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Blockchain Adoption Framework Using Innovation Translation Approach - The preliminary study

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Full research paper

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Abstract

Given the rapid move of organisations towards blockchain adoption, this paper focuses on the niche area associated with blockchain technology adoption. Literature is scarce around the explorative view of the blockchain adoption process and a need to identify the interplay of human and non-human elements at several points that influence the actions and ultimately the decision to adopt a blockchain application. This study investigates the blockchain adoption process from an explorative view and determines yet uncovered aspects to be considered before and while adopting blockchain. For this purpose, the study employed an Innovation Translation approach informed by Actor-Network Theory to identify the interactions among actors at each moment of blockchain adoption. The results of the study are crucial for blockchain literature as it fills gaps of empirically investigated, explorative and dynamic insight into the process and assists potential adopters in realising the interactions required before and during a successful adoption process

Keywords: Blockchain adoption, Innovation Translation approach, Actor-Network Theory

1 Introduction

At the heart of cryptocurrencies, blockchain technology presented a significant breakthrough with a great potential (Batubara et al. 2018). Blockchain provides a transformative way in which transactions are recorded (Ølnes et al. 2017). Blockchain can be thought of as a distributed ledger or record of transactions that are verified by the consensus mechanism of participants that enhances trust among the participating parties (Peck 2017). After verification, a transaction, is then stored to all the copies of the ledger and the transaction is then added to a block. This block is then chained to the previous block to create a link with a previous transaction using a hash algorithm (Nakamoto 2008). Since it provides a distributed environment, it poses many benefits like decentralisation, disintermediation, immutability, scalability etc. over centrally controlled applications.

The literature reveals multiple organisational challenges around blockchain adoption (Chhina et al. 2019). Most managers who move towards blockchain adoption do not understand the background of the technology (Lacity 2018). The majority of current blockchain adoption literature has used traditional adoption models, which lack a deeper understanding and limit the exploratory view of the blockchain adoption process (Chen et al. 2020). Blockchain technology adopters themselves lack deeper understanding and knowledge of how the technology benefits them (Duan et al. 2020). Due to a lack of knowledge around the technology, blockchain is prone to many adoption vulnerabilities like no return on investment, lack of performance, lack of acceptance etc.(Poston 2020). Verhoeven et al. (2018) also argued that the competitive pressure for companies to rush towards blockchain adoption without understanding the problems leads to a lack of understanding around the technology. An investigation of the literature reveals that most organisations do not understand how blockchain can add value to their business (Casino et al. 2018). As the adopters do not understand the solution they're adopting for their problem, they face multiple challenges at later stages, such as technology appropriateness, convincing people etc.

Researchers reviewed many adoption studies conducted in this area, using various quantitative models which are further discussed in this paper. The review revealed a lack of consideration of the factors and interplay of non-technical and social elements, crucial to understanding adoption decisions in any organisation. Albrecht et al (2018) report that adoption is a dynamic process- 'dynamic' meaning it keeps changing. The perception, behaviour, influence, competition, industry and even the emerging use cases around blockchain continuously evolve (Werner et al. 2020). Then how can we take a snapshot capture of this adoption and assess its positive or negative influence on organisational value? Adoption models like Diffusion of Innovation (DOI), Technology Acceptance Model (TAM) etc do not capture the continuous change happening during the adoption process (Tatnall 2011).

This paper presents a framework using the theoretical lens of the innovation-translation approach. Innovation translation approach reveals social-technological interactions considering both types of influences in the process, which are impossible to understand by any other theories that work in isolation (Boerboom and Ferretti 2014). The innovation translation approach is informed by Actor-Network Theory (ANT) as the translation process that helps to understand the interactions that initiated the adoption decision, as many actors are trying to influence based on their interests (Sarker et al. 2006). These outcomes will help potential adopters to understand what approaches they could take to initiate a blockchain adoption process and what strategies they would need to convince the internal and external stakeholders. Convincing people for blockchain implementation is also one of the biggest challenges underway in its adoption (Chen et al. 2020). Using innovation translation informed by ANT will also fill the gap in understanding the key aspects of blockchain adoption, e.g., how adoption happens (Akrich et al. 2002); how its dynamically flows (Awa et al. 2016); and what are the advantages of new technology and its adoption? (Orlikowski 1992).

Therefore, bridging the above-identified gaps, this research serves as an exploratory study to understand the dynamic flow of interaction among critical aspects involved in blockchain adoption, including humans, the environment, and the technology itself. For this purpose, we formulated the following research question for this study which aims to understand the process behind the decision of blockchain adoption from an explorative view:

RQ: How do stakeholders in an organisation decide to adopt a blockchain application?

The rest of the paper is organised as follows: The following section provides a literature review on blockchain adoption and the innovation translation approach of Actor-Network Theory. This is followed by a description of the research methods used and a discussion of the findings. Then the next section explains the contribution of this research, followed by the last quarter, which provides the concluding remarks.

2 Literature Review

2.1 Blockchain Adoption

To answer the research question more effectively, the researchers reviewed the current literature around blockchain adoption. Kosmarski (2020) used a qualitative approach to study blockchain adoption but the study considered only the challenges in academic applications of blockchain. Another qualitative study on blockchain adoption by Clohessy and Acton (2019) considered organisational factors and suggested that there is a need for more comprehensive research on blockchain adoption. This study also suggested that there is a need to look deeper into how managers make decisions regarding blockchain adoption? Precisely, to review the methods used to study blockchain adoption and the gaps where the domain lacks.

Researchers reviewed many adoption studies conducted in this area, using various quantitative models like TAM, Unified Theory of Acceptance and use of Technology (UTAUT), Diffusion of Innovation (DOI), Technological-Organisational-Environmental (TOE) etc. (Clohessy et al. 2019; Lou and Li 2017; Shrestha and Vassileva 2019). Some of these are consolidated in Table 2 below. This research does not deny the capabilities of studying adoption with these tried and tested theories. But literature has criticised the use of TAM and UTAUT as they lack the consideration of environmental and institutional factors (Albrecht et al. 2018). Moreover, DOI has been criticised for ignoring externalities, path dependence and disregarding technology standards, and TOE has been criticised for its nature of flexibility that harms accuracy (Albrecht et al. 2018).

Reference	**Findings**
(Kamble et al. 2021)	The study designed a decision support system for decision makers to assess the probability of blockchain adoption. They designed the framework using TAM model.
(Lanzini et al. 2021)	The study used TOE model to identify the factors that that can play a role in the decision-making process
(Six 2021)	This paper introduced plans to make an automated decision-making process for blockchain application. The purpose is to select the most suitable application of blockchain.
(Sternberg et al. 2021)	The study proposes a theory-based model for interorganisational adoption of blockchain in supply chain by confirming already proposed model from literature
(Schuetz and Venkatesh 2020)	The study explains how blockchain can influence the financial innovativeness if adopted in the rural parts of India.
(Queiroz et al. 2020)	The study examined the blockchain adoption in supply chain operations using modified UTAUT model.
(Werner et al. 2020)	This study examined the influence of blockchain adoption on organisational performance from an interorganisational perspective.
(Wong et al. 2020)	This study examined blockchain adoption in supply chain using TAM and UTAUT model.
(Angelis and da Silva 2019)	This study used the level of blockchain maturity to determine its' value drivers in adoption.
(Clohessy et al. 2019)	This study examines the influence of TOE factors on blockchain adoption.
(Woodside et al. 2017)	This study is a review of past and future of blockchain technology for its' adoption.

Table 1: Review of blockchain adoption studies

2.2 Why Innovation-Translation approach?

The innovation translation approach is informed by ANT, where anything that changes the circumstances in each situation is an Actor (human/non-human) (Bruni and Teli 2007). ANT denies that purely social or purely technical relations can overcome the socio-technical divide (Tatnall 2005). We employ the Innovation Translation approach and understand the interactions among the human and non-human actors involved in the blockchain adoption process to address the research problem. The alignment with the key actor's interests and belief about a technology by other actors in the network is known as the process of translation (Callon and Latour 1981). It helps us understand how the key

actors convince others to adopt the new technology, whether directly or indirectly (Callon 1984). The Innovation Translation process involves four sub-stages which are discussed in detail in the next section:

1. **Problematisation**
2. **Interessement**
3. **Enrolment**
4. **Mobilisation**

This approach represents a promising theoretical framework or lens to study innovation adoption. The socio-technical characteristics of the theory, provide broader dynamics to understand and predict the adoption process of a technology (Awa et al. 2016). It considers the unpredictable ends of development processes or projects (Latour 2003).

To further confirm the use of the innovation translation approach for a study on blockchain adoption, researchers have employed this approach for similar research. Conducting a qualitative research on Information and Communication Technology (ICT) adoption, Eze et al. (2014) mentioned that innovation translation has helped understand the dynamics and interactive nature of the adoption process. Research on the adoption of social media networks has found that this approach could provide a better picture on adoption over the conventional innovation research methods, providing a view of adoption as a social process (Sarosa and Finance 2012). Birke and Knierim (2020) suggested, that there is need of further in-depth studies using the translation approach to involve external interactions and study adoption of technological innovations. A comparison of innovation diffusion, Technology Acceptance Model (TAM) and Innovation Translation concluded that innovation translation and ANT offer better detail on how individuals and organisations adopt technological innovations as compared to the other two approaches (Tatnall 2011). The main disadvantage highlighted in researching innovation with conventional models is to focus on only the 'technical' aspects of the process and to treat the 'social' as just the context of conducting business (Tatnall 2005).

3 Research Method

The primary goal of this research is to explore the dynamics of the adoption process of blockchain. To meet the above discussed research objective this work followed a qualitative methodological principle by employing exploratory interviews and analysing them through the lens of innovation translation approach informed by ANT. To achieve the objectives of this research we focus on the 4 stages of innovation translation approach.

3.1 Data Collection

The data collection process consisted of semi-structured explorative interviews with the key actors in organisations who have decided to adopt blockchain. Semi-structured interviews help identify the areas to be explored as they consist of various key questions and allow the interviewee and the interviewer to pursue the phenomenon in more detail (Britten 2006). Each participant was the key initiator in their organisations. The key actors were selected to interview because it is the key actor who succeeds to become indispensable, and this person is someone in the process who is seen as having the answer (Tatnall 2009). Therefore, they were the best informants to fulfill the purpose of this research.

Interviews have proven to be the most commonly used method for data collection where in-depth understanding of a particular phenomenon is required (Gill et al. 2008), which is blockchain adoption decision for this study. The interviewing of mixed type of application users was based on Miles et al. (1994), who says that categorisation of businesses is necessary as answers from one type of grouping alone rarely helped to get an in-depth understanding of cross-fertilised technological contexts (Awa et al. 2016). This categorisation of blockchain interviewees is summarised in Table 2 below, which involves interviewee status, their respective blockchain application, number of interviews and their project stage where deployed means it is in the implementation phase. In-production represents the maintenance stage (Khan et al. 2020).

The samples were very carefully and purposively selected. There were two major criteria for participant selection- One is blockchain expertise and experience. The other was they should be part of the strategic decision-making team for blockchain adoption in their respective organisation. In general terms, these informants were best suited to answer the questions as decision making requires both technical and managerial skills (Ilori and Irefin 1997). On top of it they were the major role players in their organisation. This rigour in participant selection limited the number of available participants, especially with a novel technology like blockchain with limited enterprise adoption. The participants from these case organisations were selected by following the concept of 'networked organisations' as quoted in

Sarlak et al. (2020), which means that organisations can be considered as networked if they share the following characteristics: 1. decentralisation; 2. diversity; flexibility; 3. differentiation; 4. redundancy; 5. lateral cross-functional ties; 6. being dynamic and innovative in all aspects; 7. communication structures for either accessing or sharing information; 8. social mechanisms for coordination and control; and, 9. extended organisational boundaries, Multi-party cooperative relationships, an independent company in a distributed network and finally a network of functions and relationships. All information about participants and organisations was either available on their website or was gathered by introductory questions through emails.

Interviewee Status	Blockchain application	Number of interviews	Project stage	Identifier
Executive vice president with 21 years of experience	Proxy voting in digital trading infrastructure	2	Deployed	I1-I2
Founder and CTO with around 20 years of experience	Seed traceability and organic cotton traceability	1	Deployed	I3
Co-founder and CTO with 18 plus years of experience	Blockchain for commodity trading	2	Deployed	I3-I4
Blockchain specialist with 12 years of experience	Interoperable blockchain among government department to store documents	1	In-production	I5
Blockchain expert and co-founder	Track and trace for security applications	1	In-production	I6
CEO and interim CTO	Blockchain procurement process in SME's	3	In-production	I7-I10

Table 2: Interview profile and categorisation

Each interview went for about 40- 60 minutes. We repeated the interview with the participant whenever we ran out of time or needed more information regarding a response. The interview questions were carefully designed using interview guides available in the literature. The data collection phase was ceased when data saturation was attained. The answer to interview questions were not getting any new data, so the pilot phase was ceased. Data saturation is a rule allowing the researcher to stop conducting further interviews when no new data is obtained from the participants (Schmidt 2004).

3.2 Data Analysis

We employed a thematic analysis approach. This approach is theory and data driven as it explores the themes and issues that arise from the data. Thematic analysis is often defined as the method of searching, identifying and reporting emerging themes from the data in the context of the phenomenon to be investigated (Braun and Clarke 2006).

In stage 1, the interview audio was transcribed and anonymised into text format, then the transcribed text files were imported into to NVIVO (a renowned tool for qualitative data analysis). At next stage, initial open coding was performed and then grouped using the emerging themes. Each interview was coded prior to the other so that outputs from one interview were taken. So, the coding and data collection happened in parallel to much extent. The condensed codes were extracted by relating the context of responses and themes. At the next stage, the reduced codes were mapped to the theoretical definition of stages of innovation translation approach. Several levels of coding was done to attain reliability analysis. Miles and Huberman (1994) define reliability analysis as the level of agreement among two types of coding. If it is more than 70%, then the code is said to be a benchmark (Miles and Huberman 1994). In our case the score of reliability was more than 80% on the comparison. The results at each stage were discussed with other authors to reach an agreement on themes and sub-themes.

4 Discussion of Findings

Utilising the stages of innovation translation, we have discussed our findings from our exploratory interviews with the 'key actors' from six organisations who have successfully deployed a revenue

generating blockchain application. This diversification helped us gather the differences and the concept of 'networked organisations' which helped to gather the commonalities of views across multiple applications without any cultural, industrial, or environmental similarity. This also proves that common properties of specific stances can also be claimed at other perspectives with similar circumstances (Payne and Williams 2005).

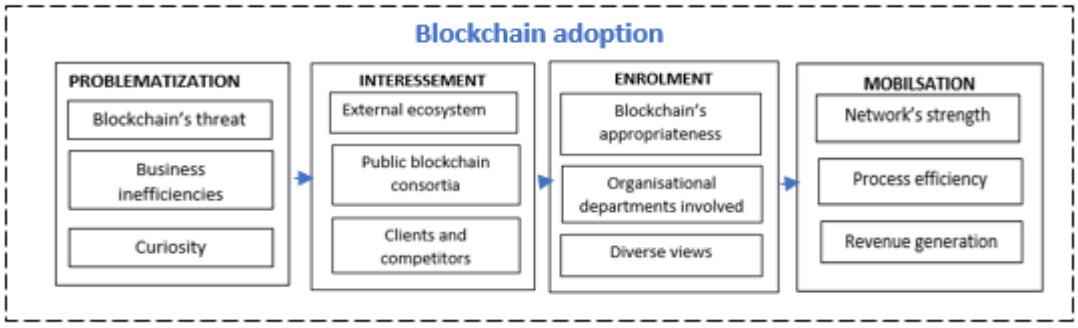

Figure 2: Blockchain adoption framework

Figure 2 summarises the findings from the interviewees in the form of an adoption framework, as identified and discussed at each moment of innovation translation approach below.

4.1 Problematisation

This phase involves how the key actor defined the problem and how different actors were identified (Birke and Knierim 2020). Here the key actor defines the issues that technology proposes to solve their problems or they realise the problems that can be negotiated with the technological solution (Unnithan and Tatnall 2014). The results revealed that most of the key actors considered blockchain as a threat to their business which made them wary of its adoption. Threat is like an organisational disease which needs to see a doctor who can rectify what is wrong and provide medicine to make the organisation feel better (Cole 2012). Looking everything as a threat has brought competitive advantages to business (Gates 1999). Exemplified by below source quote it is understood that blockchain was seen as threat to rectify the need of this technology to gain competitive advantage.

> "...we also are an intermediary, so in that sense we were looking at the threats that this technology could provide which may undermine our role" (I1)

Some of the key actors said that they realised the actual potential with the blockchain applications which made them to move towards its' adoption. Below source quotes exemplify the responses from participants when they were asked for the motivation behind adopting it. Efficiency is a matrix that measures the organisational performance against the available "best practice" (Biener and Eling 2012). Sometimes there is no change required in the business but the efficiency will just demand a change in doing things (Gates 1999). Exemplified from the below source quote, blockchain as it seen as the best practice available in the market for a process.

> "...What we have learnt is that the path of unexceptional adoption at least what is worth for us is more incremental in nature, bringing about operational efficiency through this technology which lays out the foundation for crypto changes in the future..." (I7)

The data revealed that it was the curiosity of the clients towards bitcoin made the consultant organisations to look for opportunities into the crypto world. Arnone et al. (2011) quoted that curiosity happens when there is an information gap in an individual's knowledge leading to a feel of deprivation and ultimately motivates him to fill this gap. Curiosity is important as it motivates to initiate actions and enable mastering on new things (Arnone et al. 2011). Exemplified by the below source quote, the study reveals that the information gap about blockchain technology is an emerging factor leading to curiosity among clients and make the organisations' master the technology if adopted wisely.

> "when things could grow on in bitcoin or in any of the crypto world...there is always a regulatory that comes on and we didn't really think that our clients would move on bitcoin in a very destructive manner. They would consider bitcoin as an asset, but it would significantly impact our client's business, and which means it could be an asset for our business as well" (I4)

Analyzing the responses from all the participants as some of them are exampled above, the research identified three major constructs at Problematisation stage. Figure 2 framework summarizes these constructs which acted as a motivation behind blockchain adoption for majority of participants: blockchain's threat, business inefficiencies and curiosity towards cryptocurrencies. All theses aspects identified at this stage have proven to be imperative in terms of enhancing efficiencies and driving performance.

4.2 Interessement

This phase helps us to understand the strategies used by the key actors and the actions performed to gather interest of other actors in the organisation so that they willingly adopt the roles defined for them (Birke and Knierim 2020). This stage identifies how the key actors establish an interest towards the technology (Unnithan and Tatnall 2014). Discussing framework from Figure 2, the first node coded in this phase is involving with the ecosystem external to the organisation and gather views on how acceptive are the people for blockchain across the boundary. Any organisations does not exist in isolation and it relies on many external parties and their relations for decision making and gain feedback (Hutt 2010). Exemplified by below source quote, engaging with the externals is the initial step for Interessement towards blockchain to maintain their relations and earn their feedback.

> "One of the things that we did very early on is that things such as blockchain or any of the emerging tech is really wouldn't be acceptive if you were not really engaged with the industry and the external ecosystem" (I8)

In the similar way, collaboration with externals came up as another theme for this phase for making other industrial partners, competitors and especially the client base to make them aligned towards the suggested blockchain solution and build up a strong network. Stakeholder collaboration is important as it helps attaining a combination of situation-specific and stakeholder-specific solution (Hutt 2010). Collaboration also helps to identify interests and serve as a catalyst to establish connections of similar interest (Arnone et al. 2011). Exemplified by below source quote and considering an inter-organisational technology like blockchain collaboration is a very important aspect to be considered while decision-making.

> "collaborating and co-innovating with the potential competitors, your clients and the other industry partners, so I think we didn't think that we will have an opinion and that's how we'll go, it was more with interacting with the industry, interacting with the client and everybody having a view" (I5)

Moreover, when the participants were asked about how they understood blockchain then most of them said that they joined consortia like Hyperledger foundation or Enterprise Ethereum to understand the basic operating capabilities of a blockchain based application and responses like below were coded. The opportunity to try a technology enhances and facilitates its' adoption (Straub 2009). Therefore, as the below source quote exemplifies, joining public blockchains provided the organisations with an opportunity to try the technology.

> "So we joined some of the consortia like Hyperledger foundation or enterprise Ethereum and then we started co-innovating with clients which is a completely different model for ours like typically as product provider or service provide you build a solution, and the clients are not involved at the conceptual stage" (I10)

The responses coded at this stage helped the framework in Figure 2 to identify the crucial interactions needed to involve more human and non-human actors aligned towards adoption decision, to strengthen the network and successful implementation of the system. It is seen that with a technology like blockchain it is more important to collaborate and co-innovate with the internal and external human and non-human actors due to its' inter-organization nature unlike other technologies. It is also important to learn and understand the technology to identify the potential solutions that can be built on it.

4.3 Enrolment

This phase involves the enrolment of roles specified after successful Interessement. This phase provides understanding of the interactions happening among the human and non-human actors and the challenges involved (Birke and Knierim 2020). There were primarily two main challenges discussed by all the interviewees. Firstly, the problem of diverse views. This made the decision of application even more difficult. Secondly, the challenge of appropriateness.

This stage also identifies how the technology is being accepted at the organisation and how it can be used (Unnithan and Tatnall 2014). The key actors revealed that they had several criteria and matching techniques to decide the best suitable use case for their problematic business process, realised at problematisation phase. Appropriation of a technology is crucial for its' success and learning (Urrea 2006). A meaningful and appropriate solution is important to solve the problems of data sharing ensuring transparency (Shrestha and Vassileva 2019). As exemplified from the quotes below, blockchain's appropriateness was important for a successful project experience ensuring the features to solve the current business problems.

> "evaluate a score on one is this problem is really worthy for us to solve?
>
> ...for first 6 months we had around 40+ use cases where we thought blockchain could be used but maybe in the next 6 months we filtered it to 3. So, you can really heed up that not all ideas make sense." (I1)

Other interactions were among the key initiator, the technology architects and product engineers, to identify the do-able things with the available resources and with minimal infrastructure requirements. The communication of business owners with IT departments enhances knowledge and confidence in adoption and hence motivates the technology use among departments (Thong 1999). Exemplified by the below source quote, discussion with internal departments is crucial for their engagement and enhance knowledge.

> "So, we developed a score card like this with around 20 different factors and the process we followed was indifferently the technology team., the business team and the product team rated the idea and then we were able to evaluate a score on one is this problem is really worthy for us to solve?" (I9)

This phase has revealed crucial insights for the potential adopter as depicted in figure 2. At this phase, the research revealed the external interactions and internal involved and the challenges faced by blockchain adopters in the past. It is understood by the interviews that assessing the suitability of the proposed solution and co-innovating with internal and external stakeholder is extremely important for a successful blockchain project.

4.4 Mobilisation

This is the final stage of innovation translation approach of ANT. This phase provides an insight into if the roles assigned by the key actor in the enrolment phase were taken up by the actors and how the network was maintained (Birke and Knierim 2020). This phase didn't provide much insight as blockchain based applications are considerably new in most of the organisations and some of them are on the verge of going into production. The stage occurs when the solution is widely accepted and how it is serving the purpose for which it was implemented (Unnithan and Tatnall 2014). The success factors associated with a newly adopted technology determine its' acceptance and success (Selim 2007). Exemplified by the below source quotes, interviewees measure the success factors of the solutions adopted, determining if they are revenue generating projects and all roles were proactively taken by all the actors in the network as understood from sample quotes below.

> "we have launched 3 solution in last 4 years which are actually actively in production. Which means that they are actually revenue generating solutions..." (I2)
>
> "...once we did the experiment and we compared the timelines that it took for one against the other what we realised was there was a 30% efficiency game in an industry that does 19 trillion dollars a year... ....30% efficiency gain in a 19 trillion-dollar industry you have fundamentally altered the way this industry works..." (I7)
>
> "...I would say that we have had pretty positive response from most departments .... So, for example, when you're pitching to a department, you need to be very clear about. What is the problem you are solving and what is the end benefit you're getting rather than just putting dropped in for blockchains?" (I6)

This phase remarks that the factors discussed in the first three moments of innovation translation approach drives the performance of the application and a successful implementation. The analysis of context and constructs identified at this stage reveal that if better choices are made prior to implementation then blockchain can be seen to reach its' promising potential. And hence, the insight into the understanding of the decision-making process is crucial for its' mainframe adoption.

5 Contribution

This study contributes with an in-depth understanding of the adoption process of blockchain technology from a dynamic outlook. This will also help the potential adopters to foresee the problems and influences that could hinder the successful adoption of blockchain in their organisation. Moreover, this study will contribute to understanding the requirements and problems that could occur at a later stage of the adoption process. The study also identified the two main challenges - the diverse views about blockchain and appropriateness of blockchain as the main barriers in adoption. The curiosity towards bitcoin and cryptocurrency, the potential competitive threats blockchain could bring to business and the business models impacts of blockchain are identified as main motivating factors. The study also brings a theoretical contribution by filling the identified gaps of innovation translation incorporating external interactions among the human and non-human actors. Indulging with the external ecosystem, collaborating with industrial partners, clients, and competitors, and interacting with the concerned departments are the major interactions identified among actors. Their interplay at each stage recommends that internal human actors are not solely responsible behind the decision of blockchain adoption. The social aspect and the externalities associated with blockchain are more important to be considered.

6 Conclusion

The research presented a framework for blockchain adoption using an innovation translation approach informed by Actor-Network-Theory. It contributed to the literature by considering the interplay of human and non-human actors in the adoption process. It offers a deep insight into the four moments of translation and identifies constructs at each stage that are crucial in understanding the decision making for blockchain adoption. The research outcomes will help the potential adopters' identify the ecosystem and technological considerations before deciding to adopt blockchain. It also identifies the two major challenges that organisations have faced at a later stage. The research is limited in the context of applying a qualitative method only to understand the blockchain adoption process. Therefore, a quantitative future research is suggested to confirm the influence of the constructs identified at each translation moment. The research is also limited in terms of the target case organisations as it only focuses the views from adopters while there are organisations who have decided not to adopt blockchain applications. Therefore, a future research classifying experts based on their adoption decision is suggested.

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