

FROM LEDGERS TO LEARNING: BLOCKCHAIN'S ROLE IN WORKING CAPITAL AND HUMAN RESOURCE EDUCATION

Dr. R. Ashok Kumar

*Assistant Professor, Department of Hospital Administration
PSG College of Arts and Science, Coimbatore*

S. Sangamithra

*Post Graduate Student, Department of Hospital Administration
PSG College of Arts and Science, Coimbatore*

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Abstract

Blockchain technology is a decentralized and distributed ledger system used to record the ownership of digital assets. Once data is added to the blockchain, it cannot be altered, positioning the technology as a significant disruptor across various sectors, including payments, cybersecurity, and healthcare. Working capital is a key financial indicator calculated by subtracting a company's current liabilities from its current assets. It plays a crucial role in financial planning by helping businesses anticipate future requirements and maintain sufficient cash or liquid assets to cover short-term commitments, such as outstanding taxes and short-term loans. Human resources (HR) refer to the group of individuals who form the workforce of an organization, industry, business sector, or economy. A more specific term, human capital, highlights the skills, experience, and knowledge possessed by these individuals. Other related terms include manpower, labor, personnel and workforce.

Keywords: *Blockchain, Working Capital and Human Resource.*

Section I

Blockchain

Blockchain is a decentralized digital ledger that stores records of all transactions or digital events carried out and shared among participants in a network. Each transaction is validated through consensus by the majority of users within the system.

This ledger maintains a comprehensive and unalterable history of all transactions. Bitcoin, the most widely recognized cryptocurrency, serves as a prime example of blockchain technology. The concept of blockchain first gained attention in 2008 when an individual or group under the pseudonym 'Satoshi Nakamoto' released a white paper titled "*Bitcoin: A Peer-to-Peer Electronic Cash System.*"

Blockchain records transactions in a digital format and distributes them across a network, ensuring transparency and resistance to tampering. Beyond cryptocurrencies, blockchain can also be used to record and track ownership of valuable assets such as real estate, vehicles, and more.

How Blockchain Works?

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Working Capital

Working capital represents the difference between a company's current assets and current liabilities. It serves as a key financial indicator of a company's ability to meet its short-term obligations using its readily available resources. A positive working capital indicates that the company has sufficient liquid assets to cover its upcoming expenses and can use any surplus to support daily business operations.

Current assets include resources like cash and cash equivalents, inventory, accounts receivable, and marketable securities – assets that can be quickly used or converted into cash within a year.

On the other hand, **current liabilities** refer to a company's short-term financial obligations, such as accounts payable, short-term debt, and accrued expenses, which are due for settlement within a one-year period.

Many businesses that seem financially successful may still be forced to shut down because they cannot meet their short-term financial commitments when they become due. Effectively managing working capital is therefore critical for ensuring a company's continued operation.

Managing working capital requires careful attention, as the various components are closely interrelated. For instance, offering customers extended payment terms might boost sales. However, this delay in receiving payments can reduce the company's cash flow, possibly resulting in the need for a bank overdraft. The interest charged on the overdraft might outweigh the profit gained from the increased sales – especially if there's also a rise in bad debts.

Section II

Blockchain Application in Working Capital Management

1. Accounts Payable and Receivable

- **Invoice Tokenization:** Blockchain enables the digitization of invoices, transforming them into secure, traceable, and tamper-proof digital records.

- **Smart Contracts:** These self-executing agreements streamline the payment process by automatically releasing funds when pre-agreed conditions are met, thereby minimizing delays and disputes.
- **Fraud Prevention:** A transparent and immutable ledger ensures that all transactions are authentic, significantly reducing the risk of duplicate or falsified invoices.

2. Inventory Optimization

- **Real-Time Tracking:** Blockchain's distributed ledger allows for precise and continuous tracking of inventory across the supply chain.
- **Just-in-Time (JIT) Management:** Shared real-time data improves demand forecasting and helps maintain optimal stock levels, supporting JIT inventory strategies.
- **Supply Chain Financing**
- **Early Payment Programs:** Smart contracts on the blockchain can facilitate early payments to suppliers upon delivery confirmation, improving cash flow and supplier relationships.
- **Digital Trade Documentation:** Paperless and real-time documentation via blockchain speeds up transaction processing and enhances trust among supply chain partners.

4. Cash Flow Forecasting

- **Real-Time Financial Insights:** Blockchain provides up-to-date data on outstanding receivables and payables, enhancing the accuracy of cash flow forecasts.
- **Automated, Tamper-Proof Dashboards:** Financial dashboards built on blockchain offer real-time insights backed by verifiable and unalterable data.

Benefits and Impact

- **Increased Transparency and Trust:** Stakeholders have real-time access to reliable data, improving collaboration and reducing disputes.
- **Efficiency Gains:** Automation reduces administrative workloads and speeds up transaction processing.
- **Improved Compliance:** Immutable records simplify auditing and regulatory reporting.

Blockchain in Human Resource Education

Challenges in Current HR Education Systems

- **Credential Fraud:** Difficulty in verifying the authenticity of qualifications.
- **Limited Learning Traceability:** Inadequate tracking of professional learning over time.
- **Fragmented Data Systems:** Educational records are often isolated across various institutions and platforms.

Blockchain-Powered HR Education Solutions

1. Immutable Educational Records

- Academic and professional credentials stored on blockchain are secure and tamper-resistant
- Employers can instantly verify qualifications, regardless of location.

2. Lifelong Learning Ledger

- Maintains a comprehensive record of all formal and informal learning experiences. Promotes continuous learning and skill enhancement throughout an employee's career.

3. Decentralized Learning Platforms

- Learners retain control over their educational data and progression paths. Smart contracts automatically issue certifications upon completion of learning modules

4. Verified Skill Matching and Recruitment

- Employers access verified, blockchain-stored data for precise and trustworthy hiring decisions.
Reduces dependency on resumes, which can be inaccurate or misleading.

Benefits and Impact

- **Credible and Portable Credentials:** Verifiable records improve the reliability and acceptance of qualifications across organizations.
- **Faster Onboarding:** Streamlined access to educational records shortens the hiring and training process.
- **Greater Engagement:** Employees are more motivated to pursue skill development when their progress is transparently tracked and recognized.

Case Study: Blockchain Implementation in a Mid-Sized Enterprise

A manufacturing company, **Company Z**, integrated blockchain into its operations to streamline both supplier payment processes and employee training. Through smart contracts, they automated invoice payments, reducing disputes by 30%. Simultaneously, a blockchain-based certification system boosted training participation by 50%, showcasing blockchain's potential to drive efficiency and accountability across departments.

Challenges in Blockchain Implementation

1. Scalability:

Blockchain technology still struggles to efficiently handle a large volume of users simultaneously. Processing a single transaction requires executing multiple complex algorithms. For example, by October 2017, Coinbase had around 11.7 million users, and as more people adopt blockchain, the number of transactions has surged. This growth slows down transaction processing because more users mean more computers accessing and updating the network, which can overwhelm the system.

2. Security Risks and Lack of Regulation:

One major drawback in the blockchain space is the absence of comprehensive regulatory oversight, making it vulnerable to manipulation and fraud. A notable case is the OneCoin scam, where many investors were deceived by what turned out to be a Ponzi scheme masquerading as a digital currency. Regardless of one's expertise in cryptocurrency, there is always a risk that digital wallets can be hacked or even restricted by authorities due to illicit activities.

3. Complexity and Adoption Barriers:

The technical nature of blockchain, including concepts like encryption and distributed ledgers, makes it difficult for the average person to grasp and utilize. Furthermore, traditional financial institutions already offer secure and affordable payment solutions, which can make blockchain seem less attractive or harder to justify, especially given the learning curve and implementation complexity.

4. Privacy Concerns:

Since blockchain operates as a publicly accessible ledger, all transactions are visible to participants, which is beneficial for transparency but problematic for sensitive data. For wider adoption, blockchain systems need to evolve to include restricted access features, ensuring that only authorized users can view confidential information.

5. Cost Implications:

While blockchain aims to cut costs by eliminating intermediaries, it remains a relatively new technology that is challenging and expensive to integrate with existing legacy systems. This high initial investment can deter both governments and private companies from adopting blockchain solutions on a large scale.

6. Blockchain's Long Road to Mainstream Adoption:

Despite the hype and excitement surrounding blockchain's transformative potential in sectors like InsurTech, many of its fundamental challenges persist. Overcoming issues like scalability, security, cost, and complexity will require time, meaning blockchain's widespread integration across industries is still a work in progress.

Case Study: HSBC - Leveraging Blockchain to Streamline Trade Finance and Improve Working Capital

In 2018, HSBC successfully executed the first blockchain-powered trade finance transaction using the Contour platform. This deal facilitated the shipment of soybeans from Cargill (USA) to Reliance Industries (India) through a digitally managed Letter of Credit.

Problems Addressed:

- Traditional trade finance processing typically took 5 to 10 days
- Common issues included paper-based documentation, payment delays, and lack of transaction transparency

Blockchain-Driven Advantages:

- Processing times were cut to under 24 hours
- Instant, shared access to data eliminated the need for manual document checks and courier services
- Smart contracts enabled automated payment execution once conditions were met

Results on Working Capital:

- Faster payment cycles enhanced both cash flow and liquidity.
- Cash conversion times were significantly reduced.
- Improved supplier confidence due to timely settlements and fewer disputes.

Conclusion

In conclusion, the transformative potential of blockchain extends beyond safe financial records. Its inherent characteristics, such as automation, transparency, and unchangeability, provide substantial advantages for improving working capital management. Businesses may streamline accounts payable and receivable, enhance cash flow, and increase supply chain confidence by utilizing blockchain technology for safe and traceable digital invoices, automating payments with smart contracts, and enhancing fraud protection. It's interesting to note that human resource management and education can be significantly enhanced by utilizing the fundamental concepts of blockchain. Because blockchain technology is immutable, it can secure educational credentials, making credentials and abilities tamper-proof and verifiable. Parts of certifications, learning pathways, and even how people are compensated based on their performance might be automated with smart contracts. Transparency on a regulated blockchain may also boost confidence in HR practices.

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