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EVOLUTION AND GROWTH OF PAYMENT SYSTEMS IN THE DIGITAL AGE

Diksha Pawar[1*], Dr Vijay Kumar[2]

[1]Research Scholar, Department of Commerce, DSB Campus, Nainital

[2]Associate Professor, Department of Commerce, DSB Campus Kumaun University, Nainital.

***Corresponding Author**
Diksha Pawar
Research Scholar, Department of Commerce, DSB Campus, Nainital.

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Abstract: Changes in technology brings in changes in the way we live and that holds true for every aspect of human living. With such change in technology our banking habits and needs have evolved as well. And the paper throws light on some interesting recent data siphoned from the rbi reports. We studied the dynamics of modern credit payment systems in terms of their volume and values on year-on-year basis from 2018 -19 to 2022-23. The data indicated some interesting revelations as to how successful the modern child of digital banking namely UPI really is and how all the credit payments faired against each other in this technological race. Some thrived and grew and some even went extinct. We also see how NEFT payment system has been so potent in carrying retail transactions of larger absolute amount. Overall, a great picture is seen on all round basis for the development of India and its financial inclusion of larger population.

Keywords: Digital payment, payment modes, NEFT, UPI, volume and value transact.

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INTRODUCTION

A digital payment system is an electronic technique of transferring money or doing transactions without the requirement for physical cash or cheque. These systems employ digital technologies, including the internet, mobile devices, and electronic banking platforms, to assist financial transactions.

Digital payment systems, consist of gateways, wallets, mobile payments, cryptocurrencies, bank transfers, and POS systems, proposes convenience and security but confront challenges like cyber risks, technical issues, digital divide, and regulatory obedience. Digital payment systems include user- started transactions, identity authentication, payment authorization, fund transfers concerning accounts, transaction complete confirmation via notifications, and settlement of funds with concerning financial institutions. Digital payment systems tender convenience, speed, security, automated record-keeping, and cost-effectiveness by permitting anytime, anywhere transactions, instant dealing out, fraud protection, expenditure tracking, and lowered need for physical infrastructure.

Digital payment systems confront security risks, technical issues, digital divide, regulatory compliance tasks, and privacy points, requiring robust actions to shield against cyber-attacks, confirm reliability, and secure user data.

In 2020, India had ampler real-time online transactions than nations like China and the US. The nation carries out 25.5 billion real-time payments transactions, tailed by China with 15.7 billion, South Korea with 6 billion, Thailand with 5.2 billion, and the UK with 2.8 billion. With 1.2 billion transactions, the US arrived in ninth place amongst the top 10 nations (Financial Express, 2021). In the year 2021, digital commerce transactions growth in India at the rate of 30% was far more than the average global growth. Indian Startups played a substantial part in shaping India's digitalization. In 2021 India ensured the third rank in terms of the number of startups thus joining the unicorn club and was next to the US and China (Reserve Bank of India, 2022).

A retail payment system in the framework of digital payment systems indicates to the infrastructure and procedures that enable the transmission of funds for retail transactions, usually involving the purchase of goods and services by consumers. These systems are draw up to manage a high volume of low-value transactions efficiently and securely. Retail payment systems encounter security risks, technical issues, accessibility challenges, regulatory compliance, and privacy concerns, making them exposed to cyber-attacks, disruptions, and data abuse. Despite challenges, incessant advancements in technology and security measures endeavour to enhance their reliability and accessibility.

Retail payments can be broadly categorized into various segments, each with specific types of transactions. Credit transfers include methods such as AePS (Fund Transfers), APBS, ECS Cr, IMPS, NACH Cr, NEFT, and UPI, facilitating the electronic transfer of funds. Debit transfers and direct debits involve BHIM Aadhaar Pay, ECS Dr, NACH Dr, and NETC (linked to a bank account) for pulling funds from an account. Card payments are made using credit cards and debit cards. Prepaid payment instruments allow users to make transactions using preloaded funds. Additionally,

paper-based instruments represent traditional methods of payment. The total retail payments encompass all these segments.

REVIEW OF LITERATURE

(Angamuthu, 2020) The study studied the growth of digital payments in India from 2012-2013 to 2018-2019, analysing the number and value of transactions through seven parameters: RTGS, CTS, debit and credit cards, IMPS, M-Wallet, and PPI cards. Outcome showed major growth, particularly in IMPS and M-Wallet services, underlining their impact on the digital payments landscape. The convenience and efficiency of digital transactions are driving the economy towards a cashless world.

(Pal, De', & Herath, 2020) The study examines mobile payment technology's part in sustainable, human-centric progress in post-demonetization India, using Schumacher and Sen's theories. It employs secondary data from a national survey and USAID, along with primary data from 41 interviews. Results highlight the necessity for enhanced inclusion of small vendors and extended rural cash-to-wallet services to aid the unbanked and underprivileged.

(Ravikumar, Murugan, Suhashini, & Rajesh, 2020) The researcher investigated digital payments in developed and transpiring economies with special focus to India. Digital payments have displayed growth in all types of businesses both, small and large. The study regained that India is steadily growing near being a cashless economy, but still, a lot needs to be performed.

(Ravikumar, Suresha, Sriram, & Rajesh, 2019) studied the impact of digital payments on economic growth in relations of real Gross Domestic Product (GDP). They concluded that bulky digital payments and retail electronic payments do not have straight effect on economic growth. These payments may secondarily affect economic growth by means of lower cost, convenient and speedy economic transactions.

(Vasan & Senthil, 2017) The development of RTGS, mobile banking, NEFT, and ECS has notably impacted electronic payment systems. Study of RTGS and mobile transactions from 2006 to 2017 highlights the requirement for capability building in systems and human resources within the industry and RBI. Confirming seamless business continuity and minimizing cybercrimes are also vital.

OBJECTIVES

1. To study the growth of payment systems in the digital era.
2. To analyse the transaction volume and value dynamics of different payment systems used in modern banking.

RESEARCH METHODOLOGY

The research examines the growth in digital retail credit segment payments in India. It uses secondary data from, the RBI Bulletin, RBI Annual Reports, RBI Reports, research articles and reliable websites. This analysis is both descriptive and analytical. Data on Payment System Indicators has been gathered from the RBI Bulletin, RBI Annual Reports, and RBI Reports for the analysis. The growth of digital payments over a five-year period, from 2018-19 to 2022-23, has been examined. Different digital payment modes that are AePS, APBS, ECR, IMPS, NACH, NEFT and UPI in India have been studied over the same five-year period. The yearly comparative trend of different credit payment systems is analysed in terms of volume and value.

COMPARATIVE TRENDS OF DIFFERENT RETAIL CREDIT PAYMENT SYSTEM

AePS (Aadhaar Enabled Payment System): AePS permits Aadhaar cardholders to conduct banking transactions using their Aadhaar number and biometric authentication. It eases services like balance inquiry, cash withdrawal, cash deposit, and fund transfer. Example: Withdrawing cash from a micro-ATM using an Aadhaar number and fingerprint authentication.

APBS (Aadhaar Payments Bridge System): APBS is a system that uses Aadhaar numbers to route electronic credits to the Aadhaar-enabled bank accounts of beneficiaries. It is primarily used for transferring government subsidies and benefits. Example**:** Direct Benefit Transfer (DBT) of LPG subsidies to a consumer's bank account.

ECS (Electronic Clearing Service): ECS is an electronic mode of payment for bulk transactions. It can be used for both credit (payments) and debit (collections) purposes. It is used for transactions like utility bill payments, loan repayments, and insurance premium payments. Example**:** Automatic monthly debit of EMI for a loan from a customer's bank account.

IMPS (Immediate Payment Service): IMPS is a real-time interbank payment system in India that allows instant, 24/7 fund transfers via mobile phones, internet banking, ATMs, and SMS. Example**:** Instant money transfers between two bank accounts using a mobile banking app.

NACH (National Automated Clearing House): NACH is a centralized system for bulk and repetitive transactions, like salaries, dividends, interest, pension payments, and bulk electronic transfers. It handles both credit and debit transactions. Example**:** Monthly salary disbursement by an employer to its employees.

NEFT (National Electronic Funds Transfer): NEFT is an electronic payment system in India that facilitates the transfer of funds from one bank account to another on a one-to-one basis. It operates on a deferred settlement basis, meaning transactions are processed in batches. Example**:** Transferring funds from a savings account in one bank to a current account in another bank.

UPI (Unified Payments Interface): Unified Payments Interface (UPI) integrates multiple bank accounts into a single app, combining banking features, fund routing, and merchant payments, while also supporting "Peer to Peer" collect requests. Example**:** Paying for groceries at a store using a mobile app like Google Pay or PhonePe.

Volume of payment refers to the number of transactions conducted within a specific period, highlighting the frequency and usage of different payment methods.

Value of payment indicates the total monetary worth of transactions over a given period, reflecting the economic significance and financial impact of various payment types.

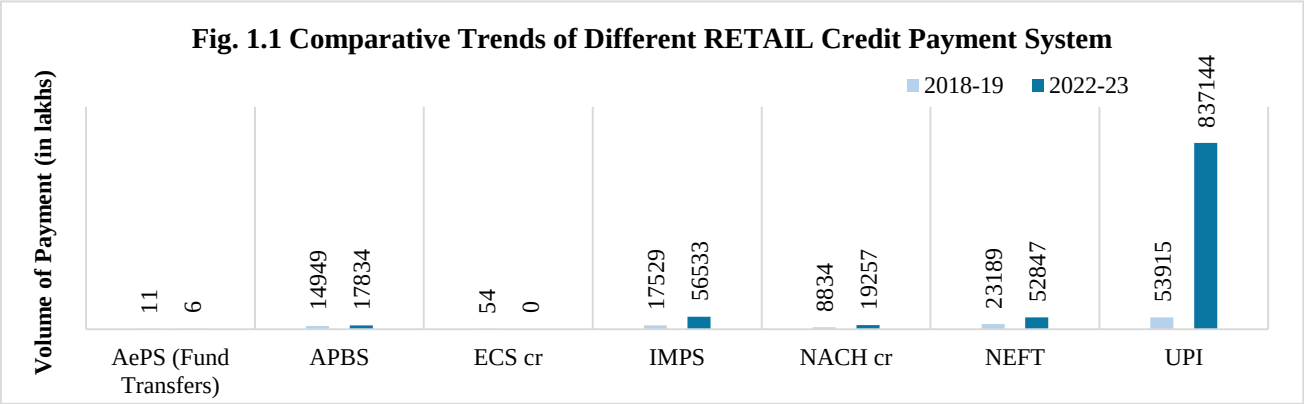
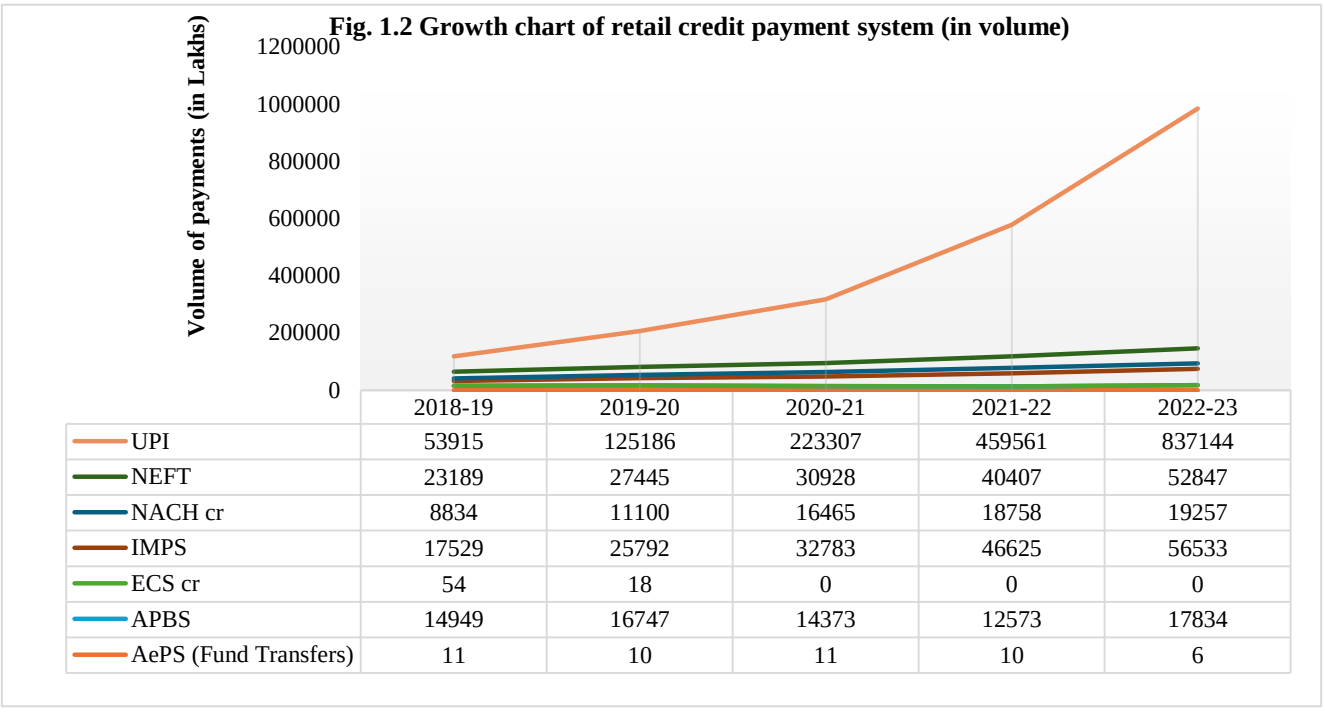


Fig 1.1 Compares comparative trends of different retail credit payment systems, volume of payment. The study direct comparison of 2018-2023. The total retail credit transfer volume from 1,18,481 lakh in 2018-19 drastically increased to 9,83,621 lakhs in 2022-23, with the growth rate of 730.19 % in mere 5 years. UPI shows the maximum growth in volume from 53,915 lakhs to 8,37,144 lakhs with the growth of 1452.71%. Interestingly a few previously prevalent systems like AePS and ECS went onto the verge of extinction.



	2018-19	2019-20	2020-21	2021-22	2022-23
UPI	53915	125186	223307	459561	837144
NEFT	23189	27445	30928	40407	52847
NACH cr	8834	11100	16465	18758	19257
IMPS	17529	25792	32783	46625	56533
ECS cr	54	18	0	0	0
APBS	14949	16747	14373	12573	17834
AePS (Fund Transfers)	11	10	11	10	6

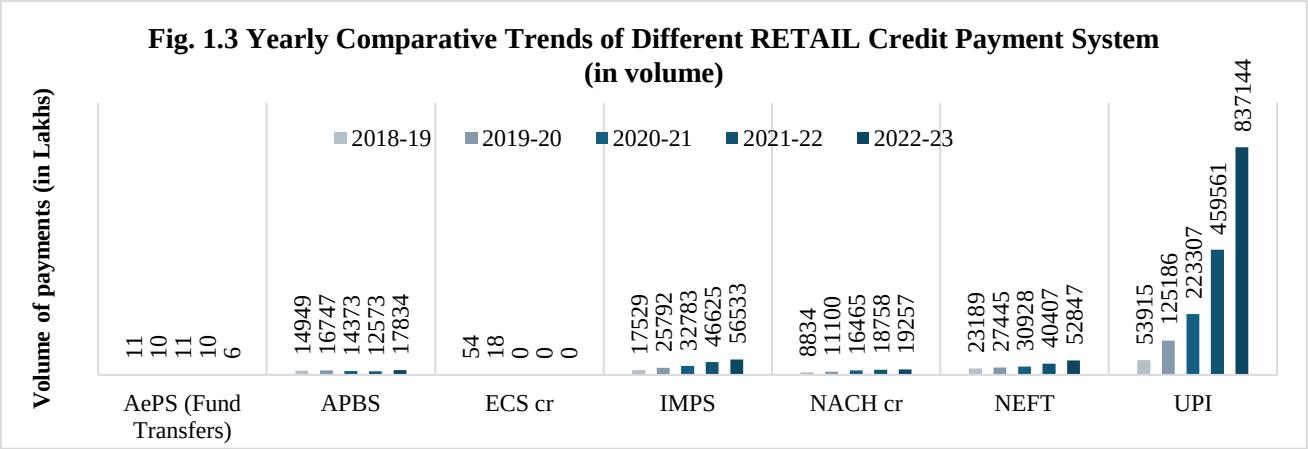
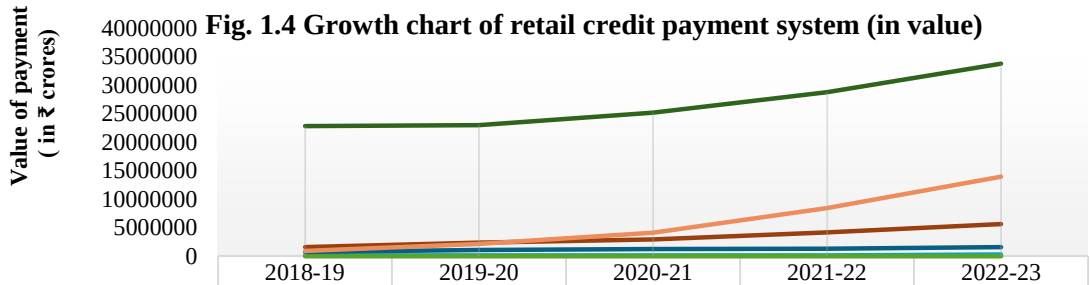


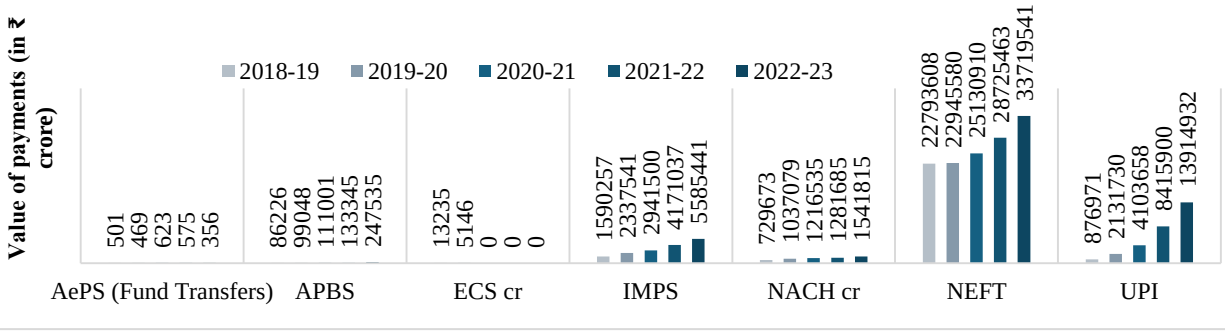
Fig. 1.2 and 1.3 demonstrate growth and yearly comparison in volume bases respectively, different modes show diverse growth rate from 2018-19 to 2022-23, AePS exhibits 4.58%, APBS 19.29%, ECR-100%, IMPS 222.511%, NACH 117.98%, NEFT 127.89% and UPI 1452.71%. We see a healthy rise in the volume of payment, UPI shows the maximum growth on year-on-year basis, followed by IMPS, NFFT which shows upward trend whereas NACH, APBS show liner trend while AEPS and ECR show downward trend, and they are in the edge of termination.

Fig. 1.4 Growth chart of retail credit payment system (in value)



	2018-19	2019-20	2020-21	2021-22	2022-23
AePS (Fund Transfers)	501	469	623	575	356
APBS	86226	99048	111001	133345	247535
ECS cr	13235	5146	0	0	0
IMPS	1590257	2337541	2941500	4171037	5585441
NACH cr	729673	1037079	1216535	1281685	1541815
NEFT	22793608	22945580	25130910	28725463	33719541
UPI	876971	2131730	4103658	8415900	13914932

Fig. 1.5 Yearly Comparative Trends of Different Credit Payment System (in value)



Figures 1.4 and 1.5 illustrate the growth and yearly comparison of retail payment values from 2018-19 to 2022-23. Total retail credit value surged from ₹2,60,90,471 crore to ₹5,50,09,620 crore, a 110.96% increase. Specific modes showed varying growth rates: AePS decreased by 28%, APBS grew by 187.07%, ECS Cr decreased by 100%, IMPS increased by 111.32%, NACH by 111.30%, NEFT by 47.93%, and UPI by 1486.70%. UPI's remarkable growth is due to its widespread adoption in India. Although the overall value of payments increased, NEFT had the highest transaction value of ₹3,37,19,541 crore, while UPI, despite high growth, had ₹1,39,14,932 crore, 41.27% of NEFT's transactions.

Fig. 1.6 volume payment comparison of Different Credit Payment System

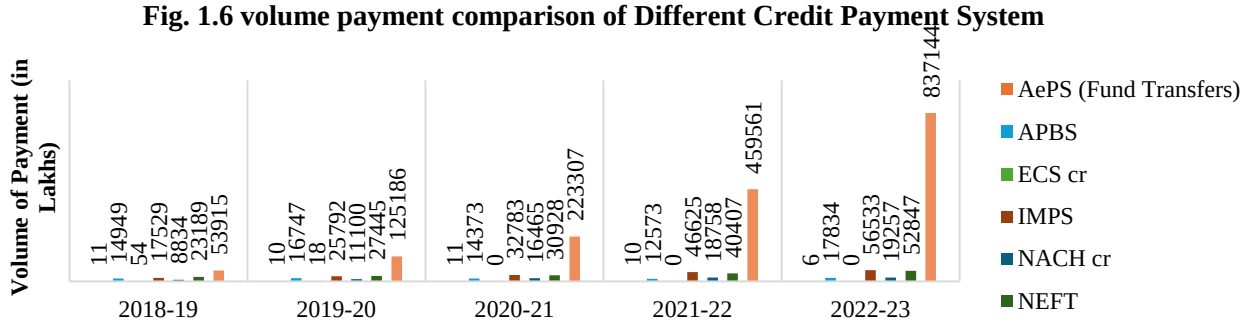
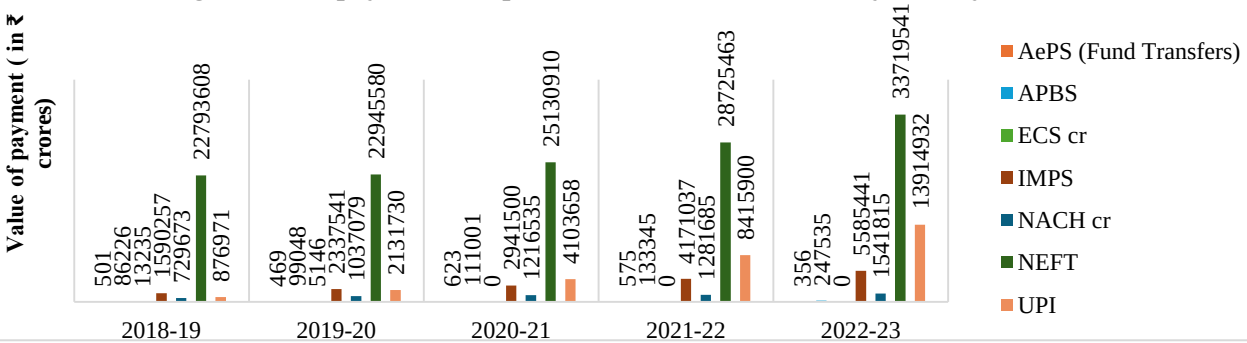


Fig. 1.7 value payment comparison of Different Credit Payment System



We see an exponential rise in the volume of digital payments which is apparent, but UPI payment system outperformed other systems. This can be mainly attributed to the ease of access and prevalence of UPI systems in all India level. When we compare the volume of payment of UPI to the value of payment its ratio goes along with each other in a linear fashion whereas for NEFT the ratio increase in volume to that of the increase in the value is massively skewed to the value side of the payment, since people use NEFT for bigger value transactions and for small amount UPI is used. The sharp increase in total value payment of NEFT also indicate that tracking of money must be easier for the banks and governments which again fulfils the need for a much safer banking.

CONCLUSION

The data analysed is from the rbi reports which gave us the yearly numbers on credit payment system's variables, variables namely volume of payments and value of payments. The data suggests that UPI has been massively successful in both growth of total payment systems and value of transactions across the above-mentioned time frame. Systems like NEFT, IMPS and NACH showed good healthy linear growth, although few systems went on a downward trend. We also observed that although UPI is the clear winner in this digital race the NEFT payment system is the foremost payment system for larger retail credit transfers in India. All in all, this wonderful growth indicates inclusion and growing awareness amongst masses regarding banking and financial literacy. The technology will evolve and continue to do so and nation along with it.

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