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Business, E-Commerce

In 1991, StuartHaber and W. Scott Stornetta proposed procedures for computationally timestamping a digital document1so that it would become almost impossible for any user to modify the date ofthe document. It is the first known work on a cryptographically secured chainof blocks.

The following year i. e. 1992, Dave Bayer, Stuart Haber and W. Scott Stornetta2 proposed anefficiency improvement that would enable to aggregate several documents intoone single block. However, this idea was conceptualised after almost 15 years.

In 2009, the first distributedblockchain was implemented by an anonymous person or group known as SatoshiNakamoto. This blockchain was used to create a ' cryptocurrency' called Bitcoin, the first digital currency, solving problem of double spending and removingrequirement of a trusted administrator. The introduction of Bitcoin on themarket generated a positive response both from institutions and customers, whowere eager to discover the benefits it could bring to their daily life. Thefinance sector overcame its suspicions and fears over this new technology andanalyzed its underlying mechanisms, which is behind the Bitcoin's revolution: the blockchain. Figure2? 1: TheBlockchain: how does it work? 3The main characteristics of the blockchain can be summedup as follows: ·   Distributed ledger: it is designed to record each transaction which can bedistributed and synchronized across networks (i. e.

useful to be applied insupply chain and financial consortiums) with different benefits in terms offraud protections (the system tracks every change and allow changes only forthe authorized users), ownership insurance (i. e. for

goods' provenance and intellectual property) and process' speed (as the mediator isreplaced by a network); ·   Decentralization: the system enables to store the imprints of the assets(i. e. token, contract, property register, etc.) in a network that can beaccessed over the Internet with different benefits for the users such astransparency and immutability (the changes in the public blockchain are open toeveryone and all the transactions are immutable), authenticity and lowertransaction costs (the blockchain data is accurate and widely available and byeliminating third party intermediaries it reduces significantly transactionfees); ·   Free and safe environment: the system cannot becorrupted and can be programmed to record virtually different transactions byany user who uses the protocoland accepts its conditions. The pillar ofthis free and safe environment is based on a mutual trustbetween the users. This principle is one of the main characteristics of theblockchain technology.

Nowadays, most financial firms have already applied or areassessing different ways to apply the blockchain technology to a part of their processes. Blockchain has evolved and has now entered a second phasereferred to as " Blockchain 2. 0" with the creation of Smart contracts that will become one of the key pillars for companies applying blockchain. Furthermore, various industries are now exploring new applications of the distributedblockchain protocol. In early2017, Harvard Business Review opined that blockchain is reasonably expected totrigger as many cascades as e-commerce has done since it was invented in thelate 1990s. In the last years the number of Blockchain wallets has been rising, startingfrom the creation of the Bitcoin cryptocurrency in 2009 and, nowadays,

reachingapproximately 15 million users. The figure table below illustrates the totalamount of Blockchain users worldwide, from the Q1 of 2014 to the Q3 of 2017.

Figure 2? 2: Blockchain Wallet User4 As the potential of blockchain is still not completelyexplored, especially out of the finance sector, most companies worldwide areapproaching this technology to better understand the typology of blockchains(private, consortium and public ones), thatbetter fit their needs. They are also exploring different uses of blockchain intheir processes and evaluating its effective benefits in terms of costs andtime savings: companies with efficient centralized system might not need toimplement a decentralized system as their actual needs are completely coveredby the current operating systems. Moreover, different reports worldwide emphasize thecontinuous increase of the relevance ofblockchain among the different players of the market: Market andMarkets report from October 2016 stated that the blockchaintechnology market size will be worth 2. 3 billion by 2021.

It appears that theblockchain technology could not only be disruptive, but also profitable and the first companies acting as pioneers could be the onesto gain more advantages in termsof knowledge and efficiency in using the technology. At the moment some industries are much further advanced than others in the application of blockchaintechnology, besides the cryptocurrencyuse. The insurance and the payments sectors were still the leaders on theapplication of the technology while the consumer (retail) and healthcaresectors were still the latest followers.   Figure 2? 3: Distribution of non Bitcoin use cases5The last Gartner analysis of the trends that are

going tocharacterize the year 2018 indicates blockchain, AI and thedigitalization as the main features companies and CIOs are going to focus on. Figure2? 4: Top 10 Strategic Technology Trends for 2018 A distributed ledger project requests cryptographic skillsof the company to understand what ispossible or not , as well as to identify the manner to integrate it into the actual company'sinfrastructure. It is interesting tonote that, according to Gartner, on February 2017 the word " blockchain" was the second word mostsearched on its website with an increase of 400% on volume within the last 12months. In addition to this Gartner itself registered that its clients'enquiries on blockchain grew more than 600%.

Itis therefore undeniable to affirm that the interest about blockchain technology increased significantly in the lastyears. At this stage still themajority of POCs (proof or concepts) carried out among industries belong mostlyto the