

Changing Payment Processes: Impact on Supply Chains

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Agenda

- **Supply chains**
 - Financial flows
- **Literature review**
 - Changes in payment processes
 - Emerging technologies
 - Disruptive technologies
- **Implications for business and supply chains**
- **Future research**

Supply Chains

Material flows

Information flows

Financial Flows

Literature review

- **Supply Chain Financing**
 - Cash Conversion Period (Cash to cash cycle)
 - Delayed payments
 - Supply Chain risks
 - Trade credit and liquidity
 - Working capital solutions

Reverse factoring

Buyer led initiatives to enable favorable invoice discounting rates for suppliers

International Programs

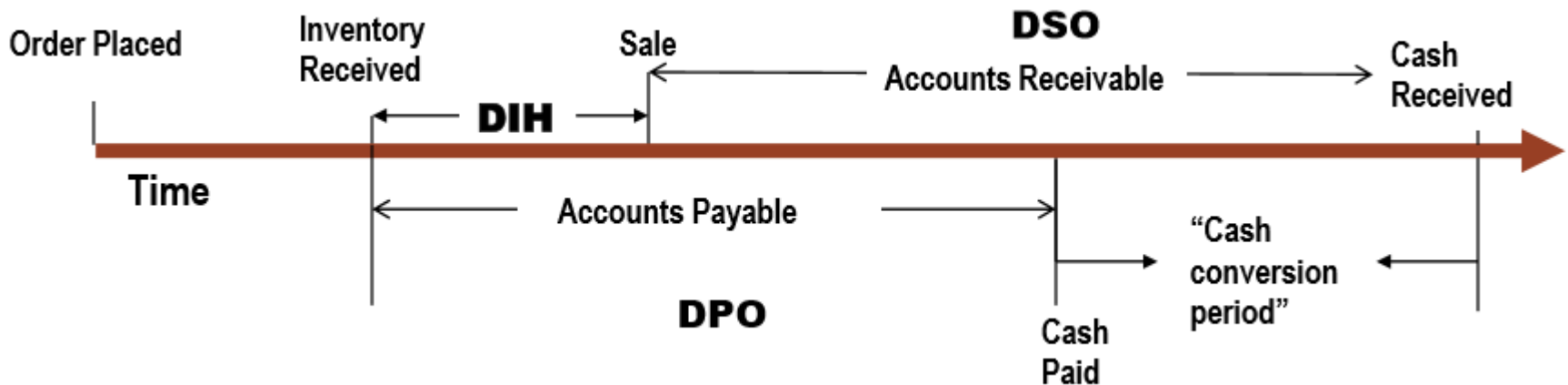
Expanded into different geographies and currencies as large Investment Grade initiated programs in OECD and emerging markets

Integrated Work Capital Platforms

Bank providers and non-bank innovators are expanding their capabilities to provide end to end financing solutions which include trigger points

Trade and Supply Chain Finance (2013)

Cash Conversion Period (Cash to Cash Cycle)



- Days Inventory Held (DIH) = $\text{Inventory} / (\text{Cost of sale} / 365)$
- Days Sales Outstanding (DSO) = $\text{Receivables} / (\text{Sales} / 365)$
- Days Payable Outstanding (DPO) = $\text{Payables} / (\text{Cost of Sales} / 365)$
- Cash Conversion Period (CCP) = $\text{DSO} + \text{DIH} - \text{DPO}$
- CCP measures the time between inventory and cash from sales

Payment evolution

- **Barter systems**
- **Fiat money**
 - Currency based
 - Foreign exchange
 - Treasury functions
- **Paper based records**
 - IOU
 - Invoice
 - Cheque
 - Travellers Cheques
- **Debit cards**
- **Credit card**
 - Magnetic strip
 - EMV or Chip and Pin
 - Pay wave
 - Procurement cards
- **Virtual Cards**
 - Procurement cards
 - Single Use Credit Cards
- **Emerging Payments**
 - Mobile payments
- **Digital currencies**

Evolution of payment costs in Australia

- **Electronic funds transfer**
 - Cheapest way to pay
 - Banking platforms move to real-time transacting for low value transactions
 - Invoicing and reconciliation expensive
- **Credit cards**
 - Despite advantages of card payments
 - Most expensive payment method
 - Consumer loyalty programs
 - Monthly fees
 - Interest rates



Research
Discussion
Paper

The Evolution of Payment Costs in Australia

Chris Stewart, Iris Chan, Crystal Ossolinski,
David Halperin and Paul Ryan

RDP 2014-14

Airline concerns around payments

- **Cost and complexity of payment acceptance**
- **Revenue Management Information**
 - 2-3 working days to close off month end
- **Revenue leakage**
- **Audit and compliance**
- **Fraud**
 - Customer
 - Internal
- **Reporting ancillary revenue**
 - pre-paid
 - On-board
- **Silo based systems**
 - Prevent the use of advanced data analytics
 - Predictive analytics
- **Innovation**
 - UTAP partnership with Bitnet
 - 260 international airlines able to accept Bitcoin

Emerging technologies

- **Cryptography**

- protection of sensitive information (organisational, institutional or personal)
- In storage or in communication

- **Crypto-economy**

- *“economic system which is not defined by geographic location, political structure or legal system, but which uses cryptographic techniques to constrain behaviour in place of using trusted third parties” (Babitt & Dietz 2014)*

Digital payments

- **Block chain**

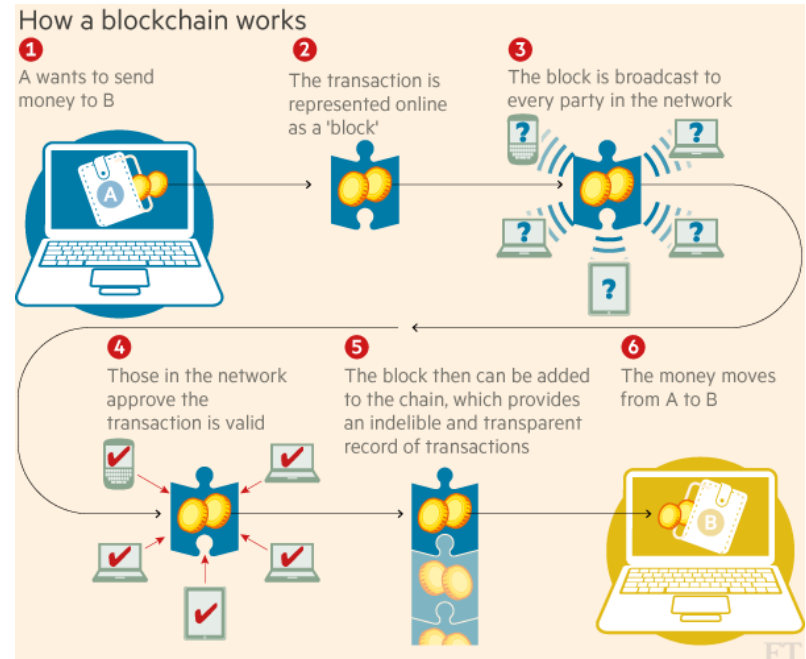
- Ensures the elimination of double spend
- Use of public-key cryptography (PKC)
- Each agent assigned a key
- Can be shared with all other agents
- Transaction is initiated
 - PKC sent to
- Coins transferred
 - digital signature or hash

- **Transaction traceable without disclosing identity**

- Unlike other fiat currencies other than cash

- **Payment finality**

- *“The discharge of an obligation by a transfer of funds and a transfer of securities that have become irrevocable and unconditional”* (Committee of Payment and Settlement Systems 2003 p.496)



Empirical evidence

ICICI Bank uses blockchain tech

TNN | Oct 13, 2016, 04.00 AM IST



Expedia Exec Says Bitcoin Spending Has Exceeded Estimates

Pete Rizzo (@pete_rizzo_) | Published on July 2, 2014 at 21:25 GMT



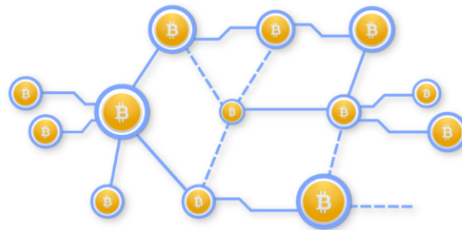
Washington-based online travel booking giant [Expedia](#) announced it would begin accepting bitcoin for payments on 11th June, and in a new interview the company confirms that its first foray into the ecosystem is already a success.

Speaking to CoinDesk, Expedia's executive vice president of global product Michael Gulmann declined to release firm figures regarding the total bitcoin sales the company has seen so far, but he said the company's blockchain is tamper-proof, and it is building the pipe with Emirates NDB and Citigroup, demonstrating its capability. It will now spearhead the network.

Unlike regular trade transactions where value is transferred, in a blockchain transaction all participants are like viewing a shared google document. It cannot be tampered and any changes can be introduced only by consensus.

Cryptocurrency program to be tested in a Greek island

4:30 pm August 24, 2015 | Nikhil Gupta | Bitcoin News



www.pnewsbtc.com

Greece has been under the weather for a long time but Agistri, a small Greek island widely considered to be a tourist haven, has been one of the hardest hit.

To seek out a way to survive in this harsh time, and to keep the economy running, the policymakers have now fallen back on the magic of cryptocurrency to pull Agistri out of the crisis. The authorities have put a seal of approval to pilot a new cryptocurrency called "Nautiluscoin" with the hope that it would help pull the fragile economy on track.

This virtual currency was initially made to help people who wished to make transactions out of the traditional banking system. Considering the economic situation that Greece is in, it is likely that the Greeks will be willing to try Nautiluscoin.

Commonwealth Bank of Australia tests blockchain trading with 10 global banks



James Eyers



Commonwealth Bank of Australia and 10 of the world's largest banks have used a blockchain to simulate trading with each other, says R3 CEV, which is managing a project to prove uses for distributed ledgers across financial markets.

R3 said its private, peer-to-peer distributed ledger allowed the 11 banks to exchange value using "tokenised" assets without the need for a centralised third party.

The R3 blockchain is underpinned by Ethereum technology and is hosted on a virtual private network in Microsoft Azure's Blockchain as a Service (BaaS).

The banks were: CBA, Barclays, BMO Financial Group, Credit Suisse, HSBC, Natixis, Royal Bank of Scotland, TD Bank, UBS, UniCredit and Wells Fargo.



BA and 10 global banks have successfully tested a private blockchain. Photo: Supplied

A blockchain is a distributed ledger, held securely on a linked network of computers that continuously maintain the records. It is the

Implications for supply chains

- Global value chains
- Distributed production systems
- Rise of the micro-nationals
- Change management
- Leap frogging
- Open new markets

Implications for supply chains

- “The **Indian handicraft** industry is **cottage based** and **mostly decentralized**. Spread all over the country, mainly in rural and urban areas, it is a major source of income for rural communities. **Employing over six million artisans**, including a large number of women and those who belong to **weaker sections of the society**, the handi-cradft industry **could benefit enormously from bitcoin**”

(Nirgunarthy, 2015)

Future research

- **Comparative case studies**
- **Digital currencies**
 - Investment in technologies
 - Investments in process changes
 - Adoption and uptake
 - Transaction Cost Economics (TCE)
 - From organisational perspective
 - from a supply chain or service value network perspective
 - Industry initiatives
- **Use in developing countries**
 - Duplicate economies

Questions

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