

Why Big Data Analytics Competency for Organizational Agility? : A View of IS Resources

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BDA Competency

BDA is known as a holistic approach to managing, processing and analyzing the 5V data-related dimensions (i.e., volume, variety, velocity, veracity and value) (Wamba et al. 2017).



BDA objects

“Acquisition, processing, storage, dissemination and use” of BDA.



BDA operations

BDA processes, work practices and routines.



BDA knowledge

- Technical knowledge-how to use, manage BDA
- General understanding of trends in relation to BDA

BDAC & Org. Agility

Organizational Agility: A firm's ability to sense and respond to environmental changes to seize market opportunities and effectively handle threats in a timely manner (Overby et al. 2006; Sambamurthy et al. 2003).



- Efficiently process data**

Eliminating data duplication and time-consuming workloads (Davenport et al. 2012).

- Better understand business market**

Customer needs, competitor moves, and technological development (Wamba et al. 2017).

- Facilitate collaboration**

A close collaboration between IT and business functions (Lu & Ramamurthy 2011).

BDA can improve organizational agility
(Chatfield & Reddick 2018; Ghasemaghaei et al. 2017; Mandal 2018)

Research Gap



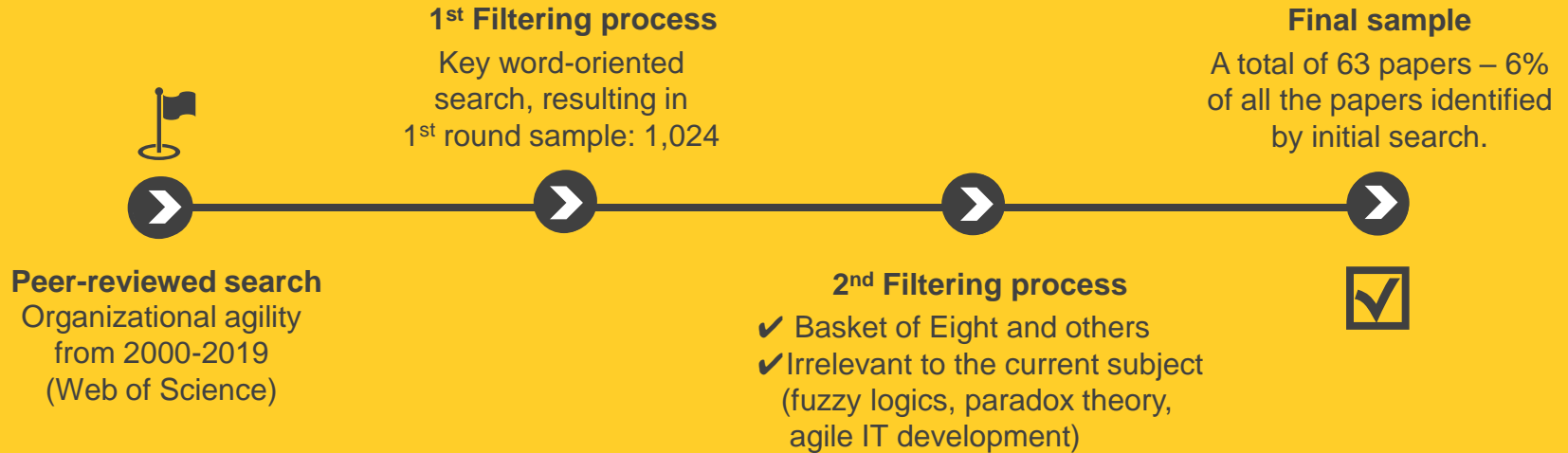
Prior IS studies show **What aspects** of BDA could improve organizational agility (Chatfield and Reddick 2018; Ghasemaghaei et al. 2017; Mandal 2018).

There has been no research that identifies **How** BDA competency could effectively lead to organizational agility?

The purpose of our study is to identify **How** BDA competency could effectively lead to organizational agility.

A Systematic Literature Review

(*Procedures followed by Piccoli & Ives 2005; Shen et al. 2015; Webster & Watson 2002)



A Basic Framework

Antecedent

The features of respective IS resources match with potential effects of BDA competency

Mediator

- ✓ Outside-in resources
- ✓ Spanning resources
- ✓ Inside-out resources

Consequence

Antecedents of agility are properly classified & explained by IS resources



Research Questions

RQ1: *How could antecedents of organizational agility be appropriately classified and explained by outside-in, spanning, and inside-out resources?*

RQ2: *How could BDA competency improve organizational agility through the mediation of IS resources (outside-in, spanning, and inside-out)?*

IS Resources

Assets & capabilities that are available and useful in detecting and responding to market opportunities and threats
(Wade & Hulland 2004).

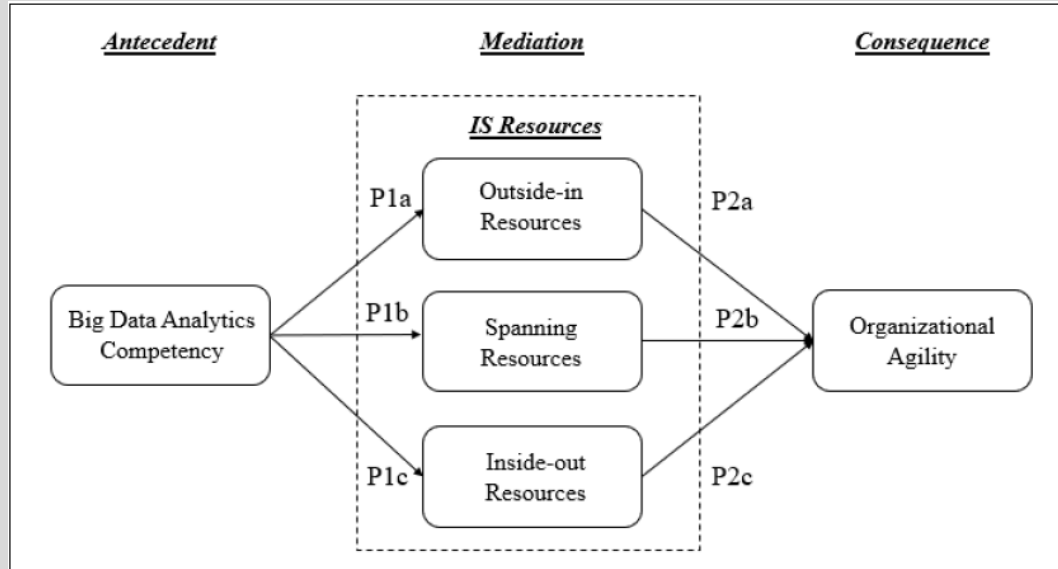
Outside-in Resources	Spanning Resources	Inside-out Resources
<ul style="list-style-type: none"> •Definition Help anticipate market needs, create durable customer relationships, understand competitors. •Characteristics <ul style="list-style-type: none"> -Market responsiveness -External relationship management -Update information 	<ul style="list-style-type: none"> •Definition Involve both internal and external analysis to integrate the firm's inside-out and outside-in resources. •Characteristics <ul style="list-style-type: none"> -IS-business partnership -Problem-solving orientation -Business understanding 	<ul style="list-style-type: none"> •Definition deployed from inside the firm to respond to market requirements and opportunities. •Characteristics <ul style="list-style-type: none"> -Cost effective IS operations -Enhanced product quality -IS infrastructure/skill
<p><u>Dynamic capabilities</u></p> <ul style="list-style-type: none"> -Disciplined flexibility -Exploration of external opportunities -Sensing market needs and competitors' action -Willingness to change 	<p><u>Improvisational capabilities</u></p> <ul style="list-style-type: none"> -Highly spontaneous, intuitive -Acting outside of existing plans -Contingent processes with unpredictable outcomes 	<p><u>Operational capabilities</u></p> <ul style="list-style-type: none"> -Efficiency (cost, time) and effectiveness (quality) -Exploitation of opportunities -Function-specific skills and knowledge

Antecedents of Org. Agility

RQ1: *How could antecedents of organizational agility be appropriately classified and explained by outside-in, spanning, and inside-out resources?*

Types of Resources	Antecedents/Description	References
Outside-in	<ul style="list-style-type: none"> External integration External IT linkage Entrepreneurial alertness Innovation capacity 	Chen et al. 2014; Holmqvist and Pessi 2006; Nazir and Pinsonneault 2012; Ngai et al. 2011; Ravichandran 2018; Sambamurthy et al. 2003
Spanning	<ul style="list-style-type: none"> IT business spanning capability Business IT strategic thinking Strategic IT alignment Behavioral capability Business capability 	Chen et al. 2014; Fink and Neumann 2007; Lu and Ramamurthy 2011; Tallon & Pinsonneault 2011
Inside-out	<ul style="list-style-type: none"> IT infrastructure capability IT capability/ IT competence Internal integration Operational competence Proactive IT stance 	Chakravarty et al. 2013; Chen et al. 2014; Fink and Neumann 2007; Lu and Ramamurthy 2011; Nazir and Pinsonneault 2012; Ngai et al. 2011; Overby et al. 2006; Ravichandran 2018; Sambamurthy et al. 2003

A Proposed Framework



RQ2: How could BDA competency improve organizational agility through the mediation of IS resources (outside-in, spanning, and inside-out)?

Discussion and Implications



Theoretical Implications

- ✓ The present paper provides a comprehensive overview about agility studies from a view of IS resources (outside-in, spanning, and inside-out resources).
- ✓ It suggests a theoretical framework that explains how BDA competency improves organizational agility, highlighting IS resources view.



Practical Implications

- ✓ Our study is expected to provide practitioners with a useful guideline about how knowledge workers take BDA as a core competency and drive keener organizational agility.

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Thank you very much!

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