

Reframing Agile Organization. Do Big Data Analytics Capabilities Matter?

ABSTRACT

The Agile Manifesto has become the mantra for software developers seeking to create innovative software. However, recently, the principles of Agile Manifesto have also emerged as guidelines for organizations continuously seeking to develop and adopt innovations. Hence, the expression Agile Organization arose. Notwithstanding this interest, Agile Organizations' traits still have to be conceptualized. Yet, the role of Big Data Analytics capable information systems has been neglected. In this perspective, the research aims to develop a framework assessing why Big Data analytics capabilities are fundamental for organizations aiming to follow Agile Organization's principles. Implications of the potential role of such information systems on innovation development and adoption, performance and organizational flexibility are also presented.

Keywords:

Agile Organization; Innovation; Big Data; Big Data Analytics; Information Systems.

Introduction

In order to increase the organisation flexibility and performance, there is a paradigm, named Agile (Fowler & Highsmith, 2001), evolving from the software development in recent years. This resulted into practitioners progressively suggesting the organizations to integrate agile principles into their organizational schemes. Moreover, pertinent literature assessed how an Agile Organization may steadily develop innovative products and easily adopt innovation (Denning, 2016). Along with the organizational studies, the significant role of adequate information systems in an organization's flexibility and performance has been impressed upon by scholars (Lu & Ramamurthy, 2011). They emphasized the importance of big data analytics (BDA) to explore the increasing amounts of data for

opportunities in this digital age (Davenport, 2014). In spite of these studies, several points still need to be cleared. First, a shared vision about the foundational principles of Agile Organizations is still missing (Gothelf, 2014). Next, there is a need for further conceptualizing the importance of BDA in organizations aiming at pursuing Agile Organization principles (Wamba & Mishra, 2017). Thus, this research attempts to provide a systematization of Agile Organizational principles followed by exploring the role of BDA in Agile Organization.

Theoretical Background

Reframing Agile Organization's Principles

As proposed by Fowler & Highsmith (2001), Agile approach recommends: (a) develop projects focussing on motivated individuals; (b) as the changes happen, respond to them; (c) if customer's satisfaction can be improved, such changes should be included at any stage; (d) conduct regular meetings to motivate stronger communications amongst individuals; (e) product and service excellence require continuous attention; (f) customers' collaboration is welcome in key processes. To follow up on these recommendations for Agile approach, it is important to focus on organizational and technical flexibility (Kortmann, Gelhard, Zimmermann, & Piller, 2014).

Because of the demonstrated efficacy and effectiveness of Agile approach, these principles have been seminally incorporated into organizational studies, laying the foundations of the Agile Organization (Ramesh, Mohan, & Cao, 2012). However, the literature around Agile Organization is still fragmented (Denning, 2016). Hence, in the absence of a theoretical harmonisation of Agile Organization's principles, moving from the principles highlighted in the Agile Manifesto, we propose a potential list of the most relevant principles:

- 1- Develop customer satisfaction (Denning, 2016).
- 2- Rapidly respond to market changes (Voss & Voss, 2013).
- 3- Achieve organizational flexibility (Kortmann *et al.*, 2014).
- 4- Achieve technical flexibility (Kortmann *et al.*, 2014).

- 5- Embrace dynamic business process management (Kortmann *et al.*, 2014).
- 6- Pursue effective strategic collaboration with partners (Denning, 2016).
- 7- Ensure stakeholder responsibility (Hahn *et al.*, 2016).

Building on these seven principles, it emerges how an Agile Organization may pursue simultaneously both explorative and exploitative tasks. In this perspective, an Agile organization is capable to deal with changes that arise unpredictably in complete environments through a fast and ground-breaking reactions. Lu & Ramamurthy (2011) observed an Agile IT organization where they found that these seven principles were well incorporated. From their observations, they recognized two benefits of following these Agile principles: market capitalizing and operational adjustment agility. The former indicates how swiftly the organization responds to internal changes. And the latter defines the ability of an organization to deal with market changes by adjusting its internal business processes. The seven principles and how they can be incorporated in an organization are represented in the following figure (Figure 1).

 Insert Figure 1 about here

However, several studies highlight the crucial role that information systems play in enabling the information workflow needed to fully exploit the aforementioned Agile principles in the organization. Consequently, it is not possible to separate an Agile Organization from an efficient and flexible information system (Lu & Ramamurthy, 2011).

Big Data, Business Process Management Systems and Organizational Agility

In recent times, the datasets have become so complex that the conventional data analysis software are not able to process the information, thereby calling for the need of big data expressions (Waller & Fawcett, 2013). Literature clearly identifies the complexities of the big data and elucidates all the characteristics of it. A label of 7Vs (Wamba, Gunasekaran, Akter, Ren, Dubey, & Childe,

2017), defined as volume, velocity, variety, veracity, value, variability and visualization, are used to differ the conventional humungous datasets from the big data. McAfee, Brynjolfsson & Davenport are few organizations where the BDA capable information systems have been successfully implemented and have marked big data as the next revolution for management (2012). In one aspect, bottlenecks in the internal processes have been reduced and process streamlining increases their efficiency (Davenport, 2014). In other aspect, big data can be leveraged by managers to identify customer's common behaviour patterns and personalize their offering and prices according to customer's preferences (Waller & Fawcett, 2013). The major benefits seen out of BDA capable information systems that have been adopted within the business are an increased consumer-centricity, operational optimization, improved risk management and better workforce utilization (Wamba et al., 2017).

In order to unleash the potential of big data, over recent times information systems, scholars and practitioners have stressed the importance to integrate BDA capabilities into management information systems (Wamba & Mishra, 2017). A BDA capable system may give "process participants better real-time situational awareness and the ability to tailor their responses appropriately" (Gao, 2013, p.4), over a traditional information system. As per the relevant literature, the BDA capable systems are *analytical, automatic, adaptive* and *agile* to leverage big data (Hill & Schulte, 2011). In addition to this, these systems have the capability to process the data automatically across various business processes, along with other advanced analysis (Wamba & Mishra, 2017).

Proposed Conceptual Framework

According to McAfee *et al.* (2012), the competitive landscape has been significantly changed by presence of big data as evaluated in previous paragraphs. In order to achieve competitive advantage, organizations need to implement specific information systems that have the ability to obtain significant information from unstructured datasets (Gao, 2013). They are in fact capable of collecting data from several different internal processes, of analysing those later, and providing the

right information to the right person (Wamba & Mishra, 2017). As a consequence of the adoption of such systems, organizations can better manage the data. On one hand, the organization's reactivity to market change is greatly influenced by these information systems (Davenport, 2014). The data can be promptly analysed and information can be sent automatically to concerned actors so that they can make necessary changes to present strategies (Gao, 2013). On the other hand, with the implementation of such internal perspective, bottlenecks can be identified using these information systems. Therefore, BDA capable information systems could help an organization to pursue the seven identified principles and to transform into an Agile Organization. Moreover, due to outcomes related with the implementation of BDA capable information systems an organization may achieve market capitalizing and operational adjustment agility (Lu & Ramamurthy, 2011). Consequently, BDA capable information systems may affect performance, foster more rapidly the adoption of innovations, and increase organizational flexibility. Therefore, we propose:

Proposition 1: BDA capable information systems are fundamental for organizations aiming at following Agile principles.

Proposition 2: An organization following Agile Organization Principles may achieve market capitalizing agility.

Proposition 3: An organization following Agile Organization Principles may achieve operational adjustment agility.

Proposition 4: As a consequence of achieving market capitalization and operational adjustment agility, an organization may have better performance, adopt innovation more rapidly, and increase organizational flexibility.

Insert Figure 2 about here

Discussion and Conclusions

BDA capable information systems may be fundamental for organization aiming at pursuing Agile Organization principles. Yet, such a kind of information systems are fundamental in digital era for improve performance, adopt innovation more rapidly, and increase organization flexibility.

Despite the interesting proposition, this research is only an exploratory research. In this perspective, the results are not generalizable and need to be tested empirically.

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FIGURE 1

Agile Organization principles, market capitalizing agility and operational adjustment agility

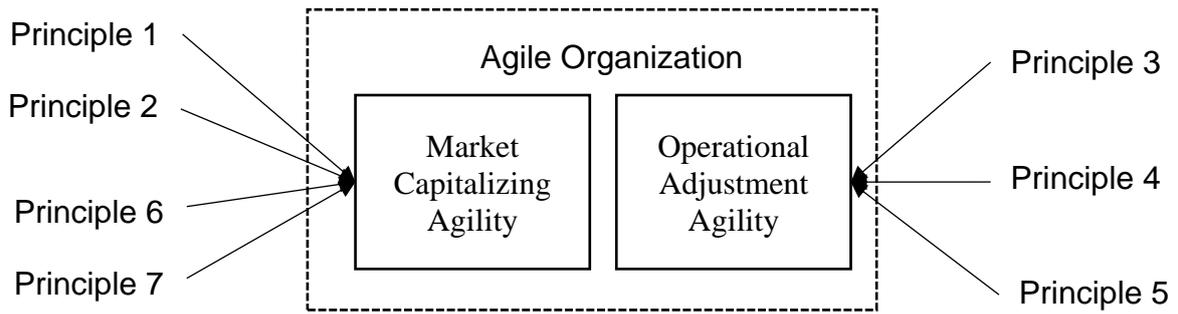


FIGURE 2

Conceptual framework: The importance of BDA capability for Agile Organization

