

COLLABORATIVE GOVERNANCE AGAINST CORRUPTION

Mireille Chidiac El Hajj *

* Lebanese University, Lebanon;
CRIISEA, UPJV, France



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Abstract

The purpose of this paper is to study the benefits of the Blockchain, if properly applied in the near future in Lebanon. It sheds light on why collaborative governance against corruption is needed. The research is built on an analysis of reports and on face to face interviews with key managers in all 14 Lebanese alpha banks. Due to the sovereign debt composition, we found out that the Blockchain technology can represent a vital tool to disrupt corruption, but the decision of implementing it, is up to the Central Bank governor. The research offers an added value as it is the first to describe the positive effects of implementing the Blockchain technology in a country that is ranked 180 out of 209 on WB's control of corruption index.

1. INTRODUCTION

The purpose of this paper is to study the benefits of the Blockchain, if properly applied in the near future in Lebanon; as its use can offer the public "innovative, efficient and cost-effective e-government services" and can serve all players (EU Blockchain, 2018). It also sheds light on why collaborative governance against corruption is needed in a country that is ranked 180 out of 209 on WB's control of corruption index (McKinsey, 2018b).

2. THE DISRUPTIVE EVOLUTION OF THE BLOCKCHAIN

Firstly proposed by Nakamoto (2008) as a method of validating ownership of the bitcoin virtual currency; the Blockchain is known as the internet of value, a new revolutionary technology that is changing the world (Tapscott & Tapscott, 2016). Different from the basic internet, it is a free utility built by a diverse group of stakeholders, whose main objective is to introduce a radical shift by transforming value industries (Corea, 2017), such as the financial services domain, the supply chains, agriculture, pharmaceutical and medical industry, law firms, media, publishing and others (EU Blockchain, 2018). Defined by Corea (2017), as “a secure distributed immutable database shared by all parties in a distributed network where transaction data can be recorded and easily audited”; the blocks store data in rigid structures that are connected to each other through a hash¹.

The Blockchain is still a promise though and needs to mature to fulfill its potential. At the initial stage of disruption - the so-called Digital Disruption phase 1 (DD1 phase) - it is expected to enter the DD3 phase in 2023, and pass to the DD5 level in 2030, based on technology maturity and market adoption, to revolutionize (Gartner,2018). This reminds us Schumpeter (1942) and the creative destruction process that is driven by innovation; whereas the innovation process is divided into four dimensions: invention, innovation, diffusion, and imitation. In a digitally connected world, the Blockchain process is a secure platform at the tipping point of diffusion and imitation; that is still at the initial stage of disruption. It is the platform where buyers and sellers exchange value without the need of the traditional form functions of management, or of the need of the traditional intermediaries.

Moreover, in a new complex interrelated structure, we are dealing with “the influence of law, of the social system and of the culture, as well as the effects of technological changes such as the digital revolution with the dramatic fall of transaction costs” (Coase, 1998, p. 73). This is reminiscent of the new institutional economics and the system of extreme decentralization of Williamson (1996; 2005) and Coase (1937; 1998); where the state institutions are not the only ones that matter anymore (Dixit, 2004). It is true that the need for government arises because in its absence, individuals pursue their own interests (23) and become more opportunistic (20); but the economic system is becoming more dynamic, the rules of the game are changing and the economic activities are being conducted without the direct interference of the State (Coase, 1998). To resolve the collapse of the relationship between different parties, the players are to avoid opportunism and to accomplish their contracts and workable arrangements in lawlessness rather than in lawfulness ways,

¹According to Corea (2017), each block includes a timestamp which is a link to the previous block via its hash. To mention that the blocks have a header, that includes metadata, a content, and real transaction data.

and that because of two main reasons: 1) the state is providing limited protection to enforce contracts and property (Dixit, 2004) the formal contracts and the court enforcement are very costly (Dixit, 2004, p. 20). Distinction is therefore made in the bilateral according (Dixit, 2004); through smart contracts and without intermediaries (Tapscott & Tapscott, 2016).

Built on smart contracts, the Blockchain can constitute the set of rules that binds the relationship between different parties to enforce their agreement or transaction in a simple decentralized form. Based on algorithms, it can reformulate the problems and accomplish better decision making (Simon, 1972). Via the proof of work (POW)², it has the ability to improve the execution of the four basic contract objectives: "verifiability, privity, observability and enforceability" (Arkari, 2018). It can facilitate and enforce the negotiation and/or the performance of the transactions and agreements (Szabo, 1997) and enable different "parties to observe the other's performance of the contract, verify if and when a contract has been performed, and guarantee that only the details necessary for completion of the contract are revealed to both parties" (Tapscott & Tapscott, 2016). It has a transformative impact under collaborative governance, especially that the state provides limited protection to enforce contracts.

Collaboration and networking between the multiple actors from the public, private and voluntary sectors is hence needed, under a new "political opportunity structure" (Newman et al., 2004); based on five main dimensions: trust-building, face-to-face negotiations, commitment to process, openness to exploring mutual gains, and shared understanding (Ansell & Gash, 2008). Its objective is to fight corruption, defined according to the Transparency International as "the abuse of entrusted power for private gain"; built on fraud and bribery.

Corruption consumes the wealth of peoples and represents "a threat to their social security, economic growth, political system, administrative performance, prosperity as well as to various elements of their development" (National Anti-Corruption Strategy Draft, 2018-2023). To fight it, there is a need to a Cambrian explosion of economic and governance designs to program the future we want for ourselves (Ehrsam, 2017). A future that is to be based on three critical components of governance: incentives, coordination and trust.

To respond to the growth of digitalization, to the growth of knowledge and institutional capacity and to the Blockchain concept, a new strategy of "Collaborative governance" is to be involved. We define it after Ansell and Gash, (2008, p. 544), as follows: "A governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets". And we

² Proof of work is a requirement, also called mining. It is performed in order to facilitate transactions on the Blockchain.

agree that governance is about collective decision making that includes both public and private actors.

This paper draws on the findings of a study within all 14 alpha banks in Lebanon. It explores the benefits of implementing Blockchain as a means of solving the pressing challenges of corruption. It argues why its use can be a tool for improved governance outcomes.

3. METHODOLOGICAL APPROACH TO THE STUDY

The research is based on two distinct qualitative approaches:

The first is a secondary research built on an extensive desk review and an analysis of all reports and data published in recent years, especially in the years 2018-2019. Sources include published reports by national and international organizations and banks, such as the LCPS, Goldman Sachs, McKinsey, the World Bank, and ministries including the Ministry of State for Administrative Reform (OMSAR), the Ministry of Economy and the Ministry of Labor.

The second is primary data, based on different face-to-face interviews that were conducted between November 2018 and May 2019, with key managers in all 14 Lebanese alpha banks. Lebanese banks are divided into 4 different categories: Alpha, Beta, Gamma and Delta. The alpha Group³ includes the top Lebanese Banks with more than \$2B in deposits, and represents the lion's share of the banking activity in Lebanon. It is noteworthy to mention that despite political and economic shocks, the Lebanese banking sector had always been seen as the backbone of the economy, with good financial standing. The Banque Du Liban (BdL) plays on the one side a critical role in maintaining financial and economic stability, pursuing multiple policy objectives, including providing economic stimulus; while on the other it also plays a critical role in sustaining confidence (WB, 2016).

4. THE FINDINGS

4.1. The main risks in Lebanon according to reports

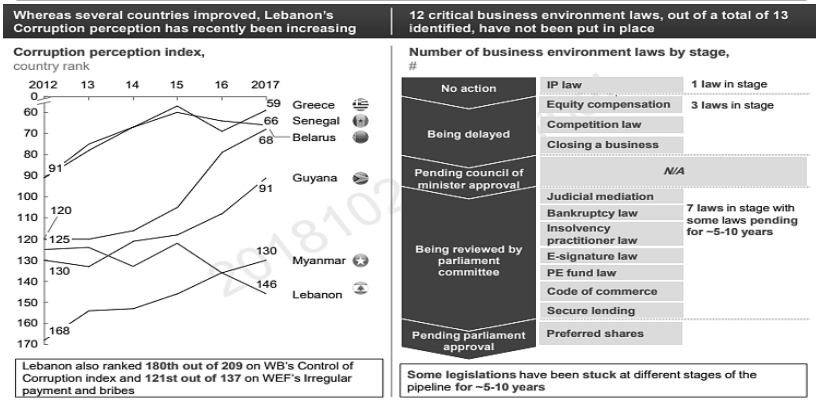
The Conférence économique pour le développement, par les réformes et avec les entreprises, in 2018 – also called the CEDRE conference, intended for the Lebanese Government, sought funding for more than 271 main infrastructural projects. To secure these funds, the government presented a reform program – “the so-called ‘Vision for Stabilization, Growth and Employment’ – which rests on four pillars: increasing public investment, economic and financial stability, structural and sectoral reforms, and a diversification strategy” (LCPS, 2019). It is to note that one of the policy areas of the reform program is Governance, with two

³ The 14 alpha banks in Lebanon are as follow: Bank Audi, Blom Bank, Byblos Bank, Fransabank, SGBL, Bank of Beirut, Bankmed, Banque Libano-Francaise, Credit Libanais, IBL bank, BBAC, First National Bank, Lebanon and Gulf Bank, CreditBank. To refer to Bankdata on <http://www.bankdata.com>

main subcategories being, fighting corruption and enhancing the digital transformation of the government. However, the published form of the reform plan resembles more a list of intentions rather than a dedicated agenda. "It covers very few references to quantifiable targets, concrete laws, or specific responsibilities and outputs" (LCPS, 2019). The published document offers therefore a limited opportunity to a good level of 'commitment' of the Lebanese government.

The problem in Lebanon originates in behavior practices in both the public and the private sectors and in the particularities of the system and its policies. In order to understand the disabilities of the centralized system in Lebanon, it helps to refer to the IMF (2018), the Goldman Sachs (2018-2019) and the McKinsey reports that point to the high level of persistent corruption and legislative inefficiencies that are affecting the government ability in Lebanon. The country is ranked 180th out of 209 on WB's control of corruption index and 121st out of 137 on WEF's irregular payments and bribes; while legislations have been stuck for 5 to 10 years. Figure 1 represents the level of corruption in Lebanon, in comparison to other countries; and the number of legislations that have been stuck at different stages of the pipeline and haven't been put in place for 5 to 10 years. One of them is the right of access to information Law.

Figure 1. The level of corruption in Lebanon



Source: Mckinsey (2018b)

On the other side, the Goldman Sachs (December, 2018) report stresses that the Lebanese model is unsustainable without any prospect of economic growth; with solely 3 productive sectors - Manufacturing, Hotel and Agriculture - that contribute as low as 16% of GDP. It is characterized by a large fiscal negative government budget of -\$5.5 Billion, with \$9.9B revenues vs. \$14.9B expenses. It is ranked 2nd worst in emerging markets and 3rd worst in the world; with a negative trade

deficit of \$18 Billion; and a Public debt estimated above 150% of GDP at the end of 2017 (IMF, 2018). An external financing (+20% of GDP or ~ +\$12 Billion) to cover the finance debt, is therefore needed, according to report.

Another Goldman Sachs report issued in January, 2019, sustains that the Lebanese case requires the application of an internal cut of around 65% to the sovereign debt implying a recovery value of 35 cents in the dollar. It needs a process of negotiation between the sovereign and its creditors and is thus related to multiple economic and political objectives that go beyond fiscal sustainability; which complicates any attempt to arriving at a realistic recovery value.

In the same line, an external cut, comprising different solutions, such as privatization, public-private partnerships, expenditure rationalization, fiscal reforms and financial engineering schemes, was suggested in 2016 by the Credit Libanais, one of the alpha Lebanese banks.

However, taking into account the severe forms of corruption and mainly those of rule-breaking, bribery, irregular practices and of the public governance gaps; the results of an internal or of an external cut may be disappointing if actions are not taken to avoid the corruption risks that weaken the Institutions and the state. The questions to ask, therefore, are as follows: What are the main causes of corruption in Lebanon? What is their impact on the economy in general? And how can we fight corruption?

The main causes of corruption: based on the available scientific data aimed at diagnosing corruption in the country, the Ministry of Administrative Development's draft on anti-corruption (2018-2023) presumes that the causes of corruption are mainly political, administrative and social. The political causes are rooted in political sectarianism and competition. The administrative causes are related to 1) the organizational structure of the Public Administration; 2) the failure to implement an e-government platform; 3) the lack of information technology and communication between the various public administration institutions; 4) the declining value of the salaries and benefits of public employees; 5) the disparities between and within various institutions/ departments; 6) the selection, promotion and staff recruitment modalities that are dictated by political, religious and administrative interferences. While the main social causes are related to 1) the negative attitudes towards state's administrative corrupt apparatus; 2) the laws and regulations violation; 3) the widespread unemployment, 4) the high cost of living; 5) the weight of taxes; and 6) the poor access to adequate social services.

Their impact on the economy: the corrupt behavior has severe effects on the integrity and accountability of the state and has harmful high costs on all levels, whether economic, political or social amounted to \$5 billion per year; a waste of approximately 45% of the country's income, 27% of the budget and 10% of the Gross National Product; according to the Ministry of Economy report in 2016.

We add that between 2005 and 2017, the government spent funds and collected taxes, without any official state budget. The Lebanese people blame "the corrupt officials, the political gridlock, the vested interests and the bureaucratic hurdles" (The Economist, 2017) for the political paralysis and for the degradation of the public services. For 12 years, their "nepotism, sectarianism, mismanagement and lack of oversight" (The Economist, 2017) led to different scandals, such as the losses in the public electricity estimated 20% of the public expenses; while more than 35% of government spending went on the public sector hiring; and another 5% on the trips and conferences and the donations to non-governmental organizations close to the ruling class (Chaaban, 2019). However, now that the government came up with the 2019 Budget, its current composition doesn't work either, as it doesn't "deliver a lasting reform, nor provides a vision for the long-term growth of Lebanon's economy" (Reuters, 2019).

How to fight Corruption? After benchmarking with other countries, such as Estonia (DAE, 2020) and some countries from the Arab world who achieved national socio-economic growth, we noted that the road to a better government can be through the Blockchain technology⁴. For, if properly implemented, it can ensure accountability of collaborative governance and promote anti-corruption measures. From clearing funding concerns to tracking government contracts, policy makers affirm their integrity through the Blockchain anti-corruption programs that have the will to change the game. Despite its limitations⁵, the Blockchain technology is worth the risk of implementing it, in a country such as Lebanon; especially that the governor of the Lebanese Central Bank (BDL)⁶, Mr Ryad Salameh, had already recognized its potential to transform the financial services sector, the capital markets and the consumer banking as well as its anti-corruption and anti-money laundry opportunities (Lebtivity, 2017).

4.2. The interviews and key findings

The interviews were based on four main open ended questions. The first question focused on the banking system stability in Lebanon; the second on the impact of corruption behavior; the third on the best scenario to recover and to reduce the financing burden to a more sustainable one;

⁴ In 2017, Bahrain launched a fintech 'regulatory sandbox', enabling firms to test and develop products in a virtual space. In 2018, the kingdom's Central Bank, Saudi Arabia Monetary Authority (SAMA), signed an agreement with US fintech company Ripple, to run a pilot project to help banks settle payments using Blockchain. Dubai is to use the Blockchain technology for all government documents by 2020 (Thomson Reuters, 2019).

⁵ Cyber-attacks on the Norsk Hydro ASA, the multinational aluminium producer (Reuters, 2019); the Mondelez International Inc, the US food company; Reckitt Benckiser, the consumer group; Merck, the pharmaceuticals company and Maersk, the world's largest shipping group caused billions of dollars of damage (FT, 2019).

⁶ He announced the advantages of the Blockchain during different forums and conferences such as the 3rd Anti-Cybercrime Forums 2017-2019.

the fourth on the consequences of implementing the Blockchain technology in the banking system and its effects on the other sectors.

To that end, we interviewed 20 branch managers and IT managers in the 14 alpha banks. Their names will be kept anonymous as requested.

All of the participating managers reported that the banking system in Lebanon is stable, as its resilience is mainly based on political compromises between different sects and parties. They also acknowledge that the BdL still spread confidence, as it knows how to absorb the systemic risks and how to avoid default on Lebanon's debts. They also argued that the public debt is mainly based in the Lebanese banks that are financing the government. Upon their analysis, there will be no need for a cut, since the Sovereign debt is more internal than external (60/40)⁷ and accounts for half of aggregate banking assets. The Lebanese crisis cannot be hence compared to the case of Greece and the dangerous amount of sovereign debt it owes to the European Union.

The interviewees agreed that corruption and related irregular practices are persistent in all sectors in Lebanon. They sustained that the greatest obstacles to integrity are in relation with the public and political sectors, since they are characterized by opportunistic individuals' behavior, such as money-laundering and ineffective control and accountability in a corrupt culture. They argued that few actions have been taken to avoid known corruption risks; even with the onetime ministry of state tasked for combating corruption, established from 2016 to 2019.

Overall, all respondents agreed that any opportunistic behavior can be justified since there is no accountability. The best scenario to recover and to reduce the financing burden to a more sustainable one would be through three components: a culture of integrity to encounter practices of corruption, awareness among employees and legal requirements, and adequate financial and human resources to prevent and report misconduct.

The interviewees' answers concerning the Blockchain implementation were though disparate. The manager at Audi Bank stressed that the Blockchain framework had already been discussed at the Central Bank (BdL), to improve the processes and the economic welfare. The rush to it derives from the fact that the BdL is considering issuing a digital currency that will play a key role in the coming years.

The IT security manager of one the Banks argued that he was not familiar with the topic. He said that it is new and vague, and that he didn't get formally into it. For the IT consultant at Credit Bank, the Blockchain is a tough problem, due to the absence of laws and rules; and because of the spread of corruption. On the other hand, the IT Bank managers at the IBL and Libano-Française banks stressed that they are already working on the Blockchain concept, preparing themselves for,

⁷ Compared to the Goldman Sacks (December, 2018) report, we acknowledge that: "around 60% of total sovereign debt is held by the banking sector, with most of the rest held by the BdL. Only 10%, on average, has been held by non-banks. If we include lending to the BdL, the banks' total exposure to the sovereign amounts to 65% of their assets and a remarkable 91% of customer deposits" (3).

when it will be applied, in reference to the governor's statements about the subject. They argued that it will need a shift of mind, a new system thinking and backing up decentralization. "We cannot be prisoners of the system forever", stressed one of the managers.

Different branch managers such as those of Credit Bank, SGBL, FNB, BankMed and Bank Of Beirut disputed that they don't know if the Blockchain is going to be implemented in the near future in Lebanon. It will take time to be applied, as it needs specific skills and a sound infrastructure. They are waiting for the BdL governor's decision; since he is the one who leads the financial decisions of the country.

5. DISCUSSING WHAT THE BLOCKCHAIN CAN DO AND WHAT SHOULD BE DONE

5.1. What the Blockchain can do?

According to both secondary and primary research, Table 1 presents some proposals on what the Blockchain can do in some vital sectors in Lebanon, whether social, economic, financial, political, environmental and health industry and on the governance level. It sheds light on the need to fight corruption to establish strategic plans that can contribute to the economic development and stability of the country.

Table 1. What the Blockchain can do? (Part 1)

Sector	<i>What the Blockchain can do to fight fraud and corruption.</i>
Social	Ensure the digital identity. Protect intellectual property. Assess the number of registered Lebanese whether residents or diaspora. Assess the number of registered refugees, as Lebanon lacks specific regulations pertaining to their status; to deal with the Peace plans ⁸ .
Economic	Detect over-employment in the public sector (public wages and benefits constitute 35% of the national budget (Chaaban, 2019)). Ensure land registries and industrial data. Reduce frivolous waste of public fund and budget deficit; unpaid VAT and grand bribes such as at the Customs and Beirut Port (ranked as the 5th most corrupt institutions) (Sakker, 2013). Track smuggling illicit activities through illegal crossing points on the Lebanese Syrian borders and ensure that funds go to the treasury. ⁹ Ensure confidence and trust that can encourage the diaspora providing funds to finance the debts and the balance of payments (WB, 2018).
Financial	Prevent missing/report error information. Improve anti-money-laundering compliance and track transactions. Ensure a better KYC and database of all clients' activities. Update any potential scam or suspicious activity or fraudulent transaction near real-time. Diminish the risk of non-compliance for delayed or inaccurate reporting. Control blacklists/whitelists.

⁸ Refer to: <https://en.nahhar.com/977205-the-deal-of-the-century>

⁹ In reference to: www.naharnet.com/stories/en/261739

Table 1. What the Blockchain can do? (Part 2)

<i>Sector</i>	<i>What the Blockchain can do to fight fraud and corruption.</i>
Political	Protect the integrity of elections. Improve election procedures and voting security and transparency. Insure diversity, inclusion and integration by providing accurate data. Implement e-government. Gradually overcoming sectarianism.
Health Industry	Secure data analysis. Ensure cost savings in IT, data breach prevention, operations, personnel, and support. Reduce frauds and counterfeit products.
Environment	Enable natural resource extraction. Create decentralized access to clean energy. Permit diminishing and/or ending air and water and other kinds of pollution by finding solutions as data becomes easily visible to citizens and city officials. Record the amount of resources being extracted, such as oil and gas, as projects are expected in the near future whereas lack of trust and of confidence prevails.
Governance	Ensure a collaborative e-Governance built on trust, confidence, transparency and collaboration between all stakeholders whether public or private. To ratify the Right of Access to Information Law, after being put on hold, to "ensure transparency, accountability and compliance with international standards of information sharing" (El Masri, 2019).

Source: Prepared by the author

5.2. What should be done?

The reports and the interviews provided us with vital tools to fight corruption via the Blockchain technology. To realize the high aspiration of collaborative governance, we propose a holistic approach broken down into several programs integrating all key stakeholders: the public sector, the private sector and the citizens. Based on six common components that should be integrated at the core of the transformation and change process, all stakeholders should understand the basic meaning of the Lebanese capacity to adopt "survival learning" that is necessary to build the future of the country. These components are as follows:

1. Educating the general public, understanding the benefits of the new technology and promoting the learning of skills: The Blockchain technology can impact jobs. It is the tool that can have good implications on an economy with a 37% rate of unemployment between the youth, according to the Ministry of Labor report (2019). It can provide new careers and even transform education. The World Economic Forum (2018) report assumes that the Blockchain technology can drive business growth, new productivity-enhancing roles and new task-specialized work. In this context, a change in required skills to perform new jobs will notably witness a shift in the nature of skills introducing core skills such as Technology design, programming, creativity, critical thinking, negotiation, emotional intelligence, leadership and social influence, and other, replacing traditional skills; as once predicted by Schumpeter (1942) in his creative destruction theory. Moreover, the KnowledgeWorks

- report (2016) on Blockchain, argues that “the driver of change reflects the potential for a cultural shift, in combination with emerging technologies, to create new possibilities for how people organize and manage institutions” (Ark, 2017).
2. Changing thought processes and spreading awareness: A call for free seminars and conferences are to be opened for all the public and private sectors in Lebanon, educating all on up-to-date technologies. All stakeholders should be convinced about the need to promote anti-corruption and integrity. The Central Bank, who is supposed to be the main actor of the anti-corruption strategy, should first explain the ground rules of the Blockchain technology and then enforce their use. Resistance is inevitable, because individuals will fear losing short-term benefits and personal interests at the expense of others. Nevertheless, a shift from personal visions to a shared vision should be the common goal of all stakeholders.
 3. Building a shared vision based on trust: the common caring vision should be the loyalty to the country. At its simplest level, the shared vision is to answer the following question: “What do we really want for Lebanon?” At the edge of its bankruptcy, the – shared vision - built on trust – of all stakeholders, is vital for how to learn to make a leap towards a better safe environment and a better quality of life. This shared vision can provide focus, energy and the ability to create new strategies via incremental improvements.
 4. Understanding the advantages of a decentralized system and the reasons behind why it is less likely that such a system is to fail. First, the decentralized system has fault tolerance; as it relies on networks of separate components. Second, it has an attack resistance, for it is expensive to attack and/or destroy it and/or manipulate it; because it doesn't have vulnerable central points and because multiple copies of the Blockchain data are stored on nodes and distributed across the whole network. And third, while trust is built in to the system, it has a collusion resistance with high difficulty for hackers to alter every copy and minimal risk of losing any data.
 5. Establishing a good and sound telecommunication infrastructure: With that in perspective, we mention that the quality of telecommunication service in Lebanon is good. However, Internet fees are still relatively high as compared to other countries in the ESCWA region particularly, if one considers the low bandwidth offered (ESCWA, 2009).
 6. Issuing a new legislative and regulatory platform regarding the treatment of Blockchain and about how digital assets should be classified. Despite the many advantages of smart contracting, it includes costs, pitfalls and several problems, mainly due to three components automation, decentralization, and anonymity. Therefore, “smart contracts may demand different treatment from traditional contract law” (Fulmer, 2018).

6. CONCLUSION

This paper offers an understanding of the roots of corruption in Lebanon and a holistic approach of how to fight it. A particular focus of the research is on arriving at a better understanding of the potential of the Blockchain technology to vastly improve the quality of life in Lebanon. On its edge of bankruptcy, and in quest to reforms, the Blockchain can be the common solution if three main conditions are applied: putting all hands on deck, mobilizing all stakeholders and policy makers, and implementing the will and the engagement to change. For, it became clear that in the Fourth Industrial Revolution's wave of technological advancement, the Blockchain can form the appropriate tool to resolve the collapse of the relationship between different parties. It can help the players avoid opportunism, accomplish their contracts and fight corruption. It cannot however represent the only viable solution in the case of Lebanon but it will at least provide all citizens as well as private and public stakeholders with the right information at the right time, preventing the lack of basic economic Data. If properly implemented, it can ensure accountability of collaborative governance, transparency and better decision-making, while saving costs and time and promoting anti-corruption measures. It can secure the four elements that constitute the basic of Collaborative governance: establishing transparency, enhancing accountability, reducing discretionary power in administrative work and preventing impunity.

In a previous paper, the importance of a Bottom-Up reform (Chidiac El Hajj, 2018) was discussed, as the failure of the centralized state has led some to conclude that only a restructuring Bottom-Up reform can help achieve balanced growth, create job opportunities and reduce economic inequality. This paper shows that there is a need for a trusted player to spread awareness and to introduce citizens to the benefits of the Blockchain. The domino effect of a key role player, such as the BdL, can secure and impose a Top-Down approach. Coordinating both Top-Down and Bottom-Up approaches can help form the necessary seed models that can grow in complexity and decide the functionality of the state. Together, they can lead to the required reform; as per requested by the CEDRE reform program. By this, we do not mean that the State will be dismissed but for collaborative governance to be promoted.

Due to the nature of the research, the lack of previous research studies in Lebanon on the topic and the fact that the Blockchain is not yet applied in Lebanon, the study was based on limited questions and answers, hence on limited access to Data from interviewees. Future quantitative studies should highlight whether the Lebanese ecosystem would be benefitting from adopting and implementing at least some of the aforementioned frameworks.

REFERENCES

1. Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory* 18(4), 543-571. <https://doi.org/10.1093/jopart/mum032>

2. Ark, V .T. (2017). *How Blockchain will transform credentialing (and education)*. Retrieved from <https://www.gettingsmart.com/2017/12/Blockchain-will-transform-credentialing-education/>
3. Arkari, J. (2018). *Smart contracts - A legal contract perspective*. Retrieved from <https://disruptservices.io/smart-contract-legal-perspective-part-i-observability/>
4. Atallah, S., Dagher, G., & Mahmalat, M. (2019). *The CEDRE reform program needs a credible action plan*. Retrieved from <https://www.lcpslebanon.org/publication.php?id=333&category=700&title=700>
5. Chaaban, J. (2019). *Lebanon needs a budget for its people, not its ruling class*. Retrieved from <http://beirut-today.com/2019/04/23/lebanon-budget-people/>
6. Chidiac El Hajj, M. (2018). A closer look at the corporate governance in Lebanon: A call for a bottom-up reform. *Corporate Governance and Sustainability Review*, 2(2), 48-61. <https://doi.org/10.22495/cgsrv2i2p5>
7. Coase, R. (1998). The new institutional economics. *The American Economic Review*, 8(2), 72-74.
8. Coase, R. (1937). The nature of the firm. *Economica*, 4(16), 386-405. <https://doi.org/10.1111/j.1468-0335.1937.tb00002.x>
9. Corea, F. (2017). *The convergence of AI and Blockchain: what's the deal? Why a decentralized intelligence may affect our future*. Retrieved from <https://medium.com/...AI/the-convergence-of-ai-and-blockchain-whats-the-deal-60c6>
10. Credit Libanais (2016). *Lebanon's public debt - Credit Libanais*. Retrieved from <https://www.creditlibanais.com.lb/Content/Uploads/.../160711112203804.pdf>
11. Dixit, K. A. (2004). *Lawlessness and Economics: Alternative modes of governance (the Gorman lectures in economics)*. Princeton University Press: UK.
12. Ehrsam, F. (2017). *Blockchain governance: Programming our future*. Retrieved from <https://medium.com/@FEhrsam/Blockchain-governance-programming-our-future-c3bfe30f2d74>
13. El Masri, A. (2019). Access to information: The rights & responsibilities of being an informed Lebanese citizen. Retrieved from <http://beirut-today.com/2019/05/13/access-information-rights-responsibilities-informed-lebanese-citizen/>
14. ESCWA (2009). *National profile of the information society in Lebanon*. Retrieved from <http://www.databank.com.lb/docs/Profile>
15. EU Blockchain (2018). *Blockchain for governance and public services*. Retrieved from eu-observatory-blockchain-in-government-services_v1_2018-12-07.pdf
16. Fulmer, N. (2019). Exploring the legal issues of Blockchain applications. *Akron Law Review*, 52, 162-193.
17. Goldman Sachs. (December, 2018). *How long can Lebanon finance its deficits?* CEEMEA Economics Research.
18. Goldman Sachs. (January, 2019). *An analysis of Lebanese debt recovery value*. CEEMEA Economics Research.
19. IMF (2018). *Lebanon: Staff concluding statement of the 2018 article VI mission-IMF*. Retrieved from <https://www.imf.org/.../ms021218-lebanon-staff-concluding-statem...>
20. King, K., Prince, K., & Swanson, J. (2016). Learning on the block: Could smart transactional models help power personalized learning? Retrieved from <https://www.Blockchaindailynews.com/attachment/756565/>
21. Kandaswamy, R., Valdes, R., & Furlonger, D. (2018). *Hype cycle for Blockchain technologies*. Retrieved from <https://www.gartner.com/.../3775165-hype-cycle-for-blockchain-te...>

22. Lebtivity (2017). *The realm of Blockchain and finance*. Retrieved from <https://www.lebtivity.com/event/the-ever-growing-realm-of-Blockchain-and-finance>
23. L.R.S. (2017). *Why Lebanon has not passed a budget for 12 years?* Retrieved from <https://www.economist.com>
24. Mazieres, D. (2016). *The stellar consensus protocol: A federated model for internet-level consensus. White Paper*. Retrieved November 21, 2018 from <https://www.stellar.org/papers/stellar-consensus-protocol.pdf>
25. McKinsey (2018a). *Smart cities: Digital solutions for a more viable future*. Retrieved from: <https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/smart-cities-digital-solutions-for-a-more-livable-future>
26. McKinsey (2018b). *Lebanon full report*. Retrieved from: 20181022-1228full-report-en.pdf
27. Ministry of Labor (2019). *Unemployment in Lebanon*. Retrieved from www.databank.com.lb/.../Unemployment%20in%20Lebanon%20F...
28. Ministry of State for Administrative development. National anti-corruption Strategy Draft (2018-2023). Report presented to the Lebanese Government.
29. Nakamoto, S. (2008). *Bitcoin: A peer-to-peer electronic cash system*. Retrieved from www.bitcoin.org
30. Newman, J., Barnes, M., Sullivan, H., & Knops, A. (2004). Public participation and collaborative governance. *Journal of Social Policy*, 33(2), 203-223. <https://doi.org/10.1017/S0047279403007499>
31. Perry, T., & Arnold, T. (2019). Lebanon budget seen 'a good first step', but numbers questioned. *Reuters*. Retrieved from <https://www.reuters.com>
32. Ralph, O., & Armstrong, R. (2019). *Mondelez sues Zurich in test for cyber hack insurance*. Retrieved from <https://www.ft.com/content/8db7251c-1411-11e9-a581-4ff78404524e>
33. Republic of Estonia. Ministry of Economic Affairs and Communication. (2019). *Digital agenda 2020 for Estonia. Updated 2018 (summary)*. Retrieved from https://www.mkm.ee/sites/default/files/digitalagenda2020_final.pdf
34. Sakkera (2013). *Customs corruption status*. Retrieved from <https://www.sakkera.com/report.php?i=722&l=e>
35. Schumpeter, J. A. (May 25th, 2013). The age of smart machines. *The Economist*. Retrieved from <https://www.economist.com>
36. Schumpeter, J. A. (1994) [1942]. *Capitalism, socialism and democracy*. Routledge: London.
37. Simon, H. A. (1972). Theories of bounded rationality. In C. B. Radner, R. Radner (Eds.), *Decision and organization* (pp. 161-176). North-Holland: Amsterdam.
38. Szabo, N. (1997). *The idea of smart contracts*. Retrieved from www.fon.hum.uva.nl/rob/.../szabo.best.../smart_contracts_2.html
39. Tapscott, D., & Tapscott, A. (2016). *Blockchain revolution. How the technology behind bitcoin and cryptocurrencies is changing the world*. Penguin: New York, NY.
40. The World Economic Forum (2018). *The future of jobs report 2018*. Retrieved from http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf
41. Thomson Reuters (2019). *Are you ready for Blockchain?* Retrieved from <https://www.thomsonreuters.com> › Home › Reports
42. Williamson, O. E. (2005). The economics of governance. *The American Economic Review*, 95(2), 1-18. <https://doi.org/10.1257/000282805774669880>
43. Williamson, O. E. (1996). *The mechanisms of governance*. New York, NY: Oxford University Press.
44. World Bank (2016). *Financial sector assessment Lebanon*. <https://doi.org/10.1596/26018>