Invitation to participate in the research project titled_ _p...

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SPEAKERS

Chibuzor Udokwu, Augustine Madumere

Augustine Madumere 00:10

So, welcome to this interview. The purpose of the interview is to understand tensions that arise during the implementation of blockchain and its use within the supply chain context. In terms of tensions, we are looking at controllable tensions and manageable tensions. So controllable tensions are, for instance, tensions that arise due to the choice of network you're using. So in this case, for this case study, I'm looking at a private blockchain. So we're focusing more on private blockchain. So the tensions arise in this regard that are controllable, maybe due to the design choice, for instance, also environmental, what we call environmental alignment. It has to do with how the company position itself, right, how the company decides to participate, what is the goal of the participation, and then also, there is also other form of tensions that arise due to if the focus is using the network as a form of collaboration or as a form of gaining competitive advantage, right, depending on the type of blockchain and depending on decision, based on design, these tensions, you can, you can control them, but you cannot eliminate them. And then also, the other ones will which are manageable, for instance, those ones who arise due to the nature of blockchain technology. So let's say for instance, if you have an open-source public blockchain, right, where everybody has access to the data, and also it's anonymous, right? You will have you might have issues with accountability if you do that, within an enterprise, a company or business, right? business wants to know who is accessing which data and for what and for one, so that these are kind of manageable tensions that do arise in terms of accountability, but an animosity, there's also tensions because of the trust, do we trust the institution providing it? If it if it's private? Or do we trust the algorithm behind it. And then there's also this, what will we call it inclusivity? And exclusivity, that's about integration. In the actual sense one means that the attention is related to the openness of the application itself. But whether a company profits from that, meaning, the focus on exclusivity, meaning, the very closed, sort of for the public, Blockchain is more on exclusivity. And then for inclusivity, that means you want to have a lot on the network and want to have a lot of participants on it. And you want to learn and grow, eat with everybody else, who are aligned with the value of the company. So this is more or less the models of tensions that do exist. And then what my professor did was that she then use it to relate to the major tensions that affect companies are potential

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areas like profitability versus growth, and short-term versus long-term. And having an innovative idea where you can focus on innovation so suddenly one of our KPIs or some performance, we abandon the innovation actually start focusing on to this profit. This is what this is management deals with, how to take care of the cannot run away from it because it's business as usual. So those tension areas are happening to the business. But this identifies potential to blockchain is now integrated into it to see do these tensions that arise due to blockchain within the business context. Do you see them arising? And if they do come up? How do you deal with that? So this is just a brief intro in terms of the framework and the tensions that arise and the definitions of the tension that we have for the case.

Augustine Madumere 04:41
in terms of use cases, you have created a solution that is used to authenticate and verifies to prove the authenticity of the product, with this solution, are you focusing on optimizing their existing solution? Will a company that wants to use it, just kind of get a plug-and-play solution and start using it immediately? Or is it something they have to join completely a new network?

Chibuzor Udokwu 05:38
Okay, so let me give you the like, let's start from here. Then we talk about the tensions. So the solution is based on public blockchains. So the future is that companies can can get their plugins and then integrated with the platform, we get them the plugin, and then they deploy. And then they start using it when they have new products, they want to make sure that is not fake the main data center to put it on blockchain. And then with their digital signature, we can see to who is doing what exactly. So that is generally about the solution. As you rightly mentioned, hopefully, it'll be a plug in and then currently is on to have it on public blockchain because we have public blockchain is a larger network and then it comprises more people than private blockchain. Then there is some things about this private blockchain about these privacy concerns. So if you people, it's okay to set up this little more privacy in private blockchain. But then you are also limited with the number of people in the network so the network can be attacked, even though you get more privacy because maybe you have 20 or 100 users, then this these are quite minimum, then in public blockchain, you can also store encrypted data with this kind of public key encryption system. So there are ways to store to store private data to store personalize data on public blockchain so that this information is not linked to third parties. I think there's already a lot of research on this and, and it's possible to ensure privacy in public blockchain, then there's also an environmental concerns that you talked about before. So environmental concerns boil down to consensus algorithm that is used for the production. So mostly, if you think about a blockchain, you have this usual popular proof of work that consumes a lot of electricity to solve a puzzle and then add a bit to be able to add data to the blockchain. So basically, this is it consumed. So this is not environmentally friendly. But if you also look at all these other technology, for instance etherium and Bitcoin uses this proof of work kind of system, but modern blockchain these days are now considering the environmental impact of the network. And then they are moving to stake based system like proof of stake based system that uses voting based on your contribution on the system, and etheric, which is the second largest blockchain fully integrated into this proof of stake kind of consensus. So it all depends. Whoever manages the distribution or deploy the solution on the blockchain can decide the type of blockchain if he wants to use this environmental friendly blockchain. They are also the proof of work that blockchain that is not just Bitcoin, but I just gave you example, a lot of blockchain these days, considering environmental impacts and using less energy wastage kind of technology, maybe then we

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can go to these tensions, the ones you mentioned before, then if I have additional attention, then I can come up with but I think I've answered about this privacy problems. And I've answered about environmental problem. I've also answered about a case study with it, and how it works on public blockchain. So maybe if you mentioned the other tensions that other people already listed, then I can comment on that.

Augustine Madumere 09:22
Let's go back to this accountability because you mentioned something about it in terms of accountability, where there will be companies that will be tied to which types of companies' compliance elements were who assess which data and to know the mean, for instance, to avoid someone from outside the blockchain to do it. How can transparency and traceability foster internal processes and data exchange within the organization? How does it work?

Chibuzor Udokwu 09:59
Yeah, it's very possible. So even if you have a privacy enabled and the data on the blockchain, it's also very possible that the partners involved in that process. So even though we talk about blockchain is decentralized, but somebody has to build this app and deployed it and allow other people to join back in a private blockchain. And even everybody can confirm the correctness and transparency of the data storage. So there's only a focal company. So imagine, like the app, we just build, a logistic company deployed it or a luxury company just deployed. So that as luxury company is the focal company, but every other participants in the network can actually verify what is in the data if it's true, or if it's false, because they are on public blockchain, but somebody has to build it. And then, if you also want to ensure encryption and privacy, you can also add additional codes on this ticket to encryption, ticket to means public key encryption system and add more people that you want to see the data. So the data stored on the blockchain, public blockchain maybe is permanently stored. But to access the data and read it, you need some key or it has to be encrypted with your keys. So this is where the control mechanism works. So whoever deployed it controls access to the data, initial assets. So everybody that part of the network will be given access, and then they can independently verify correctness of what is stored on the blockchain. So this is very possible. There are already many calls to do this. And people can actually, even though store very company private information on public blockchain without worrying about privacy concerns.

Augustine Madumere 11:47
Will they also grant assess themselves to the users of the data? Let's say for instance, you have, as a participant, you have access to your data, right? And then can you then grant access of your data to someone else, but not everything? But what do you want them to know? Or to have?

Chibuzor Udokwu 12:11
Here, this is already possible, because there are this new business process about people getting paid for releasing their data. So but the other part of after giving somebody permission to store your data on blockchain, or data associated to you and get money from it, or you pay for it or whatever. But the other problem about personal data on blockchain is about data deletion. So it's not really possible to remove what is on the blockchain. So most applications, try to avoid personal data going into the blockchain, but other non personal data that is related to that, that you own. Like all this kind of marketing data that

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all these big companies, Facebook, and all this use of track, you can actually give permission and get paid by publishing this type of data, but not really personal data, maybe it can be linked to your public keys, where there is no personal information about you. But it's possible these days, people are implementing this kind of data ownership business model where people pay to proceed to use data generated and get paid for it. So this is our new business model that we hope is instantiation people already implementing things on. But that's not that is also a big problem, because if you throw it on the blockchain, it remains there for

Augustine Madumere 13:37
Yeah, I mean, that's, that's a completely something that I didn't want to go into. Because there's always a tension between GDPR and blockchain regarding the right to be fogotten. The data remains always on the blockchain, but the GPRS allows customer to request to be forgotten. Right? So that's already tension on this one as well, in terms of how do you deal with that? If you are in the EU market?

Chibuzor Udokwu 14:08
In this case, you know, like it's not everything that goes on the blockchain, because it depends on the use case, you have to find the purpose of the blockchain in this every use case. So whatever I propose that allows you to have transparency, traceability, visibility, these kind of things. But those things that concerns private data will be done traditionally, the way it has been done before outside of the blockchain, for those functionalities that allows you to verify or authenticate and prove that something currently exists. You can put it on the blockchain and then link it to personal data outside of the blockchain, because with this oracle system, this kind of decentralized app where you can get data outside of the blockchain and put it into the blockchain, so it's really possible nobody should put Personally Identifiable that's on the blockchain these days. I think with the EU regulation, this is quite clear.

Augustine Madumere 15:10
Now that we mentioned something before about trust, so maybe we can jump on that one immediately. Because I also understood that is the trust issues, the tension. So regarding trust, for instance, it's either you trust in the code or you trust in the institution that provides the solution. What are your thoughts?

Chibuzor Udokwu 15:46
These are two ways. But generally, people shouldn't trust an institution that provided code, but rather it was a code. So this code, even on private and public blockchain, while we are part of the network, as a participant, whether it's in the private or public, you should be able to assess the code, because the code is usually public, like in smart contracts. So this smart contract are deployed on public blockchain, these are the codes here. So as a participant, or a user of the app that provides some functionality, you have access to the code and see if it does what it claims to do. There's a lot of transparency. Let's say you're a

Augustine Madumere 16:25
farmer, right? But a farmer in Portugal, right? Producing apples that are sold in Switzerland and the retailer asks you to be on a blockchain. Right? You don't have the technical capabilities to do this. How

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will such a farmer establish trust? The small farmer has to trust and assume that trusted participants are part of the network.

Chibuzor Udokwu 16:59
Yeah, is the same way like the big internet. So we don't know how the money transfer, like if the money we put in the bank is actually there. But we trust the bank. On the in this case, the farmer doesn't need to trust the big bank. But the farmer believes that, even though he lacks the foundational knowledge of the system. But other people that uses this public blockchain, which are 1000s of millions of smart people have already verified and this farmer can also contract like, some specialist and pay per day like, no matter the day work. And then they say, Okay, look at the app I'm trying to use, they told me to do this, I don't know. Can you check if it does what is so you mustn't, generally you don't know how this is before the blockchain. You don't even know how the internet works before you use the internet. So now we are adding an additional layer of trust with a blockchain. And people already verified it. So as an individual, if somebody comes to you and say, Okay, you're part of our supply chain. So find this digitally. So we put it on blockchain. And then, but you don't know how it works. But you know, is public blockchain and other people are using it. I've already vetted it, even though you lack knowledge. So it's based on crowd, but the trust is based on crowd. So you as an individual, mustn't know the whole system to be able to say it's correct. But we believe that because there's a lot of crowd in the system. So other people have already vetted what you're trying to use. So that's why it's better to build on top of layer one technology that has been vetted like Ethereum, everybody knows how Ethereum works. So there is nothing new about it. So but the code of the smart contract that you want to use to track your supply chain manager farming, it is on blockchain, somebody has to confirm to you that this code actually does what it's supposed to do. So if other parties can do this for you it and if you can do it for yourself. So nobody wants to teach you how to verify. But the point is, what you put there, you can track it on the on your wallet or on blockchain explorers. And you see the data is real. And you sign the IDs and your address and sign with receipt that signatures and other things. So basically, I think it's a technical question to that everybody that wants to use blockchain that trust must understand it does shouldn't please not everybody understands.

Augustine Madumere 19:27
Yeah, it's not possible that everybody understands it. But I'm just wondering, how can we how can trust be established? Right, what you mentioned, in this case, is that some of the other participants have verified it and agree to it, and they're using it and for you as a small company or a small farmer. There's already an established trust before you join and you can accept as it is. Right? Yeah, exactly. And to do this, it like you said, it requires the farmer to accept it as it is given or if you have the technical capabilities to verify, to audit it yourself, right?

Chibuzor Udokwu 20:09
Audit, you can hire a one day auditor, like a one day job. And then, so these things are possible. So if you because it's possible to audit it, but you can't audit it, but you can hire somebody, which is very outside of the company that provided the service. So that is the beauty. So these things, you don't have to trust these people that provided the service to audit it for you. Because the code is public, it's on public domain, you can audit it yourself, or get a professional to audit it for you, or you trust that the code is correct, because 1000s of other people are using it. So

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Augustine Madumere 20:44
I think this also may be what about maybe someone gives you the blockchain or the network certificate says, this is verified, and it's okay. And then you can trust it. So that institution again can also manipulate the auditors. Right?

Chibuzor Udokwu 21:02
No, but you can hire No, you can hire your own auditor. So if the provider of the service lives in Switzerland, so what if I find an auditor in Estonia, nobody knows. So the point is that the code is public. So for the fact that the code is public, anybody can verify it. So that's the point. So if you have the technical capability to verify it, fine. If you don't have, I asked somebody outside the organization that provided this is not possible in the traditional banking system. So if a bank provides a supply chain out, that allows you to pay people, you can't even audit the app and see what it does. If they actually take your money for interest or fees deposit or whatever happened. If they actually Money in the Bank of the bank, you put it inside, so you can't audit it. So if they hire auditors is the one they approve, or the one government agency, but you can't audit the app, you can't audit anything, you can't do anything. For this one gives you the opportunity to do it yourself, get somebody to do it for you, or trust that other people have done it, and then

Augustine Madumere 22:06
Let's go back to the integration model tensions, which is related to the openness of the of the application to other participants, right, whether it is just for you or for other people participating. In the case of public, it is not restricted. Because of private. I mean, it's also good with what you said, right? You can also restrict its public policy still with restricted access to participants who are verified maybe by a governance board or by an advisory board that vet participants based on certain criteria before they are allowed on the network, right? what benefit arises from restricting users to an infrastructure like this.

Chibuzor Udokwu 23:00
But it's, it's the restriction per se, it's let's say you want to build trust between five players in a supply chain. So you can use a private blockchain and implement this. So the five players are the people that this system is important. Do you understand so if you add them and be able to, they have unlimited, like, let me say use the word unlimited assets, to do what they are assigned to do. Based on their role, they have assets to perform the function they are supposed to perform. And before they already started using it, they already verified the code because it's public to them and it doesn't stay in one person computer, it stays in the computer of the five of them. So even if one party goes the app server runs. So that's like some kind of control you can implement on private blockchain. on public blockchain you can use encryption to study data and allow people that have the key to interact with the public that so it also works the same way that people that cares about the process, the business process of the supply chain, they are the people that should use this function. So who are they and what are their keys, use it to encrypt the data then people can have access to

Augustine Madumere 24:16

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so for summarize what you said. You can use it to build trust among the participants that are using it, because it is exclusive to them. You can also they can also have an exclusive advantage of being on a blockchain let's say for instance, there's a farmer that grows potato in France, right? And Carrefour were able to put the farmer on the blockchain. The Farmer didn't have an IT department. Carrefour took care of it. They paid for the implementation to put it on the blockchain. So if you go to Carrefour and scan the potatoes, you will see where it's coming from the origin and how it was grown. Now, the former can use it as an exclusive advantage to look for new customers and say, if you buy my stuff, you can it's already on the blockchain that you can show your customers where it's coming from? Right? So he's benefiting already from the exclusiveness of the solution that is private. Can you do that in a public blockchain?

Chibuzor Udokwu 25:25
as well, yeah, I have this kind of solution is even much better on the public blockchain, because then anybody can open their computer and access to public data and verify. So it also gives advantage to the farmer. Because these days people are caring about the environment. So if the farmer use environmental friendly practices to do the farming and store it on blockchain, it can attract new kinds of customers to them, because they can verify and say this potato uses this type of doesn't use this type of fertilizer, which is terrible. It's planted in this particular place, it uses type OPNET. So you can add a lot of bunch of things to do it. And then because of the time stamping and the historical data, people can throw the farmer and say, Okay, this guy, we can stamp you as environmentally friendly. So this additional benefit for this kind of solution. You can do it on the same way you do it on the third, centralized blockchain, you can also do it on public blockchain with encryption to ensure that the data you don't want public to see is blocked. Yeah, so it's possible both on public and private production are the same, it gives the farmer advantage of showing transparency in their farming process of they're not destroying the environment. And like this kind of things, I'm just thinking of the potential benefits to the farmer.

Augustine Madumere 26:51
Thank you. Let's go back to the organisational alignment, which is a source of tension that comes with a company focusing on an external value network, or they are creating and capturing internal value for themselves. What are your views the challenges when implementing blockchain in an existing business process?

Chibuzor Udokwu 27:23
it's it's mostly about know how there's limited number of people that actually have this experience of what what blockchain should do. And then there is also this general mistake of putting, like, if you want to digitize a process, like the traditional way, you just write a code and then a lot of them platforms on decentralized, that it will depend on the code. So anything that is possible to digitalize is digitailzed but in blockchain. So there is more is not just like that, because you want to put one to optimize the blockchain because it costs the transaction costs money. So maybe you have to find in this business process. What are the key items in this business process that if I put on the blockchain, it will increase trust, it will increase transparency, it will increase accessibility, maybe efficiency. So if you think about it this way, so the method of building blockchain app is not these traditional method of coding doesn't work. It doesn't apply. So a new approach is entirely needed. That allows people to build something on

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blockchain in a very systematic way that provides the value that blockchain system provides. So it's not the traditional way of digitizing a business process and putting everything on the code and it is possible to run computations on a blockchain you have to find those key functions that when you put it on the blockchain, it increases transparency or efficiency or availability like this kind of values that blockchain

Augustine Madumere 29:04
What steps are necessary to make this happen, let's say for instance, for a company that is trying to participate in the network, what steps are necessary for a smooth integration.

Chibuzor Udokwu 29:22
They need the blockchain, engineer, designers, analysts, so they need your partners and key stakeholders to come together and then transform the existing business process to blockchain based business process by finding the key functionalities that exploit the benefit of the blockchain. So the first is the needed the skill, they need the technology and then they need the governance which is other people that is involved to agree because if I say I have a supply chain and put it on the blockchain. And one of the parties doesn't agree with us it. So there has to be agreement between other parties. So it's a collaborative effort in putting things in blockchain. So I actually develop some kind of modeling framework that allows people to work together in business and digitize their traditional functions and put it on blockchain. But these things work in a collaborative way. This is like we are talking about in the business terms now. So all the parties involved, have to agree and accept to use it like this farmer you mentioned. So if you have an app about a farmer, putting their farming process on the blockchain, the seedling, whatever they use, you build it for this farmer in your business process. There's a retailer, yes, and you build an app for tracking or the bio product that you sell. So what's your bio product supplier say, Come on, I wouldn't use this because it's additional costs for me because of additional point of scanning, taking picture putting on blossom. So that means they won't do it. So the first part is getting the stakeholders first getting the technical staff like people, the technology and the governance. So this identities, three things can help you implement a successful blockchain solution.

Augustine Madumere 31:21
Okay, thank you. Before I could have one more, and then we rounded up, maybe from your side, is there any food for thought? For companies evaluating blockchain implementation you want to add?

Chibuzor Udokwu 31:39
Yeah, I think the food for thought is that these days, everybody's talking about sustainability. Transparency, is not just okay to claim that we're a sustainable company or you're a transparent company. Because these are the values that blockchain provides. So if if a company and you don't key into this new technology, and then to develop the skill in this era, and use this technology, I think you'll be left behind because at some points, people start asking for verifiability of things you sell to see the product that the supply chains provide. At some time, people will start accept but you have to look at his product for so I use child labor, by quarters, smartphones and batteries we are using, are you using child labor content? Are you exploiting the environment in diamond on necklaces? How do you exploit this environment to do so at some point people be asking this question. And if you don't transform your business process to capture this kind of trustability, transparency, interoperability of data with Blockchain, then I think these companies will be left behind with this

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Augustine Madumere 32:57
produce modern blockchain is going to send the future. Thank you for that input. The final question, I think, is around value discipline. And this relates to pensions, to what businesses want to achieve with Blockchain solution, but some in some emphasize on creating value for themselves, for the needs of the company or value for their external customers. And this, let's go back to the solution that you provide - luxury solution. Here, what is the need for the customer, orwhat needs of the customer are taken into consideration and also what values are created for both the organization and the customer,

Chibuzor Udokwu 33:56
For the customer. The value is tha they can verify the authenticity of the product they buy, because of the fake products. Yeah, so if you buy fake products, and the original supposed to last for 20 years, and buying back the fake one in the name of the original, it lasted for three months. So you imagine the values as a company, you combat this fake product, you sell more product actually, because all these nice expensive shoes when they are if you implement a system to track them easily with no additional cost to the customer. So it means that you can sell more because the customers won't buy the fake one because the fake one can easily be found that so the value for the for the company in this type of business process is more money because they sell more product and then they come back fake product. So a lot of companies are losing a lot of money in fact that so there's also a value for the customer and the company because people reuse this luxury product like the watch you can sell this expensive wash because you can keep them as a money in your bank, because you can just deal with them. So if you want to resell them how to go is that you go to the company that sold it to you and the customer three of you together, the company verifies it. And then they say original, yeah, well distant takes a lot of time with a lot of money. Because according to the research, we did 50% of the cost of the sale of the product is spent on verifying the authenticity. So this cost is eliminated for you, for the company and for the customer. So it's now more efficient to sell this already exists luxury product, because people can verify it on the blockchain. And so it's a for this particular case study, it's worked for the company more money, it worked for the customer, more money because they don't lose money in buy ing fake products. And for the environment. Actually, if people can resell this expensive stuff, people can buy it, why we can say people are not buying this used Rolex watches, is because maybe they don't know they don't trust if it's original. So if there's a way to trust it, and the value is 20 years, and the lifespan 30 years, of course it should be should be in the circular supply chain. And then those materials you need to exploit in the land, excavate the land to do the new rolex watch you don't have to do this. Because the ones still in circulation is still good. And people can buy it because they trust that it's original. So you see the business process. It's favours the company, customer, and the environment. So but I'm not saying all the business process in the supply chain or in businesses should put in the blockchain. But this is a very good example of what blockchain can do for use cases where

Augustine Madumere 36:47
it adds value. You also you omitted the middleman, which is the Stores. You know when you have it on a blockchain, you can then resell it without having somebody in the middle.

Chibuzor Udokwu 37:01

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Right? Yeah, that's the middleman. Yes. Yeah, it saves the cost you eliminate the middleman. And the middleman is the expensive guy, because they take 50% of service for resale for verifying the authenticity for you. And imagine you are living in Africa and this watches are produced in Switzerland. So how do you come to Switzerland to verify the authenticity and sell to your partner? So the entire logistics of this supply chain has been optimize, effectively by just using barcodes, Blockchain, RFID digital signatures and confirming don't it's something

Augustine Madumere 37:39

Chibuzor Udokwu 37:48
In this case, it makes it more efficient, because people can say, okay, it depends. So the value could be traceability, it could be efficiency, actually, in this case is efficiency, it could be saving money. So it depends on the use case you're applying it to and what it does for you in this case, so But companies should exploit more think about the whole technology on the standard and find these values that make sense for the business model. But at some point, people will start questioning all these products. Like I said, we are they from what material was using focus on them, are they destroying the environment, like the Earth is already destroyed. So

Augustine Madumere 38:32
thank you, for your time. I really appreciate it. This lesson, maybe you want to introduce yourself so that I can have the recording in the video as well

Chibuzor Udokwu 38:45
Blockchain researcher associate. So I focus on research and data analytics blockchains use cases for business organizations. And I've also worked extensively in developing modeling frameworks within blockchain systems for organizations.

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