregation to enhance model reliability and inform socio-economic policies. Collectively, these studies illustrate FCMs' growing significance in decision-making, economic planning, and policy development across various disciplines.

2. Data and methodology

Sources of data and information:

This paper draws upon a diverse array of data sources to comprehensively explore the multifaceted landscape of factors and risks influencing changes in India's socio-economic and ecological spheres through the utilization of UPI. The research relies on qualitative insights garnered from dynamic sources such as random discussions and interactions with stakeholders, as well as presentations and workshops involving experts, development practitioners, and researchers (Mondal et al (2024); Dolai et al (2023) [11-13]). These qualitative sources enrich the analysis by providing real-time, nuanced perspectives, and expert opinions, complementing the existing body of knowledge. By combining these various sources, the paper seeks to offer a holistic understanding of the intricate dynamics at play, offering valuable insights and policy directions for a future that balances social inclusivity and ecological sustainability within the context of UPI in India.

Fuzzy Cognitive Maps (FCM) model:

Fuzzy Cognitive Maps (FCMs) are mathematical models that employ fuzzy logic to represent complex systems. They consist of nodes representing concepts or variables interconnected by weighted edges, where each edge represents a causal relationship between two concepts. In mathematical terms, an FCM can be represented as follows:

Let N = {C1, C2, C3, ..., Cn} be the set of nodes representing concepts, where each Ci is a concept, and n is the total number of concepts. The relationships between these concepts are defined by a weighted adjacency matrix W, where Wij represents the weight of the causal link from concept Ci to concept Cj.

A set of differential equations typically describes the dynamics of the FCM:

$$dC_i/dt = \Sigma(W_{ij} * C_j) \text{ for all j in N,}$$

where, dC_i/dt represents the rate of change of the fuzzy value of concept Ci with respect to time t. This equation illustrates how the fuzzy value of each concept changes over time based on its causal links with other concepts and their respective weights. The sigmoidal or logistic activation function is often used to ensure that the fuzzy values of concepts remain within the range [0, 1].

Through iterative simulations and the application of these equations, FCMs allow us to model and analyze the dynamic behavior of complex systems, making them a valuable tool in fields such as artificial intelligence, decision support systems, and systems engineering.

Average Stability Index:

The mathematical formula for calculating the average stability index value can be expressed as follows: Let S be a vector representing the states of a concept over time, where S_i is the state of the concept at time step i. The average stability index value for a concept can be computed as:

$$= \frac{1}{N-1} \sum_{i=1}^{N-1} |S_{i+1} - S_i|$$

where:

- N is the total number of time steps or data points.

- $|S_{i+1} - S_i|$ represents the absolute difference between the state at time step i+1 and the state at time step i.
- The sum ($\sum$) is taken over all time steps from i = 1 to i = N-1 .
- Finally, the sum is divided by N-1 to compute the average.

This formula calculates the average absolute difference between consecutive states for a concept over a sequence of time steps, providing a measure of the concept's stability or how much it changes from one time step to the next on average.

3. Results and discussion

The study proposes the utilization of Fuzzy Cognitive Maps (FCMs) for scenario planning to enhance the development of resilient ecological policies. FCMs facilitate scenario construction and the visualization of potential outcomes by modeling causal relationships between various factors. In this framework, varying relationships between factors are represented, with blue arrows indicating positive causality. FCMs possess learning capabilities that aid in identifying missing links, thereby improving the accuracy of scenarios and enhancing our understanding of system dynamics.

In Figure 1, concepts are systematically categorized into three distinct sections, each with a specific role in comprehending the system's dynamics. The first section encompasses categories such Safer & Secured, User friendly, Zero transaction fees, Simple & easy to use, Save Working Time, Save Processing Time, Transaction Processing Cost Benefit, Other Cost Benefit, Level playing field for all Bank (New and smaller banks establishing themselves in the market) etc., categories are recognized as drivers. They are crucial in influencing the system's behavior and results.

The concepts in the ordinary section include variables such as Transaction are faster, Reliable, Satisfaction & Accountability, Travel costs Benefit, Suitable for e-Com & m-Com transaction, Resolves the COD collection problem, Boost Work force, Collective Market Size, Cash flow management, Customer engagement, Employment, Increased transparency, Instant pay get both buyer and sell good affordability, Reduced corruption, Reduction in black money, Financial stability, Improved financial inclusion, Better access to credit, Increased investment, Improved supply chain management, Increased entrepreneurship, Increased efficiency in government programs, Increased economic mobility etc.

The receiver section reflects the impact and consequences of the drivers and ordinary factors on the economy, which serves as a measure of the overall economic performance in the Indian economy. By categorizing the concepts into drivers, ordinary factors, and the receiver, the figure provides a framework for understanding the relationships and interactions among these components, highlighting the factors that influence the system and the ultimate outcome of interest.

Steady State Analysis:

In the context of Fuzzy Cognitive Mapping (FCM), steady-state analysis refers to the examination and determination of the equilibrium or stable states that a system can reach over time. FCM is a computational modeling technique used to represent and analyze complex systems with interconnected concepts or variables. Steady-state analysis in FCM involves finding the configurations of concept values within the map where the system has

reached a stable or balanced condition, meaning that the values of the concepts no longer change significantly.

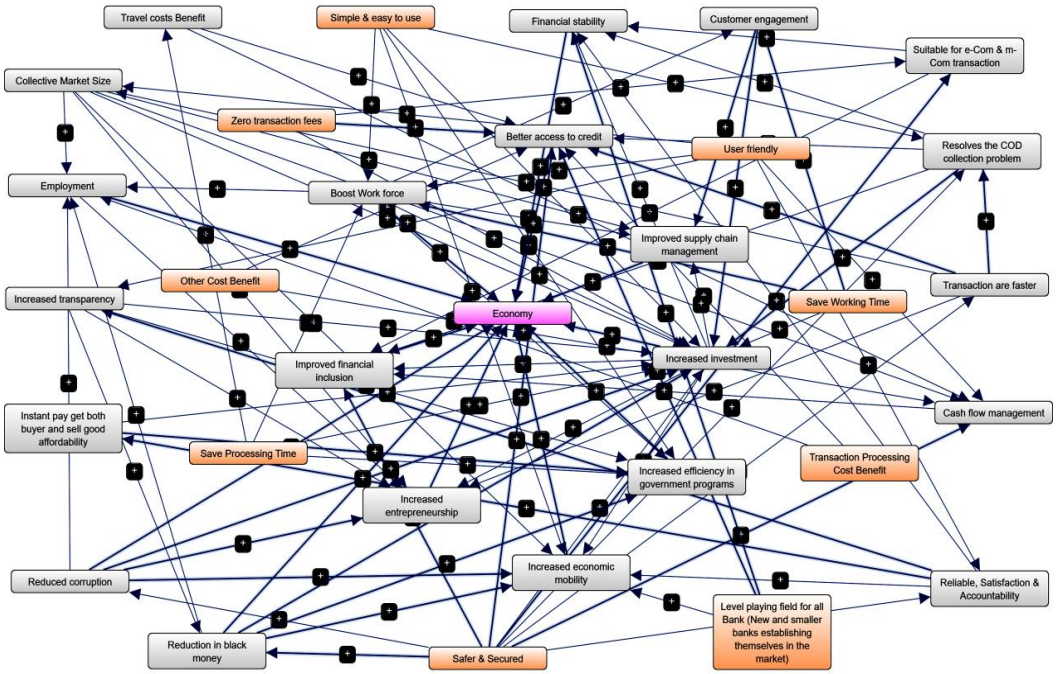

Figure 1: Conceptual Framework: Drivers, Ordinary Factors and Economy

Table 1: Summary of FCM statistics in steady-state analysis.

Total Components	32
Total Connections	99
Density	0.0998
Connections per Component	3.09375
Number of Driver Components	9
Number of Receiver Components	1
Number of Ordinary Components	22
Complexity Score	0.11111

The summarized statistics of the Fuzzy Cognitive Map (FCM) presented in the table provide a glimpse into the structure and characteristics of this complex model. With a total of 32 components and 99 connections, the FCM illustrates a moderately interconnected network with a density of 0.0998. On average, each component influences approximately 3.09375 others, indicating a web of relationships among the concepts. The presence of 9 Driver components signifies their influential role in driving the dynamics of the FCM,

while one component is labeled as a Receiver, implying its susceptibility to external influences. The majority, comprising 22 components, are categorized as Ordinary, suggesting their dual role as influencers and influenced entities within the network. The complexity score of 0.11111 highlights the overall intricacy of the FCM, reflecting the nuanced interplay of concepts. These statistics offer a valuable starting point for comprehending the inner workings of the FCM, enabling us to delve deeper into understanding the relationships and potential implications of these concepts within the context of the modeled system or domain.

Table 2: In degree, out degree, centrality and type of concepts in the FCM.

Component	Indegree	Outdegree	Centrality	Type
Economy	3.6	0	3.6	receiver
Safer & Secured	0	1.74	1.74	driver
User friendly	0	0.47	0.47	driver
Zero transaction fees	0	0.53	0.53	driver
Simple & easy to use	0	0.58	0.58	driver
Save Working Time	0	0.49	0.49	driver
Save Processing Time	0	0.27	0.27	driver
Transaction Processing Cost Benefit	0	0.24	0.24	driver
Other Cost Benefit	0	0.25	0.25	driver
Level playing field for all Bank (New and smaller banks establishing themselves in the market)	0	0.73	0.73	driver
Transaction are faster	0.03	0.57	0.6	ordinary
Reliable, Satisfaction & Accountability	0.23	0.87	1.1	ordinary
Travel costs Benefit	0.03	0.21	0.24	ordinary
Suitable for e-Com & m-Com transaction	0.32	0.06	0.38	ordinary
Resolves the COD collection problem	0.46	0.54	1	ordinary
Boost Work force	0.64	0.98	1.62	ordinary
Collective Market Size	0.21	0.82	1.03	ordinary
Cash flow management	0.68	0.14	0.82	ordinary
Customer engagement	0.28	0.62	0.9	ordinary
Employment	0.57	0.4	0.97	ordinary
Increased transparency	0.45	0.47	0.92	ordinary

Instant pay get both buyer and sell good affordability	0.17	0.42	0.59	ordinary
Reduced corruption	0.14	1.2	1.34	ordinary
Reduction in black money	0.25	1.26	1.51	ordinary
Financial stability	0.6	0.22	0.82	ordinary
Improved financial inclusion	0.69	0.29	0.98	ordinary
Better access to credit	1.7	0.34	2.04	ordinary
Increased investment	2.11	0.95	3.06	ordinary
Improved supply chain management	0.59	0.34	0.93	ordinary
Increased entrepreneurship	0.82	0.27	1.09	ordinary
Increased efficiency in government programs	0.96	0.31	1.27	ordinary
Increased economic mobility	1.25	0.2	1.45	ordinary

The table-2 detailing the Fuzzy Cognitive Map (FCM) presents a comprehensive overview of the interconnections and roles of various concepts within the network. These concepts, representing critical aspects in the modeled system or domain, exhibit diverse degrees of influence and centrality. Notably, 'Economy' emerges as a receiver with a high indegree, indicating its susceptibility to external factors but not influencing others. Conversely, 'Safer & Secured,' 'User friendly,' 'Zero transaction fees,' and other driver concepts exert substantial influence over other components, shaping the FCM's dynamics as pivotal drivers. The ordinary concepts encompass a wide range of factors, from 'Reduced corruption' and 'Improved financial inclusion' to 'Increased investment' and 'Increased economic mobility,' each contributing to the network's complexity. 'Increased investment' and 'Better access to credit' stand out with high indegrees and outdegrees, emphasizing their pivotal roles in influencing and being influenced by various factors. This FCM analysis offers a comprehensive understanding of how these concepts interact and influence one another within the modeled system, providing valuable insights for decision-makers and analysts seeking to navigate and optimize the complex dynamics at play.

Figure-2 illustrates an analysis in which all drivers are increased by 10 percent and examines their impact on the full FCM. This analysis is contrasted with the initial steady state scenario, which serves as the baseline for the study. The notable positive impacts of increased drivers across various factors are widespread. They notably affect the workforce positively by a significant 6%, leading to better employment opportunities and a more robust job market. Additionally, a 5% increase is observed in improved financial inclusion, making financial services more accessible to all sections of society. Access to credit experiences a substantial 13% boost, empowering individuals and businesses with easier access to funds. Investment grows by 9%, fostering economic growth and innovation, while

there's a noteworthy 6% increase in economic mobility, allowing people and businesses to participate more actively in the ever-evolving economy. The overall impact of these changes has a considerable 17% positive influence on the economy, reflecting the pivotal role of these factors in driving economic growth and prosperity. After launch, the Unified Payments Interface (UPI) has ushered in a transformative era in India's financial landscape. As the workforce has evolved, the fintech sector has experienced significant growth. Moreover, it has played an important role in improving financial inclusion, providing a convenient and accessible platform for digital transactions. This increased financial inclusion, in turn, facilitated better access to credit for individuals and small businesses, spurring economic activity. Additionally, the expansion of UPI has spurred investment, innovation and economic growth within the financial technology sector. As a result, UPI has not only improved financial access but also enhanced economic mobility, enabling individuals and businesses to participate more actively in India's evolving economy. As a result, the Indian economy has been greatly affected, and GDP growth has remained at a high level for the past few years.

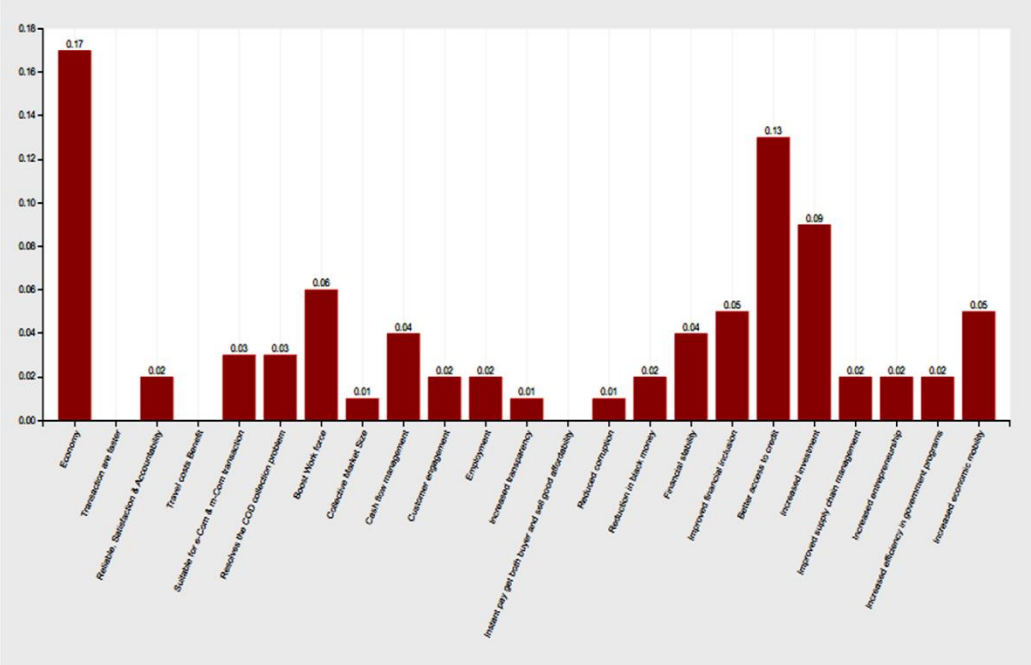

Figure 2: The impact of increasing driver concepts by 10% on the full FCM in the steady state

Similarly, all when drivers increase their utilization of UPI by 10%, it triggers a series of positive impacts on the economy. Reliable, Satisfaction & Accountability rise by 2%, contributing to trust and contentment among users. Suitability for e-Commerce & mobile Commerce transactions improves by 3%, enhancing the platform's convenience for digital transactions and fostering economic growth. The resolution of the COD collection problem sees a 3% boost, streamlining payment collection processes and ensuring smoother transactions. The Collective Market Size grows by 1%, expanding market participation and driving innovation. Cash flow management improves by 4%, allowing more efficient

financial handling and enhanced liquidity management. Customer engagement rises by 2%, fostering stronger relationships between businesses and customers. Employment increases by 2%, creating more job opportunities. Transparency improves by 1%, promoting clearer financial operations. Corruption reduces by 1%, enhancing the integrity of financial transactions. Financial stability gains 4%, creating a more secure financial environment. Supply chain management becomes 2% more efficient, streamlining logistical processes. Entrepreneurship rises by 2%, fostering innovation and job creation, while government programs become 2% more efficient, ensuring streamlined and effective initiatives. These changes reflect the dynamic nature of the economy and its sensitivity to various drivers, underlining the importance of understanding these impacts for informed policy decisions and a healthier economic environment.

Dynamic Scenario Analysis:

Now, the simulation represents an extreme case where all concepts behave as variables with semi-continuity. In this study the program runs for up to 100 iterations, and after a few iterations, all concepts converge within the FCM. Figure-3 shows how the concepts interact and influence each other in the given results. 'Safer & Secured' appears to be strongly influenced by other concepts after each iteration, with higher values indicating stronger influence and lower values indicating weaker influence. This plot also illustrates the strength and direction of dependencies between concepts. After two iterations, concepts such as Financial stability, Improved financial inclusion, Better access to credit, Improved supply chain management, Increased entrepreneurship, Increased efficiency in government programs, and Increased economic mobility appear to have lost their influence, as their values have all converged to zero. In the process of the simulation, it was observed that the convergence to zero occurred progressively for various concepts. Initially, after 3 iterations, approximately 39% of the concepts reached the state of convergence to zero. Subsequently, after 4 iterations, this percentage increased to 71%, signifying that a significant portion of the concepts had stabilized at zero values. As the simulation continued, the convergence trend persisted, with approximately 80% of the concepts reaching zero after 5 iterations and 93% after 6 iterations. Ultimately, after a total of 7 iterations, all the concepts within the system had achieved convergence to zero, indicating a high level of stability in the simulation results. During this iteration period, the average value of all driver concepts is greater than the average value of all ordinary concepts.

The FCM has reached a certain level of stability when the values in the matrix become relatively constant or converge to certain values. This indicates that the system has settled into a steady state, and the concepts are no longer changing significantly. the concept Safer & Secured having an Average Stability Index of 0.0119, and this value being statistically significant at the 7% significance level compared to others. A high Average Stability Index for a concept within an Fuzzy Cognitive Map (FCM) suggests that the values associated with that concept are relatively stable and experience minimal fluctuations during the simulation or iterative process. In the context of economic factors, a high Average Stability Index would indicate that the economic variables represented by that concept tend to remain steady and do not undergo significant changes over time within the FCM. The figure illustrates that there is minimal fluctuation in key aspects such as

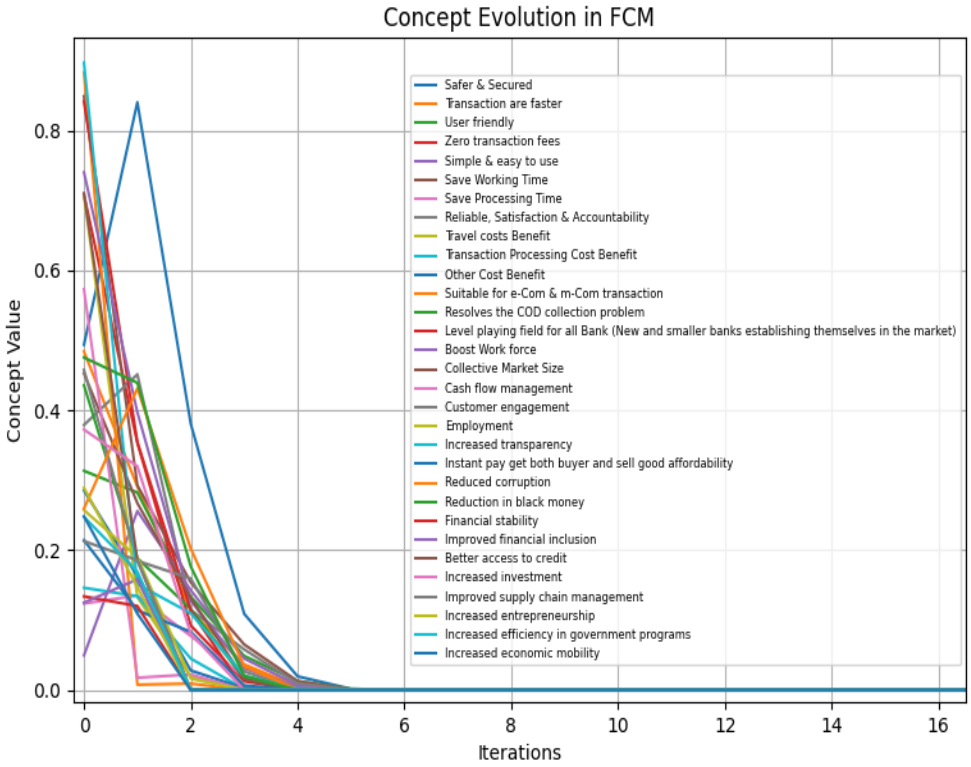

Figure 3: Dynamic view of the concepts in FCM

Safer & Secured, Zero transaction fees, Save Working Time, Level playing field for all Banks (including new and smaller banks entering the market), Travel cost benefits, Suitability for e-Commerce and mobile Commerce transactions, Boosting the workforce, Increased transparency, and Improved access to credit. These factors collectively contribute to a significant enhancement of UPI's efficiency, resulting in a profound impact on the economy. The concept of Save Processing Time, Transaction Processing Cost Benefit, Financial stability, and Improved financial inclusion exhibit the most fluctuation, which, to some extent, influences the economy.

4. Conclusion

The study highlights the effectiveness of Fuzzy Cognitive Maps in modeling complex systems, particularly in the context of UPI and its influence on the Indian economy. The developed FCM model categorizes concepts into drivers, ordinary factors, and the receiver, offering a structured framework to understand their interrelationships and the ultimate economic impact. Steady-state analysis reveals the stability of the system and the intricate web of relationships among various components, highlighting the pivotal role of driver concepts. The analysis of increased driver concepts shows the substantial impact of UPI on the economy, fostering growth, financial inclusion, and innovation. The study underscores

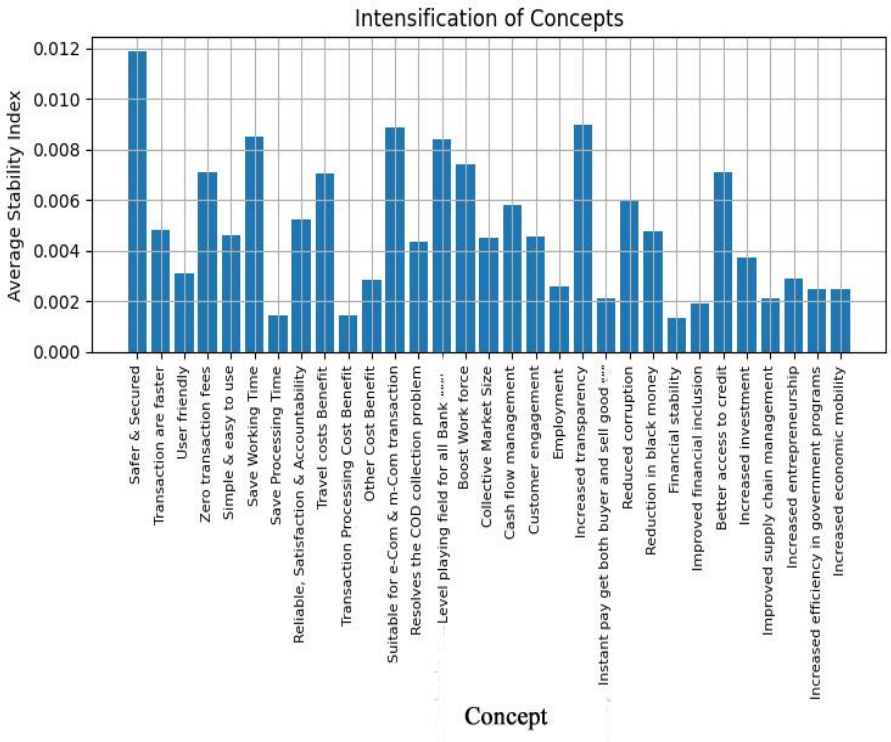

Figure 4: Average stability Index of the concepts in FCM

UPI's pivotal role in India's financial landscape, spurring economic growth, enhancing financial inclusion, and promoting access to credit and investment. This transformative impact has led to sustained GDP growth and economic development in the nation, showing the profound implications of UPI in shaping India's evolving financial ecosystem. Dynamic Scenario Analysis further illustrates the adaptability and resilience of UPI, as concepts converge to stable states, signifying minimal fluctuations. The analysis reveals that UPI operates with high stability, with key concepts like Safer & Secured, Zero Transaction Fees, Save Working Time, and Improved Access to Credit remaining relatively steady throughout the iterative process. These factors collectively highlight UPI's role in enhancing efficiency, promoting financial inclusion, and fostering economic growth. On the other hand, certain concepts like Save Processing Time, Transaction Processing Cost Benefit, and Improved Financial Inclusion exhibit more fluctuations, indicating the dynamic nature of UPI's influence. This study enhances our understanding of UPI's multifaceted impact and highlights its adaptability in the face of changing circumstances. UPI's enduring stability and adaptability position it as a cornerstone in India's financial future, paving the way for sustained growth, innovation, and expanded financial inclusion.

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Appendix:

Concept Name	Average Stability Index	Error Value	Minimum Value	Maximum Value	Mean Value	Standard Deviation	Variance	T-Statistic	P-Value
Safer & Secured	0.0119	0.6429	0	0.84	0.0183	0.103	0.0106	1.7716	0.0795

Transaction are faster	0.0048	0.2752	0	0.4838	0.0092	0.0567	0.0032	1.6233	0.1077
User friendly	0.0031	0.1782	0	0.3133	0.0078	0.0436	0.0019	1.7974	0.0753
Zero transaction fees	0.0071	0.4481	0	0.7084	0.0115	0.0785	0.0062	1.4718	0.1442
Simple & easy to use	0.0046	0.2577	0	0.2558	0.0049	0.0295	0.0009	1.6787	0.0963
Save Working Time	0.0085	0.5825	0	0.8487	0.0136	0.0898	0.0081	1.5136	0.1333
Save Processing Time	0.0015	0.0846	0	0.1349	0.0035	0.0195	0.0004	1.8114	0.0731
Reliable, Satisfaction & Accountability	0.0052	0.3526	0	0.4511	0.01	0.0592	0.0035	1.6942	0.0933
Travel costs Benefit	0.0071	0.5867	0	0.7079	0.0085	0.0712	0.0051	1.199	0.2334
Transaction Processing Cost Benefit	0.0015	0.1001	0	0.146	0.0032	0.02	0.0004	1.6179	0.1088
Other Cost Benefit	0.0029	0.184	0	0.2853	0.0047	0.0324	0.0011	1.4589	0.1477
Suitable for e-Com & m-Com transaction	0.0089	0.8751	0	0.8826	0.0089	0.0874	0.0076	1.019	0.3107
Resolves the COD collection problem	0.0044	0.2767	0	0.4355	0.0075	0.048	0.0023	1.5572	0.1226
Level playing field for all Bank (New and smaller banks establishing themselves in the market)	0.0084	0.5549	0	0.8413	0.013	0.0906	0.0082	1.4307	0.1556
Boost Work force	0.0074	0.4477	0	0.7401	0.0129	0.0836	0.007	1.538	0.1272
Collective Market Size	0.0045	0.2578	0	0.4526	0.0086	0.0532	0.0028	1.6122	0.1101
Cash flow management	0.0058	0.5558	0	0.5728	0.0061	0.0567	0.0032	1.0686	0.2878
Customer engagement	0.0046	0.3058	0	0.4576	0.0082	0.051	0.0026	1.6073	0.1111
Employment	0.0026	0.187	0	0.2571	0.0046	0.0315	0.001	1.4553	0.1487
Increased transparency	0.009	0.7521	0	0.8966	0.0117	0.0904	0.0082	1.2919	0.1994
Instant pay get both buyer and sell good affordability	0.0021	0.13	0	0.2141	0.0041	0.0252	0.0006	1.6418	0.1038
Reduced corruption	0.006	0.3339	0	0.4312	0.0092	0.0533	0.0028	1.7219	0.0882
Reduction in black money	0.0048	0.3084	0	0.4753	0.011	0.0659	0.0043	1.6701	0.098

Financial stability	0.0013	0.1207	0	0.1337	0.0025	0.0177	0.0003	1.4192	0.1589
Improved financial inclusion	0.0019	0.1616	0	0.1581	0.0028	0.0198	0.0004	1.4114	0.1612
Better access to credit	0.0071	0.5564	0	0.71	0.0089	0.0725	0.0053	1.2232	0.2241
Increased investment	0.0037	0.2578	0	0.3722	0.0076	0.0489	0.0024	1.5645	0.1209
Improved supply chain management	0.0021	0.1874	0	0.2128	0.0039	0.0278	0.0008	1.4179	0.1593
Increased entrepreneurship	0.0029	0.2044	0	0.289	0.0043	0.032	0.001	1.3504	0.1799
Increased efficiency in government programs	0.0025	0.1863	0	0.2474	0.0041	0.0295	0.0009	1.3963	0.1657
Increased economic mobility	0.0025	0.1767	0	0.2481	0.0035	0.0267	0.0007	1.3228	0.1889