

## **Management Information System using Blockchain Technology in an E-commerce Enterprise: A Systematic Review**

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### **Abstract:**

Information technology over the last two decades has been discerned as an emerging technology by affecting our personal, social, and public life. Thereby, the technology has made a notable impact on the quality of life. Management Information System collects data from various online systems, thus, analyzing the information, and further reporting the data to aid in management decision making. This study primarily explores and highlights the management information system using block chain technology in an e-commerce enterprise. The paper thereby presents a systematic review based on several studies in the literature. A systematic review of management and business process journals is performed using the keywords related to the topic. Thereby, the study finds that MIS using the block chain technology is easily acceptable in an e-commerce. Various advantages associated with the MIS are compiled from related studies in the literature. The results obtained from the assessment are gathered in an organized way and subsequently concluded in order to understand the principle functioning of the management information system using blockchain technology in an e-commerce enterprise.

### **Keywords:**

MIS, management information system, block chain technology, e-commerce

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### **1. Introduction**

Management information system associates to the provisions of extended management functionality for various applications of the Internet. The management information system mainly functions in the areas of information security, transaction auditing, reporting, centralized policy, and application connectivity (Malcolm et al., 2008; Altamony et al., 2012; Karajeh and Maqableh, 2014; Khwaldeh et al., 2017). It associates to the provisions of extended management functionality for various applications of the Internet. MIS is a collection of workforce's, tools, procedures, and software to achieve various business tasks at different levels in the organization (Tripathi, 2011). It is an integral part of the business organization that provides timely and accurate information to the business managers in taking appropriate decisions (Yadeta, 2016; Yassien and Mufleh, 2017) and is also known as the Information System, the Information and Decision System, the Computer-based Information System (Tripathi, 2011; Aldmour et al., 2017). According to Khalis et al. (2018), Management information systems are burgeoning into widely accepted modes of process management in several industries. It is of special consequence in projects of high complexity. Information systems provide an edge in the effective management of complex and multifaceted projects.

Recently, there has also been an increased usage of Automated Management Information Systems that have hugely revolutionized the decision-making process in a positive way (UStudy, 2010). For instance, companies by using automated MIS no longer have to rely on 24-hour services from workers, which is crucial for e-commerce business. Alternatively, the machines can be programmed to do things on our behalf (Jarboe, 2005). Of course, this offers a considerable plus in decision-making since managers are relieved of making some decisions- especially the technical ones which can be best interpreted and solved by the automated system.

Modern e-business and e-commerce industries cannot compete without the power of management information systems (Alenezi and Tarhini, 2015; Alenezi et al., 2017; Kanaan and Masa'deh, 2018). Thereby, the MIS could be employed for playing a strategic role in all businesses through the integration of people, process and information technology and hence redefining e-commerce. This fact creates unique opportunities for the impact of the MIS. In any organization, the process of decision-making is an inherently necessary aspect not only for the organizations but also for the individuals who rely significantly on decisions for their survival in the profoundly competitive arena of entrepreneurship (Al-Zhrani, 2010).

Essentially, prior to decision making on which MIS strategy to employ, it is requisite to assure that the decision made is completely compatible with the current system. The strategic MIS decision making will not only benefit in avoiding the erratic choices, however, will also save the time and money that would have been otherwise wasted (Jahangir, 2005; Rhodes, 2010; Tarhini et al., 2015). Additionally, it is noteworthy for the MIS strategy or tool used to be in line with the decisions that are to be made. In other words, there should be a point connecting between the decision to be made and the MIS to be used by an individual or corporate business owner (Jarboe, 2005). Therefore, MIS renders a fitting platform for good decision making (Kumar, 2006; Tarhini et al., 2017a, b). Moreover, MIS lays a firm foundation for the establishment of concrete decisions through its timely information, systematic tools, and adequate managerial policies and regulations typically. Jahangir (2005) explores and highlights that some MIS allow multiple users to admittance the same content at the same time without any discrepancies.

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Apart from this, the MIS plays a significant role in keeping records or the institutionalization of databases that can efficiently keep confidential or invaluable information. Therefore, the record keeping and data-basing the tool of MIS ensure that decisions are made viable while businesses run smoothly (Jahangir, 2005).

### **2. Literature Review**

#### **2.1. Blockchain Technology-Revolutionizing the Next Frontier in Information Technology**

Blockchain technology is a standout innovation amongst the most well-known issue in recent years. The technology has effectively changed individual's way of life in some zone because of its extraordinary impact on diverse business or industries, and what it can do will proceed at present causing a significant influence in multiple places. However, in spite of the fact that the feature of blockchain technologies may bring advancement as more reliable and convenient services, there is still a need to oversee into the trends of its usage in the e-commerce industry. The blockchain is an integrated and coordinated multi-field infrastructure construction containing mathematics, cryptography, algorithm, and economic model, combining peer-to-peer networks along with the distributed consensus algorithm for solving the widely distributed traditional database synchronize problem (Lin and Liao, 2017).

This blockchain technology is primarily a distributed database of records or the public ledger of all digital events and transactions executed and shared among participating parties. In addition to this, by consensus of a majority of participants in the system, each transaction is verified in the public ledger. Thus, the blockchain contains a validated set of record of every single transaction made. Bitcoin, that is a decentralized peer-to-peer digital currency forms the most frequently used example popular for blockchain technology (Crosby et al., 2016). Recently, the crypto currency has attracted extensive attention from both the industry and academia. Additionally, Bitcoin that is often called the first crypto currency has gained huge success with the capital market reaching 10 billion dollars in 2016 (Capitalizations, 2017). Since the databases do not have cryptographic guarantees of integrity, the enthusiasm around this technology is growing strongly which are necessary for any database operating in the adversarial environment. Additionally, there is more to the blockchain than the data integrity only. The fundamental advantage of blockchain technology is the decentralization of the data. Moreover, the security and the privacy associated with the blockchain technology is the emerging field which is in dire need of exploring further research (Zheng et al., 2016).

Blockchain can be connected with differing applications far beyond crypto currencies. Since it enables payment to be completed without any bank or any intermediary, the blockchain can be utilized in different financial services such as digital assets, remittance, and online payment (Crosby et al., 2016). However, this technology is facing a number of technical challenges (Lin & Liao, 2017). Blockchain can be viewed as an open messaging system verified by public key cryptography and digital message signatures created using a unique private key (Shah, 2017). The security of entire block chains depends intensely on secure generation, use, and storage of private keys. To realize the fundamental security risks in blockchain technology, it is essential to know the variation in the public and private blockchain (Yli-Huumo, 2016).

Typically, the security in blockchain protection involves detection of a threat, prevention of the threat, appropriate response using the security policies, IT services, and tools. The technology uses many techniques such as minimum privilege, defense in penetration, risk

management, and patch management in order to achieve the security of block data (Joshi et al., 2018). According to Tschorsch et al. (2016) and Han et al. (2014) they explained the usage of a combination of the public and private key in order to securely encrypt and decrypt data. The other most secure concept of blockchain is that the longest chain is the most authentic one which eliminates the security risks due to a 51% majority attack and fork problems.

While blockchain application is primarily discerned as the technology enabling crypto currencies, for example, the Bitcoin, it will most likely become an even more valuable enabler of social and economic transactions, for instance as a general purpose in the digital asset ownership record (Lindman et al., 2017). This is due to the distributed transaction data, and cryptographic logic that lies at the blockchain's core, thereby rendering extraordinarily tamper-resistant. There has been witnessed a fair share of transitions and evolutions in a typical e-commerce marketplace (Skloot, 2000). Therefore, this domain of blockchain in e-commerce has undergone alterations to become one of the most profitable sectors of the 21st century. According to recent Statista report, the blockchain market is globally expected to foresee a surge of more than 400% by 2021 (Statista Research Department, May 2019). Thereby, with the implementation of blockchain technology in the eCommerce marketplace, a considerable shift will be marked by building a decentralized economy. The significant advantage of blockchain technology such as decentralization, identity protection, freedom of transactions ease of use, faster transactions, and reduced fraud makes e-commerce marketplace an advanced technology.

## **2.2. Impact of Management Information System in Redefining E-Commerce**

The organizations under the E-commerce industry solicit to achieve a core competence by devising and sustaining a unique process to collect personal information about customers and their purchasing trends (Demir et al., 2017). Furthermore, MIS assist the organization and its system to blend efficiently and effectively, thereby redefining e-commerce. MIS brings out the synergy between the interactions of the people and information systems. MIS thereby facilitates management decisions at the strategic and operational levels of an organization. According to Weber (2010), MIS plays a critical role in the development of the company in a global context. The use of internet technologies to manage information system is a substantial improvement for the e-commerce industry. A study conducted by Shahjee researched and highlighted Management Information System of E-commerce on Business. The paper cited that MIS, although relatively a new concept, it has the potential to alter the traditional form of economic activities. The paper also suggested e-commerce impact on many areas of business and disciplines of business management studies. It also asserted that management information systems enables analysis, design and implementation of e-business systems within an organization; issues of integration of front-end and back-end systems.

The case of Amazon portrays a successful alignment of the information systems with the overall strategic goals of the organization. Thereby, Amazon has used this MIS as a vibrant tool to establish its management activities. Moreover, it assured that the customers are offered with diversified services through its management information system (Demir, 2017).

According to Bajaj (2011), an increase in the number of the software used by the e-commerce organization has been levied to up gradations and advancements due to the determining factors impacting the outcomes and expectations of the usage of the software. Additionally, software configuration management has been discerned as a vital tool in order to manage the entire evolution and life cycle of software projects.

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MIS is an integral part of the business organization that provides timely and accurate information to the business managers in taking appropriate decisions (Yadeta, 2016). MIS is also known as an Information System, the Information and Decision System, the Computer-based Information System (Tripathi, 2011). Various organizations have opted to apply a group of components, i.e., information system to their associations (Spalding, 1998). This system nowadays plays a crucial role in the e-business and e-commerce operations, enterprise management, and collaborations, and hence, the strategic success of the business (Herver et al., 2004). When an information system is applied to improve the management by the directors of the organization, then it is described as the management information system (Ein-Dor & Segev, 1978).

The system renders to strategically improve the performance of management in the business of e-commerce. MIS is a collection of workforce's, tools, procedures, and software to achieve various business tasks at different levels in the organization (Tripathi, 2011). Moreover, MIS is one of the notable functions of management which plays an extensive role in presenting information that is required for critical decision making which directly affects the performance of the organization (Swafford, 2008).

Management Information System assists the organization to access its critical information (Varma & Wadhwa, 2006). According to Jahangir (2005), organizations must assure that they have a good MIS to ensure further a better and improved decision making in business just as a bad MIS instigate the making of bad choices and decision making. For the companies fully exploiting their potential, e-commerce offers possibility of breakthrough changes; thereby radically altering customer expectations changes in redefining the market or creating entirely new markets.

#### **2.3. Blockchain Technology in Increasing Efficiency of Supply Chain and Improving Sales**

The globalization of the supply chains renders their management and their control more challenging. The block technology which is a distributed digital ledger technology ensures traceability, transparency, and security, is showing promising ease in the global supply chain management challenges (Saber, Kouhizadeh, Sarkis & Shen, 2018). True blockchain associated transformation of business and supply chain is still undergoing progress, and it is in the early stages. According to Bogart and Rice (2015) in recent years as the technology is gaining momentum, there has been a flurry of advancements, applications, and new use cases. The applications of blockchain technology have a wide range of potentials from digital curries to the blockchain enabled legal contracts (Buterin, 2014) with the most promising applicability yet to be developed.

Furthermore, globalization, different cultural and human behavior, and the diverse nature of the regulatory policies in the supply chain networks makes it almost impossible to evaluate the information and thereby manage risks in the intricate system (Sarpong 2014; Ivanov et. al, 2018). Billions of products are being manufactured for the e-business and e-commerce industry being manufactured every day globally, through complex supply chains which extend to all parts of the world. The supply chains are getting complexed increasingly, more extended, and more globally.

Blockchains are, apparently, a disruptive based technology for the organization, operations, design, and general management of supply chains. Blockchain's ability to guarantee the traceability, reliability, and the authenticity of the information, along with smart contractual

relationships for a trustless environment all portend a major rethinking of supply chains and supply chain management.

The end users and consumers are often oblivious of the different crisis that is involved with the good's production. The earlier mentioned events have intensified the need for transparency in the manufacturing supply chains as a matter of consumer/labor protection and risk prevention. This is developing currently into a general demand for improved access towards the information in order to regain consumer trust in products (Mechthild & Ludwig, 2006).

The reliability and the transparency of the blockchain are meant to more efficiently and effectively facilitate material and information flow through the supply chain; with automated governance requirements. The transformation may further result in a broader shift from an industrial commodity, durable, products economy to an information, customization economy. The production will rely more heavily on knowledge, communication, and information and not necessarily on materials characteristics (Pazaitis, De Filippi, and Kostakis, 2017). For example, customers can follow the complete detailed information of the products which would further increase customers' trust connected with product characteristics (Tian, 2016).

The supply chain in the manufacturing systems consist of a series of system entities including physical, people, resources, processes, knowledge, and financial contracts and transactions facilitating the moving of a product from supplier to customer. In an extensive supply chain system, it is challenging to have an overall picture of all transactions within the chains (Haq et al., 2010). This information is typically stored in multiple locations and is accessible to certain system entities. In such systems, the customers (being the final consumer or the larger company within the chain) usually have partial access to the overall information (Monfared, 2009). In many cases, part of the data is treated as a commodity for a supplier. Therefore, due to the low level of transparency, the tractability of transactions is based on the trust between the system actors.

Furthermore, through the usage of the immutable records of data, controlled user accesses, and distributed storage, the blockchain technology can improve the traceability and transparency potentially. A decentralized distributed system that uses Blockchain technologies to collect, store, and manage critical product information of each product throughout its life cycle is proposed in this paper. Such a distributed block of information potentially creates a secure, shared record of transactions for each product along with specific product information. The proposed system is explained in the following sections, including the types of actors in a network of suppliers, how they access and register themselves in the network, and how data entry is authorized, validated, and stored.

A vital property of the blockchain technology is that eliminating the intermediate or the control facilities towards removing the friction in all the types of the exchange of values which can rise in the form of risk, costs, human error, time delays, information and control (Bogart and Rice, 2015). Typically, before deciding on which MIS strategy to use, it is vital to ensure that the choice made is fully compatible with your current system. This will not only help in avoiding erratic, but it will also save you the time and money that would have been otherwise wasted by that person (Rhodes, 2010; Jahangir, 2005). In addition, it is noteworthy for the MIS strategy or tool used to be in line with the decisions that are to be made. In other words, there should be a connecting point between the decision to be made and the MIS to be used by individual or corporate business owners (Jarboe, 2005).

#### 2.4. Blockchain to Add Overall Cost Efficiency

The blockchain is one of the decentralized or secure networking environments which contains the collection of several computers called nodes. For sharing and storing a large volume of data, this technology is of vital importance with a lot of possibilities. Furthermore, this technology minimizes the cost and increases accuracy (Kaur et al., 2018). Nowadays, most of the organization and individual end users are making use of online utilities for storing their crucial data for the backup purpose and has thereby dramatically adopted its usage in all IT environments for its availability and efficiency. The information is stored in an online storage system called the cloud. However, this storage utility has a critical threat to protect the data saved by distinct users; also this cloud service has many security issues. In addition, it also has some limitations such as system complexity, low storage efficiency, high computation cost, and high overhead. However, the blockchain is relatively an advance technology that stores the data in a distributed manner and further minimizes the cost and thereby improves accuracy. Blockchain manages the cloud storage based on the distribution of excess drive and web space on PCs and in data centers. A blockchain model comprises of encoded linked block of data which are a set of transactions or messages from the document or information. The cryptographic hashes are thereby introduced as a sequence of linked block (Al-Saqaf, 2017). Each block consists of three methods. They are block data, chaining hash and block hash. Block-data are a set of transactions or messages. Immediately preceding block hash value copy is called a chaining hash and the computation of the combined hash value of block data or information is defined as the block-hash. Moreover, this technique provides different advantages of transparency, immutability, and durability which are described below.

- **Transparency:** In the blockchain network, the duplicate copy of blocks of data is sustained by each node. The openness attitude of the blockchain model allows inspecting and auditing of data. Therefore, this method of transparency forms the operation highly visible and provides the network activities.
- **Immutability:** In the blockchain network, the stored information is unchangeable because the other nodes are responsible for the validation and verification of a block data. This technique permits the clients to activate with an assurance that the data chain is accurate and unaltered (Abeyratne, 2016).
- **Durability:** The decentralized networks are opposed to the centralized systems. Blockchain network is thereby used to eliminate a single point of failure. Blockchain network distribution provides the blockchain much reliable than central authority systems. Thereby, the blockchain network technique is way better suited for preventing the malicious attack.

Blockchain technology is a standout innovation amongst the most well-known issue such as dependency on the third party, trust verification, privacy, cloud storage issues, crowd funding issues in the recent years. The technology has effectively changed individual's way of life in some zone because of its extraordinary impact on diverse business or industries, and thereby causing a great influence in multiple places. The blockchain makes unfeasibly hard for the hackers to collect data from a repository system and breaking the networks. The information stored in the blockchain is decentralizing, encrypted and cross-checked. Blockchain technology has a rapid increment and wide attention based on the crypto-currencies. Moreover, blockchain technology is considered as an information technology which could be used in the field of technology, industry,

and commerce (Lee et al., 2017). The blockchain is mainly perceived as an accounting book or distributed digital ledger. It is primarily used for the transactions and further provides security for these transactions in the cloud. Moreover, based on blockchain technology, the users can transmit the information through the security of cryptography. In this technology, each node has a copy of the original data of the client and secures these data in a cloud.

#### **2.5. Blockchain to Increase Safety and Security to Data Management**

Blockchain can be connected with variety of applications far beyond crypto currencies. Since it enables payment to be completed without any bank or any intermediary, the blockchain can be utilized in different financial services such as digital assets, remittance, and online payment. However, this technology is facing a number of technical challenges. Blockchain can be viewed as an open messaging system verified by public key cryptography and digital message signatures created using a unique private key. The security of entire blockchains depends intensely on secure generation, use, and storage of private keys. To realize the fundamental security risks in blockchain technology, it is important to know the variation in the public and private blockchain.

Typically, the security in blockchain protection involves detection of a threat, prevention of the threat, appropriate response using the security policies, IT services, and tools. The technology uses many techniques such as minimum privilege, defense in penetration, risk management, and patch management in order to achieve the security of block data (Joshi et al., 2018). According to Tschorsch et al. (2016) and Han et al. (2014) they explained the usage of a combination of the public and private key in order to securely encrypt and decrypt data. The other most secure concept of blockchain is that the longest chain is the most authentic one which eliminates the security risks due to a 51% majority attack and fork problems (Conti et al., 2018).

Zyskind and Nathan (2015) summarized common characteristics essential for the privacy of blockchain to perform transactions without leaking identifiable information. The primary objective of privacy enhancement is to make it extremely difficult for other users or copy or use the crypto profile of other users. The collected data are usually stored at central servers of service providers, which are often susceptible to malicious attacks. Zyskind and Nathan (2015) proposed a decentralized personal data management system ensuring the user ownership of the data implemented on the blockchain. Since the user's addresses are pseudonymous in the blockchain, however, it is still possible to link address frequently.

Furthermore, a number of companies claim to increase privacy through some kind of mixing schemes, wherein bitcoin transactions from different users were mixed together. However, this meant relying on the third party, which did not always prove to be secure or beneficial (Meiklejohn, 2013). Since substantial changes are required to the existing blockchain technologies in order to preserve privacy, two approaches to the problem are seen. Firstly, to add anonymization to the existing blockchain by techniques such as Confidential Transfers. Additionally, the other possible method is to create new blockchains that are incompatible with the Bitcoin. For example, the Zerocash offering guarantees around the anonymity built-in by the application of new primitives in their blockchain, in particular zero-knowledge "succinct non-interactive argument of Knowledge" (SNARKS) (Eli et al., 2014). Vasek et al. (2015) highlighted the four different types of Bitcoin scams (Ponzi scams, mining scams, fraudulent exchanges, and scam wallet) by the racking of online forums and voluntary vigilantes. Lim et al. (2014) analyzed the

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trend in security breaches prevailing in Bitcoin and their countermeasures. The paper looked into the transaction method and security breach of bitcoin and its countermeasures.

The most recently developed blockchain-based systems, such as Ethereum, enable users specifying the scripts in transactions and contracts to aid applications beyond simple cash transactions. In this case, for verification, the required computational resources could be more extensive depending on the user-specified script size (Lim et al., 2014). The fundamental advantage of blockchain technology is the decentralization of the data. Moreover, the security and the privacy associated with the blockchain technology is the emerging field, which is in dire need of exploring further research. Moreover, "proof of work" is one of the parts of the bitcoin blockchain that has attracted considerable critique to prevent Sybil attacks that are secretly controlled with users by the attacker (Zyskind & Nathan, 2015). In this Sybil attack, a malicious attacker can flood a decentralized network with users that are secretly controlled by the attacker (Haplin & Piekarska, 2017). It is proposed by many researchers that the future of the privacy and security research looks bright on the blockchain technology (Halpin & Piekarska, 2017). High integrity of transactions and security along with the privacy of the nodes are needed to prevent the attacks and attempts in disturbing transactions in this technology (Swan, 2015). Also, confirmation of the transactions requires a computational power in the blockchain technology.

### 2.6. Conceptual Framework

The conceptual framework elaborates the relationship between various dependent and independent variables in a study. The present study has indulged in a review of existing literature to analyze considerations, problems, and opportunities of MIS using the blockchain technology in the e-commerce industries. Due to the dramatic momentum in the adoption of MIS using blockchain technology in various sectors, it is crucial to analyze these as dependent and independent variables for adoption of MIS using the blockchain technology in e-commerce.

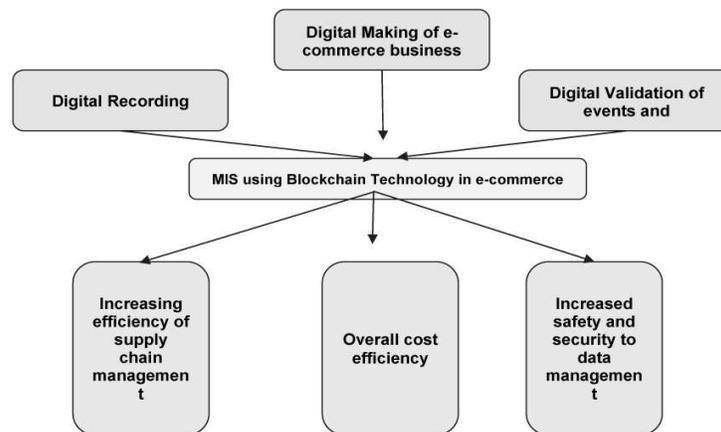


Figure 1. Conceptual Framework illustrating Management Information System using blockchain technology in an E-commerce

Conceptual framework development based on analysis of existing literature explores and highlights different variations in the application of the usage of MIS using the blockchain technology in e-commerce. Furthermore, the opportunities discussed herein are concurrent. The conceptual framework helps in identifying particular concerns and determination of ways to address them, particularly in the e-commerce industry. Conceptual framework design provides for a visual representation of specific concerns across all sectors and the resulting advantages. Literature shows an elevation in the popularity of the management information system in the blockchain technology. Figure 1 discusses from the initiation of e-commerce based on the MIS. It discerns the digital making of the e-business using blockchain technology. It further discusses how the data is recorded in a digitalized form. Thereby, irrespective of the size of the e-business, the data is stored in a digitalized form. The most successful implementation of the blockchain is bitcoin that has proven to be a viable solution in order to create a trust-less ecosystem without any central authority. Furthermore, examining the existing proof of concepts in the market, such as the blockchain of IBM, which they use digital currency and the mining protocol. Thereby, the businesses are now much more intended about disintermediating the third parties and thus place trust in the system (Abulzahab, 2017). Additionally, although privacy and regulatory compliance are challenges for the blockchain; however, connectivity is becoming such an imperative of modern business that there is a real incentive to tackle those challenges. Thereby, allowing more blockchain into the regular financial markets or other e-commerce enterprises will ensure an advancement in the online payment systems. Moreover, another advantage of MIS using blockchain has an advantage of the digital validation of various events along with the transactions taking place efficiently. The conceptual framework illustrated in figure 1 further explains the advantages involved with the management information system. Firstly, it increases the efficiency of the supply chain management. Secondly, the overall efficiency of the cost is also increased. The elemental objective behind running any business is making the business cost efficient. Thus, this objective is further addressed. Lastly, the applicability of the management information system is that it increases the safety and security of the data. Safety and the protection of the data in the business needs to be acknowledged, and with its use, the data is secured.

### **3. Findings and Discussion**

The current study perceives that rapid advancements in the electronic networks and computer-based information systems have given tremendous capacities to store, process, and transmit digital data in utmost all the business sectors. The adoption of the MIS has transformed the way we conduct trade, deliver government services, and provide health care (Dhillon & Backhouse, 2000). Against the backdrop of the electronic age, new organizational structures are coming up with new advances. The businesses and organizations are no longer characterized by their physical assets rather by a network of individuals who formulate, process, maintain, and distribute information. Thereby, these organizations are location and structure-independent and are thus continually impacted by the dynamic nature of their environment. This pushes them to make collaborations within and beyond the confines of their firm, which is the primary objective of the e-commerce industry. Blockchain technology is creating a dramatic and huge stir in the logistics and supply chain management. With its initial attention for its association with Bitcoin, its capability to create a trusted and transparent ledger of transaction information. Currently, as supply chain managers begin to acknowledge the

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possibilities of this new technology, there is immense potential for advancing transparency (Francisco & Swanson, 2018).

In digitalization of asset ownership, Blockchain technologies are touted as one of the most notable technological innovations. Blockchain has been illustrated to be a versatile programmable platform for managing contracts and ownership and providing an audit trail that cannot be easily tampered with but can be distributed in real time (Mattila, 2016). The applicability of blockchain technology and the underlying shared database technologies are vital technological enablers in the recent developments of ledger systems and distributed transaction. Instruments of finance, such as payments, trading records, and smart contracts, can be built on blockchain technology, which then inhibits adverse behaviour and repercussions, such as double-spending, forgeries, and false disputes (Barber et al., 2012).

The consequence of such transactional mechanism increments with the advancing programmable world wherein an expanding amount of physical things become programmable and get connected to the Internet. The MIS deals with the process of managing information as a decisive resource for advancing organizational performance and involves developing strategies and introducing systems and controls for improving information quality over time (Chaffey, Wood & White, 2011). Thus information management and systems deal with information on several management levels of an organization's perusing the goals of the particular organizational level (Luadon & Luadon, 2003). Thereby, operative staff requires solutions to cope with their daily tasks, but the management is in need to gain more insight into the knowledge of an organization to attract new customers or provide new products to increase the organizations' performance. The digitized supply chain integration is becoming increasingly dynamic. Admittance to the customer demand requires to be shared effectively, and product and service deliveries must be tracked to provide visibility in the supply chain. Additionally, the economic implications of adoption are apparent.

The findings intimate that economic progression is correlated with the adoption decision of cloud-based MIS. Enhanced transparency of processes and increased accessibility increases consumer base (Brous, Janssen, & Herder, 2018). Business process integration is based on standards and reference architectures, which should offer end-to-end integration of product data. Companies operating in supply chains establish data integration and process and through the specialized intermediate companies, whose role is to create interoperability by mapping and integrating company-specific data for various organizations and systems. It has typically resulted in high integration costs, plus diffusion is slow. Cloud integration and blockchain based MIS can be expected to offer a cost-effective business model for interoperable digital supply chains (Korpela, Hallikas & Dahlberg, 2017). In addition to confidentiality, integrity, and availability (CIA), the responsibility, integrity, trust, and ethicality (RITE) principles hold the key for successfully managing information security in the next millennium (Dhillon and Backhouse, 2000).

#### **4. Conclusion**

In order to be more efficient, effective, and responsive organizations give prominence to the use of networks and computer-based information systems. Yet the use of information and communication technologies has increased the incidents of computer abuse (Dhillon and Backhouse, 2000). The current period is the age of empowered customers who demand more information about the products they purchase, including the source of the supply and complete history of the product manufacturing in e-commerce. Satisfying these provisions are often either

too complicated, not cost effective, or even impracticable given traditional supply chain information technology; however, the blockchain technology embraces the possibility of addressing this challenge. This new technology provides a level of supply chain transparency in all the e-businesses allowing the supply chain managers to obtain the information consumers are demanding and thus offer to their companies' competitive advantages.

The improvement and implementation of novel technology does not guarantee that it will be used and otherwise succeed. Thereby, theoretical insight is needed to conjecture better the underlying motivators and barriers that will help the e-commerce industries and other leading companies or discourage them, from adopting blockchain technologies for supply chain traceability. Previous work has steered to the significance of the usage and applicability of behavioral intention and its antecedents in influencing technology. The current study contributes to a robust conceptual framework to explain these relationships and support the development of blockchain tools. By doing so, this research introduces the significant behavioral intentions in influencing technology. A conceptual model is theoretically derived as a potential framework for understanding the adoption of blockchain for supply chain traceability. The theoretical model is supported by researchable propositions and balanced with supply chain management implications and future research suggestions. The eyesight of the future insinuates a borderless global economy, empowered by technology and driven by the so-called knowledge workers. Such knowledge operators do not have fidelity to companies or also countries. They relocate to wherever the choicest possibilities endure. A more substantial pragmatic view of the future is that of chaos created by financial reorganizations and breakdown of political and social structures. Bearing pressures of organizational cost containment and external competition, several companies are rushing headlong into adopting IT without careful planning and understanding the security concerns. Many e-commerce businesses are still trying to cope with the intricacy and the mystique that surrounds computer systems. It appears that less security is applied to data held in computer systems than is the case for data held in manual systems. Office workers are familiar with the security specifications of a filing cabinet but not certainly those of an information system. In the corporate world, information security is generally perceived as being of interest to the IT department, and so many professionals do not give adequate importance to the security concerns of an organization. Even if they do, they come up with over-complicated solutions. Indeed, the widespread use of IT by businesses today has given rise to "security blindness" on the part of the users. The blockchain technology is becoming progressively colossal in size with the rapid increase in the volume of blockchain usage and the surge of daily transactions in the sheer number. All the transactions are although stored in each node to get its validation; however, the source of the current transaction needs to be validated first before the transaction is identified and validated. Therefore, as suggested by (Zheng et al. 2016), the proposed solutions to the scalability issue can be categorized into two categories: redesigning of blockchains and storage optimization. Therefore, the resulting database would then be able to maintain the rest of the non-empty addresses. In addition to this, mixing solutions and anonymous solution can be the proposed solutions to achieve the anonymity in blockchains (Zheng et al., 2016). The security challenge can be discussed in terms of integrity, confidentiality, and availability, which is always a challenging issue in open networks such as the public blockchains. With various security issues concerning in the blockchain technology, transactions, software and wallets, this paper tends to come up with the future trends in the security and privacy issues. Although the security of the blockchain is

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continuously enhanced, the significant challenges have continued to be prevailing. Studies have been done highlighting the usage of secure token or saving it securely with a view to protect the personal key. Therefore, the anonymity of the user information must be ensured while using the blockchain technology. Additionally, the user information should be deleted completely when removing the service.

While technical controls are vital, especially with regard to who accesses computer systems and to what they are allowed to do once admitted, sophisticated future users of information systems will have to address the organizational problems at a time when the form the organization takes is being revolutionized. Ironically, the principles that seem to be emerging harken back to earlier times when the technology for close supervision and control of dispersed activities was non-existent, an era when people had high morality, integrity, and ethics (Dhillon & Backhouse, 2000).

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