Business Intelligence Adoption: A Literature Review and Model Exploration

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1. Abstract

Purpose

Synthesize a new model of Business Intelligence adoption factors, driven by four key variables:

1 - Executive Management Influence
2 - Individual Intention
3 - Technology
4 - Organization

The research seeks to identify new insights from existing publications in factors impacting adoption of Business Intelligence ("BI") through a systematic literature review. The research is comprehensive and review-centric, covering over 80 scholarly publications from highly reputable sources, including:

- International Journal of Information Management
- MIS Quarterly
- Decision Support Systems

Practical implications

The research is important because BI systems provide immense benefits to organizations who adopt modern BI tools (Acheampong & Moyaid, 2016). BI systems provide an ability to make fast decisions with the most up-to-date information available. This increased speed to insight results in greater profitability, enhanced competitive advantage, and improved decision-making capabilities. However, limited research exists on the factors affecting adopting BI (Acheampong & Moyaid, 2016). The current research will challenge existing theories of BI adoption, synthesize recent advances, and expand existing models in the field through a systematic literature review and empirical study (Puklavec, Oliveira, & Popovič, 2018), (Lee, 2010), (Ain, Vaia, DeLone, & Waheed, 2019).

2. Research Approach / Methodology

Research Methods used:

Research Methods	Source
A systematic literature review	Ain et al. (2019), Younas, Jawawi, Ghani, Fries, and Kazmi (2018), Gina and Budree (2020), Llave (2017), English and Hoffmann (2018), El-Adaileh and Foster (2019)
A review centric research	Larson and Chang (2016)
Empirical Analysis of Factors	Yiu, Yeung, and Abe (2020), Madhlangobe and Wang (2018),
A review and research agenda	Trieu (2017)
Empirical Investigation	Sujitparapitaya, Shirani, and Roldan (2012), Rajan and Baral (2015), Mudzana and Maharaj (2015), Hou (2012),
Exploratory study	Puklavec et al. (2014), Lee and Anderson (2006)
A conceptual framework	Jiang (2009)

Table 1: Research Methods for the current work

Research Methods for BI Adoption in the past:

Research Methods	Source
Exploratory Study	Puklavec et al. (2014)
Propensity scoring matching (PSM) and event study methodology to analyze data from a sample of US firms which adopted BI systems in a specific time.	Yiu et al. (2020)
A mixed method investigation	Bischoff et al. (2015)
A systematic literature review on 84 cases published from 2011 to 2020. 93 determinants were identified based on content analysis using text mining techniques of Yoshikoder and human coding skills. Resulting determinants are ranked on frequency of use.	Ahmad et al. (2020)
Synthesis of an assessment model and review of Business Intelligence literature in a specific region and sector, the study derives a framework that allows for identification of factors that affect Business Intelligence adoption.	Hartley and Seymour (2011)
A technological evolution approach	Chung and Snyder (2000)

Table 2: Research methods used for BI Adoption as a Dependent variable

Models Found Explaining BI Adoption:

Model	Source	
Technology, Organization, Environment ("TOE")	Maroufkhani et al. (2020)	Chaveesuk and Horkondee (2015)
	Seok-Keun and Bo-Young (2018)	Acheampong and Moyaid (2016)
	Nam et al. (2019)	Puklavec et al. (2014)
	Arnott, Lizama, and Song (2017)	Puklavec et al. (2018)
Diffusion of Innovation ("DOI")	Maroufkhani et al. (2020)	Puklavec et al. (2014)
	Nam et al. (2019)	Puklavec et al. (2018)
	Karahanna et al. (1999)	Popovič et. Al. (2019)
	Chiu et al. (2017)	
Behavioral Model	Fetzner and Freitas (2011)	Arnott et al. (2017)
	Shahid et al. (2017)	
Technology Acceptance Model ("TAM")	Stjepic, Bach, and Viuksic (2021)	Puklavec et al. (2014)
	Fetzner and Freitas (2011)	
Resource Based Theory	Popovič et. Al. (2019)	Maroufkhani et al. (2020)
Maturity Model	Qushem (2017)	
Information Evolution Model ("IEM")	Gontar (2011)	
Iacovou Model	Iacovou et al. (1995)	Puklavec et al. (2014)
	Nam et al. (2019)	
Unified Theory of Acceptance and Use Technology	Fetzner and Freitas (2011)	

Table 3: Models used to explore both technology adoption generally and BI adoption.

Current Research Approach

Various models were identified in prior research explaining BI Adoption, including:

- Theory of Reasoned Action
- Technology Acceptance Model (TAM)
- Technology-Organization-Environment (TOE)
- Motivational theories
- Innovation Diffusion Model

The current research seeks to identify a unique adoption framework, synthesizing ideas of these existing models.

Proposed Model:

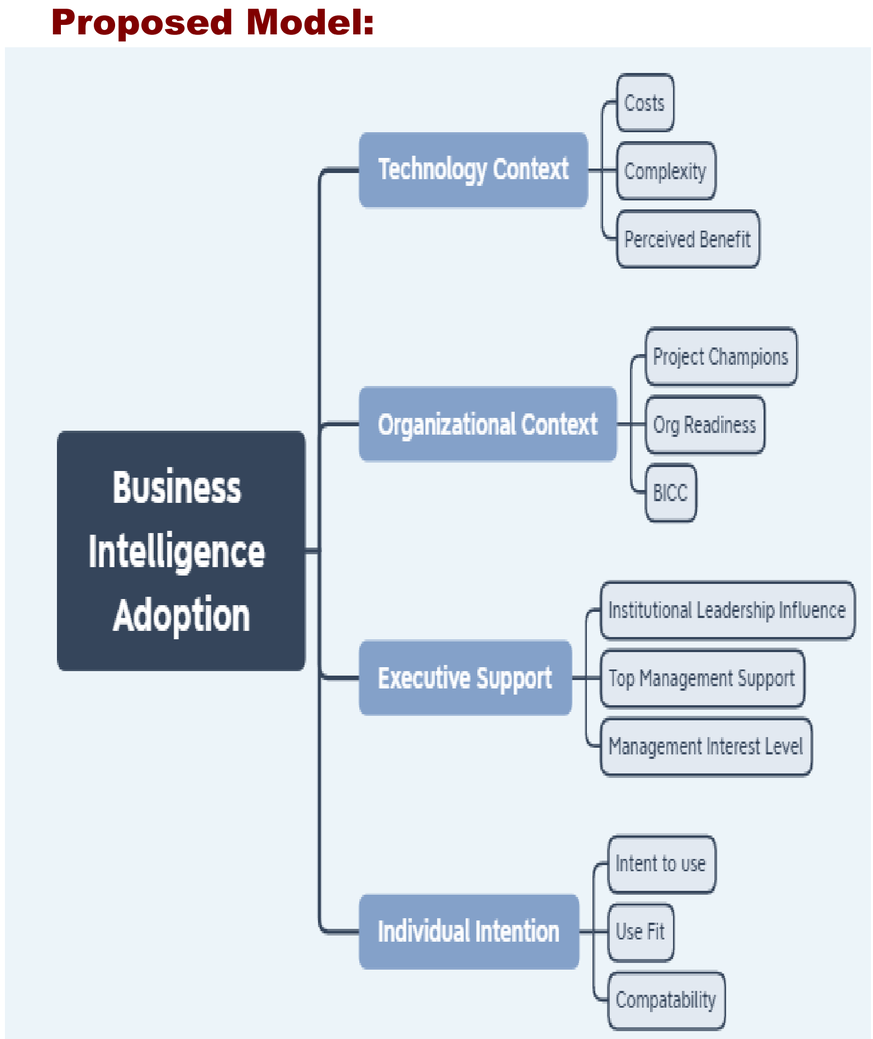

Figure 1 Theoretical model for investigating factors driving Business Intelligence adoption

Alternate Variables Explaining BI Adoption:

	Independent Variable (from other articles)	Sources
1.	Benefits	(Acheampong & Moyaid, 2016), (Llave, 2017), (Antoniadis et al., 2015), (Elbashir et al., 2008), (Trieu, 2017), (Moreno et al., 2019), (Rouhani et al., 2016)
2.	Implementation	(Magaireah et al., 2017), (Bajaj & Rai, 2018), (Batra, 2017), (Williams et al., 2017), (Ali et al., 2018), (Prouza et al.), (Foshay & Kuziemsky, 2014), (Halim et al., 2020),
3.	Contextual factors	(Yiu et al., 2020)
4.	Organizational learning	(Fink et al., 2017)
5.	Tool Selection	(Gina & Budree, 2020), (Kilic et al., 2014), (Büyüközkan et al., 2019; Hanine et al., 2017)
6.	Integration with ERP	(Nofal & Yusof, 2013)
7.	Competitive Advantage	(Peters et al., 2016) (English & Hoffmann, 2018),
8.	Performance Measurement	(Vallurupalli & Bose, 2018), (Lin et al., 2009)
9.	User Satisfaction	(Philip, 2017)
10.	Success Factors	(Sianipar et al., 2019), (Mudzana & Maharaj, 2015)
11.	Capabilities	(Işık et al., 2013)

Table 4: Alternate independent variables influencing BI adoption found in the research.

3. Discussion / Conclusion

Discussion and Findings

This review looked at many research methods used to better understand the adoption of BI and technology more generally. In conducting the review, many new insights, and potential contributions to the field of Business Intelligence adoption were uncovered.

1. Individual adoption of technology and organizational adoption of technology are two different concepts and cannot be combined in the same model. Behavioral aspects of individual intention are a widely researched field both in TM and many other disciplines including psychology, consumer behavior, sociology and others. Limiting the idea of individual's interest in adopting technology specifically for BI and then combining that in the same model with organizational drivers is a mistake. Organizational drivers of BI adoption are more focused and can be distilled to economic predictors of adoption

2. The research proves that bifurcating Executive Support and the Organizational Context is a challenging leap in logic. While the idea of breaking out Executive Support into its own independent variable was unique, there was not enough evidence found in the literature to support the idea of standing this driver on its own and calling it independent. The organizational context is a strong driver of BI adoption as evident in the literature and should always include Executive Support as a subcomponent of the Organizational context.

3. The proposed model sought to break out compatibility perception from use fit, within the individual intention context. While this idea may be possible if one were to move the driver of use fit into the category of technology context, reviewing both items as subcomponents of individual intention does not prove value. Both topics have significant overlap and cannot logically be studied as independent variables under the same category. When looking at use fit from the perspective of the technology context, then it may be useful from a different organization perspective, but not within the individual context.

4 Breaking out executive support into institutional leadership, top management support and management interest level was a novel idea, but found little foundation in the literature reviewed. Executive support is perhaps the strongest driver of overall BI adoption. However, attempting to categorize executive support into the three variables created too much ambiguity.

Conclusions

The research identified new insights from existing publications in factors impacting the adoption of BI through a SLR, but it fell short of the idea on creating a new model. Future research should look deeper into executive support components of BI adoption as it was found to be the most dominant explanation in the literature, however, this should be explored as a subcomponent of the Organizational context, not as an independent variable outside of organizational contexts. Last, this literature sought to explain factors affecting BI adoption specifically outside of the general technology context.

References and Bio

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