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Blockchain in Healthcare Market – Global Industry Size, Share, Trends, Opportunity, and Forecast, 2018-2028F Segmented By Type (Public, Private), By Application (Supply Chain Management, Data Exchange and Interoperability, Claims Adjudication and Billing, Others), By End User (Pharmaceutical and Medical Device Companies, Healthcare Payers, Healthcare Providers), By Region, Competition

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Abstracts

The Global Blockchain in Healthcare Market was valued at USD 550.02 million in 2022 and is expected to exhibit robust growth in the forecast period with a CAGR of 45.5% through 2028. A blockchain is a collection of records, called blocks, that are cryptographically linked together. Each block contains a cryptographic hash of the previous block, a timestamp, and transaction records. The timestamp ensures the presence of transaction data during block publication, enabling hashing. The interconnected blocks form a chain, making blockchains resistant to data tampering. Private and public blockchains are the primary types, with variations such as Consortium and Hybrid blockchains also existing.

Blockchain technology is revolutionizing various sectors, including healthcare. In the healthcare system, Blockchain networks securely store and exchange patient data among hospitals, diagnostic laboratories, pharmacies, and physicians. In the medical field, blockchain applications have the potential to identify critical and potentially harmful errors accurately. Consequently, they can significantly enhance the performance, security, and transparency of medical data sharing in the healthcare system. Leveraging this technology, medical institutions can gain valuable insights and improve the analysis

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of medical records.

Key Market Drivers

Rising Incidence of Healthcare Data Breaches

The healthcare industry has witnessed a significant increase in the number of data breaches in recent years. The emergence of digital technologies has presented an opportunity to eliminate reliance on third-party custodians, ensuring both security and transparency. The utilization of blockchain technology to address specific challenges, such as efficient data exchange among healthcare providers, directly impacts accurate diagnosis, appropriate treatment, and the overall ability of healthcare providers to deliver cost-effective care. The growing requirements for medical data storage and security offer numerous benefits for medical staff, patients, and healthcare facilities. Leveraging blockchain technology, with its cross-checking, encryption, and decentralization capabilities, enhances the security of medical data, thereby driving market growth. Governments of various nations are prioritizing the digitization of the healthcare system and related sectors, recognizing its potential to enhance patient participation, improve health outcomes, and enable better forecasts, among other advantages.

Adoption of Blockchain Technology in the Healthcare System

The adoption of blockchain technology within the healthcare system has led to an increased demand for blockchain technology in the sector. This has the potential to result in significant annual cost savings in areas such as IT, personnel, operations, and support function expenditures, as well as reductions in fraud and the sale of counterfeit goods. By integrating blockchain with supply chain management, comprehensive protection against fraudulent pharmaceuticals can be achieved, making it the most sought-after blockchain technology in the healthcare industry.

The healthcare sector is currently facing a critical issue: pharmaceutical counterfeiting. The lack of transparency in pharmaceutical supply chains creates opportunities for fraud and manipulation. However, blockchain technology offers an ideal solution to combat pharmaceutical counterfeiting by ensuring system transparency and data integrity. It provides comprehensive end-to-end supply chain transparency.

Cost-Effectiveness of Blockchain Technology

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Numerous startups have embraced blockchain technology as a solution to significant challenges in the healthcare industry, thereby enhancing security protocols. This digital ledger technology offers exceptional safety, eliminates the need for third-party administrators, and ensures a high level of transparency. Designed specifically for the utmost security of medical data, public blockchain technology enhances the industry's value. Furthermore, the cost-effectiveness of implementing public blockchain technology in healthcare plays a pivotal role in driving industry growth. Anticipated market demand is poised to benefit from robust security protocols, reliable portal services, and the anonymity it provides.

Development of Internet-of-Healthcare System using blockchain

The development of an Internet-of-Healthcare System using blockchain technology is expected to stimulate market growth. The Internet-of-Healthcare Systems represent a specialized implementation of Internet of Things technology, enabling the integration of patient medical data from multiple hospitals into a decentralized storage system based on blockchain. This ensures the highest level of storage and access security, addressing potential security and data administration concerns that may arise at the local hospital level. Currently implemented in over 350 hospitals, the Internet-of-Healthcare Systems use software agents accessed through the Message Queueing Telemetry Transport protocol, efficiently managing numerous local systems while maintaining network timeliness.

Moreover, the system is compatible with a wide range of health information systems used in participating hospitals. This positions the system as a viable option for a nationwide integrated health records system and exemplifies secure networks that can collectively be referred to as an Internet of Special Things. Mobile device apps provide secure and direct access to patient data stored in a central blockchain, with the ability to download data to mobile devices using Amazon Web Services and permissions regulated by the Key Management System. Based on the aforementioned points, the market is expected to experience growth in the forecast period.

Key Market Challenges

Lack of Operational Knowledge

In terms of managing records, there is significant variation among healthcare physician providers and insurance payers. Encouraging all these organizations to adopt blockchain technology without a streamlined approach, such as a single payer system,

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poses considerable challenges. However, the effectiveness of the entire system is compromised if any organization is unwilling to embrace it. Convincing them to transition from paper records to electronic healthcare records (EHR) using blockchain is indeed a formidable task. Healthcare is a heavily regulated industry, with laws like HIPAA (Health Insurance Portability and Accountability Act) in the United States and similar regulations in other countries. Lack of knowledge about how blockchain can align with these regulations can lead to compliance issues and legal challenges.

High Cost of Blockchain Creation

The high cost of blockchain creation can significantly impact the adoption and implementation of blockchain technology in healthcare. While blockchain has the potential to bring numerous benefits to the healthcare industry, the expenses involved in building and maintaining blockchain networks can pose challenges. The high cost of developing and deploying a blockchain-based healthcare solution can be a significant barrier to entry for smaller healthcare organizations or startups. This can limit the diversity and pace of innovation in the industry. Healthcare institutions may need to invest in additional infrastructure to support blockchain networks, including specialized hardware, storage, and network resources. These costs can be substantial and may not be feasible for all healthcare providers. Blockchain networks can be resource-intensive, especially if they use consensus mechanisms like Proof-of-Work. This means higher energy consumption and computational requirements, which can lead to increased operational costs for participants in the network.

Key Market Trends

Increasing Demand for Medical Data Storage and Security

The need for secure and efficient storage of medical data has experienced a substantial rise, providing multiple advantages to healthcare facilities, medical professionals, and patients. Blockchain technology, with its capabilities in cross-checking, encryption, and decentralization, plays a crucial role in ensuring the security of medical data, thereby driving market growth. Governments of various nations are prioritizing the digitization of the healthcare system and related industries, recognizing the potential to enhance patient engagement, improve health outcomes, and enable better forecasting, among other benefits.

Government Initiatives

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The Centers for Medicare and Medicaid Services (CMS) have recently issued guidelines on the utilization of blockchain technology in the healthcare sector. Additionally, the CMS Innovation Center has initiated a pilot program to explore the application of blockchain technology in Medicare claims processing. Concurrently, the Department of Health and Human Services Office of Inspector General has published a report on the potential use of blockchain technology in detecting and preventing healthcare fraud and abuse. Moreover, the FDA has launched a pilot program to investigate the implementation of blockchain technology for drug traceability. Lastly, the U.S. Department of Health and Human Services Office of Inspector General has provided guidance on incorporating blockchain technology into the design of cybersecurity programs for healthcare organizations. Governments and public health agencies in certain countries have allocated funding and grants to support research and pilot projects exploring the use of blockchain in healthcare. These initiatives drive innovation and validate the technology's potential in the healthcare sector.

Segmental Insights

Type Insights

The global blockchain in healthcare market is categorized into public and private segments based on type. The public blockchain segment is projected to dominate the revenue share during the forecast period. This can be attributed to the decentralized and open-source nature of public blockchains, which allows anyone to access and contribute to public records. The transparency and accountability provided by public blockchains promote trust in the healthcare sector, as interested parties can verify the accuracy and currency of the data. Furthermore, the encryption and distribution of data across multiple nodes make public blockchains highly secure against hacking and tampering. These factors are expected to drive the adoption of public blockchains in the healthcare sector, leading to revenue growth in this segment.

On the other hand, the private blockchain segment is anticipated to exhibit the highest revenue CAGR during the forecast period. Private blockchains, similar to public ones, impose restrictions on access and permissions. This makes them ideal for the healthcare sector, where confidentiality and privacy are paramount. Private blockchains enable secure storage and sharing of patient data with authorized parties, including doctors, hospitals, and insurance companies. Moreover, private blockchains can be customized to meet the specific requirements of the healthcare sector and offer scalability. Consequently, the implementation of private blockchains in the healthcare sector is expected to increase, contributing to revenue growth in this segment.

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Application Insights

Categorized by application, the global blockchain in healthcare market encompasses Supply Chain Management, Data Exchange and Interoperability, Claims Adjudication and Billing, and Others. The segment of clinical data exchange & interoperability is projected to hold the largest revenue share during the forecast period. Blockchain technology facilitates secure and rapid transmission of patient health information among multiple stakeholders and providers, thereby enhancing care coordination and quality. Data interoperability remains a significant challenge in the healthcare sector, but blockchain technology can address this by providing a secure and decentralized platform for data sharing. Furthermore, blockchain has the potential to enable the development of personalized healthcare solutions and empower individuals with greater control over their health data. These factors are expected to drive the adoption of blockchain in clinical data exchange & interoperability applications and contribute to the revenue growth of this segment.

On the other hand, the drug supply chain management segment is anticipated to exhibit a significantly rapid revenue CAGR during the forecast period. Managing the drug supply chain is a complex process involving various parties and compliance with legal regulations. Blockchain technology can enhance the traceability and transparency of medicine supply chain data, thereby reducing the risk of counterfeit or substandard medications being circulated. By securely and effectively tracing medications from the manufacturer to the end consumer, blockchain can enhance patient safety and ensure regulatory compliance. These factors are expected to drive the utilization of blockchain in applications for medication supply chain management and support the revenue growth of this segment.

Regional Insights

The North American market accounted for the largest share of revenue in 2022, driven by a robust healthcare infrastructure and the presence of key industry players. The region's healthcare sector is heavily regulated, prompting increased adoption of blockchain technology to ensure data confidentiality and privacy. Furthermore, the market is expected to experience continued revenue growth due to the rising number of alliances and partnerships between healthcare institutions and blockchain technology suppliers.

In Europe, the market is projected to hold a significant revenue share during the

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forecast period. The region boasts an advanced healthcare sector with a strong focus on research and development. Healthcare organizations in Europe are increasingly leveraging blockchain technology to improve patient outcomes, safeguard data, and streamline processes. The growing number of startups and emerging players in the blockchain healthcare market further contributes to revenue growth in the region.

The Asia Pacific market is anticipated to exhibit the fastest revenue compound annual growth rate (CAGR) throughout the forecast period. Investments in healthcare infrastructure and the adoption of innovative technologies are driving revenue growth in the region. The region's large population and increasing prevalence of chronic diseases also fuel the demand for innovative healthcare solutions, including blockchain technology. Moreover, the market in the Asia Pacific region is characterized by the growing number of partnerships between healthcare organizations and blockchain technology suppliers, which is expected to drive revenue growth.

Key Market Players

IBM

PATIENTORY INC.

Guardtime

iSolve, LLC

Solve.Care

Oracle

Change Healthcare

BurstIQ

Medicalchain SA

Blockpharma

Report Scope:

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In this report, the Global Blockchain in Healthcare Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Blockchain in Healthcare Market, By Type:

- Public
- Private

Blockchain in Healthcare Market, By Application:

- Supply Chain Management
- Data Exchange and Interoperability
- Claims Adjudication and Billing
- Others

Blockchain in Healthcare Market, By End User:

- Pharmaceutical and Medical Device Companies
- Healthcare Payers
- Healthcare Providers

Blockchain in Healthcare Market, By Region:

- North America
  - United States
  - Canada
  - Mexico

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- Europe
  - France
  - United Kingdom
  - Italy
  - Germany
  - Spain
- Asia-Pacific
  - China
  - India
  - Japan
  - Australia
  - South Korea
- South America
  - Brazil
  - Argentina
  - Colombia
- Middle East & Africa
  - South Africa
  - Saudi Arabia
  - UAE

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Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Blockchain in Healthcare Market.

Available Customizations:

Global Blockchain in Healthcare market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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