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# WALMART'S USE OF BLOCKCHAIN TECHNOLOGY TO ACHIEVE HIGHER SUPPLY CHAIN EFFICIENCY

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## 1. Introduction

Blockchain technology is used in multiple areas in the modern technologically innovative world. Business requires every step to be as efficient as it is possible to be. At the same time, business also needs processes to not be complicated so that it can be handled and applied at any given moment according to the requirements of the executives. Running a business involves a lot of complex processes. Through the efficiency of the executives, the processes are executed smoothly and the business is able to achieve its aims. For businesses that rely on supply chain, the flow of information is rapid and cumbersome for the employees of the organizations involved in the process. With the help of technology, the cumbersome process of keeping details of materials can become smoother. The use of blockchain technology is one way to reduce the processing burden on the supply chains in business. By applying the technology, the business ultimately moves on to a position where it can improve the performance. This is especially necessary in businesses that involves food and edible materials. Walmart has shown that the use of blockchain technology paves the way towards a more efficient level of operations within the units of the organization.

## 2. Literature Review

Blockchain technology stores information in blocks. When a company makes a purchase from a supplier and gives the task of storing the materials to another business partner, the information would be stored in separate blocks (Crosby, Pattanayak, Verma and Kalyanaraman, 2016). The blocks would hold

information about the date of purchase, the time, the slot where it is stored. When the material is transferred from the warehouse for the purpose of sale, the blocks would have the information of its date, time and the address it is sold to. To store such information and to process them, it would require usage of high level of technology. However, with the help of blockchain, the process would be much easier. In other circumstances, the information might get stuck in the retrieval procedure (Yaga, Mell, Roby and Scarfone, 2019). This would lead to a situation where the organization would have to face hassle from the end of the customers. With the inclusion of the blockchain technology, these processes would be sped up. The organization would be able to retrieve the information of every item, or group of items sold to a customer or bought from a supplier (Treleaven, Brown and Yang, 2017). The organization would be able to share the information with the business partners, which are the suppliers, the warehouse or the logistic partners. A network would be set up by the organization where information would be shared among the supply chain and each and every business partner involved in the process (Biswas and Muthukkumarasamy, 2016). For businesses like Walmart, the ability to deliver to the customers on time and overall customer service remains among the highest priority (Min, 2019). By incorporating blockchain technology, the organization would be placed at a much better position to deliver on these accounts.

Blockchains store information based on codes. That means that instead of username, the blockchain uses special codes to denote as particular information. In business where delivery of materials is important, the names of suppliers have the chance of creating confusion in the business (Beck, Avital, Rossi and Thatcher, 2017). The business organization might store information related to one supplier whose name and address has similarities to that of another customer. In this case, the dealings with the organizations would become difficult. The information stored in one place is not relevant to the supplier on whose name it is stored. To retrieve the information and store it in the right manner would become an arduous process in such a situation (Saberi, Kouhizadeh, Sarkis and Shen, 2019). Without a proper working system and flawless execution by the organization, the same process can potentially be repeated again and again. All of this can be avoided with better application of efficient technology. The same is brought forward by the incorporation of blockchain. By storing the information in the process of codes and blocks, blockchain would make sure the interchange of information would not happen (Zheng, Xie, Dai, Chen and Wang, 2017). It would also become much easier for the operatives in the technological department to handle things. It creates a system that is good for business and provides the organization with a sustainable process of information loading and updating. For a situation where the business organization would have to deal with a number of suppliers, it is highly important that technology is used for smooth running of procedures.

Blockchains are created in such a way that the operatives would be able to distinguish one order from another (Chen, Xu, Lu and Chen, 2018). If an order is placed by the organization quickly after a similar order was placed before,

there is a chance that information in the process would be mixed up. Here, the role of blockchains is highly important. Blockchain technology operates on blocks. There is a stark contrast of one block from another. Even if the information stored in one of the blocks is 99% similar to the other, blockchain would make sure that it is distinguished. The orders would be retrieved separately by the suppliers who would only know about a code. Through the representation of the code, the suppliers would store the materials. This way, one would not be mistaken for another (Angraal, Krumholz and Schulz, 2017). Blockchain keeps on finding new ways to make sure that confusion is avoided in the process of businesses. The confusion can lead to a bad deal or a bad situation. With the application of blockchain, the processes would become much easier for the executives to handle. By incorporating the technology in the working system, the efficiency of the organization would grow by leaps and bounds (Yli-Huumo, Ko, Choi, Park and Smolander, 2016). The fact that it is providing a variety of information to the business organization makes it easy to regulate procedures. In such a case, the chances of food supply related mishaps would largely reduce. This is one of the main reasons Walmart switched to blockchain technology. The need for the company at the time was to make sure that mishaps would be avoided in the future. A mishap related to a delicate material like food has a large-scale implication on the reputation of the organization. To avoid the same, the incorporation of technologies and efficient mechanisms is absolutely essential for large scale organizations.

Blockchain is created based on the occurrence of a transaction. If the transaction does not occur, the blockchain remains yet to be established. For example, when someone places an order but does not follow through with it. The person does not click on the buy or 'add to cart' button provided in the mobile application or the website. In this circumstance the blockchain would not be created (Tijan, Aksentijević, Ivanić and Jardas, 2019). This is essential in business and fruitful to the purpose of the business people. For example, a business has to place an order. However, there is a chance that the purchasers of the order can cancel. In this case, if the business places the order, it would lead to an overload of materials in possession. Every business wants a certain level of supply to be maintained throughout the transactions. If there is an overload or lack of supply, the business would have to face problems. They would need to employ extra employees to make sure that they are able to handle the process. Therefore, the decision-making procedure under such set of circumstances is highly critical. The order would have to be placed. But the main area of concern is that the order can be cancelled at any point of time. In such situations, a proper time has to be chosen to make the decision of placing the order (Zhang, Schmidt, White and Lenz, 2018). The mechanisms of blockchain works in favour of the interests of the business. By establishing the block only when the order is placed, the blockchain reduces the chances of a mishap in the entry of information. A special feature of blockchain is that the transaction is always verified. The user would be asked to make sure if the transaction is in place after a while. Only if the transaction is verified, the block that has every set of information about the transaction, would be established in

a proper way. Before the verification, the block is already established (Miraz, M.H. and Ali, 2018). However, once the user does not go on to verify the information regarding the purchase, the block would be placed in the bin. Blockchain works through the use of the hash. A hash is denoted to every transaction that is made in the process. This is a procedure that is followed in coding. It helps in keeping the information safe.

## 3. Research Methodology

### Research Approach

For a research to meet its successful purpose, the purpose of the researcher has to be drawn out. Research approach provides the researcher the guidelines that needs to be followed based on a specific purpose that the researcher wants to fulfil through the research process. There are various types of research approaches

- **Descriptive Study** – Every research is based on an issue. It probes an area of study and wants to determine aspects of the area of study. In descriptive study, the main focus is to make sure that the issues in the research process would be laid down in a descriptive manner. It is necessary to point out that specific facts and information about the topic of study would be laid out in the descriptive approach.
- **Explanatory Approach** – In this approach, the area of study would have to be specific and peculiar. This is only applicable when the area of study is concerning a peculiar fact or a series of facts. The explanatory approach would probe with the purpose of providing an explanation of the area of study.
- **Remedial Study** – The remedial study is aimed at finding solutions in an area of discipline. This type of study is generally used in scientific experiments where the adding of a new dimension in the process of study becomes important at every instant.

Out of these three approaches of research, the descriptive approach is chosen. The aim of the research is to gain knowledge over how the application of blockchain technology helps the process of an efficient supply chain management for Walmart (Meng, Tischhauser, Wang, Wang and Han, 2018). Once the facts are laid out in detail, the study would focus on providing an overall explanation of the subject. It becomes important to make sure the facts are laid down in a descriptive manner in the area of study. Only then would the research proceed to the next step.

### Research Philosophy

The research needs to have a proper philosophy in order to provide the right shape to the research. There are four types of research philosophies

- **Pragmatism** – According to the philosophy of pragmatism, there are many ways to interpret a particular series of events. In no single perspective can the entire picture of the research be properly presented. Pragmatism focuses on the research question. The area of knowledge surrounding the research question provides the most significant information with respect to the research.

- **Positivism** – According to positivism, the knowledge in any research under any setting would be gained through facts. These facts, are generated through the process of observation and recordings (Sun, Yan and Zhang, 2016). In other words, positivism research philosophy relies largely on the research activity.
- **Realism** – According to the philosophy of realism, the reality can be learned only through a scientific process. The ability of the human mind to perceive the reality is little. It can only successfully perceive a portion of the reality. With a better approach of science, it gives the power to understand the processes of the universe in a better way.
- **Interpretivism** – Interpretivism philosophy is developed in a research process based on the ability of the researcher to interpret the facts and science. A probe into an area of study would yield result based on the interpreting efficiency of the researcher.

Of these, it is the interpretivism philosophy that is chosen for this particular research. In this research, it is important for the researcher to have a high level of power in interpreting the facts and valued opinions of the participants of the research. After interpreting the facts, the results of the research would be laid down. The result is dependent on the technique, standard and overall ability of the researcher.

**Research Activity**

The research activity that is chosen for this process is Interview Questions. Interview questions are able to provide a wide area of angles to the research process. In this research, it is necessary to probe in order to gain information about the various aspects of the research process. The aspects would be highlighted and explained better through the inputs of the research participants. The research participants are chosen based on the knowledge of blockchains and its application in the industry. The research participants would be able to provide explanations regarding the areas of study that are yet to be explored to the extent that it can provide valuable and applicable information and facts.

## 4. Findings

The interview Questions are as follows

- Does the blockchain provide an answer for an efficient technology for the professionals who work in warehousing, delivering and storing items?
- Do the companies have enough technological professionals in their array of employees to handle the issues that might pop up and cause some level of problems within a company? Why or why not?
- Do companies generally have enough training required in the process of handling complex matter as in case of the food and beverage mishap that happened to Walmart? Why or why not?
- Has there been a previous technological gap where the technology installed in the process has not been able to solve the problems for the professionals?

- Has blockchain ever revealed to have any shortcoming sin its processes or any area of operation?
- Have these shortcomings led to a problem of epic proportions for any company in the past where the situation required handling of numerous items for sale and delivery?
- Is blockchain regarded high in the technological community? Do the experts and the pundits see this technology as something that can solve the problem for the people over a long term?
- Is a higher demand of technology within a company based on some mishap in the past that occurred like in Walmart's case?
- Does the introduction of technology mean that the employees within the company do not have to be acquainted with the operative elements of technology?

Most of the participants of the research revealed the fact that blockchain provides a better level of technology for the machines. It also revealed that most companies do not have a high level of technological expertise. The participants have felt that the technological gaps in the processes have stayed over the years. The introduction of new technology always is able to add a new layer in the industry.

## 5. Analysis and Discussion

By adding the technological features in the business, Walmart is able to improve a lot of operation processes. They would have a better idea of the processes within the industry and a better access to the information. In general, the businesses do not employ a large number of personnel from the technological background (Efanov and Roschin, 2018). This is because in most of the cases, the department of technology would turn out to be an unproductive portion within the company. The company would have to pay the department to be run. However, for most of the time, the department would not have much to contribute to the company. It is called to action only during the times when there can be a difficult situation for the company. In most of the cases, the business organizations are not able to budget the allocation needed for technological development. Any proposal to introduce a new technology would not be sanctioned within the company because expenditure is a scrutinized process in business organizations. However, the situations of difficulty can come around at any point in time. Here, the organization would have to make sure that it is prepared for the process. For this, it is necessary to either introduce a new set of technological professionals or a new set of technology (Cocco, L., Pinna, A. and Marchesi, 2017). The former would be much costlier for the organization. The latter might have a cost at the beginning of the process. However, it would become a portion of the company that would be handled by the technological experts. Therefore, in this process of decision making, the decision to use blockchain would be one that bears fruit for the organization. It was also revealed that blockchain technology has some technological hassles that might turn out to be a problem for the organization that is tasked with handling the matter. However, the problems of this nature

are mostly elementary in their levels. If the organization have the resources of technological professionals in their disposal, it would lead to problem solving in a smooth manner. Overall, blockchain technology is something that bears fruit for the organizations where it is installed. It is able to provide a solution for the operative procedures for the company. For an efficient supply chain, the necessity of blockchain is much higher.

## 6. Conclusion

In business where there is a requirement of purchasing and delivering of materials, there needs to be a technological efficiency within the system. Walmart had its technological issues. That led to a mishap regarding the regulation s of food and beverage. Therefore, it is necessary for Walmart to introduce an improved level of technology. By using blockchains, the organization is able to perform at a high standard. The research ponders upon the reasons behind the success of blockchain technology and the use of overall technology within the industry. It is important to know how blockchain offers a higher level of technology in the first place. The information is always stored in blocks. It is stored in the method of codes. The company would be assured that any of its deliveries would not be mixed up in the process. The research is performed with the method of interview questions. The interview questions would be posed to the professionals within the delivery industry and also technological professionals. It was revealed from the research that blockchain ultimately offers a proper solution that is sustainable in the industry of purchase and delivery.

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