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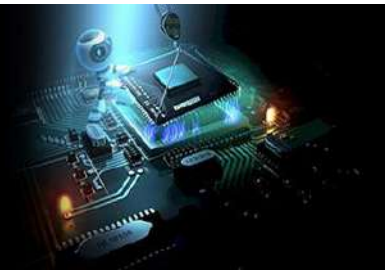

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The blockchain technology and its uses (with a specific emphasis on the advancement of the automobile sector through the uses of blockchain technology)

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Abstract
Block chain is a comprehensive system integrated globally, spanning networks and systems. The Block chain is a public ledger that maintains track of all confirmed transactions. That is not, though, a separate ledger that tracks your activity, other than a mutual community Journal that records all operations crosswise the entire system in real-time. Satoshi Nakamoto's Bitcoin blockchain addresses a well-known game theory problem known as the Byzantine Generals dilemma. The problem can be solved by preventing any effort by a small handful of opportunistic commanders to become rebels and lie regarding their offensive's planning to assure the win. The auto industry has gone a long way, being one of the most complex, complicated, and technically sophisticated industries on the globe. Among the advancements are electric, hybrid, and self-driving intelligent autos. Many Smart factories, such as production processes, robots, complex cyber-physical networks, or virtual reality, have become increasingly common in the era of IoT (Internet of Things) connected automobiles. Crypt currency is one such technology that may assist the car industry in improving data security, privacy, transparency, confidentiality, endurance, ownership, legitimacy, transparency, reliability, and identity and streamlining operations, and long-term sustainability. Its qualities and issues are evaluated. Block chain opens up a wide range of potential short-to medium-term vehicle applications, requiring enterprises to reevaluate their corporate strategy.

Keywords: Block chain, bit coin, IoT, cryptography, automobile industry, transactions, currency, data security, transparency

1. Introduction
Blockchain was previously only a computer engineering word referring to how data may be arranged and transferred. Blockchains are currently referred to represent the "fifth evolution" of computers. The distributed database is an innovative method. New methods of combining existing technology lead to development. Blockchains may be thought of as database systems governed by a group of individuals who store and trade data. There are several types of blockchains and blockchain technologies. Blockchain is a comprehensive system that is being integrated globally, spanning networks and systems. The Blockchain is a public ledger that maintains track of all confirmed transactions. That is not, though, a separate ledger that tracks your activity, other than a mutual community journal that records all operations crosswise the entire system in real-time. This income that everyone with access to the network may observe all of the actions that have occurred. Blockchain does not allow you to remove your own or anyone's purchase record; just an already system of collected data that catches every single payment ever made may be written in. There is no way to manipulate with the data recorders because they are completely frozen. Noon ever, for instance, can edit or erase any transactions on their or anybody else's Bitcoin wallet; once the data is posted, it is permanent [1].
The concept of Blockchain can reinstate security to this procedure in the absence of a trustworthy middleman, such as a respected banking institution that participates in our transactions. Consider how many times in the past third parties sought to defraud the system in operations, and how Blockchain removes this risk.
Moreover, the transaction can be practically immediate without the use of an intermediary. The time it takes for an intermediary to complete a trade is usually lengthy. Transactions on the Blockchain may be performed in a matter of seconds.

1.1 Types of Blockchain

- **Blockchain Networks:** Such as Crypto currencies, are massive, distributed systems that are powered by a native token. They welcome participation at a few stages and contain accessible code that their audiences maintain.
- **Permission Blockchains:** Blockchain systems, like as waves, limit organizations' role in the network. They are still massive, distributed systems based on a native token. Their source code might be accessible or closed-source.
- **Private Blockchains:** Private Blockchains are often smaller and do not use vouchers. Their association is strictly regulated. These blockchains are chosen by consortiums that exchange confidential information and have trustworthy partners.

Even though the notion of Blockchain was created to integrate ultimate integrity into Bitcoin exchanges, the necessity to limit access-mainly when writing and generating Blockchain records-occurs from time to time. This is why, in addition to public Blockchain, two more forms of Blockchain were tried to introduce: to allow people and institutions to confine their activities to themselves while not allowing strangers to alter or undermine their inner Blockchain technology.
Aside from the setting of visibility and edit ability, there are two more categories of Blockchain that you must comprehend to appreciate the notion.

a) Blockchain 1.0
Refers to the time when Blockchain technology was mainly utilized for monetary operations. Clients were talented in quickly driving and accepting currency from others, rather than waiting days for each transaction to complete. As a result, transaction fees globally have dropped to less than 1 percent, while bank and monetary institution charges between 7 percent up to 30 percent.

b) Blockchain 2.0
Is extended as of the earlier model to create it additional user-friendly and accessible to the public Agreements are at the heart of Blockchain 2.0. It operates on a whole new technology, adequately dubbed the Blockchain 2.0 code of behavior. It distinguishes between assets and configurable infrastructures. Blockchain 2.0 expands the technology's ability to decentralize the marketplace to incorporate more types of property, including real estate, vehicles, art, and so on.

The Ethereum concept is constantly evolving; when new requirements emerge, Blockchain is updated to fit those requirements. As Blockchain 1.0 progresses toward 2.0, new ideas arise as they are needed [2].

1.2 The core of Blockchain:

According to The blockchain technology is a confluence of three well-known fields: a) game theories, b) encryption, and c) computer programming. Together professions have existed autonomously for many years, except for the first time in their lives, interacting synergistically and being revolutionized by Blockchain.

'The data analysis of cooperation and competition among intelligent, logical decision-makers is known as game theory.' Moreover, this is relevant to the Blockchain because Satoshi Nakamoto's Bitcoin blockchain addresses a well-known game theory problem known as the Byzantine Generals dilemma. The problem can be solved by preventing any effort by a small handful of opportunistic commanders to become rebels and lie regarding their offensive's planning to assure the win. This is accomplished by implementing a system that assesses the work put into developing these messages, verifies their accuracy, and establishes time limitations for viewing unedited chats. Implementing "Byzantine Fault Tolerance" is crucial since it begins with the assumption that no one can be trusted and ends with the assurance that the operation has moved and arrived securely during its trip, which includes network respect and defeating potential dangers.
This novel approach of attaining security has far-reaching implications for transactional functionality, because it brings the architecture and responsibilities of the trusted intermediates presently held by the Standard Existing Orient have been called into doubt. This presents an unanswered question: how do we need a centralized power to provide confidence when we can accomplish the same degree of reliability bypassing operations from one peer to another via a network system?
The concept of cryptography is employed in many ways to give encryption to an Ethereum blockchain, and it is built on three essential principles digital signatures and hashing, keys, A "hash" is a sole fingerprint that may be used to ensure that data has still not been altered with something without no having to, in fact, observe it.
Keys have been used in at least two configurations: private and public. For example, consider a door that requires two keys to open. In just this situation, the sender encrypts data with the public key, which the secret key holder can only decode. I do not remember you showing your master password.
A biometric system/digital signature is a computational algorithm for confirming the validity of an item (digital communication or document).
The public/private dominant, the cryptographic yin-yang, is centered on encryption: disclosure of information, but personal examination. It is comparable to a home address. You can make your house address public, except this does not expose anything concerning the inside of your home. You will require your private key to obtain access to your personal house, and no one else may claim a location that's comparable to yours since you have designated it as yours. Long cryptographic principles have existed for a long time, and software developers are drooling at the prospect of combining them with game theory innovations to build the vast architecture of blockchains, where apparent ambiguity is reduced by absolutely verified reality [3].

1.3 Blockchain proofs

The responsibility of demonstrating what occurred is a blockchain specialty. Proof methods have evolved from becoming form part of a broader agreement process (such as Evidence or Evidence), to Confirm (such as establishing authenticity or ownership), to Evidence (wherever proving elements are part of a different service, such as land ownership or a marriage record) [4].

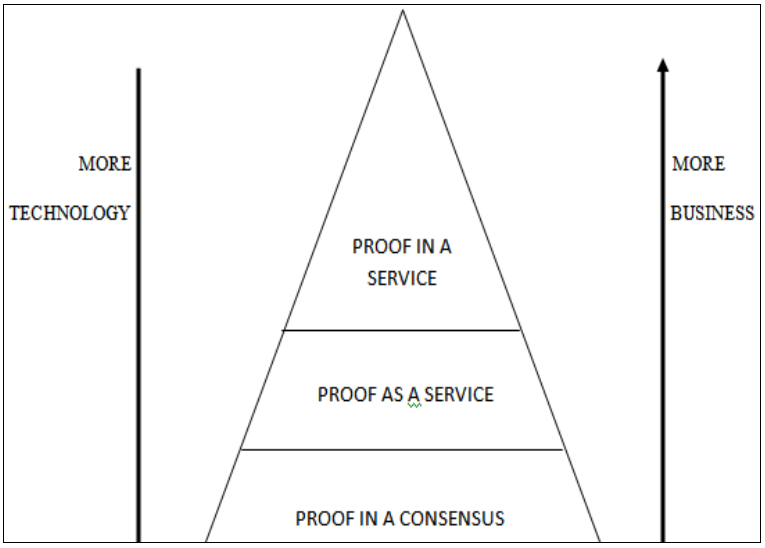

Fig 1: The pyramid of proofs

1.4 Blockchain properties

a) Digital Crypto-currency

The cryptocurrency characteristic is perhaps the most "visible part of a blockchain, specifically if the Blockchain, for example, Bitcoin (BTC) or Ethereum (ETH), is public. Cryptocurrencies are frequently used as a monetary proxy for a blockchain's viability and security. It is commonly represented by a coin, which is another sort of related representation for an actual cryptocurrency.

Some of the significant challenges with cryptocurrency are their price volatility, which is enough to keep most clients away." In a 2014 paper detailing a technique for improving cryptocurrencies, Robert Sams quoted Nick Szabo: "The primary source of bitcoin's insecurity is volatility in speculation, which is caused by genuine doubt about the currency's prospect. If as cryptocurrencies will become more widely used and comprehended, the future becomes less unpredictable, leading to an additional safe and steady acceptance process. Other efficient liquidity channels might not be able to reduce genuine uncertainties.

Outside the necessary blockchain processes, cryptocurrency is precisely like every other money. It may be traded on exchanges and used to purchase or sell goods and services. Cryptocurrency is influential in blockchain networks, but there is friction every time it enters the actual world of traditional currency (sometimes known as "fiat money").

a) Decentralized Computing Infrastructure

The blockchain technology may also be thought of as a software development strategy that connects multiple computers or other networks that usually use the same "agreement" process for release or publishing whatever data they contain and where it is stored; encryption validates all critical transactions.

Physically, what indeed powers blockchains are computer networks servers. However, the benefit of Blockchain is that these servers do not need to be set up by programmers. Unlike the web, where an HTTP (Hyper Text Transfer) request is given to the server, the system appealed to the Blockchain for blockchain networks.

b) Transaction Platform

A bitcoin blockchain can validate a variety of digitized valuation dealings involving digital currency or assets. A transaction is logged on a "block," luggage compartment space, when a consensus is obtained. The blockchain technology keeps account of these transactions, which may then be verified as having occurred. As a result, the Blockchain is a massive transaction management network capable of handling both micro transactions and huge operations.

c) Decentralized Database

The blockchain technology shatters the repository processing paradigm. A blockchain is similar to a location where any data can be stored semi-publicly in a continuous container area (the block). Because the container has the signature, anybody can verify that the information was placed there; nonetheless, only the individual that saved it (or a program) may access what is within the receptacle, and you are the only one who can keep it safe have the secret key to that content.

So, except for the fact that a portion of the recorded information, known as the "header," is accessible to the public, the Blockchain functions similarly to a database. To be sure, blockchains are not powerful databases. It is not their responsibility to replace enormous databases; instead, it is the role of software developers to figure out how to rewrite existing programs to use the Blockchain's state availability of adequate.

d) Accountancy Ledger that is shared and Delivered

The blockchain Technologies is as well a decentralized, publicly available, real-time asset ledger that maintains track of all transactions carried out on its system, allowing a user's system to confirm the legitimacy of each transaction and prevent double-counting. This ledger may be shared with various Personal, public, or semi-private parties can be held.

While although being referred to as a public distributed ledger is a systematic way to characterize blockchains, it is only one of its characteristics. However, some consider it to be the most important as the most significant.

e) The platform for Software Development

A blockchain technology is, first and primarily, a collection of software tools for developers. Yes, they have a political and social grounding (decentralization), but they also

contain technological advances. This new set of development tools is a welcome development for software developers. The Blockchain incorporates decentralized, and cryptography secures technology to develop a new breed of apps. As a result, blockchains are a contemporary approach to building apps. Blockchains may also include transactional programming languages, a communications API for peer-to-peer nodes, and a client API for verifying transaction processing.

f) Open-Source Software

Most blockchain technologies are accessible, indicating that the network is public and assures that advancements will be made collaboratively on top of the core program. For example, the fundamental Bitcoin protocol is open source. Since its inception by Satoshi Nakamoto, It has now been overseen by a team of "professional developers" who have tried to get better this throughout the occasion. Hundreds of independent developers are also working on add-on goods, services, and applications that take full use of the Bitcoin protocol's resiliency. One of the most important factors is that blockchain programming is an unlocking resource. The stronger the community that grows around a blockchain technology, the more accessible its basis is likely to be.

g) The market for Financial Services

Monetary is the foundation of blockchain systems based on cryptocurrency. If the cryptocurrency is treated like any other asset, it will evolve into a financial instrument, paving the way for the future growth of a wide range of investment instruments. Blockchains provide an exceptional innovation atmosphere for the next generation of financial services. As crypto-currency volatility decreases, they will become more popular. Cryptocurrencies derivatives comprising Options, swaps, futures, and synthetic products are all examples of derivatives; investment, loans, and a variety of other traditional instruments have the potential to build a contemporary trading environment for the financial sector.

h) Peer-to-Peer Network

See nothing "controlling" about blockchains. The block chain’s foundation layer is a peer-to-peer set of connections in terms of architecture. A blockchain promotes decentralization through peer processing at its node locations. The network is, in fact, the machine. Any other activity is checked at the peer-to-peer level. Essentially, a blockchain may be thought of as a totally decentralized thin compute cloud. Any member, regardless of where they are in the world or what time it is, may connect and deal with some other user at any time. An intermediary is not required to filter, halt, or terminate an operation among multiple participants or nodes that consume it. Any system node can give services based on its understanding of transactions occurring elsewhere in the system. In addition to a technological P2P system, blockchain technologies frequently generate a consumer marketplace. On top of them, blockchain systems and frameworks of various sizes and vitality develop their own (shared) ecosystems.

i) Trust Services Layer

Being an atomic unit of action, all blockchain technologies typically maintain trust. In essence, it is a function, and service supplied. However, belief is not limited to purchases. Data, programs, procedures, identities, business theory, contract conditions, and physical items are all protected. It encompasses nearly everything with the inherent or associated value that can be digitized as an (elegant) benefit.

Examine the technological combine that resolves likely emerge on the peak of these "ten keys" distinctiveness and capabilities. The enormous empowering powers of blockchains are simple to envisage when they are combined.

1.4 Blockchain Advantages

Businesses and entrepreneurs are not required to inquire. Like swans to water, they have acclimated to this new technology and are hard at work developing new companies and solutions to replace current ones while following various restrictions. Enterprises are the ones who are inquiring since the benefits are not always clear to them. Initially, the Blockchain presented itself as a burden for giant corporations. This was not something that was expected. The blockchain technology is vital to artists before eating they find the fortune story within the cookie. On the other hand, Bitcoin, Blockchain-based, and crypto currencies have no value (yet) for the general public since the cookie is being marketed to customers and some enterprises.

Engineers typically aim to address a technological challenge. However, if fixing the technical problem does not result in the resolution of an end-user query, consumers will wonder, "Was it a dilemma solution... since I do not see this difficulty?"

The finished attitude merely requires a clear answer. The end-user is unconcerned with who invented a particular technological innovation or who dreamed it up. Stakeholders from the company are also engaged in this formula since they recognize that issues cost money and are willing to support solutions for solving these issues.

In general, the advantages of Blockchain may be explored on an extensive list:

- Direct or indirect cost reductions
- **Pace:** Eliminating time lags.
- **Clarity:** Giving the appropriate in arrange to the appropriate people.
- **Improved privacy:** safeguarding customers and business with more granular control.
- **Decreased risk:** Improved visibility, limited coverage, reduced scam, and reduced meddling.
- **Efficiency:** Increased production of work.
- Efficient processing or publishing.
- **Improved Quality:** fewer faults or higher satisfaction levels [5-10]

1.5 Blockchain Challenges

Blockchain technology faces numerous problems. They are often categorized into four categories, which are as shown in:

Table 1: Blockchain Challenges/Problems

Technical	**Market/Business**
Immaturity of interfaces and technologies	Shifting things on the Blockchain
Durability	Implementation of quality ideas
Heritage networks	A significant number of users effectiveness of beginning
Exchange with information	Investment financing
Confidentiality	Cryptocurrencies volatility
Safety	Provisioning new users, there are a few poster app firms.
Norms	A scarcity of skilled workers
Shortage of guidelines	cost concerns
inadequate ecological infrastructures	The conundrum of innovations
Behavioral/Educational	**Legal/Regulatory**
Limited leadership foresight	Uncertain rules
Strategy implementation	Intermediation from the government
Believing a connection	Regulatory obligations
Minimal best practices	Publicity
Limited user aspect	Taxes and reports

1.6 Blockchain in the automotive industry

The immense enthusiasm around Distributed Ledger Technology (DLT) such as blockchain technology appears to barely cover the fact that they are still in their infancy in a market that is still evolving. Most managers are looking for easy thoughts for achievement and a thorough comprehension of the significance and worth of apps. Blockchain is undoubtedly going to impact every vertical and area of the industry and the soon-to-come digital world, despite various concerns.

The car business has primarily affected technological breakthroughs, which have in turn influenced these inventions. DLT offers several prospects and future benefits to car manufacturers, suppliers, and associated service providers within the context of its external environment. DLT is well-known for enabling vehicles to automatically collect and carry out various requests and transactions across numerous jurisdictions [11-15].

1.7 Blockchain in the Automotive Industry

All in all, a Numerous devoted stakeholders, such as-a public blockchain-among automakers, automotive auto dealers, regulatory agencies, auto financial institutions, Several co-linked Ethereum-based networks built on the bases of virtual servers can benefit automobile leasing firms, buyers, dealers, and even garages and inter-operability by adding an adequate level of transparency and trust in all types of vehicular exchanges, attempting to prevent disputes, and lowering transaction fees. Simultaneously, it can dramatically streamline procedures, especially those involving clearances from legal and regulatory authorities. The writer emphasizes that blockchain technology is all concerning increasing the clearness and competence of available supply chain management systems and creating them more proactive and predictive.

Blockchain applications in the automobile industry:

- Blockchain technology may be worn in a variety of crucial areas.

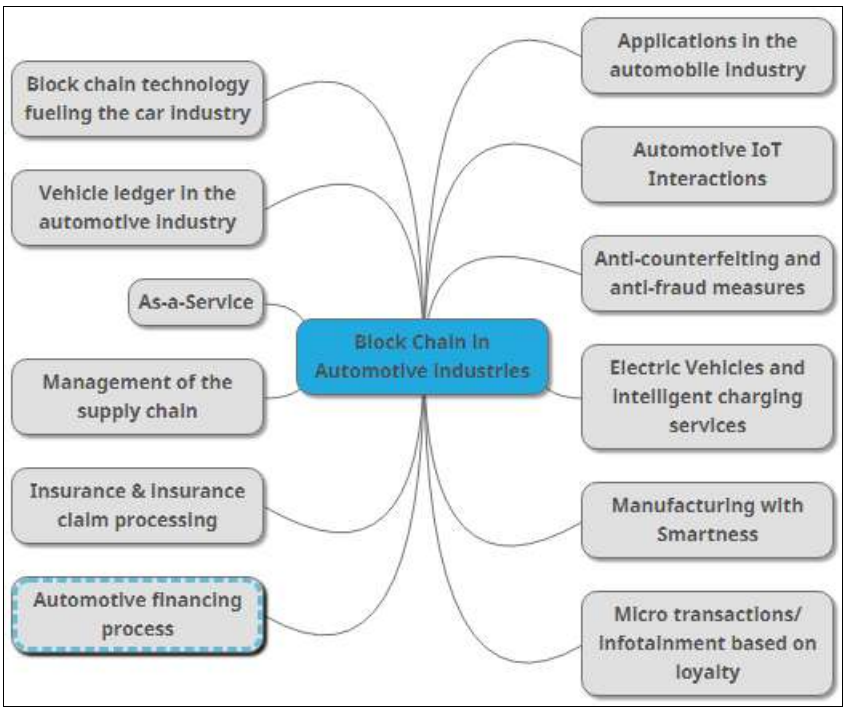

Fig 2: Blockchain's Uses in the Automotive Industry

a) Blockchain technology fueling the car industry?

This UINC study presents an unusual approach. It categorizes all of the use scenarios. There are:

- Interactions between the Automobile and the Internet of Things
- Transferring a Vehicle's Title
- Supply Chain Management
- Manufacturers with foresight
- Cover and Annuity Claim Settlement
- Faithfulness base micro transactions/ entertainment

The diagram above depicts some of the sectors in the automobile industry where Blockchain may be used.
They will be thoroughly examined as follows;

b) Automotive IoT Interactions

Automobiles are evolving into Cyber security that is networked (CPSs). These CPSs are equipped with specialized sensors and control devices. The use of the IoT paradigm in automobiles allows for the capture of massive amounts of data. Most autos constructed in the recent decade, such as feature vehicle diagnostic, are obtained via On-Board Diagnostics (OBD) connections. Install an Event Data Recorder (EDR) to record data and statistics triggered by certain occurrences. Is another critical breakthrough (e.g., radical pace reduction). Detectors and track the status to an assigned mobile network will collect data such as driving proceedings (e.g., distance, pace), security proceedings (e.g., spare element substitute caution), and servicing events (e.g., yearly repair) and be capable of transferring this information to a ledger shared by stakeholders (counting the possessor).
Its systems enable remote monitoring and control of equipment and the generation of new information, gleaned based on real-time data Internet of Things (IoT). Ethereum might be used in tandem to track, procedure, and trade data between linked devices. In this Paper, an example of intelligent vehicle communications is shown. Other authors proposed a lightweight, scalable blockchain strategy to overcome existing security and privacy flaws in IoT-connected autos, such as centralized, privacy loss, and safety risks.

c) Vehicle ledger in the automotive industry

A real-time cryptocurrency that securely records, modifies, tracks, and transmits data (for example, automobile repair and owner history). Companies can cooperate with a bitcoin service provider to manage logistics monitoring and control to create a record of all OEM transactions, such as quality and legitimacy concerns with replacement parts. The logbook may gather information on automotive history from several sources and start charging for access to the report. The network may be expanded to accept payment for services performed, such as automobile upkeep or the purchase and sale of vehicle data to/from other parties.

d) Anti-counterfeiting and anti-fraud measures

Blockchain technology The Internet of Things (IoT) may be utilized to prevent scams successfully. On the one side, competing parties can adjust the condition of things from the origin point. Through the moment of sale, and in some instances, throughout their entire lifecycle. Sensors, on the other hand, can be mounted on assets (for example, each item pallet sent to the Genuine Electronics Company (OES)) to keep track of their whereabouts and condition in real-time (for instance, that the shipment meets the Arrival Time (ETA)). This concept will need extensive coordination between automobile stakeholders and software engineers, it should be noted.
In terms of odometer fraud, a system may be described that uses an in-car interface to submit vehicle miles data to a digital recorder regularly. If you feel there has been tampering, you can check the displayed mileage to the mileage reported with an app. In addition, a car holder may use a blockchain to track its mileage and obtain an authenticity certificate that can be utilized to assure selling conditions.

e) As-a-Service

Technological innovation has spawned a new 'As-a-Service' commerce representation, with rapidly expanding projects like Car Next Door. An Ethereum-based platform would enable IoT-connected automobiles, driverless cars, ride-hailing car-sharing providers, automobiles, and ride-hailing car-sharing to communicate to make an answer that keeps track of trips and enforces interstate compacts the monetary units, allowing vehicle owners to profit from their travels. Price per mile, credentials to unlock the car, insurance data, reimbursement data, and information on vehicle owners, drivers, and occupants would all be provided securely, reliably, and seamlessly. For instance, there would be no relationship between the valid user's (id) and their path and any unauthorized access to the car, i.e., only approved users would be able to locate, unlock, and utilize a specific automotive. Furthermore, once the travel is completed, the platform may process all transactions and add a trip to the user's account record.

f) Electric Vehicles and intelligent charging services

The need for infrastructure investment is expanding in tandem with the growth of the electric car sector. The integration of electric cars with the Owner'sOwner's elegant home and smart devices may result in advanced services. The billing mechanism, for example, might be adjusted to the customer's desires; for example, using a customized calendar, this information might be utilized to ensure that the vehicle is charged up when it is needed. It also enables us to select the most expensive or effective charging cycle, such as minimizing high demand periods.
A cryptography system can be presented for decentralized secretarial, contract management, or invoicing and payment automation. Two situations might be regarded: when the car owner charges the automobile when the car's OwnerOwner discharges the energy from the electric vehicle to the grid to help stabilize the equipment set up, known as a third-party charging station. The user's physical address and behavior (for example, charging with a specific charger on a particular day) may be recorded, although this data may be kept private.
In the Paper, there are several examples of uses. The lightning network and cryptographic protocols, for example, are used to provide a decentralized security strategy (registration, scheduling, authentication, and billing) are the four-phase. The suggested security mechanism may be simply integrated with existing scheduling to strengthen electric autos' trade safety and charge piles. Another unusual situation is discussed in, which a private information charging station selection is shown [16].

g) Management of the supply chain

Many organizations have very little data about their OwnerOwner, second or third providers, making supply chain management a critical business problem. The end-to-end supply chain's transparency and accessibility will assist in modeling the item migration from raw resources through manufacturing, sturdy and finished items, allowing for new types of jeopardy management and long-term analysis of People, natural facilities, and information.

The supply chain in manufacturing techniques comprises procedures, financial derivatives, and transactions that allow a product to be transferred from suppliers to consumers. It is tough to get a comprehensive picture of all transactions in a broad supply chain. This data is frequently kept in many locations and is accessible to certain device entities. In those kinds of constructions, customers are typically only provided a portion of the complete information, whether they are the last client or a larger organization along with the network. A retailer may regard a piece of the data as a product in some instances. Because of the lack of transparency, transactional tractability is reliant on system actors' cooperation.

A major issue with having such a centralized construction is that it turns into a single point failure, putting the entire scheme at risk (e.g., hacking or corruption). Over the years, several disasters have proved that the most strict and expensive security mechanisms cannot guarantee comprehensive data protection, placing businesses at in a system, there is a danger. PaperPaper recorder, distributed data, and controlled user access are all used in Blockchain-based are said to help with accountability and traceability difficulties in the industrial distribution chain.

This PaperPaper suggests a decentralized dispersed system that employs blockchain technology to record, store, and retain vital product information for each unique product's life cycle. A distributed block of details like this can generate a safe, for every individual's development; there is a shared ledger of transactions and certain product information [17].

h) Manufacturing with Smartness

The use of Blockchain in application manufacture can boost improvement and excellence control while lowering expenses for monitoring in inspection (e.g., description management), guarantee account administration, possession issues, servicing, or recycle duties.

A blockchain may also be utilized in a digital twice, which is a digital representation of an actual item that can be used to watch its current status and reconstruct its history and prospect. During the lifespan of an asset (e.g., a car, a tool, or a part) in the automotive sector, it may transfer data and inform proceedings to its digital twin. As a result, Blockchain may be utilized to store all of the previously specified data securely.

For instance, a distinctive sensor may be attached to every components container before being shipped from the component company's side and records its real-time position and position to guarantee that the cargo arrives in the assemble port on time. All of this mechanism in cycle with the Internet of Things (IoT) to build an efficient overall pro strategy through the use of blockchain-based preparedness and protection technologies, in which each supply chain companion actively engages in updating the item's status (characteristics) as it tries to move from place of manufacturing to retail level. The entire notion necessitates unprecedented levels of collaboration among automobile manufacturers, equipment manufacturers, software engineers, and cyber security businesses [18].

i) Insurance and insurance claim processing

A cryptocurrency Insurance firm may create customized agreements for automobile insurance based on natural driver behavior and insurance automation prices using this technology. Any monetary compensation received as a consequence of an insurance claim The events of a vehicle's Owner'sOwner's driving habits, such as speeding and mileage, as well as security occurrences, such as broken components and crashes, may be retained, shared, and utilized to compute insurance rates and payouts on the Blockchain. So because data is linked to the Owner, the insurance company may access the car owner's history for relevant insurance estimates, even if the automobile is sold.

Some other blockchain realizing that securely helps connect the displaying content, when planning to rent a vehicle to a customer, from trying to conduct KYC customer checks (e.g., license and credit verification) before leasing the car, to putting away the blockchain leasing contract, to auto pay after the vehicle is decided to come back.

j) Microtransactions/infotainment based on loyalty

A cryptography system enables car owners to effortlessly acquire additional customer assistance, such as connecting to in-home devices or parking charges depending on pre-determined parameters contractual arrangements recorded and performed on the Blockchain.

Client incentives can be provided via loyalty and reward programs. In this case, an innovative contract-based system may track Customer buys, and reward points are rewarded, which may be exchanged for cash inside the shareholder engagement network. The credits are seen and updated across the whole system, for example, by being cashed as a rebate [19].

k) Automotive financing process

Whenever an electrical owner of the car can charge their vehicle at a third charging point, a cryptography system manages contracts, billing, and payments or discharges their EV's energy to the grid to help with grid stability, such as moving energy from rural to urban regions.

Community's models are a type of company that connects the parties involved. Before renting an automobile, performs Know Your Customer (KYC) checks and keep the rental agreement, and automated payments. Blockchain systems will rely on security technologies connectivity and the elimination of data hazards. The retrieved information can be utilized for analytics, knowing your customer (KYC) behavior, and monitoring automobile hiring or leasing. Several concerns mentioned above have been studied via initiatives. Visa and DocuSign, for example, developed a blockchain-based automotive leasing system in 2015. Daimler AG and Landesbank Baden-Württemberg (LBBW) used Blockchain to execute monetary transactions in a pilot project to monitor capital trading operations and financial activities [20].

1.8 In the automobile business, a SWOT analysis of Blockchain is performed.

As seen in Table 1, Blockchain provides several benefits. Its

key advantages are prepared competence and resiliency: communication may be streamlined, and costs reduced (e.g., bank charge).

Table 2: Strengths & Weaknesses

Strengths	Weaknesses
Increased operational effectiveness	Insensitive, early stages of development stage
Increased cyber resilience	Scaling difficulties
Elimination of the need for intermediaries that have no worth	Excessive energy usage
An automatic transaction using contracts, IoT enabling	Poor performances
Quick and easy remittances with minimal costs	Inadequate compatibility
Errors made by humans are reduced.	Privacy concerns (in some scenarios)
Accountable, verifiable, screen-capped, and unchangeable independently audited data.	Criminal conduct, including harmful assaults
No loss of data, nor edited not fabricated data	Relies on data from outside seers for inputs.
Protection and current encryption Transparencies global	Lack of familiarity among customers, a bad experience for users
Markets accessible	If a person's login details (e.g., a bank account) are lost, no mediator can be consulted.
Reliable big-data platforms	In different use cases, virtual currency volatility is a concern.
Decentralized power	Restrictions of the self-executing script scheduling algorithm
Tracking and tracing, asset authenticity	Bank account and critical distribution
Flexible and dynamic value interchange	High-skilled personnel (limited and expensive)
	Sophistication (cryptocurrency notions are hard to execute).
	Core competency use instances or procedures may not be fit for blockchain implementation.
	Weak corporate management

The most severe blockchain faults are related to the science's infancy, such as scalability, energy usage, performance, compatibility hazards, and privacy concerns. Contracts will be deployed automatically in the event of IoT-connected automobiles or structures, but in other circumstances, they will rely on the admission of source data from external oracles. As a result, criminal activities or physical attacks are likely to increase due to this circumstance.

The possibilities of a digital twin, which allows virtual replicas of natural assets to mirror reality, can also be enhanced by Blockchain-using information from IoT sensors. Tracking and tracing of electronic and electric devices throughout their lifecycle, assurance of such increased characteristics include component provenance and authenticity, Validation of events from original product creation and authorization procedures to manufacturing, Validation of the collection and delivery procedure, and related after-sales operations [21-27].

Table 3: Opportunities and Threats

Opportunities	Threats
Corporate efficiency (e.g., reduced operating costs, improved protection, complete loT robotics)	Impression of danger or unpredictability
Completely new business facilitator	rapid Technology weaknesses
Redistribution knowledge symmetrical among stakeholders	Diverse cryptographic protocols
Scam decrease	Low acceptance from leading players
Lowered moral hazard internetwork impact	Unpleasant government regulations and legal jurisdictional hurdles
A massive amount of large datasets tried to push into the Blockchain by various actors for data gathering (big data apps)	Adaptation difficulties in institutions
Suitable code	Intermediate or long-term investments
allows For ease in intra- and inter-trade	Inadequate for external consumers, ready for acceptance
Reducing of identity verification	

2. Limitations

Nevertheless, there are a few limitations of this study;

a) The technical specifics of the Blockchain's inner workings are outside the scope of this study.
b) Interviews with different owners are not feasible owing to the continuing COVID crisis. Though the stakeholder's concerns are correctly documented by web research, references are appropriately supplied.
c) The data collected in although the study was insufficient, Owners and lenders of automobiles may not be an accurate representation of reality.

3. Opportunities for future

a) This technology may be integrated with AI and machine learning to detect patterns, resulting in better goods. To train a model for machine learning, a large dataset is necessary, which may be obtained via the approach described above.
b) The AI-enabled technology can not only warn owners when maintenance is due, but it can also predict when it will be due correctly in ahead, allowing them to make an informed choice.
c) Due to this projection, better demand forecasting will undoubtedly assist the manufacturer and the supply chain.
d) The government may potentially use the projections to better combat pollutants and other societal issues.

4. Conclusion

This study was a study paper on the usage of Blockchain in the automobile sector. A literature study was done to discover possible applications and their limitations. Following that, several applications are mentioned in depth. To illustrate how blockchain technology may be used in the car business. The Internet of Things (IoT) connected automobiles are investigated. The evaluation is based on the GUEST technique, which operates several frameworks to identify how to deliver value to various stakeholders. Their issues are examined, and a remedy is suggested. One may argue that the proposed system could be implemented without the use of Blockchain, depending just on IoT sensors, it is conceivable. Still, the goal is to establish "joint trust," "Transparency," and "immutability" are key terms. In numerous ways, a centralized system can be updated, hacked, or modified, and because Blockchain is a decentralized solution, it is impervious to such assaults.

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