



CRYPTOCURRENCIES AS A TREND FOR FUTURE DEVELOPMENT OF CROSS-BORDER TRANSACTIONS ON THE EXAMPLE OF RIPPLE

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Introduction

Digitalization has permeated practically every facet of contemporary life, including financial matters. Faster, safer and less expensive payment options both inside and outside of nations have become necessary as technology has developed. When platforms like PayPal and Qiwi emerged, providing substitute methods of digital payments, the banking sector saw notable transformation. These systems have struggled, however, with security concerns, long transaction processing times, and exorbitant costs. These issues helped to shape a fresh technology called the blockchain.

First deployed in 2009, blockchain technology produced Bitcoin, the first distributed cryptocurrency. From an experiment to a potent financial tool, the bitcoin market has changed significantly since then. Millions of people worldwide today utilize cryptocurrencies not only for savings but also for foreign transactions, investments, even the development of distributed financial apps (Abbreviation used DeFi).

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The history of the emergence of cryptocurrencies

An unidentified person or group of persons going by Satoshi Nakamoto developed Bitcoin, the first cryptocurrency. The concept was to design a distributed money system capable of operating apart from central banks or government departments. Blockchain, a distributed ledger system guaranteeing the security and openness of every transaction, has evolved as the fundamental component of Bitcoin².

At first, coins were seen as dangerous and niche investments. But their appeal has grown over time, and big financial institutions have drawn notice to the blockchain's creative powers. Other cryptocurrencies, such as XRP³ and Ethereum, have started to offer other characteristics. For instance, Ethereum created the foundation for smart contracts and distributed apps, therefore inspiring the growth of decentralized finance (DeFi). By providing quick and reasonably priced transfers, XRP then emphasizes on addressing cross-border payment issues.

The Traditional Cross-Border Payment System

Overview of Current Systems

Investment, remittances, and international trade all depend on cross-border payment systems. But these systems sometimes rely on conventional infrastructure, like correspondent banking networks – which have been the backbone of world financial transactions for decades – and SWIFT (Society for Worldwide Interbank Financial Telecommunication).

Connecting banks all around, the SWIFT network serves as a messaging tool enabling

² See for details: The history of cryptocurrency. Available from: <https://www.bitstamp.net/learn/crypto-101/the-history-of-cryptocurrency/> [Accessed March 6, 2025]; The Impact of Cryptocurrencies on Online Payments. Available from: <https://www.bitstamp.net/learn/crypto-101/the-impact-of-cryptocurrencies-on-online-payments/> [Accessed March 6, 2025]

³ Ripple (XRP) is more than just another cryptocurrency; it's designed to facilitate faster and cheaper money transfers compared to traditional banking methods. Ripple's system ensures near-instant transactions with minimal fees, making it an efficient way to send and receive money globally. Since its launch in 2012, Ripple has gained popularity and is used by banks and companies to streamline transfers. As a leading digital asset infrastructure provider in the financial services industry, Ripple offers solutions for instant transactions and tokenization management. Currently, XRP, Ripple's cryptocurrency, is trading at \$2.19, with a 24-hour trading volume of over \$6 billion.



payment instructions exchange. Conversely, correspondent banking is the arrangement whereby financial institutions cooperate to handle foreign exchange operations. Particularly in cases of absent direct links between the sending and receiving banks, these networks depend on middlemen banks to enable transactions.

Payments across borders via these conventional procedures can be costly. For retail payments, fees cover middleman charges, foreign exchange conversion fees, and service fees – which can run between 3-7% of the transaction value. Businesses may pay different fees based on transaction size and currency combinations. Processing timeframes vary from two to five business days since transactions pass several institutions for compliance checks and settlement.

Many people and small companies – especially in developing countries – face obstacles to using conventional cross-border payment methods. Often excluding the unbanked and underbanked groups, the demand of a formal banking relationship and strict compliance procedures leaves these people dependent on unofficial or expensive remittance services.

Challenges in Traditional Payments

With 92% of predicted worldwide B2B cross-border payment flows handled by traditional banking systems – which have been the backbone of international payments – they dealt handled Nowadays, institutions and related payment networks rely on outdated SWIFT systems that need many middlemen. Moving money across borders has always therefore rather costly and time-consuming. Small and medium-sized companies (SMEs) have great trouble executing transactions typically requiring several days to clear.

High expenses were one of the main issues noted by over half of Citibank's business clients. For 59% of the responders, slow rates sparked worries. At an 11% rate in 2024, cross-border transactions for US e-commerce firms failed losing USD 3.8 billion in revenues lost. Given that by 2028 one-third of all e-commerce purchases are predicted to be international, reasonable solutions must be implemented.

One advantage is that cryptocurrencies and blockchain technology seem to be feasible means to alter the landscape. Peer-to-peer mechanisms of blockchain assist businesses to settle payments directly with minimum transaction costs, therefore

reducing middle-man involvement.

Usually needing days, cryptocurrencies lets international transactions run in minutes or seconds. In industries including manufacturing, financial services, and commodities trading where the whole flow of world ecosystems rely on the effective management of capital and liquidity and runs at a fast pace, this is very useful. Companies are noticing these benefits increasingly.

According to Deloitte's 2024 research, 93% of global stores using cryptocurrencies report better consumer metrics. Although conventional cross-border payment systems have helped to sustain world economic growth, they are rife with inefficiencies and problems that restrict their use in a fast changing digital economy.

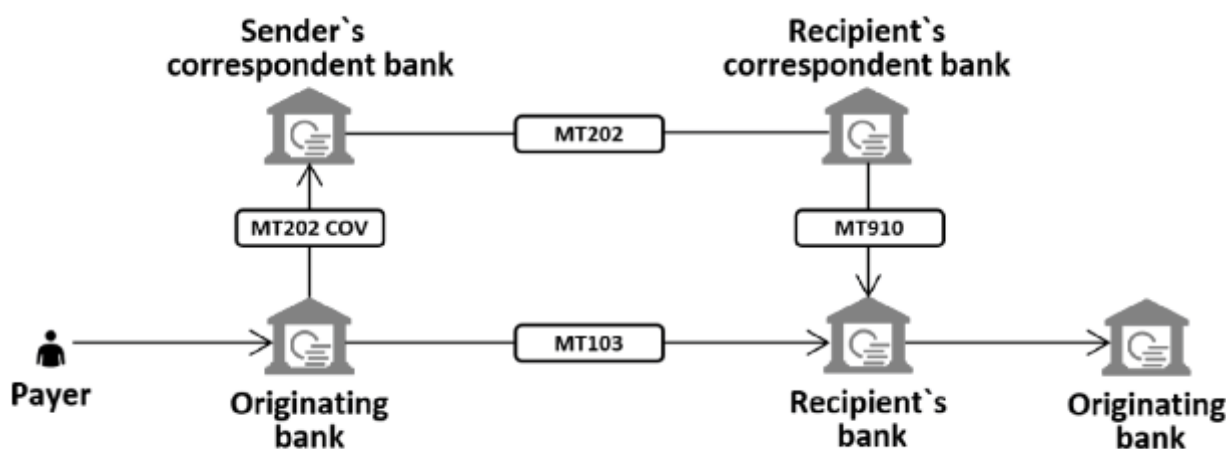
The lack of openness of conventional systems is one of their main shortcomings. When a transaction calls for several middlemen, the sender has little control over the payment flow. Monitoring financial situation can be difficult, and extra costs charged by middlemen banks sometimes surprise us.

The restrictions of old systems disproportionately influence developing economies. Over 1.4 billion adults globally, according to the World Bank, still lack bank accounts. Cross-border payments are either unaffordable or impossible for people living in these areas as well as companies. High fees and reliance on middlemen aggravate this exclusion, therefore slowing down economic progress in underdeveloped regions.

For millions of people, remittances – money migrants send to their homes – are their main source of income. Still, delays and expensive fees define the conventional remittance process. Data from the World Bank shows that the world average cost of delivering \$200 stays above 6%, much above the UN aim of 3%. In areas like Sub-Saharan Africa, these expenses might be more than 8%, therefore draining family income. Funds coming days or even weeks later than expected can also come from delays brought on by compliance inspections and the involvement of several banks.

These inefficiencies show how urgently cross-border payment systems need innovation, which opens the path for blockchain and bitcoin-based solutions to handle long-standing problems.

Picture 1
Scheme of SWIFT operations



Author's chart, database Anna Churakova⁴

Legend:

Message type (MT): Message structure. MT – category, group, type.

MT103 Single Customer Credit Transfer: This is a standard proof of payment document issued by any bank or institution sending money through the SWIFT network. It requires a signature, has a maximum length of 10,000 characters, and is not subject to mass generation (MUG).

MT202 General Financial Institution Transfer: Used for transferring funds between financial institutions. It's not used if the transfer is related to a customer credit transfer sent via the "cover" method (in which case, MT 202 COV is used). It requires a signature, has a maximum length of 10,000 characters, and is not subject to mass generation.

Mt910 Confirmation of Credit: Notifies an account owner of a credit to their account. It does not require a signature, has a maximum length of 2000 characters, and is not subject to mass generation. (See for details: SWIFT. Standards MT November 2022, p.24, 25-26, 45; Taquet, K. & A. Hotat. SWIFT. Standards MT Release 2025; DEUTSCHE BÖRSE GROUP. Cross-border Payments and Reporting).

Place of cryptocurrencies in the contemporary financial system

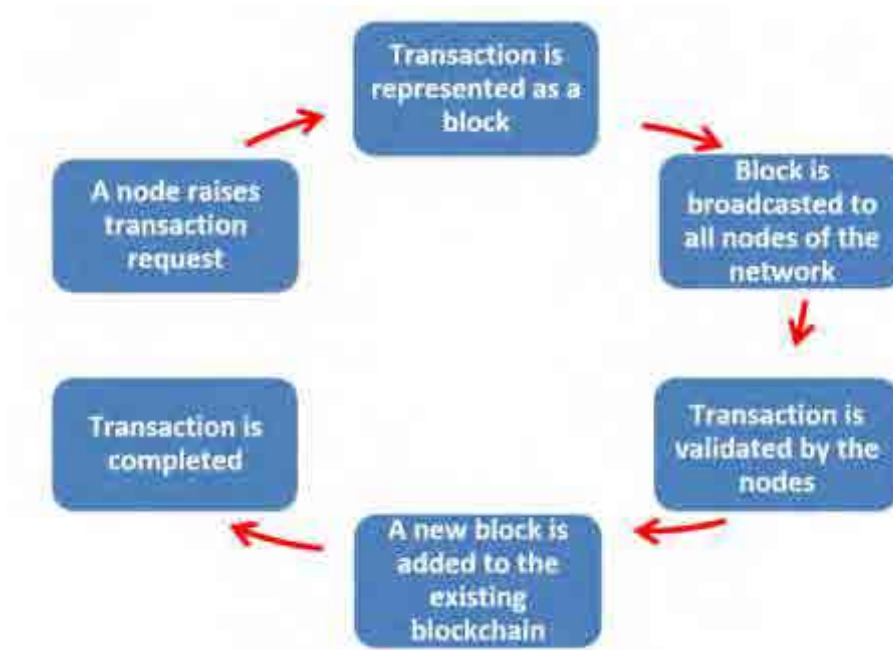
Over the past few years, cryptocurrencies' place in the global financial system has evolved drastically. Originally seen as speculative assets, they are now becoming increasingly important for the world economy particularly in relation to international transfers and dispersed financial services.

Recent years have seen XRP and Ripple especially important in contemporary banking systems. Particularly crucial for cross-border trade and money flows to developing nations, these assets are especially made to offer quick and reasonably priced foreign transfers.

⁴ Churakova, A. Blockchain vs SWIFT: Which System Will Shape the Future of Cross-Border Payments? How SWIFT Payment Works. Available from: <https://b2binpay.com/vi/news/blockchain-vs-swift> [Accessed March 6, 2025]



Picture 2
Scheme of blockchain operations



XRP: the leader of cross-border payments

Ripple created XRP to solve the issues with delayed and costly foreign transfers common of conventional banking systems like SWIFT. RippleNet lets banks and other financial institutions use XRP for real-time liquidity (On-Demand Liquidity, ODL), therefore removing the need to retain cash in foreign currencies in nostro accounts across several nations.

XRP appeals to banks and payment systems all around since it offers quick completion of transactions with little cost. By 2024, RippleNet has more than 300 partner financial institutions, including Japanese banks, American Express, and Santander – among other big banks.

Regulation of Cryptocurrencies in Japan

Among first nations to enact laws on cryptocurrency is Japan. Adopted in 2017, the payment services legislation formally acknowledged cryptocurrency as a lawful form of payment. This law also created guidelines for digital asset transactions and bitcoin exchanges, which attracted Japan as a market for businesses engaged in cryptocurrencies.

Ripple and XRP technologies are greatly promoted by the regulatory environment of Japan. Working hard to provide safe and open circumstances for cryptocurrency transactions, the

Financial Services Agency of Japan (FSA)⁵. This creates chances for financial institutions and drives innovation forward.

The rules and guidelines set by the FSA have helped many Japanese financial institutions start including blockchain technologies and cryptocurrencies into their systems. This gives Japanese banks a competitive edge internationally so they may draw in outside business and enhance their offerings.

Partnerships between Ripple and Japanese banks

Japan was among the first nations where strategic alliances and a favorable legal climate let ripple and XRP find general adoption. SBI Holdings is one of Ripple's most important Japanese associates. They established SBI Ripple Asia in 2016 as a joint venture actively pushing blockchain technology application for cross-border payments.⁶

⁵ Japan Poised to Cut Crypto Taxes and Redefine Digital Assets by 2025. Available from: <https://www.bitget.com/news/detail/12560604243338> [Accessed March 6, 2025]

⁶ Santosdiaz, R. From Tradition to Transformation: How is Fintech Reshaping the Financial Landscape in Japan? (October 1, 2024). THE FINTECH TIMES. Available from: <https://thefintechtimes.com/fintech-landscape-of-japan/>. [Accessed March 8, 2025]



Furthermore, joining RippleNet to test and use blockchain – based solutions are big Japanese institutions as MUFG, Sumitomo Mitsui Financial Group, and Resona Bank. Working together, they hope to establish a more affordable and effective worldwide transmission system.

Advantages of using XRP for Japanese Banks

Adoption of XRP by Japanese institutions offers several concrete advantages, particularly in the context of cross-border payments. Among these:

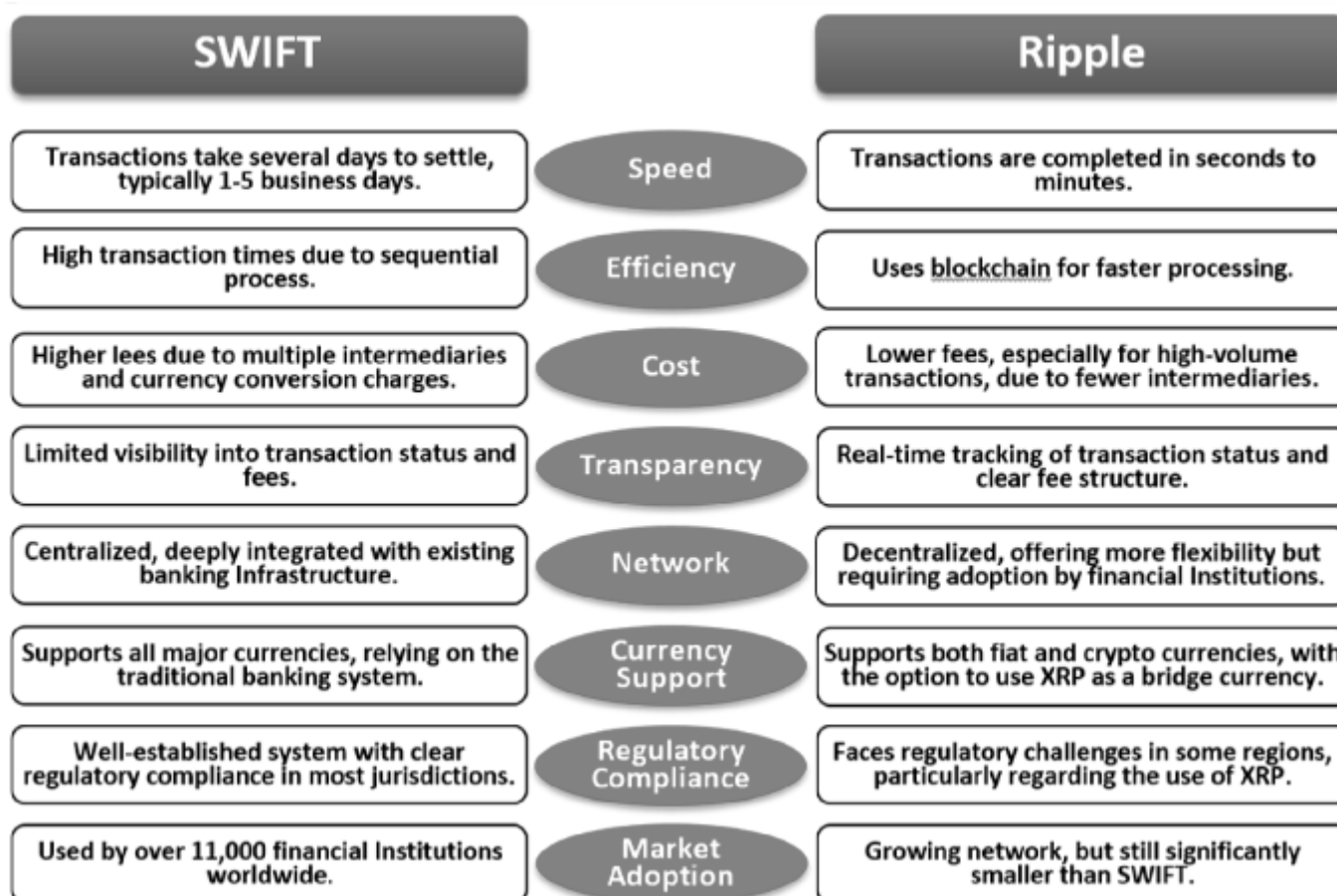
Unlike regular bank transfers, which could take several days, RippleNet and XRP let you finish transactions in seconds.

Ripple's distributed payment system seeks to enable faster and less expensive cross-border transactions than conventional methods and other blockchain networks, therefore lowering the expenses of Japanese banks when making such payments.⁷

Blockchain lowers the amount of mistakes and raises client confidence by letting you monitor the state of a transfer in real time and offers openness of transactions.

By use of the XRP On-Demand Liquidity Service (ODL), Japanese banks can avoid storing significant volumes of foreign currencies in several nations, therefore lowering running expenses and optimizing capital management.⁸

Picture 3
Comparison of SWIFT and Ripple technology



⁷ Ripple News: Japanese Banks to Embrace Ripple's XRP by 2025. Available from: <https://www.linqto.com/unicorn-news/ripple-news-japanese-banks-to-embrace-ripples-xrp-by-2025/> [Accessed March 8, 2025]

⁸ Sodiq, O. Ripple vs. SWIFT: The Battle for Dominance in Global Payments. Ripple vs. SWIFT: The Comparative Analysis. Available from: <https://defi-planet.com/2024/10/ripple-vs-swift-the-battle-for-dominance-in-global-payments/> [Accessed March 8, 2025]



The impact of XRP on the global financial system

It is projected that by 2025 not only Japan but also other nations will start employing XRP and related cryptocurrencies in their financial systems as more and more nations consider blockchain technologies and cryptocurrencies. For nations whose remittances define their economy, notably those in Southeast Asia and Latin America, this will be especially crucial.⁹

New financial instruments and services meant to increase financial inclusion and lower the cost of international transactions can be developed on cryptocurrencies' basis. Given globalization and growing interconnection between nations, the requirement of such solutions is ever more critical.

Problems and challenges faced by XRP

XRP has several issues and hurdles despite its great benefits and potential that would stop its general acceptance into the financial system.

a/ *Legal problems.* One of the primary issues is field of regulation's uncertainty. Claiming XRP is a securities marketed without appropriate registration, the U.S. Securities and Exchange Commission (SEC) sued Ripple Labs in 2020. Investors and institutions thinking about including XRP into their operations have been inundated in worry over the case. Should XRP be acknowledged as a security, its use and trading activities could be seriously hampered.

b/ *Fluctuation.* XRP is prone to volatility, like most cryptocurrencies, which can influence its popularity as a medium of transaction. For banks and consumers who want consistent assets for overseas transactions, sharp price swings make XRP less predictable.

c/ *Difficulties with technology.* Another difficulty is the necessary technology setup to guarantee XRP's scalability and efficiency. Although XRP and RippleNet can handle transactions faster than conventional systems, it is still important to guarantee the network's steady running with a rising transaction volume.

d/ *Rivalry among other cryptocurrencies.* Other cryptocurrencies and payment platforms present rivalry for XRP. Other initiatives include Stellar (XLM) and other alternative cryptocurrencies also have benefits and provide answers for cross-border transactions.

e/ *Public confidence and impression.*

Particularly XRP, public opinion of cryptocurrencies is also quite crucial. Many instances of fraud and ineffective practices in the realm of cryptocurrencies can lower XRP confidence among possible users and investors.

Future Trends and Development

Central Bank Digital Currencies

Among the most important innovations in the evolution of cross-border payments are central bank digital currencies. CBDCs, unlike distributed cryptocurrencies, are issued and controlled by central banks, acting as digital equivalent of a national fiat money.

Most likely, CBDCs will coexist with cryptocurrencies to form a dual system whereby both controlled and distributed digital currencies have complementing functions. While Bitcoin and Ethereum appeal to distributed finance (DeFi) and peer-to-peer transactions, CBDCs give governments the capacity to upgrade payment systems and keep control over monetary policies.

Leading countries are investigating CBDCs as component of their financial systems aggressively. China, one of the most advanced CBDC initiatives, has carried out large trial projects combining the digital yuan into retail payments and global trade.

With an eye toward more efficiency and financial inclusion, the European Central Bank (ECB) is creating the digital euro to improve cross-border payments inside the European Union.

Focusing on lowering transaction costs and improving financial access, nations including India, Sweden, and the Bahamas (sand dollar) are also testing CBDCs.

Integration with Traditional Banking Systems

Financial institutions are progressively working with blockchain developers as blockchain technology develops to include distributed ledger technology (DLT) into conventional banking systems.

Several banks have teamed with blockchain systems to expedite cross-border payments. Using blockchain-based technologies, banks such as

⁹ Ferreira, P. The Global Crypto Landscape: Japan's Ascent and Argentina's Unconventional Path. Understanding the global crypto chessboard. Available from: <https://www.financemagnates.com/cryptocurrency/the-global-crypto-landscape-japans-ascent-and-argentinass-unconventional-path/> [Accessed March 8, 2025]



Santander and Standard Chartered help to enable quicker and more affordable worldwide payments.

For institutional customers, JPMorgan Chase created its own digital currency that lets transactions on a private blockchain network be almost instantaneous. These alliances guarantee a better shift toward blockchain-powered banking solutions by bridging the gap between old systems and creative technology.

Cross-Blockchain Interoperability

The development of several blockchain systems has made interoperability necessary to allow flawless transactions on several platforms. Through asset transfer and communication between several networks, cross-blockchain solutions are solving this difficulty.

By linking disparate networks, Polkadot lets blockchains transfer data and assets safely, hence enabling interoperability across them.

Cosmos is mostly interested in building an online of blockchains whereby several blockchain systems may function and exchange data without problems of compatibility.

To improve interoperability and enable smart contracts over different blockchain platforms, Chainlink offers distributed oracles.

A coherent blockchain ecosystem depends on these technologies, which also let consumers harness the strengths of several networks without fragmentation.

Green Blockchain Solutions

More energy-efficient solutions are being sought as the environmental effects of blockchain technology come under examination. Bitcoin's conventional consensus systems, Proof of Work (PoW), demand great processing capability which results in notable energy consumption.

Turn now toward proof of stake (PoS). Many blockchain systems – including Ethereum – are switching from PoW to PoS, which substantially lowers energy consumption by substituting a staking-based approach for mining. PoS is a more sustainable choice since it is anticipated to spend 99.95% less energy than PoW. Layers 2 Solutions and Carbon Offset Initiatives are other energy-efficient innovations. Technologies such as Optimistic Rollups and Lightning Network lower the computational strain on main blockchains, hence improving scalability and efficiency. Some blockchain systems are using carbon-neutral approaches, funding carbon offset projects and

renewable energy sources to help to lessen their environmental impact.

Given the worldwide drive for sustainability and the assurance that blockchain adoption does not have to result in environmental damage, green blockchain solutions are starting to take the stage.

Conclusion

Based on the author's presented facts, evidence and motives, the following hypotheses can be derived:

First, Adoption of XRP by Japanese institutions by 2025 might be a significant turn in the direction of the world financial system. For banks in the worldwide market, Ripple's quick and affordable foreign transfers give a competitive advantage. XRP does, however, also present several major issues that could influence its acceptance and use notwithstanding its several benefits.

Second, Particularly the uncertainty around the legal status of XRP, regulatory problems pose hazards for financial organizations trying to incorporate this coin into their activities.

Third, Furthermore, the volatility of cryptocurrencies could restrict their utility as a means of exchange, particularly in overseas transactions when value predictability is a major determinant.

Fourth, Therefore XRP's future will rely on Ripple's capacity to properly handle these problems and fit a fast evolving financial scene. Not only will complete ERP adoption change transaction procedures inside Japan, but it will also provide a standard for other nations trying to include cryptocurrencies into their financial systems.

Fifth, The competition between SWIFT and Ripple reflects a trend in the financial sector for faster and more cost-effective international money transfers. SWIFT relies on its long-standing reputation and widespread use, while Ripple offers innovative solutions that are faster and cheaper.

It is likely that international payments will be made using both traditional systems and blockchain technologies in the future. Financial institutions can choose a combined approach, using the advantages of SWIFT and technologies such as Ripple to meet the different needs of their customers and meet regulatory requirements.



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