Strategic Services Marketing

Prof. Kalpak Kulkarni

Department of Management Studies,

Indian Institute of Technology, Roorkee

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Blockchain and its application in service industries

Hello everyone. As we have seen the role of AI and chatbot along with that another technology that is making ground and being used across industries is blockchain. So in this session let's assess and understand the impact of blockchain and its applications in service industries. What is blockchain? Blockchain is a decentralized and distributed ledger technology that securely records and verifies transactions across a network of computers. It consists of chain of blocks, each connecting a list of transactions linked through cryptographic hashes. Seems like complex? Let's understand what is blockchain with an informative video.

Have a look at this one. Blockchains are incredibly popular nowadays. But what is a blockchain? How do they work? What problems do they solve? And how can they be used? Like the name indicates, a blockchain is a chain of blocks that contains information. This technique was originally described in 1991 by a group of researchers and was originally intended to timestamp digital documents so that it's not possible to backdate them or to tamper with them.

Almost like a notary. However it went by mostly unused until it was adapted by Satoshi Nakamoto in 2009 to create the digital cryptocurrency Bitcoin. Now a blockchain is a distributed ledger that is completely open to anyone. They have an interesting property. Once some data has been recorded inside a blockchain, it becomes very difficult to change it.

So how does that work? Well let's take a closer look at a block. Each block contains some data, the hash of the block and the hash of the previous block. The data that is stored inside the block depends on the type of blockchain. The Bitcoin blockchain for example

stores the details about a transaction in here, such as the sender, receiver and the amount of coins. A block also has a hash.

  You can compare a hash to a fingerprint. It identifies a block and all of its contents and it's always unique, just as a fingerprint. Once a block is created, its hash is being calculated. Changing something inside the block will cause the hash to change. So in other words, hashes are very useful when you want to detect changes to blocks.

  If the fingerprint of a block changes, it no longer is the same block. The third element inside each block is the hash of the previous block. This effectively creates a chain of blocks and it's this technique that makes a blockchain so secure. Let's take an example. Here we have a chain of 3 blocks.

  As you can see, each block has a hash and the hash of the previous block. So block number 3 points to block number 2 and number 2 points to number 1. Now the first block is a bit special. It cannot point to previous blocks because, well, it's the first one. We call this block the Genesis block.

  Now let's say that you tamper with the second block. This causes the hash of the block to change as well. In turn, that will make block 3 and all following blocks invalid because they no longer store a valid hash of the previous block. So changing a single block will make all following blocks invalid. But using hashes is not enough to prevent tampering.

  Computers these days are very fast and can calculate hundreds of thousands of hashes per second. You could effectively tamper with a block and recalculate all the hashes of other blocks to make your blockchain valid again. So to mitigate this, blockchains have something that is called proof of work. It's a mechanism that slows down the creation of new blocks. In Bitcoin's case, it takes about 10 minutes to calculate the required proof of work and add a new block to the chain.

  This mechanism makes it very hard to tamper with the blocks because if you tamper with one block, you'll need to recalculate the proof of work for all the following blocks. So the security of a blockchain comes from its creative use of hashing and the proof of work mechanism. But there is one more way that blockchains secure themselves and that is by being distributed. Instead of using a central entity to manage the chain, blockchains use a peer-to-peer network and everyone is allowed to join. When someone joins this network, he gets a full copy of the blockchain.

The node can use this to verify that everything is still in order. Now let's see what happens when someone creates a new block. That block is sent to everyone on the network. Each node then verifies the block to make sure that it hasn't been tampered with.   And if everything checks out, each node adds this block to their own blockchain.

All the nodes in this network create consensus. They agree about what blocks are valid and which aren't. Blocks that are tampered with will be rejected by other nodes in the network. So to successfully tamper with a blockchain, you'll need to tamper with all the blocks on the chain, redo the proof of work for each block and take control of more than 50% of the peer-to-peer network. Only then will your tampered block become accepted by everyone else.

So this is almost impossible to do. Blockchains are also constantly evolving. One of the most recent developments is the creation of smart contracts. These contracts are simple programs that are stored on the blockchain and can be used to automatically exchange coins based on certain conditions. More on smart contracts in a later video.

The creation of blockchain technology peaked a lot of people's interest.   Soon others realized that this technology could be used for other things like storing medical records, creating a digital notary or even collecting taxes. So now you know what a blockchain is, how it works on a basic level and what problems it solves. Want to learn how you can implement a simple blockchain in JavaScript? Then check out this video here. And as always, thank you very much for watching! So in order to provide an overview of blockchain technology, there are four elements.

First is decentralization. Unlike traditional centralized systems, blockchain operates on a peer-to-peer network, distributing control and authority among participants. Second element or characteristic is distributed ledger. Every participant in the network has a copy of the entire blockchain, ensuring transparency and reducing the risk of data manipulation. Third element is consensus mechanism.

Blockchain relies on consensus algorithms to validate transactions, ensuring that all participants agree on the state of the ledger. The final element is smart contracts. These are self-executing contracts with predefined rules embedded in a code, automating and enforcing contractual agreements. So what relevance does this blockchain technology has

for services marketing? To be precise, there are four we can say. First aspect is with respect to trust and transparency.

Secondly, providing security and data integrity with respect to smart contracts in marketing and supply chain transparency. Let us understand these further. First relevance is with respect to trust and transparency. Blockchain's immutability and transparency addressed trust issues in services marketing. Customers can verify the authenticity of information, fostering trust in the brand or service provider.

Second relevance is with respect to security and data integrity. The cryptographic nature of blockchain ensures the security and integrity of data, reduces the risk of fraud or even manipulations in marketing transactions. With respect to smart contracts in marketing, smart contracts enable automated, tamper-proof execution of marketing agreements such as loyalty programs, ensuring fair and transparent rewards. And with respect to supply chain transparency, in services that involves physical products, blockchain enhances transparency in the supply chain, allowing customers to trace the origin and journey of the products. Now let's understand some applications of blockchain in services marketing.

The first major area is supply chain transparency. The first application is with respect to tracking and authenticating products. Blockchain enables the creation of an immutable record of a product's journey through the supply chain. Each step from manufacturing to distribution is securely recorded, allowing customers to verify the authenticity of products. For example, a luxury goods company using blockchain to trace the origin of gemstones, assuring customers of the ethical sourcing and authenticity of each piece.

Second application is with respect to ensuring ethical sourcing. Blockchain helps establish and maintain transparency in the sourcing of materials or ingredients. This is particularly crucial for services where ethical considerations play a significant role. For example, fair trade coffee producers using blockchain to showcase the journey of coffee beans, ensuring customers that the product aligns with ethical sourcing practices. Another application is with respect to digital identity verification.

The first application here is with respect to securing and verifying customer identities. Blockchain provides a secure and decentralized way to manage digital identities. Customers can have verified identities stored on the blockchain, enhancing security and reducing the risk of identity theft. For example, a blockchain-based digital identity system

used by a financial service provider for securing customer authentication, reducing the chances of fraudulent activities. Another application with respect to digital identity is preventing identity theft.

With blockchain, individuals have control over their digital identities. Imitable records make it difficult for unauthorized parties to manipulate or misuse personal information. For example, blockchain-based identity verification for online services that ensures that users have control over their digital identity and reducing instances of identity theft. To make it more easy to understand, have a look at this particular video that showcases how blockchain is implemented in the aspects of identity management. Thanks for watching! Bye! Next application of blockchain technology is with respect to loyalty programs and rewards.

Firms can go ahead with blockchain-based loyalty programs or points. Loyalty programs often suffer from issues such as fraud and lack of transparency. Blockchain addresses these challenges by providing a decentralized and secure platform for loyalty points. For example, a retailer implementing a blockchain-based loyalty program where customers earn and redeem points transparently, ensuring the integrity of the reward system. Further, it is possible to have improved tracking and redemption system.

Blockchain facilitates real-time tracking of loyalty points, making it easier for customers to understand their reward status. Smart contracts automate the redemption process, ensuring a seamless experience for customers. For example, an airline using blockchain to enhance its frequent flyer program, allowing passengers to track and redeem miles more efficiently and transparently. Let's have a look at this particular Walmart case that uses blockchain technology. Our next guest is a founder and CEO of a technology company which focuses on blockchain.

Her company is now using blockchain to help Walmart take on Amazon. I want to know how this works. Joining us is this lady, Susan Akbarpour with Mavatar.

Susan, welcome back. Good to see you. Thanks for having me. It's a pleasure to be here. Spell this out in very simple terms. Our viewers are pretty much like me.

We're not that big on technology. How is Walmart using blockchain? And your company using blockchain to help the company? Walmart is using blockchain in different capacities for inventory management system tracking many things. However, our technology.

.. Wait, wait, wait, wait, wait. They're going to track how much inventory they've got. Paper towels, for example. Yes. How does blockchain track paper towels? So there are many parties involved when we're talking about inventory management, right? Point A to B to C to D. If we want to use this using Excel sheet or traditional inventory management system, it's not efficient.

It's not cheap because every of these movements need to be tracked and to be recorded. So blockchain is helping to make everything automatic and very efficient and fast without back office services that they cost these kinds of retailers arms and legs. Forgive me for being so simplistic. Yes. But I think of inventory management as all about barcodes.

It is. Has that got anything to do with blockchain? There are barcodes. There are, as I said, many parties involved. Many are the partners involved. So you really need to track all of these systems together and blockchain make it fast and very cheap.

You're the CEO of Mavatar. Yes. And you are working with Walmart. Have you sold them a product? Have you sold them your technology? No. In fact, we're helping them to partner with traditional media companies and actually power their product sales with the power of content, which is in fact helping two industries, two traditional industries that they are both affecting today. They are bringing content and Walmart and other brick and mortars bringing products and we are creating Amazon like marketplaces fueled by the content of the media. So we're licensing our software to media companies to lend their content to promote the product sales and we're tracking through blockchain everyone who is influencing those product sales.

I give you a very nice example. Make me understand. Go ahead. I remember the JLO dress in Grammys 2000. Everyone remember that, right? It broke the internet. It actually made Eric Schmidt, the CEO of Google said that that search inquiry made us think about creating image search for Google, right? But no one, including JLO, CBS, Grammys and the designer even Versace, they didn't gain a penny out of that influence. Today if you go and search that keyword in Google, you see still Google sells advertisement for the counterfeit and similar dresses online.

What's blockchain got to do with that? Blockchain is tracking that influence in our technology to every single of those influencers and distribute the value that they create and the commission that they got from Versace between all of them forever. I think I got

it. I think you got it. I think I'm there. And guess what? Fox and CBS and Disney and all of these guys are promoting millions of products every year.

You guys don't have to even use push advertisement and subscription as a revenue model. You got your foot in the door. Susan Akbarpour, thank you very much.

Thank you. Appreciate it. Blockchain is also used in insurance industry. Let's have a look at this particular video that shows how blockchain is used in insurance companies for streamlining claims and settlements. Block Chain in Insurance, insurance industry plays an undeniable role in every human life be it health property or any risky Insurance everyone has their covers and claims the work for force and processing of the insurance sector can be enriched with blockchain technology in this video we have portrayed how the blockchain insurance sector would work. In this video, we have portrayed how the blockchain insurance sector would work. How would a future blockchain-backed insurance sector work? Even though the insurance sector is certain in our lives, it lacks the evolutions of technologies. Implementing blockchain in the insurance industry can fast-forward the growth curve to next generation.

Digitized documentation.   Blockchain insurance platforms can avoid physical documentation and digitize the records which could save huge papers. Digitization of records can avoid damages from calamities and loss of data. Automated claim approvals. Insurance industries face a great hassle on processing huge claims at the time of calamities. In these scenarios, blockchain-based insurance platforms can process claims rapidly with community governance.

Scheduled payments. Insurance premiums, claim approvals, and other payment processes in the industry can be scheduled with smart contract protocols. Blockchain insurance channel supports P2P transactions, and hence the process would be swift. Devoid of scams. Insurance sector needs to verify the client's reputations and claims in a legitimate manner. Blockchain insurance platforms can avoid risky claim scams to a greater extent with community governance heading through consensus goal.

Integrated verticals.   Every person would have distinct insurance premiums for automobile, health and properties. With blockchain insurance applications, a person's entire insurance policies can be integrated and managed efficiently. Blockchain insurance

platform features such as integrity, transparency, decentralization, P2P transactions, devoid of intermediaries. Scams can enhance the claim processing and consumer experience in our future generations. Let our claim processing in the hassle-packed situations be ergonomic and hassle-free with blockchain-powered insurance applications.

Not just private players or services, blockchain has applications for government services as well. Have a look at this particular video that showcases blockchain applications for providing government services. With the aim to deliver maximum governance to citizens, government departments must digitally transform themselves from an intra-departmental as well as an inter-departmental perspective. This requires active engagement among stakeholders such as ministries and departments, private players and members of the public.

Almost every governmental department faces two typical challenges. One is working in silos which gradually leads to multiplicity of processes across various departments. Different departments and affiliates run on disparate and disjointed technology systems leading to potential data integrity and data consistency concerns. While not recommending severe upgrades to established IT-powered processes in various government functions, it is also significant to aggregate multiple digital identities accorded to citizens in each department thereby making cross-referencing easier. Infosys Blockchain, this network aggregates various digital identities of a citizen with a unique digital identifier on blockchain in a way that no single stakeholder is in charge of managing this identifier. Let us look at how such a blockchain-powered network eases the life of a citizen.

Right up to his birth, the hospital publishes the citizen's birth certificate on the blockchain network and a digital identifier is created for the citizen. This establishes a medical history for the citizen that is bonafide. Subsequently, the Department of Citizen Records also updates the Social Security ID or Citizen ID on the network against the same digital identifier. As the citizen proceeds to complete his schooling and graduates from a university, all his academic projects, certificates, awards and recognitions are updated on this network by his various schools.

This creates a bonafide academic repository. When the citizen applies for the job of an investment banker in a global bank, it also allows the employer to validate his educational qualifications through the network. The employer, in turn, updates the citizen's employment details as well as the mass salary account details on the network. This creates

a bona fide professional listing for the citizen. The citizen goes on to avail medical insurance provided by the employer and avails a car loan from a bank. Respective stakeholders update all necessary medical records and investment details on the network and the cycle goes on.

All of this access will be possible with least amount of moving parts, that is, without causing multiplicity of IT integration between various departmental systems. This eventually create a certified and immutable history of citizens that can be a great aid to ensuring safety and sovereignty of the country. Government departments need to undergo a digital transformation both internally and between departments to eliminate reduced or redundant processes and address issues related to data integrity and consistency. This particular video that shows how leveraging blockchain to aggregate citizen identities across various government departments can effectively tackle these challenges.

Now, let's look at some challenges and considerations while using blockchain in services. At a broader level, there are three types of challenges. Regulatory compliance, integration with existing systems and education and adoption challenges.

Let's discuss these one by one. First here is regulatory compliance. Under this, the first challenge is complex regulatory landscape. Blockchain implementations often face challenges in complying with existing regulations, which can vary across jurisdictions and geographies. Navigating this complex regulatory landscape is crucial for ensuring legal adherence. The second challenge under regulatory compliance deals with data protection and privacy. Compliance with data protection laws and jurisdictions become paramount, especially when dealing with sensitive information on the blockchain.

Striking a balance between transparency and privacy is a regulatory challenge. Second set of challenges deals with integration of blockchain with existing systems. First challenge here is legacy system compatibility. Integrating blockchain with legacy system possesses technical challenges. Ensuring seamless compatibility and interoperability with existing infrastructure is essential for smooth transition.

Second challenge deals with data migration and transition. The migration of data from traditional systems to blockchain can be intricate. Planning for a phased transition while maintaining operational continuity is a critical consideration. Third set of challenges for using blockchain services deals with education and adoption challenges. First here is

understanding blockchain technology. Stakeholders within government departments may lack comprehensive understanding of blockchain technology.

Educating decision makers and staff about the benefits and workings of blockchain is essential. Second channel, which every organization faces, is change management. The adoption of blockchain represents a significant shift in the way processes are conducted. Resistance to change and unfamiliarity with the new technology can impact successful implementation for blockchain. Further, now let's understand the relationship between blockchain and having digital transformation of services.

There are 10 points or factors through which blockchain can influence digital transformation success for any service firm. These are enhanced security and trust, decentralized identity management, streamlined supply chain process, improved cross-border transactions, smart contracts for automation, tokenization of assets, digital voting and governance, supply chain visibility and accountability, faster and cost-effective transactions, and finally enhance customer privacy. Let's discuss these one by one. First here is enhanced security and trust.

Blockchains decentralize and tamper resisting nature ensures the integrity of data. In digital transformation, this feature enhances security and trust in various services such as financial transactions, identity verification, and supply chain management. Second one here is decentralized identity management. Blockchain enables users to have control over their digital identities. This is particularly valuable in digital services where identity verification is crucial, such as online authentication, access control, and secure document sharing as well.

Third, through streamlined supply chain processes. For services involving supply chain and logistics, blockchain facilitates transparency and pressability. Smart contracts automate processes, reducing paperwork, minimizing errors, and enhancing overall efficiency in the supply chain. Next benefit is with respect to improved cross-border transactions. In international services, blockchain simplifies and accelerates cross-border transactions. It eliminates intermediaries, reduces transaction costs, and provides a transparent and efficient way for financial transactions between parties in different countries.

Next benefit comes with smart contracts for automation. Smart contracts, self-executing contracts, with the terms of agreement directly written into code, automate various

processes. In digital services, this can include automated payment settlements, contract execution, and compliance checks as well. Next, where blockchain influences digital transformation is through tokenization of assets. Digital transformation often involves the representation of real-world assets as digital tokens on the blockchain. This tokenization allows for fractional ownership, increased liquidity, and efficient trading of assets like real estate, art, or even commodities.

Where blockchain influences digital transformation is through digital voting and governance. In public services and governance, blockchain can be utilized for secure and transparent digital voting systems. This enhances the integrity of elections and governance processes by ensuring the immutability of voting records. Next comes supply chain visibility and accountability. For services related to product authenticity and origin, blockchain provides an immutable and transparent ledger. Consumers can trace the entire supply chain, ensuring the authenticity of products and holding parties accountable for quality.

Next comes faster and cost-effective transactions. Blockchain's elimination of intermediaries and its decentralized nature contributes to faster and cost-effective transactions. This is particularly advantageous in financial services, remittances, and any service requiring quick and secure transactions. And finally, blockchain also influences digital transformation success through enhanced customer privacy. Blockchain allows users to have control over their data and who accesses it. This is crucial in services where customer privacy is a priority, such as healthcare, where patient data can be securely managed and shared with authorized entities only.

So as services undergo digital transformation, integrating blockchain technology offers numerous benefits in terms of security, efficiency, transparency, and trust. It plays a pivotal role in reshaping traditional service models and fostering innovation in the digital era. So in this session, we try to understand and assess the impact of blockchain and its applications in various service industries. Thank you.