

Chapter 16

Organizational Readiness/ Maturity Considerations for Blockchain Adoption

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ABSTRACT

Digital transformation involves new concepts, radical innovation, and radical organizational change across multiple organizational dimensions. Blockchains can be considered a form of digital transformation for organizations. An aspect of the radical nature of blockchains flows from the capabilities it can provide for trustworthy transactions between organizations. This creates opportunities for new business models by disintermediation of some parties to traditional transaction flows in the same industry or supply chain. Multiple parties have to agree to adopt the new style of transactions. Scorecards and metrics for multiparty technology adoption have additional scope that metrics within a single organization do not. Organizational readiness and maturity metrics for effectively utilizing blockchains have to address the broad range of business considerations that management should consider when evaluating opportunities for digital transformation via blockchain.

INTRODUCTION

Achieving a digitalized economy assumes a process of digital transformation with digital technologies being adopted and new management techniques to effectively manage the identification of suitable technologies; match technologies with organizational opportunities; and then administer the organization in the digitalized economy. Blockchains are increasingly proposed for a wide range of different applications. Blockchains can be considered a form of digital transformation for organizations' business processes, business models, and more. Organizations are attempting to develop and deploy blockchain based solutions with varying degrees of success. Blockchains are associated with a decentralized implementation architecture which often contradicts centralization assumptions inherent in both IT infrastructure (e.g.,

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Client-Server) and in organizational processes and management structures. Blockchains also enable Decentralized Autonomous Organizations (DAOs) which may be better considered as a software implementation of organizational governance rather than a typical technology for process automation. The availability of appropriate metrics will be key for organizations to assess blockchain technologies and deploy them as they transform towards the digitalized economy.

For other significant digital technology deployments, organizations have been using a variety of metrics or scorecards to assess the maturity of their processes related to the technology; and their readiness to develop and deploy solutions based on digital technology. Scorecards and metrics can assist organizations in assessing their process maturity and readiness for deploying blockchain based solutions, if they are appropriate for the type of digital transformation proposed. The mission of this chapter is to provide a view of the applicable organizational readiness and maturity metrics for effectively utilizing blockchains for those concerned with management science and practice. This view provides perspective on where scorecards and metrics are well developed, and where there are gaps.

Metrics and scorecards help organizations evaluate their readiness for blockchain implementations. This chapter starts with a review of the decision processes associated with blockchain selection and adoption; then considers the readiness of businesses for digital transformation via blockchain adoption; before reviewing the maturity or readiness metrics for organizational transformation. Blockchain technology developments have been continuing with increasing attention to architectural choices, design, and development methodologies. Decision processes for blockchain adoption documented in the literature are typically derived from a technology perspective. That technology perspective highlights the capabilities of the technology but lacks an understanding of the organizational context. Both intra-organizational and inter-organizational technology adoption tend to be analyzed with similar frameworks such as the Technology, Organization, and Environment (TOE) framework. Business readiness metrics predate the development of blockchain technologies with various kinds of metrics and scorecards to evaluate dimensions of organizational performance, including capabilities to adapt to technological change. Most of the business readiness/maturity metrics focus on internal technology adoption. A digitalized economy, and blockchains, need readiness metrics that apply across organizations. The digital transformation of an organization for the digitalized economy goes beyond mere technology adoption within existing organizations and includes new forms of digital native organizations such as DAOs. DAOs can use blockchain technology to transform organizational governance and the nature of work. While there is a plethora of advice on technology metrics and technology adoption, digitalized organizations is a much newer concept with fewer metrics available to guide adoption.

Decision Processes for Blockchain Selection and Adoption

Blockchains are an evolving technology with variants already developed and deployed. Some refer to stages of blockchain technology development maturity using numerical generations (Mukherjee & Pradan 2021). *Blockchain 1.0* is focused on cryptocurrency applications e.g., Bitcoin. *Blockchain 2.0* extends applications beyond cryptocurrencies with smart contracts. Smart contracts provide a trustworthy computing paradigm through consensus results of computations on the blockchain. Many of the *Blockchain 2.0* smart contracts have been focused about decentralized finance. *Blockchain 3.0* expands the range of decentralized applications further and addresses scalability and performance issues from previous blockchain generations. These improvements were enabled by a range of architectural options within specific blockchains e.g., Directed Acyclic Graphs (DAGs), alternate consensus mechanisms,

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